

Cultural Resources

Arkabutla Dam is a high hazard potential dam located in Desoto County, Mississippi with portions of the Lake extending into Tate County, Mississippi. The dam is located on the Coldwater River, a tributary of the Tallahatchie River, that stores floodwater to provide flood damage reduction in the Yazoo Basin. The dam is located approximately 4.25 miles north of Arkabutla, Mississippi and approximately 35 miles south of Memphis, Tennessee. Project components consist of an embankment dam, abutment dikes, outlet works, spillway, and closure dikes. The total length of the dam including the abutment dikes is 10,700 feet in length. The maximum height above the valley floor is 85 feet. The outlet works consist of a three-gated reinforced concrete intake tower, single reinforced concrete conduit, reinforced concrete stilling basin, and outlet channel. A service bridge connects the intake tower with the crown of the main embankment and allows access from embankment to the intake structure operating floor. The spillway is in a natural saddle about 3,000 feet north of the dam and is an uncontrolled overflow type consisting of a reinforced concrete approach apron, weir, chute, stilling basin, and riprap lined outlet channel. The two small closure dikes are located northwest of the spillway and have a total length of approximately 1,300 feet and a maximum height of 35 feet. Construction of the project began in August 1940 and was completed in June 1943.

Historic properties in the dam vicinity were identified based on a review of the National Register of Historic Places (NRHP), Management of Archaeological Site Data in Mississippi Department of Archives and History's Historical Site Management Tool (HSMT), historic aerial photography, historic map research, and a review of cultural resources survey reports. Review of current cultural resources map revealed no historic properties within and relatively few known cultural resources adjacent to the APE. The bottom lands of the Coldwater River, as well as those of both Hurricane and Wolf creeks, all tributaries of the Yazoo River system, are rich in mostly prehistoric cultural remains. Haag (1952) conducted the earliest reservoir survey in Mississippi while on faculty at the University of Mississippi when he surveyed the Yalobusha River in preparation for the construction of Grenada Reservoir.

All four of the Corps reservoirs were examined in a reconnaissance of Corps-held property between 1980 and 1981 (Broyles, Thorne, and Owens 1982). These efforts were conducted across the Arkabutla lakebed during winter pool conditions, encompassing an area approximately 3,500 acres in size, versus summer pool conditions (approximately 10,610 acres in size). An approximately 25 percent% sample was randomly chosen for revisitation and assessment/evaluation, the data for which was used to generate some very basic cultural resources management guidelines and recommendations. The reconnaissance included a review of private collections. Archaic occupations are well represented in the data set which resulted from this study, though Woodland occupations are the most frequently identified. Both Mississippi and Paleoindian occupations are infrequent. Most of these sites are located on natural elevations in the floodplain (lakebed) or along creekbanks and lake shoreline.

The largest of the archaeological surveys in the uplands of north Mississippi was conducted by personnel at the University of Mississippi during the 1990s (Johnson 1996). Nine drainages were surveyed including several which drain into Sardis, Grenada, Enid, and Arkabutla reservoirs. A total of 157,214 acres were examined, and 919 sites were located or relocated. Most of these sites were found on the floodplains and are small lithic scatters. Of those sites that could be assigned to a time period, most dated to the Late Woodland period.

An individual investigation was undertaken of one archaeological site (Kelley's Crossing site [22Ta684]) in 2006 to assessment/evaluate the impacts of fluctuating pool levels, representing the most recent investigative effort. This study revealed the presence of a low density, disturbed cultural deposit near the present shoreline. Wave

activity and fluctuating pool levels at Arkabutla Lake appear to be continually eroding away at this deposit, leaving many cultural materials in secondary contexts along the shore (Albertson 2006). Similar impacts are expected for most archaeological resources within this area. One last cultural resources survey effort of about 107 acres of ridge top, and side slope in nine separate survey areas located in the Hickahala Creek and Coldwater River drainages in Tate and DeSoto counties. This effort identified one scatter of Late Woodland material (22Ds792) along the shoreline edge, determined ineligible for listing to the NRHP (Johnson 2009).

Within the Arkabutla Lake/Reservoir boundaries (here defined as the reservoir/dammed body of water), there are approximately 67 known archaeological sites (Table Cultural_1). Many of the known sites are associated with prehistoric occupations unattributed to any specific occupational time period(s), meaning that no artifacts diagnostic of specific periods were noted when identified (n=46). Of those sites with known occupations, most are associated with the Woodland period (n=20)], followed by much smaller numbers of Mississippi (n=5), Archaic (n=3), and Paleoindian (n=2) occupations. Many (n=32) of the known sites have not been formally evaluated or assessed for listing in the National Register of Historic Places (NRHP). Of those have been evaluated/assessed, nearly all (n=34) have been determined ineligible for listing in the NRHP; only one has been determined eligible for listing in the NRHP. The eligible archaeological site (22Ta667) was recommended under Criterion D for its potential to contribute the prehistory of the area.

Across the upland (ridge and terrace) settings of the Arkabutla Lake and Dam property, there have been an additional 72 archaeological resources identified (Table Cultural_2). Many of these sites are associated with Woodland period occupations (n=15) or prehistoric occupations unattributed to any specific occupational time period(s), meaning that no artifacts diagnostic of specific periods were noted when identified (n=14). Of those remaining sites with known occupations, there are equal numbers of 20th century (n=9) archaeological sites or sites not attributed to any specific historic time period(s) (n=9), followed by 19th century sites (n=6), and much smaller numbers of Archaic (n=2), Mississippi (n=1), and Paleoindian (n=1) sites. Most (n=46) of these known sites have been determined ineligible for listing in the NRHP, with the remainder having not been formally evaluated or assessed for listing in the NRHP (n=26).

Comparison of the extent of pools across Arkabutla Lake at various elevations allows for inventory and analysis of known cultural resources associated with each pool elevation. Only six sites have been identified at or above summer pool elevation (230 ft.), which encompasses approximately 10,610 acres. Between this elevation and winter pool elevation (210 ft.) the number of sites increases to 56, while the acreage at this elevation decreases significantly to approximately 3,500 acres. There are only five sites located at an elevation below the winter pool elevation of 210 ft., all five listed with an elevation of 207 ft. No sites have been recorded at lower elevations (see Table Cultural_1). Based on information gathered from previous archaeological studies, it is known that only five of the known 67 sites are submerged when the pool is at 210 ft., meaning that the other 62 sites are repeatedly subjected to the impacts of annual drawdowns between summer and winter pool elevations.

Furthermore, the existing Arkabutla Dam and Reservoir (specifically the earthen dam, Gaging Station, Intake Tower, Outlet Channel, and Stilling Basin - collectively inventoried as MDAH Historic Structures Inventory No. 137-ARK-1002) is considered eligible for listing to the NRHP under Criteria A and C, with a period of significance from 1936-1954. Under Criterion A, the dams are significant for their association with the Yazoo Headwater Project, the first comprehensive flood control project in the Yazoo River Basin and the expanded authority of the USACE resulting from the Flood Control Act of 1936 which granted the USACE considerable leeway in the design and selection of flood control efforts. In addition, the dams and reservoirs are also eligible under Criterion C as examples of hydraulic-fill dam technology and for engineering efforts associated with flood control.

The entire Arkabutla Lake and Dam property encompasses an area approximately 38,500 acres in size. Excluding the single reconnaissance effort conducted across the lakebed discussed above, all other cultural resources efforts are restricted to upland ridge and terrace settings and conducted between 1981 and 2019 (38 total cultural resources surveys) (Table Cultural_3). These efforts were either associated with USACE activities (e.g. construction, land transfer, and timber harvests/sales [n=27 or 71.1 percent]) or other federal/state agency activities (e.g. bridge replacements, cell towers, and utility work [n=11 or 28.9 percent]). Together, these efforts encompass approximately 6,200 acres, or 16.1 percent of the total property acreage.

Table Cultural_1. Inventory of known archaeological sites across the Arkabutla Lake and Dam lakebed, listed by elevation.

SITES BELOW WINTER POOL (210 FT.) ELEVATION (N=5)

Trinomial	Elevation (ft.)	NR Status	Components
Ds 558	207.0	Ineligible	Woodland; Mississippi
Ds 559	207.0	Ineligible	Woodland; Mississippi
Ta 515	207.0	Unevaluated	Undetermined Prehistoric Period
Ta 516	207.0	Unevaluated	Undetermined Prehistoric Period
Ta 517	207.0	Unevaluated	Undetermined Prehistoric Period

SITES BETWEEN WINTER (210 FT.) AND SUMMER (230 FT.) POOL ELEVATIONS (N=56)

Trinomial	Elevation (ft.)	NR Status	Components
Ds 528	210.0	Ineligible	Undetermined Prehistoric Period
Ds 536	210.0	Ineligible	Undetermined Prehistoric Period
Ds 537	210.0	Ineligible	Undetermined Prehistoric Period
Ds 539	210.0	Ineligible	Undetermined Prehistoric Period
Ds 540	210.0	Ineligible	Undetermined Prehistoric Period
Ds 541	210.0	Ineligible	Undetermined Prehistoric Period
Ds 542	210.0	Ineligible	Undetermined Prehistoric Period
Ds 547	210.0	Ineligible	Undetermined Prehistoric Period
Ds 549	210.0	Ineligible	Undetermined Prehistoric Period
Ds 568	210.0	Ineligible	Undetermined Prehistoric Period
Ds 575	210.0	Ineligible	Undetermined Prehistoric Period
Ds 633	210.0	Unevaluated	Undetermined Prehistoric Period
Ta 513	210.0	Unevaluated	Undetermined Prehistoric Period
Ta 514	210.0	Unevaluated	Undetermined Prehistoric Period
Ds 548	213.0	Ineligible	Undetermined Prehistoric Period
Ds 579	213.0	Ineligible	Undetermined Prehistoric Period
Ta 537	213.0	Unevaluated	Undetermined Prehistoric Period

Ta 539	213.0	Unevaluated	Undetermined Prehistoric Period
Ds 552	215.0	Ineligible	Undetermined Prehistoric Period
Ds 570	215.0	Ineligible	Undetermined Prehistoric Period
Ds 572	215.0	Ineligible	Undetermined Prehistoric Period
Ds 573	215.0	Ineligible	Middle-to-Late Woodland Period
Ds 576	215.0	Ineligible	Undetermined Prehistoric Period
Ds 649	215.0	Unevaluated	Archaic; Woodland Periods
Ds 571	217.0	Ineligible	Undetermined Prehistoric Period
Ds 574	217.0	Ineligible	Middle-to-Late Woodland Period
Ta 518	217.0	Unevaluated	Paleoindian; Undetermined Prehistoric Periods
Ta 524	217.0	Unevaluated	Woodland Period
Ta 526	217.0	Unevaluated	Undetermined Prehistoric Period
Ta 538	217.0	Unevaluated	Undetermined Prehistoric Period
Ta 540	217.0	Unevaluated	Undetermined Prehistoric Period
Ds 538	218.0	Ineligible	Undetermined Prehistoric Period
Ds 553	220.0	Ineligible	Middle-to-Late Woodland Period
Ds 554	220.0	Ineligible	Woodland Period
Ds 555	220.0	Ineligible	Woodland; Mississippi Periods
Ds 563	220.0	Ineligible	Undetermined Prehistoric Period
Trinomial	Elevation (ft.)	NR Status	Components
Ds 564	220.0	Ineligible	Undetermined Prehistoric Period
Ds 631	220.0	Unevaluated	Early Woodland Period
Ds 632	220.0	Unevaluated	Woodland Period
Ds 655	220.0	Unevaluated	Early Woodland Period
Ds 656	220.0	Unevaluated	Woodland Period
Ds 658	220.0	Unevaluated	Archaic; Woodland Periods
Ds 659	220.0	Unevaluated	Woodland Period
Ta 500	220.0	Unevaluated	Late Archaic; Woodland; Mississippi Periods
Ta 519	220.0	Unevaluated	Woodland Period
Ta 520	220.0	Unevaluated	Paleoindian; Woodland Periods
Ta 521	220.0	Unevaluated	Woodland Period
Ta 525	220.0	Unevaluated	Undetermined Prehistoric Period
Ta 542	220.0	Unevaluated	Undetermined Prehistoric Period
Ta 543	220.0	Unevaluated	Undetermined Prehistoric Period
Ta 544	220.0	Unevaluated	Undetermined Prehistoric Period
Ta 545	220.0	Unevaluated	Undetermined Prehistoric Period
Ta 546	220.0	Unevaluated	Undetermined Prehistoric Period
Ta 684	220.0	Eligible	Middle-to-Late Mississippi Period
Ds 527	226.0	Ineligible	Undetermined Prehistoric Period
Ds 546	226.0	Ineligible	Undetermined Prehistoric Period

SITES AT OR ABOVE SUMMER (230 FT.) POOL ELEVATION (N=6)

Trinomial	Elevation (ft.)	NR Status	Components
Ds 534	230.0	Ineligible	Undetermined Prehistoric Period
Ds 569	230.0	Ineligible	Undetermined Prehistoric Period
Ds 664	230.0	Unevaluated	Undetermined Prehistoric Period
Ta 502	230.0	Unevaluated	Undetermined Prehistoric Period
Ds 792	233.0	Ineligible	Middle-to-Late Woodland Period
Ds 561	240.0	Ineligible	Undetermined Prehistoric Period

Table Cultural_2. Inventory of remaining known archaeological sites across Arkabutla Lake and Dam property.

Trinomial	Elevation (ft.)	NR Status	Components
DS 526	280.0	Ineligible	Middle-to-Late Woodland; Mississippi Periods
DS 532	250.0	Ineligible	Undetermined Prehistoric Period
DS 533	250.0	Ineligible	Paleoindian; Woodland; Mississippi Periods
DS 534	240.0	Ineligible	Undetermined Prehistoric Period
DS 544	230.0	Ineligible	Undetermined Prehistoric Period
DS 545	226.0	Ineligible	Undetermined Prehistoric Period
DS 550	230.0	Ineligible	Undetermined Prehistoric Period
DS 551	230.0	Ineligible	Undetermined Prehistoric Period
DS 556	235.0	Ineligible	Woodland; Mississippi Periods
DS 557	250.0	Ineligible	Woodland Period
DS 561	240.0	Ineligible	Undetermined Prehistoric Period
DS 565	259.0	Ineligible	Undetermined Prehistoric Period
DS 566	226.0	Ineligible	Undetermined Prehistoric Period
DS 567	238.0	Ineligible	Early Woodland Period
DS 634	250.0	Ineligible	Undetermined Prehistoric Period
DS 635	250.0	Ineligible	Undetermined Prehistoric Period
DS 636	240.0	Unevaluated	Civil War
DS 657	220.0	Unevaluated	Undetermined Prehistoric Period
DS 660	230.0	Unevaluated	Woodland Period
DS 661	230.0	Unevaluated	Woodland Period
DS 662	250.0	Unevaluated	Woodland Period
DS 663	250.0	Unevaluated	Woodland Period

DS 786	319.0	Unevaluated	19th through 20th Centuries
DS 790	250.0	Ineligible	20th Century
DS 791	308.0	Ineligible	Undetermined Historic Period
DS 797	279.0	Unevaluated	Undetermined Historic Period
DS 798	256.0	Ineligible	Undetermined Prehistoric Period; Undetermined Historic Period
DS 799	249.0	Ineligible	Undetermined Historic Period
DS 800	256.0	Unevaluated	Undetermined Prehistoric Period
DS 801	236.0	Ineligible	Undetermined Prehistoric Period; Undetermined Historic Period
DS 802	249.0	Ineligible	Undetermined Prehistoric Period
DS 803	243.0	Ineligible	Undetermined Prehistoric Period; Mississippi Period
DS 804	256.0	Ineligible	Undetermined Historic Period
Trinomial	Elevation (ft.)	NR Status	Components
DS 805	246.0	Ineligible	Undetermined Historic Period
DS 806	266.0	Ineligible	Undetermined Prehistoric Period
DS 807	276.0	Ineligible	Undetermined Historic Period
DS 808	269.0	Ineligible	Undetermined Historic Period
DS 809	256.0	Ineligible	Undetermined Historic Period
DS 814	352.0	Ineligible	19th through 20th Centuries
DS 815	250.0	Ineligible	19th through 20th Centuries
DS 816	250.0	Ineligible	19th through 20th Centuries
DS 817	250.0	Ineligible	Mid-to-Late 19th through 20th Centuries
DS 818	240.0	Ineligible	20th Century
DS 819	255.0	Ineligible	19th through 20th Centuries
TA 508	240.0	Unevaluated	Undetermined Prehistoric Period
TA 511	240.0	Unevaluated	Undetermined Prehistoric Period
TA 512	230.0	Unevaluated	Undetermined Prehistoric Period
TA 522	250.0	Unevaluated	Woodland Period
TA 523	230.0	Unevaluated	Paleoindian; Woodland Periods
TA 527	240.0	Unevaluated	Woodland Period
TA 528	236.0	Unevaluated	Undetermined Prehistoric Period
TA 530	226.0	Unevaluated	Undetermined Prehistoric Period
TA 531	230.0	Unevaluated	Undetermined Prehistoric Period
TA 532	226.0	Unevaluated	Undetermined Prehistoric Period
TA 533	236.0	Unevaluated	Undetermined Prehistoric Period
TA 541	230.0	Unevaluated	Undetermined Prehistoric Period
TA 553	240.0	Ineligible	Undetermined Prehistoric Period; Undetermined Historic Period

TA 554	240.0	Ineligible	Middle-to-Late Woodland Period; Undetermined Historic Period
TA 560	240.0	Ineligible	Early/Middle Archaic; Middle-to-Late Woodland Periods; Undetermined Historic Periods
TA 561	240.0	Ineligible	Middle-to-Late Woodland Period; Undetermined Historic Period
TA 568	238.0	Ineligible	Undetermined Prehistoric Period
TA 603	250.0	Ineligible	Late Archaic; Woodland Periods
TA 627	264.0	Unevaluated	Woodland Period
TA 628	290.0	Unevaluated	Woodland Period
TA 629	250.0	Unevaluated	Woodland Period
TA 630	250.0	Unevaluated	Woodland Period
TA 632	240.0	Unevaluated	Woodland Period
Trinomial	Elevation (ft.)	NR Status	Components
TA 677	240.0	Ineligible	Woodland Period; 20th Century
TA 678	240.0	Ineligible	Undetermined Prehistoric Period; 20th Century
TA 685	250.0	Ineligible	20th Century
TA 686	240.0	Ineligible	Woodland Period
TA 687	240.0	Ineligible	Woodland Period

Table Cultural_3. Inventory of known cultural resources surveys conducted within Arkabutla Lake and Dam property.

Report No.	Title	Author(s)/Principal Investigator	Date
81-074	Cultural Resources Survey, Highway 51 Landing, Arkabutla Lake, DeSoto County, Mississippi	United States Army Corps of Engineers (USACE) – Vicksburg District	07/1981
82-087	A Cultural Resources Reconnaissance of the Four Corps Owned Lakes in Mississippi: Grenada Lake, Enid Lake, Sardis Lake, and Arkabutla Lake	Bettye J. Broyles, Robert M. Thorne, and Harry P. Owens - Center for Archaeological Research, University of Mississippi	1982
89-104	Cultural Resources Survey of the Proposed Parking Area of the Coldwater High School, Tate County, Mississippi	Wheeler Van France, III. - Private	4/1989
92-037	A Cultural Resource Survey of Proposed Timber Sale Areas on Arkabutla, Sardis, Enid, and Grenada Lakes, Mississippi	Richard Walling and Shari D. Moore – Panamerican Consultants, Inc.	02/1992

92-177	Cultural Resources Survey of Proposed Bridge Replacements on Mississippi Highway 304 Between Eudora and Hernando (MSHD Project No. 79-0029-02-001-10), Desoto County, Mississippi	Robert D. Hyatt – Mississippi State Highway Department	06/1992
92-307	Cultural Resource Inventory, Proposed Land Buys, Arkabutla and Grenada Lakes, Mississippi	Jefferson M. Thomson and Richard Walling - Panamerican Consultants, Inc.	01/1993
92-359	Cultural Resource Inventory, Fiscal Year 1993, Timber Cut Areas, Mississippi Lakes, Mississippi	Robert T. Rice, Shari D. Moore, and Richard Walling	11/1992
95-150	Cultural Resources Survey of 195 Acre Tract of Land, Arkabutla Lake, DeSoto County, Mississippi	James Lauro – Archaeology Mississippi, Inc.	04/1995
Report No.	Title	Author(s)/Principal Investigator	Date
96-189	Cultural Resource Studies in Nine Watersheds, Demonstration Erosion Control Project, Yazoo Basin, Mississippi	Jay K. Johnson - Center for Archaeological Research, University of Mississippi	07/1996
97-120	Cultural Resources Survey of Arkabutla Reservoir 1997 Timber Sale Areas 1, 2, and 3, DeSoto and Tate Counties, Mississippi & Askew Refuge 1997 Timber Sale Area	Gerald P. Smith - Cultural Resource Services, Inc.	06/1997
98-136	Cultural Resources Survey of Proposed Improvements on U.S. Highway 51 Between Senatobia and Coldwater (MDOT Project No. 82-2920-00-001-10), Tate County, Mississippi	Bruce J. Gray, Kevin L. Bruce, Philip J. Carr, and Cliff Jenkins – Mississippi Department of Transportation	7/1998
98-269	Cultural Resources Survey of Proposed Timber Harvest Areas and Boat Ramp, Sardis and Arkabutla Reservoirs, Lafayette, Panola, and Tate Counties, Mississippi	Jay K. Johnson - Private	12/1998
99-023	Cultural Resources Survey of Proposed Turnout for a Roadside Marker, Tate County, Mississippi	Jay K. Johnson - Private	02/1999
99-154	An Intensive Cultural Resources Survey of the Tennessee Air National Guard Drop Zone Site, Permit Area, Arkabutla Lake, Tate County, Mississippi	Andrew Saatkamp - Panamerican Consultants, Inc.	05/1999
99-202	Cultural Resources Survey of Proposed Timber Cut Areas, Sardis and Arkabutla Reservoirs Lafayette, Marshall, and Tate Counties, Mississippi	Jay K. Johnson - Private	12/1999

02-281	Cultural Resources Survey of Proposed Timber Cut Areas, Arkabutla Reservoir, Desoto County, Mississippi.	Jay K. Johnson - Private	11/2002
03-230	Cultural Resources Survey of a Proposed Cellular Tower Near Tishomingo, Tishomingo County, Mississippi.	Jay K. Johnson - Private	09/2003
03-230	Cultural Resources Survey of a Proposed Cellular Tower Near Tishomingo, Tishomingo County, Mississippi.	Jay K. Johnson - Private	09/2003
03-238	Cultural Resources Survey of Proposed Timber Harvest Areas, DeSoto County Mississippi	Jay K. Johnson - Private	10/2003
Report No.	Title	Author(s)/Principal Investigator	Date
04-029	A Cultural Resources Assessment of a Proposed Borrow Pit location, Section 35, T4S, R8W, Tate County, Mississippi	Robert M. Thorne - Pickering Environmental Consultants, Inc.	01/2004
04-219	Cultural Resources Survey of a Proposed Cell Tower Location, Tate County Mississippi	Jay K. Johnson - Private	07/2004
04-306	Cultural Resources Survey of Proposed Timber Harvest Areas, Arkabutla Lake Area 1, Desoto County, Mississippi	Jay K. Johnson - Private	10/2004
04-307	Cultural Resources Survey of Proposed Timber Harvest Areas, Arkabutla Lake Area 2, Desoto County, Mississippi	Jay K. Johnson - Private	10/2004
04-338	Cultural Resources Survey of a Proposed Cell Tower Location, Tate County Mississippi	Jay K. Johnson - Private	09/2004
06-091	Cultural Resources Survey of One Item (DR-03-01) for the Delta Headwaters Project, DeSoto and Tate Counties, Mississippi	John Peukert – USACE	03/2006
06-112	Cultural Resources Survey of Proposed Land Transfer Area, DeSoto County Mississippi	Jay K. Johnson - Private	04/2006
06-371	Cultural Resources Survey of Proposed Land Transfer Area, DeSoto County Mississippi	Jay K. Johnson - Private	09/2006
07-316	Cultural Resources Survey of the Proposed Patton's Point and Cane Creek Timber Management Areas, DeSoto County, Mississippi	Jay K. Johnson - Private	09/2007
08-189	Cultural Resources Survey of 31 Acres, SE ¼ of Section 36, T4S, R7W, Tate County, Mississippi	Keith C. Baca – USACE	05/2008

09-1013	Cultural Resources Survey of 55 Sites for the Delta Headwaters Project (Projects RP-05-01, RP-05-02, and R-06-01), Marshall and DeSoto Counties, Mississippi	Andrew Saatkamp - Panamerican Consultants, Inc.	04/2009
09-1522	Cultural Resources Survey of 12 Acres at the South Abutment of the Emergency Spillway, Arkabutla Reservoir, DeSoto County, Mississippi	Jay K. Johnson - Private	07/2009
10-0300	A Phase I Cultural Resources Reconnaissance Survey for the Arkabutla Lake Emergency Spillway Bridge, DeSoto County, Mississippi	Jennifer Ryan – USACE	03/2010
Report No.	Title	Author(s)/Principal Investigator	Date
10-0411	Cultural Resources Survey of the Plantation Point Survey Area, DeSoto County, Mississippi	Jay K. Johnson - Private	05/2010
10-0757	Cultural Resources Survey of a Parcel of Land Along the North Bank of the Emergency Spillway DeSoto County, Mississippi	Jay K. Johnson - Private	10/2010
11-0181	Cultural Resources Survey of the AFLO Shoreline Forest Thinning Area, DeSoto County, Mississippi	Jay K. Johnson - Private	03/2011
11-0514	Cultural Resources Survey of the Proposed Drop Zone Timber Harvest Area, Tate County, Mississippi	Jay K. Johnson - Private	09/2011
	Phase I Cultural Resources Survey Report for the Sardis Lake Hydroelectric Project (FERC No. 13701), Grenada Lake Hydroelectric Project (FERC No. 13702), Enid Lake Hydroelectric Project (FERC No. 13703), and the Arkabutla Lake Hydroelectric Project (FERC No. 13704), DeSoto, Grenada, Panola, Tate, and Yalobusha Counties, Mississippi	C.A. Cloy, A. Johnson, and J. Barnes – HDR, Inc.	10/2013
13-0711	Addendum to Cultural Resources Survey for the Proposed Yazoo River Basin Hydroelectric Power Projects, 13701-Sardis Lake, 13702-Grenada Lake, 13703-Enid Lake, and 13704-Arkabutla Lake, MDAH Project Log #04-010-14, (#11-098-13 and 04-171-13), DeSoto, Grenada, Panola, Tate, and Yalobusha Counties, Mississippi	Jeanne Barnes and Robert Quiggle – HDR, Inc.	03/2014
14-0217	Cultural Resources Survey of the Proposed, Hickahala Crossing Entergy Project, Tate County, Mississippi	Jay K. Johnson - Private	05/2014

16-0086	Cultural Resources Survey of 320 Acres, Tract 127, Arkabutla Lake, DeSoto County, Mississippi	C. Andrew Buchner and John Rawls - Panamerican Consultants, Inc.	10/2015
19-0051	Cultural Resources Survey for I-55 Bridge Replacements at Hickahala Creek and Relief, Tate County, Mississippi	C. Andrew Buchner, Mitchell R. Childress, and John Rawls - Panamerican Consultants, Inc.	02/2019

Life safety risk analysis analyzed areas between 11 and 97 km (7 and 60 miles) downstream of the physical dam. Once inundation reaches approximately seven miles downstream the topography becomes wide and flat with small channels and old oxbows; this causes floodwaters to attenuate, becoming slow moving and somewhat shallow. Modeling indicates that after a Top of Active Storage Pool (TAS) breach, the elevation of the Coldwater River at Marks, MS (74 km [46 miles] downstream) begins to rise approximately 16 hours after the breach event, peaking six feet higher than normal at around 66 hours after the breach event. TAS breach inundation depths measure from 0.31 to 0.91 meters (1 to 3 feet) in the 11-24 km (7–15-mile) reach and 0.00 to 0.31 meters (0 to 3 feet) in the 24-97-km (15-60-mile) reach. After a Maximum High Pool (MH) breach, inundation depths measure up to 2.1 meters (7 feet) in the 11-24 km (7–15-mile) reach and 0.31 to 1.52 meters (1 to 5 feet) in the 24-97-km (15-60-mile) reach.

With respect to cultural resources, the breach inundation coverages were compared to MS SHPO mapped cultural data to assess the potential for impacts. For the purposes of this cursory analysis, all levels of inundation measuring over zero meters were counted equally, so that generalizations could be made regarding the overall pervasiveness a breach event would be for cultural resources. Within this 11-97 km extent, 637 archaeological sites were inventoried as follows: Panola County (n=409), Tunica County (n=82), DeSoto County (n=62), Tate County (n=54), and Coahoma County (n=30). More detailed cultural resources analysis of the breach inundation data is forthcoming.

References Cited

Albertson, Eric S.

- 2006 *Archaeological Site Delineation of the Kelley's Crossing Site (22TA684), Kelley's Crossing Recreation Area, Arkabutla Lake, Tate County, Mississippi*. Report submitted to the U.S. Army Corps of Engineers, Vicksburg District. Report on file at the MDAH, Jackson, Mississippi (MDAH Report No. 06-434).

Broyles, B.J., R.M. Thorne, and H.P. Owens

- 1982 *A Cultural Reconnaissance of the Four Corps Owned Lakes in Mississippi: Grenada Lake, Enid Lake, Sardis Lake and Arkabutla Lake*. Oxford: University of Mississippi. Report on file at the MDAH, Jackson, Mississippi (MDAH Report No. 82-087).

Haag, W.G.

- 1955 *Archaeological Survey of the Grenada Reservoir in Mississippi*. Ms. on file, Department of Anthropology, University of Mississippi.

Johnson, Jay K.

- 1996 *A Cultural Resource Studies in Nine Watersheds: Demonstration Erosion control Project, Yazoo Basin, Mississippi*. Report submitted to the U.S. Army Corps of Engineers, Vicksburg District Under Contract DACW38-90-C-0044. Report on file at the MDAH, Jackson, Mississippi (MDAH Report No. 96-189).

- 2009 *Cultural Resources Survey of the Tulane Road and Rifle Range Road Timber Management Areas, De Soto and Tate Counties, Mississippi*. Report submitted to the U.S. Army Corps of Engineers, Vicksburg District. Report on file at the MDAH, Jackson, Mississippi (MDAH Report No. 09-1246).

SECTION 106 PROGRAMMATIC AGREEMENT

FINAL DRAFT PROGRAMMATIC AGREEMENT

**AMONG THE
U.S. ARMY CORPS OF ENGINEERS (USACE) VICKSBURG DISTRICT;
TRIBAL NATIONS;
AND SHPO/STATE HISTORIC PRESERVATION OFFICER;
REGARDING
THE ARKABUTLA DAM (MS01496), COLDWATER RIVER, MISSISSIPPI,
EMBANKMENT, OUTLET WORKS, SPILLWAY,
DAM SAFETY MODIFICATION STUDY (HEREAFTER REFERRED TO AS THE ARKABUTLAM DAM
PROJECT)**

PREAMBLE

WHEREAS, the mission of the U.S. Army Corps of Engineers (USACE), Vicksburg District (MVK), is to deliver vital public and military engineering services; partnering in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters; and

WHEREAS Arkabutla Dam is in Desoto County, Mississippi with portions of the lake extending into Tate County, Mississippi. The dam is located on the Coldwater River, a tributary of the Tallahatchie River, and it stores floodwater to provide flood damage reduction in the Yazoo River Basin. The dam is located approximately 4.25 miles north of Arkabutla, Mississippi and approximately 35 miles south of Memphis, Tennessee. The project is authorized by the Flood Control Act of 1928, as amended by the Flood Control Acts of 1936 and 1938. The Flood Control Act of 1936 authorized a plan of improvement for control of headwater flooding in the Yazoo River Basin and the Flood Control Act of 1939 authorized construction of the project under the Flood Control Mississippi River and Tributaries appropriation. Construction of the project began in August 1940 and was completed in June 1943. The reservoir at Arkabutla was constructed as part of the Yazoo River Basin Headwater Project. The authorized project purposes include flood control and recreation; and

WHEREAS, Arkabutla Lake is one of the four Yazoo Basin Lakes that were authorized, designed, and constructed for flood control of the downstream areas in the Yazoo Basin (Appendix A, Figures A-1 and A-2); and

WHEREAS, the USACE Dam Safety Program uses risk to inform how it manages the approximately 740 dams it operates and maintains, with life safety as the highest priority. This approach is a best practice adopted to evaluate, prioritize, and justify dam safety decisions, Risk allows USACE to quantify and describe the hazard, likelihood of something going wrong, and consequences if something goes wrong look, evaluating potential projects in terms of its purposes; ecosystems; constrained budgets; the uncertainty of future events and current knowledge; past design decisions; and combinations of these factors; and

WHEREAS, during completion of an Issue Evaluation Study (IES) in November 2021, six (6) potential failure modes (PFM) were identified, two which were labeled as primary risk drivers: PFM 8: Backward Erosion Piping into the Outlet Works Drainage System, and PFM 10: Backward Erosion Piping into the Conduit; and

WHEREAS, risk was found to have significantly increased based on formation of a downstream sinkhole in the outlet works drainage system in April 2023 and analysis of data collected from April to July 2023 from automated foundation piezometers (geotechnical instruments used here to measure pressure exerted by an open body of water on retaining structures, monitoring the retention structure's stability) as well as dye testing and visual inspection of the outlet works drainage system, revealing atypical downstream debris, soil material, and water movement, all indicators of increased permeability of the retention structure's foundation material; and

WHEREAS, the intent of the Arkabutla Dam Project is to reduce risk associated with Arkabutla Dam to tolerable levels through replacing the outlet works in a new location; and

WHEREAS, USACE has determined that the project elements (Appendix A) that, together, constitute this Undertaking may affect properties listed in or eligible for listing on the National Register of Historic Places (NRHP) pursuant to 36 CFR Part 60 (historic properties) and/or properties having religious and cultural significance to Tribes including sites that may contain human remains and/or associated cultural items; and

WHEREAS, as USACE cannot fully determine at this time how this Undertaking may affect historic properties, the location of historic properties, or their significance and character, USACE has elected to develop this Agreement in consultation with stakeholders, as provided for in 36 CFR § 800.14(b)(3), to govern the implementation of this Undertaking and fulfill its obligations under Section 106 of the NHPA including the resolution of adverse effects for this Undertaking; and

WHEREAS, as used in this Amended Agreement, “Signatories” is defined in 36 CFR § 800.6(c)(1), “Invited Signatories” is defined in 36 CFR § 800.6(c)(2), and “Concurring Party” is defined in 36 CFR § 800.6(c)(3); and

WHEREAS, a Consulting Party will be recognized by USACE as a Signatory, Invited Signatory, or Concurring Party starting on the date the Consulting Party signs this Agreement as a Signatory, Invited Signatory, or Concurring Party and provides USACE with a record of this signature; and

WHEREAS, in accordance with 36 CFR § 800.6(c)(1), a Signatory has the authority to execute, amend, or terminate the Agreement; and

WHEREAS, in accordance with 36 CFR § 800.6(c)(2), Invited Signatories who sign this Agreement are signatories with the authority to amend and terminate the Agreement; and

WHEREAS, in accordance with 36 CFR § 800.6(c)(3), a Concurring Party is a Consulting Party invited to concur in the Agreement but who does not have the authority to amend or terminate the Agreement; and

WHEREAS, USACE recognizes that The Absentee-Shawnee Tribe of Indians of Oklahoma, The Alabama Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, The Caddo Nation of Oklahoma, The Chickasaw Nation, The Chitimacha Tribe of Louisiana, The Coushatta Tribe of Louisiana, The Jena Band of Choctaw Indians, The Mississippi Band of Choctaw Indians, The Muscogee (Creek) Nation, The Quapaw Nation, The Seminole Nation of Oklahoma, The Seminole Tribe of Florida, The Tunica-Biloxi Tribe of Louisiana, and The United Keetoowah Band of Cherokee Indians (collectively referenced as “ Federally-recognized Tribes”), may have sites of religious and cultural significance off Tribal Lands [as defined in 36 CFR § 800.16(x)] that may be affected by this Undertaking, and in meeting its Federal trust responsibility, USACE invited Tribes to participate in government-to-government consultation starting July 1, 2024. Pursuant to 36 CFR § 800.2 (c)(2)(ii)(E), and in consideration of the confidentiality of information, USACE has invited the Tribes to enter into this Agreement that specify how USACE will carry out Section 106 responsibilities for this Undertaking; and

WHEREAS, USACE may invite additional Federally-recognized Tribes that have sites of religious and cultural significance to enter into the terms of this Agreement as invited signatories or concurring parties in accordance with 36 CFR § 800.14(f), and nothing in this Agreement prevents a Federally-recognized Tribe from entering into a separate Programmatic Agreement or other agreement with USACE for administration of USACE Programs; and

WHEREAS, USACE recognizes that the State Historic Preservation Office is organized in accordance with Mississippi's needs and has staff dedicated to historic preservation of the built-environment (divisions, commissions, or departments, etc.) and staff dedicated to archaeological sites (divisions, departments, surveys, etc.). Collectively, these staff fulfill the SHPO's role in accordance with the NHPA and will be referred to as the SHPO. Any specific roles or authorities under state regulation will be defined, as appropriate; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), the ACHP (November 25, 2024) and the Choctaw Nation of Oklahoma (July 31, 2024) provided electronic notice that they have declined to participate in further consultation; and

WHEREAS, USACE received written confirmation (July 31, 2024) that the Mississippi State Historic Preservation Officer (MS SHPO) of their desire to participate in consultation on this Agreement pursuant to 36 CFR § 800.14(b) and 36 C.F.R. § 800.6; and

WHEREAS, for the review of specific Undertakings under this Agreement, USACE may invite other agencies, organizations, and individuals to participate as consulting parties; and

WHEREAS, the USACE Vicksburg District uses its own staff and authority and will consult with the SHPOs and the appropriate Federally-recognized Tribe(s) regarding specific project elements within the respective districts; and

WHEREAS, USACE commits to continuing consultation with the Signatories, Invited Signatories and Concurring Parties to develop the Arkabutla Dam Project Agreement throughout the pre-construction engineering and design, and construction phases of the Undertaking's implementation; and

WHEREAS, The Signatories, Invited Signatories, and Consulting Parties have determined that USACE's Section 106 requirements can be effectively and efficiently implemented through a programmatic approach stipulating roles and responsibilities establishing protocols for consultation, facilitating identification and evaluation of historic properties, and streamlining the assessment and resolution of adverse effects; and

NOW THEREFORE, USACE (Vicksburg District), the Signatories, Invited Signatories), and Concurring Parties agree that the Undertaking associated with the Arkabutla Dam Project shall be administered in accordance with the following stipulations in order to take into account the effects of the individual elements of the undertaking on historic properties and to satisfy USACE's responsibilities under Section 106 of the NHPA for all applicable undertakings.

STIPULATIONS

I. APPLICABILITY

- A.** This Agreement applies to the Undertaking in the Vicksburg District (MVK) of USACE for the currently identified authorized work required to reduce risk associated with Arkabutla Dam Project, currently listed in Appendix A and Stipulation I.E. (below), which includes the elements of the Undertaking addressed in the Arkabutla Dam (MS01496) Coldwater River, Mississippi Embankment, Outlet Works, Spillway, DAM SAFETY MODIFICATION REPORT (DSMR).
- B.** USACE will not apply or utilize this Agreement for any Undertaking other than the currently authorized Undertaking as defined and detailed in the Arkabutla Dam (MS01496) Coldwater River, Mississippi Embankment, Outlet Works, Spillway, DSMR, currently listed in Appendix A and Stipulation I.E. Any alteration, modification, or change in the scope or nature of the Undertaking will require additional consultation to address said alterations, modifications, or changes, which may culminate in the development of an Amendment to this Agreement (see Stipulation XIII) or designation as a new Undertaking pursuant to 36 CFR § 800.3.
- C.** USACE may utilize this Agreement to fulfill its Section 106 responsibilities and those of other Federal agencies that designate USACE as the lead Federal agency pursuant to 36 CFR § 800.2(a)(2) with appropriate notification to the other Signatories and ACHP regarding the Undertaking that falls within the scope of this Agreement. When USACE is not designated as the lead Federal agency, all Federal agencies, including USACE, remain individually responsible for their compliance with Section 106.

This provision does not prevent USACE from recognizing another Federal agency as lead Federal agency for this specific Undertaking, as appropriate.

D. USACE has determined that the following types of activities have limited or no potential to affect historic properties and USACE has no further Section 106 responsibilities with regard to them, pursuant to 36 CFR § 800.3(a)(1):

1. Administrative actions such as personnel actions, travel, procurement of services, and supplies (including vehicles and equipment) for the support of day-to-day operational activities, and the temporary storage of materials provided storage occurs within existing facilities or on previously disturbed soils.
2. Providing funding for planning, studies, and design and engineering costs that involve no commitment of resources other than staffing and associated funding.
3. Funding the administrative action of acquiring properties, including the real estate transactions and transfers.
4. Boundary Surveying, monitoring, data gathering, and reporting in support of planning or design activities (e.g., conducting geotechnical boring investigations or other geophysical and engineering activities provided no clearing or grubbing is necessary).
5. Demarcation of project areas and resources (e.g., cultural sites, wetlands, threatened and endangered species habitat).

E. Project Description: Arkabutla Dam is in Desoto County, Mississippi with portions of the Lake extending into Tate County, Mississippi. The dam is located on the Coldwater River, a tributary of the Tallahatchie River, that stores floodwater to provide flood damage reduction in the Yazoo Basin. The dam is located approximately 4.25 miles north of Arkabutla, Mississippi and approximately 35 miles south of Memphis, Tennessee. Arkabutla Dam is one of the four flood control dams in the Yazoo River Basin. The other three flood control dams are Enid on the Yocona River. The proposed Undertaking involves replacing the Outlet Works at a new location and includes the following elements (see Appendix A, Figures 3-6):

1. New Outlet Works (All new features will be designed with additional levels of armament and reinforcement) (see Appendix A; Figure 3):
 - a. Reinforced concrete intake structure;
 - b. Reinforced concrete control house with vertical lift gates and an emergency gate;
 - c. Bridge connecting the control house to the top of the dam;
 - d. Reinforced concrete conduit;
 - e. Reinforced concrete stilling basin; and
 - f. Excavation of a new discharge channel with riprap scour protection to direct water towards the existing discharge channel.
2. Cofferdam (see Appendix A; Figure 4).
3. Abandonment of existing Outlet Works in place (see Appendix A; Figures 3 and 5).
4. Proposed borrow sources and accessways (see Appendix A; Figure 6).

II. POINTS OF CONTACT

- A. USACE Vicksburg District will provide at a minimum a primary and secondary contact, which may include technical staff as well as liaisons. The primary contact is the contact to which all initial and formal correspondence is sent. If the individual designated as the primary point of contact is not available, communications shall be directed to the secondary contact.
- B. USACE has requested and will continue to request Consulting Parties, including Signatories, Invited Signatories and Concurring Parties, designate a primary and secondary point of contact. Each Consulting Party to this Amended Agreement is requested to provide phone numbers, email addresses, and mailing addresses for the primary and secondary contacts.
- C. USACE acknowledges that contacts and areas of interest may change over time. Addressing this is primarily a USACE responsibility with assistance from the Consulting Parties. The initial compilation is provided in Appendix B. Following the initial compilation, USACE and the Consulting parties shall follow the process outlined in the appropriate set of roles and responsibilities below to provide and distribute updated information. Alteration of Appendix B will not require executing additional amendments.
- D. In accordance with the process laid out in the roles and responsibilities below, USACE will follow-up on returned email and hard-copy mail or disconnected phone lines to ensure that a POC is re-established, and the relevant Consulting Party receives the necessary information.

III. ROLES AND RESPONSIBILITIES OF THE CONSULTING PARTIES

- A. USACE: To the extent of its legal authority, and in coordination with other Signatories, Invited Signatories, and Concurring Parties, USACE shall ensure that the following measures are implemented.
 - 1. Shall not construct any element of the Undertaking until Section 106 review is completed pursuant to this Agreement.
 - 2. Shall notify and consult with the MS SHPO, appropriate Federally-recognized Tribes, and other Consulting Parties. Consultations may include face-to-face meetings, as well as communications by U.S. mail, e-mail, facsimile, and/or telephone. Times and places of meetings, as well as an agenda for meetings, will be developed with mutual acceptance and done in a timely manner.
 - 3. Shall comply with public involvements requirements of Section 106 in accordance with 36 CFR § 800.2(d).
 - a. USACE shall notify the public of the elements of the Undertaking in a manner that reflects the nature, complexity, significance of historic properties likely affected by the Amended Undertaking, the likely public interest given USACE's specific involvement, and any confidentiality concerns of Federally-recognized Tribe(s), private individuals and organizations.
 - b. USACE may consult with the SHPO(s) and relevant THPO(s), Consulting Tribes, or Federally-recognized Tribe(s), and other consulting parties, to determine if there are individuals or organizations with a demonstrated interest in historic properties that should be included as a consulting party for the Undertaking in accordance with 36 CFR § 800.2(c)(5). If such parties are identified or identify themselves to USACE, USACE shall provide them with information regarding the Undertaking and its effects on historic properties, consistent with the confidentiality provisions of 36 CFR § 800.11(c).
 - c. In accordance with the public outreach strategy developed for the Undertaking in

consultation with SHPO(s), appropriate Federally-recognized Tribe(s), USACE shall identify the appropriate stages for seeking public input during the Section 106 consultation process. USACE shall consider all views provided by the public regarding the Undertaking.

- d. USACE shall also provide public notices and the opportunity for public comment or participation in the Undertaking through the public participation process of the National Environmental Policy Act (NEPA) and its implementing regulations set out at 40 CFR Parts 1500-1508, and/or Executive Orders 11988 and 11990 relating to floodplains and wetlands. This environmental assessment was initiated prior to the rescission of Executive Order 12898. During the applicability of Executive Order 12898, the agency engaged in efforts to fully comply with Environmental Justice requirements in effect at the time, including targeted public meetings. Since the rescission of Executive Order 12898 on January 21, 2025, the agency has discontinued Environmental Justice considerations as required under Executive Order 14173.
4. Shall maintain the POC List, Amended Appendix B and distribute as part of the consultation, to the parties listed as the Primary POC. USACE will incorporate any changes to the POC listing as derived from the steps below into the annual distribution, as well as individual updates received in the interim.
 - a. USACE district staff engaged in consultation who receive a returned email, returned letter, or notification of a disconnected phone line, will follow up with the relevant Consulting Party to re-establish the appropriate point of contact. This will be communicated to necessary parties upon clarification and in the annual POC update.
 - b. At a minimum the MVK Cultural staff will make a round of phone calls to confirm the current POC listed for each of the Federally-recognized Tribes contained in the POC listing.
 - c. District Archaeologists will ensure that the contact information for the SHPOs within their district have not changed.
 5. Shall consult with any Federally-recognized Tribe on a government-to-government basis in recognition of its sovereign status, whether a signatory to this Agreement or not, but particularly regarding sites that may have traditional, religious, and/or cultural importance to Federally-recognized Tribes. In meeting its Federal trust responsibility, USACE alone shall conduct all government-to-government consultation with Federally-recognized Tribes.
 6. Shall be responsible for determining the APE, identifying historic properties located within the APE, providing NRHP eligibility determinations, and findings of effect, in consultation with SHPO(s), appropriate Federally-recognized Tribes, and other Consulting Parties.
 7. Shall ensure all Cultural Resources review is conducted by qualified professional staff as outlined in Stipulation VI.
 8. Shall ensure that all documentation generated as part of the NHPA process resulting from the Amended Undertaking shall be consistent with applicable *Standards (State and Federal)* (Stipulation VI.A) and confidentiality provisions outlined in Stipulation IV.
 9. Shall ensure, to the greatest extent practicable, that the SHPO(s) and the appropriate Federally-recognized Tribe(s) are consulted at the same time. And will, prior to submitting any determinations of eligibility and/or finding of effect as part of the consultation, review National

Register eligibility recommendations provided by a cultural resources contractor and make its own determination.

10. USACE contractors shall not consult directly with any SHPO(s)/THPO(s), Consulting Tribes, or Federally-recognized Tribes. Consultation with SHPO(s)/THPO(s), Consulting Tribes, or Federal recognized Tribes remains a federal responsibility. This is/will be documented in any SOW for Cultural Resource Management activities or other construction work.
11. Shall, when authorizing elements of this Undertaking requiring environmental/cultural conditions pursuant to this Agreement, include all stipulations and conditions negotiated as part of the Section 106 Process. USACE will ensure that this information is communicated to the USACE contractor and will be available for technical questions related to its implementation. This information is conveyed through the Buildability, Constructability, Operability, Environmental and Sustainability Reviews (BCOES Process), per Engineering Regulation 415-1-11, leading to solicitation.
12. Shall ensure that all documentation (e.g., identification, evaluation, and mitigation reports) resulting from this Undertaking is reviewed pursuant to this Agreement is consistent with SHPO(s) and appropriate Consulting Tribes' Tribal guidelines, per Stipulation VI., and the confidentiality provisions of 54 U.S.C. § 307103 and 36 CFR § 800.11(c), per Stipulation IV.
13. Shall ensure that, on Federal land, that the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. §3001-3013, 18 U.S.C. § 1170) and the Archaeological Resources Protection Act of 1979 (ARPA)(16 U.S.C. §470aa – 470mm) are followed.
14. Shall ensure that the provisions of the State of Mississippi's burial law, including specific authorities outlined in Stipulation IX- Treatment of Human Remains and Items of Religious and Cultural Importance are followed. USACE will provide any necessary technical guidance on the implementation of these provisions in association with implementation of the Amended Undertaking and this Agreement.
15. Shall consult the ACHP to resolve disputes that may occur during the implementation of this Agreement, pursuant to the Dispute Resolution process in Stipulation XII, resolve adverse effects, and participate in the annual reviews convened by USACE to review the effectiveness of this Agreement.

B. SHPO:

1. The SHPO shall coordinate with USACE, to identify Consulting Parties, including any communities, organizations, or individuals that may have an interest in the Undertaking and its effects on historic properties.
2. The SHPO shall consult with USACE regarding USACE's determination of the Areas of Potential Effects (APE), National Register eligibility, and findings of effect responding within timeframes set out in Stipulation V.
3. On a per Work Item basis, the SHPO shall provide, as part of the consultation, available information about historic properties (such as access to site files, GIS data, survey information, geographic areas of concern) for the purposes of addressing effects to historic properties. Only Qualified Staff, per Stipulation VI. shall be afforded access to protected historic property

information. USACE and any SHPO may execute a written agreement to clarify and memorialize data sharing if it extends beyond any basic fee structure or access schedule.

4. The SHPO staff of jurisdiction (Historic Preservation Division staff members or equivalent) shall be reasonably available as a resource and for consultation through site visits, written requests, telephone conversations or electronic media. In those instances where consultation has occurred, USACE shall provide a written summary via e-mail or regular mail to SHPO, including any decisions that were reached.

C. Federally Recognized Tribes:

1. USACE acknowledges that Federally-recognized Tribes possess special expertise in assessing the National Register eligibility of properties with religious and cultural significance to that particular Tribe. Tribal leaders, and as appropriate, their representatives, shall decide the individual for the Tribe who meets appropriate qualifications/standards for the Tribe's review of the Amended Undertaking affecting properties with religious and cultural significance to that particular Tribe. Designations such as this will follow the intent and processes laid out in USACE's 2023 Tribal Consultation Policy and Executive Order 13175.
2. Federally-recognized Tribes (THPOs and other designees) may coordinate with USACE, to identify Consulting Parties, including any communities, organizations, or individuals that may have an interest in the Amended Undertaking and its effects on historic properties.
3. Federally-recognized Tribes (THPOs and other designees) may consult with USACE regarding USACE's determination of the Areas of Potential Effects (APE), National Register eligibility, and findings of effect responding within timeframes set out in Stipulation V.
4. Federally-recognized Tribes (THPOs and other designees) may provide, as part of the consultation, available information about historic properties (such as access to site files, GIS data, survey information, geographic areas of concern) for the purposes of addressing 4. Only Qualified Staff, per Stipulation VI. shall be afforded access to this sensitive information. USACE and any Federally-recognized Tribe may execute a written agreement to clarify and memorialize data sharing, if it extends beyond any basic fee structure or access schedule.
5. Federally-recognized Tribes (THPOs and other designees) may be reasonably available as a resource and for consultation through site visits, written requests, telephone conversations or electronic media. In those instances where consultation has occurred, USACE shall provide a written summary via e-mail or regular mail to THPO, including any decisions that were reached.
6. Federally-recognized Tribes (THPOs and other designees) may, based on availability, participate in annual reviews convened by USACE to discuss the effectiveness of this Amended Agreement in accordance with Stipulation III.

IV. CONFIDENTIALITY OF HISTORIC PROPERTY INFORMATION

- A. USACE will safeguard information about historic properties to the extent allowed by Section 304 of NHPA (54 U.S.C. § 307103), Section 9 of the Archaeological Resources Protection Act (ARPA), and other applicable Federal laws, as well as implementing restrictions conveyed to USACE by the SHPO and Federally-recognized Tribes, consistent with state and tribal guidelines. These safeguards will be included in any developed cultural resources Scopes of Work, as well.
- B. Only USACE staff meeting the Professional Standards (Stipulation VI.), shall be afforded access to protected historic property information provided by any SHPO and/or Federally-recognized Tribes;

- C. Regarding sensitive information shared by Federally-recognized Tribes, USACE, in accordance with provisions of federal law, will not share non-public information, without first confirming (in writing with the provider of the information) the appropriateness of sharing.
- D. USACE shall provide to all Consulting Parties the documentation specified in 36 CFR § 800.11 subject to the confidentiality provisions of 36 CFR § 800.11(c) and such other documentation as may be developed during consultation to resolve adverse effects to the extent permitted by federal law.
- E. The SHPO(s)/THPO(s), Consulting Tribal staff, and Federally-recognized Tribal staff and/or designee(s), shall safe guard historic property information (locational and other non-public) in accordance with the provisions of Section 304 of the NHPA and applicable State and Tribal legal authorities.
- F. USACE anticipates the presentation of historic property data as part of any Standard Treatment Measure (STM) or Memorandum of Agreement Treatment Measure (MOA TM) but shall ensure that these products, presentations, or other publications are adequately coordinated and consulted upon before release/presentation to ensure that any otherwise protected information is being represented appropriately.

V. CONSULTATION STANDARDS, TIMEFRAMES, AND CORRESPONDENCE

A. Consultation Standards:

1. Consultation among all Consulting Parties to this Agreement will continue throughout the implementation of this Agreement. Per 36 CFR § 800.16(f), consultation means “the process of seeking, discussing, and considering the views of other participants, and, where feasible, seeking agreement with them regarding matters arising in the section 106 process.”
2. USACE, when consulting with any Federally-recognized Indian Tribe, whether a signatory to this Agreement or not, will do so on a government-to-government basis in recognition of their sovereign status.
3. USACE will consult with the SHPO(s), Federally-recognized Tribes, and other consulting parties, based on expressed areas of interest in the case of Federally-recognized Tribes or jurisdiction in case of the SHPO(s). Consultations may include face-to-face meetings, as well as communications by regular mail, electronic mail, and/or telephone. Times and places of meetings, as well as an agenda for meetings, will be developed with mutual acceptance and done in a timely manner.

B. Timeframes:

1. All time designations in this Agreement shall be in calendar days unless otherwise expressly stipulated in writing in this Agreement:
 - a. For Emergency Undertakings as reviewed under Stipulation VII., USACE shall follow the timeframes as indicated in 36 CFR 800.12 (b) (2.).
 - b. Following the Streamlined Project Review Stipulation VII. provisions of this Agreement, the response time for requests for concurrence shall be a maximum of thirty (30) days, unless otherwise agreed to by the parties to the specific consultation on a case-by-case basis.

2. The review period will be extended until the next business day, if a review period included in this Agreement concludes on a Saturday, Sunday, State, or Federal, or Tribal holiday. If requested, USACE may consider an extension of a review period consistent with the time designations in this Agreement for parties affected by an unanticipated state office closure (any state) (e.g., hurricane, tornado or similar).
3. Any electronic communication forwarding plans or other documents for review under the terms of this Agreement that is sent after 4:00 pm Central Time will be deemed to have been received by the reviewing party on the next business day.
4. E-mail comments by the Signatories on any documents submitted for review under this Agreement are timely if they are received at any time on or before the last day of a review period. Responses sent by mail will be accepted as timely if they are postmarked by the last day allowed for the review.
5. If any Signatory does not object to USACE's finding or determination related to any feature of the Undertaking within an agreed upon timeframe, USACE may proceed to the next step in the consultation process as described in Stipulation VII, Project Review.
6. Timeframes are contingent upon USACE ensuring that its findings and determinations are made by Qualified Staff and supported by documentation as required by 36 CFR § 800.11(d) and 36 CFR § 800.11(e), and consistent with USACE guidance.

C. Correspondence:

1. The Consulting Parties may send and accept official notices, comments, requests for further information and documentation, and other communications required by this Agreement in accordance with the protocol in Appendix B.
2. If the size of an e-mail message is unusually large or an e-mail is returned to a sender because its size prevents delivery, the sender will contact the intended recipient(s) and determine alternative methods to deliver the information (including available file sharing platforms).
3. Time-sensitive information that is not sent by e-mail should be sent by overnight mail, courier, or hand-delivered. The timeframe for requests for review not sent by e-mail will be measured by the date the delivery is signed for by the SHPO(s), Federally-recognized Tribe, or other organization representing the Consulting Parties.

VI. STANDARDS

- A.** In addition to the definitions utilized in 36 CFR § 800, this Agreement uses the definitions presented in the subsequent paragraphs to establish standards for performing all cultural resource project reviews and investigations required under the terms of this Agreement including, but not limited to, site identification, NRHP eligibility evaluations, and as appropriate, STM or MOA TM for the resolution of adverse effects to historic properties:
1. "Qualified Staff" – shall mean staff who meet, at a minimum, the SOI Professional Qualifications Standards set forth at 48 FR 44738 (September 29, 1983), for History, Archaeology, Architectural History, Architecture, or Historic Architecture (https://www.nps.gov/history/local-law/arch_stnds_9.htm) and the appropriate qualifications presented in Professional Qualifications (36 CFR Part 61, Appendix A).

2. "Standards" -- shall mean the Secretary of the Interior's (SOI) Standards and Guidelines for Archaeology and Historic Preservation [Federal Register 48(190) 1983:44716-44737] (https://www.nps.gov/history/local-law/arch_stnds_0.htm);
 3. "Meeting Professional Standards" -- shall mean that all cultural resource investigations shall be performed by, or under the direct (in-field) supervision of appropriate professional(s) or by contractors, who are "Qualified Staff";
 4. "Field and Reporting Standards" -- shall mean the current historic standing structure and archaeological guidance from SHPO Office (<https://efaidnbmnnnibpcajpcqlclefindmkaj/https://www.mdah.ms.gov/sites/default/files/2020-06/20200610-MS-STANDARDS-AND-GUIDELINES.pdf>);
 5. "Policies and Guidelines" -- shall mean guidance from any of the following:
 - a) The National Park Service publication *The Archaeological Survey: Methods and Uses* (National Park Service 1978);
 - b) ACHP's Treatment of Archeological Properties: A Handbook (1980) (<https://www.achp.gov/sites/default/files/documents/2018-11/Treatment%20of%20Archeological%20Properties-A%20Handbook-OCR.pdf>);
 - c) Identification of Historic Properties: A Decision-making Guide for Managers (1988, joint ACHP-NPS publication);
 - d) Consulting About Archeology Under Section 106 (1990);
 - e) ACHP's [Recommended Approach for Consultation on Recovery of Significant Information from Archeological Sites](https://www.achp.gov/sites/default/files/documents/2018-06/ACHPPolicyStatementRegardingTreatmentofBurialSitesHumanRemainsandFuneraryObjects0207.pdf) (1999);
 - f) ACHP's Policy Statement Regarding the Treatment of Burial Sites, Human Remains and Funerary Objects (2007) <https://staging.achp.gov/sites/default/files/policies/2018-06/ACHPPolicyStatementRegardingTreatmentofBurialSitesHumanRemainsandFuneraryObjects0207.pdf>; and
 - g) Section 106 Archaeology Guidance: A reference guide to assist federal agencies in making effective decisions about archaeological sites (2009) <https://www.achp.gov/sites/default/files/guidance/2017-02/ACHP%20ARCHAEOLOGY%20GUIDANCE.pdf>
- B.** In developing Scopes of Work (SOW) for identification and evaluation studies, STM or MOA TM(s), or any other cultural resources activities required under the terms of this Agreement, USACE will comply with the requirements of the Standards, Field and Reporting Standards, and the Policies and Guidelines, in existence at the time this work is performed.
- C.** Additionally, in developing SOW for identification and evaluation studies, STM or MOA TM(s), or any other cultural resources activities required under the terms of this Agreement, and where geographically appropriate, USACE will take into account the following guidance:
1. Guidance from the *National Historic Preservation Act Section 106 Protocol and Standards*, *Archaeological Survey Standards*, and *Archaeological Resources Protection Act Violation Procedures*; and
 2. Any additional area-specific guidance beyond that provided for under Stipulation VI. (e.g., additional Federally-recognized Tribal guidance, or local preservation ordinances).
- D.** In developing the SOW for development of the contextual cultural study of the Coldwater River basin under the terms of this Agreement, USACE will consult guidelines associated with feasibility studies developed in association with designation of National Heritage Areas (NHA), drawing specifically

upon the contextual study the Yazoo Backwater Water Management Area project, in existence at the time this work is performed (see Appendix D for more detailed information).

- E. Additionally, in developing the SOW for the development of the heritage area contextual/cultural study of the Coldwater River basin area under the terms of this Agreement, USACE will also take into account the following guidance:
1. Guidance from the National Park Service publication *NATIONAL HERITAGE AREA FEASIBILITY STUDY GUIDELINES* (National Park Service 2019 - https://www.nps.gov/subjects/heritageareas/upload/NHA-Feasibility-Study-Guidelines_FINAL-Revisions-2019_508-compliant.pdf); and
 2. The National Park Service publication *Heritage Study, Environmental Assessment, Lower Mississippi Delta Region: Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee* (2 vols.) (1998 - https://www.nps.gov/parkhistory/online_books/mrdr/mrdr_heritage_study.pdf & https://www.nps.gov/parkhistory/online_books/mrdr/mrdr_heritage_study2.pdf); and
 3. The National Park Service publication *National Heritage Area (NHA) Feasibility Studies Short Guide to Assessing National Importance, Contributing Resources, Opportunities, and a Boundary for Heritage Areas* (https://www.nps.gov/subjects/heritageareas/upload/NHA-Study-Guidance_Assessing_a_Nationally_Important_Landscape_andOpportunities.pdf); Guidance from the *National Historic Preservation Act Section 106 Protocol and Standards, Archaeological Survey Standards, and Archaeological Resources Protection Act Violation Procedures*;
 4. The National Park Service publication *REGIONWIDE ARCHEOLOGICAL SURVEY PLAN, SOUTHEAST FIELD AREA, NATIONAL PARK SERVICE* (National Park Service 1996 - https://www.nps.gov/parkhistory/online_books/sero/rasp.pdf). Any additional area-specific guidance beyond that provided for under VI A (e.g., additional Federally-recognized Tribal guidance, or local preservation ordinances);
- F. Lastly, in developing the SOW for all monitoring elements associated with the construction of the undertaking as well as for assessing/evaluating both newly identified and previously identified archaeological resources in the lake/reservoir under the terms of this Agreement, USACE will consult other USACE districts and divisions concerning lake/reservoir cultural resources management and take into account the following guidance, including but not limited to (see Appendix E for more detailed information):
1. *Draft CULTURAL SITE MONITORING AND ENFORCEMENT*, U.S. Army Corps of Engineers, Omaha District - https://www.nps.gov/subjects/heritageareas/upload/NHA-Feasibility-Study-Guidelines_FINAL-Revisions-2019_508-compliant.pdf; and
 2. *U.S. ARMY CORPS OF ENGINEERS, OMAHA DISTRICT CULTURAL RESOURCE PROGRAM DRAFT ANNUAL REPORT CALENDAR YEAR 2018* (February 2019), U.S. Army Corps of Engineers, Omaha District - <https://safe.menlosecurity.com/doc/docview/viewer/docN73E2C7C288E3b12a0710fc4faf9e5dde9efe454d3e6d4c5798d2720a5c9b2c769452a056e083>; and
 3. *Draft Historic Properties Management Plan, Waco Lake, McLennan County, Texas* (Redacted U.S. Army Corps of Engineers, Fort Worth District https://www.swf-wc.usace.army.mil/waco/pdf/20230811_Draft_Waco%20HPMP_Redacted.pdf).

VII. PROJECT REVIEW

- A. Review for Emergency Undertakings: For review of actions that are emergencies, USACE shall follow the provisions of 36 CFR 800.12 (b).
- B. Streamlined Project Review: For all elements of the Undertaking, USACE shall ensure that the following project review steps are implemented. In the interest of streamlining, USACE may combine some or all of these steps during consultation in accordance with 36 CFR § 800.3(g).

1. Consulting Parties: USACE shall consider all written requests of individuals and organizations to participate as consulting parties and consult with the SHPO(s) and the appropriate Federally-recognized Tribe(s) to identify any other parties that meet the criteria to be consulting parties and invite them to participate in the Section 106 process. USACE may invite others to participate as consulting parties as the Section 106 consultation proceeds.
2. Area of Potential Effects (APE): For all features undergoing streamlined project review, Qualified Staff shall determine the APE in consultation with the SHPO(s) and appropriate Federally-Recognized Tribe(s).

The APE will be defined as all areas to be affected by construction activities and areas of associated ground disturbance including but not limited to haul roads, borrow areas, staging and stockpiling areas. The APE will include all areas for which a Right-of-Entry is sought by USACE. Additional effects that will be considered shall include visual, auditory, and off-site anticipated erosion resulting from the constructed feature. USACE may consider information provided by other parties, such as local governments and the public, when establishing the APE.

APE Definition Factors:

- a. For standing structures not adjacent to or located within the boundaries of a National Register listed or eligible district, Qualified Staff may define the APE as the individual structure or structures when the proposed Undertaking is limited to its repair or rehabilitation (e.g. floodwalls, or other appurtenant structures to the levees, etc.).
 - b. For archaeological sites the USACE should consider the nature of likely properties in non-surveyed areas.
3. Identification and Evaluation: Qualified Staff shall determine, in consultation with the SHPO and Tribe(s), if the APE contains historic properties, including properties of religious and cultural significance to Federally-recognized Tribes. This may include the review of newly developed or previously produced documentation in coordination with the SHPO, appropriate Federally-recognized Tribe(s), and any additional Consulting Parties.
 - a. Level of Effort: USACE shall make a reasonable and good faith effort to identify historic properties in accordance with 36 CFR § 800.4(b)(1). USACE shall consult with SHPO(s) and appropriate Federally-recognized Tribe(s) to determine the level of effort, methodology necessary to identify and evaluate a variety of historic property types, and any reporting requirements. For properties of religious and cultural significance to affected Federally-recognized Tribe(s), USACE shall consult with the affected Tribe(s) to determine if the APE contains such properties and determine the necessary level of

effort to identify and evaluate or avoid any such historic properties. All Identification and Evaluation studies will comply with the Standards (Stipulation VI).

- b. Timing:
 - a. With respect to each element of the Undertaking, USACE shall achieve compliance with all relevant terms of this Agreement prior to initiating physical construction of that Work Item.
 - ii. The results of all field investigations will be subject to a review and comment period of no less than thirty (30) days by the appropriate Consulting Parties, following the receipt by the SHPO(s) and the appropriate Federally-recognized Tribe(s) of the completed reporting document (architectural survey, Phase I or II archaeological reports, and any other supporting documentation).
 - iii. Coordination of consultation will be through the designated Points of Contact (Stipulation II).
4. Determinations of Eligibility: USACE shall make determinations of National Register eligibility based on identification and evaluation efforts, and consult with the SHPO(s), appropriate Federally-recognized Tribe(s), and other Consulting Parties regarding these determinations. Should the SHPO(s), or appropriate Federally-recognized Tribe(s) disagree with the determination of eligibility, USACE shall:
 - a. Consult further with the objecting party to resolve the objection;
 - b. Treat the property as eligible for the National Register; or
 - c. Obtain a determination of eligibility from the Keeper of the National Register in accordance with 36 CFR § 63.2(d)-(e) and 36 CFR § 800.4 (c) 2.
5. USACE shall notify the SHPO(s), appropriate Federally-recognized Tribes(s), and any other consulting parties of this finding and provide supporting documentation in accordance with 36 CFR § 800.11(d). Unless consulting parties object to the finding, or request additional information, within 30-days, the Section 106 review of the Undertaking will have concluded.
 - a. If the SHPO(s) and/or appropriate Federally-recognized Tribes(s), objects to a finding of “no historic properties affected,” USACE shall consult with the objecting party to resolve the disagreement.
 - i. If the objection is resolved, USACE either may proceed with the Undertaking in accordance with the resolution or reconsider effects on the historic property by applying the criteria of adverse effect pursuant to Stipulation VII., Application of the Criteria of Adverse Effect, below.
 - ii. If USACE is unable to resolve the disagreement, it will forward the finding and supporting documentation to ACHP and request that ACHP review USACE’s finding in accordance with the process described in 36 CFR § 800.4(d)1)(iv)(A) through 36 CFR § 800.4(d)1)(iv)(C). USACE shall, pursuant to 800.4(d)1)(iv)(C), prepare a summary of its decision that contains the rationale for the decision and evidence of consideration of the ACHP’s opinion, and provide this to the SHPO(s), appropriate Federally-recognized Tribes(s), and all other consulting parties. If USACE’s final determination is to reaffirm its “no

historic properties affected” finding, the Section 106 review of the Undertaking will have concluded. If USACE will revise its finding, then it shall proceed in accordance with Stipulation VII., below.

6. Assessing Adverse Effects: If, through consultation, USACE finds the Undertaking may affect historic properties in the APE, including those of religious or cultural significance to affected Federally-recognized Tribe(s), USACE shall apply the criteria of adverse effect to historic properties within the APE(s), including cumulative effects, taking into account the views of the consulting parties and the public concerning effects in accordance with 36 CFR § 800.5(a).
 - a. *Findings of No Adverse Effect:* If, through consultation, USACE determines that an element/elements of the Undertaking does not meet the adverse effect criteria, pursuant to 36 C.F.R. § 800.5(a)(1), USACE shall propose a finding of “no adverse effect” and consult with the MS SHPO, appropriate Federally-recognized Tribes(s) and Consulting Parties in accordance with 36 CFR § 800.5(b) and following steps i-iii below, or will move to subparagraph b.
 - i. USACE shall notify all consulting parties of its finding; describe any project specific conditions and/or modifications required to avoid or minimize effects to historic properties; and provide supporting documentation pursuant to 36 CFR §800.11(e).
 - ii. Unless a consulting party objects within thirty (30)-days, USACE will proceed with its “no adverse effect” determination and conclude the Section 106 review.
 - iii. If a consulting party objects to a finding of “no adverse effect,” USACE will consult with the objecting party to resolve the disagreement.
 - a) If the objection is resolved, USACE shall proceed with the Undertaking in accordance with the resolution; or
 - b) If the objection cannot be resolved, USACE shall request that ACHP review the findings in accordance with 36 CFR § 800.5(c)(3)(i)-(ii) and submit the required supporting documentation. USACE shall, pursuant 800.5(c)(3)(ii)(B), prepare a summary of its decision that contains the rationale for the decision and evidence of consideration of the ACHP’s opinion, and provide this to the SHPO(s), appropriate Federally-recognized Tribes and all other consulting parties. If USACE’s final determination is to reaffirm its “no adverse effect” finding, the Section 106 review of the Undertaking will have concluded. If USACE will revise its finding then it shall proceed to Stipulation VI., below.
 - b. *Avoidance and Minimization of Adverse Effects:* If USACE, during its initial review, finds any element of the Undertaking may adversely affect historic properties, USACE may make a further internal review to consider ways to avoid or minimize effects to historic properties. The review will consider revising the elements of the scope of work affecting historic properties to substantially conform to the SOI Preservation Standards or otherwise avoid or minimize adverse effects.
 - i. If USACE modifies the scope of work following its initial internal review to avoid or minimize effects below the “criteria of adverse effect” (36 CFR 800.5 (a)(1), (i.e., to the point USACE can make a finding of No Adverse Effect), USACE shall consult with the SHPO, appropriate Federally-recognized Tribe(s), and all other

consulting parties providing the *original and modified* Scopes of Work as part of its finding of “no adverse effect” following the process in Stipulation VII.

- ii. If USACE is unable to modify elements of the Undertaking to avoid or minimize effects below the “criteria of adverse effect”, USACE shall initiate consultation to resolve the adverse effect(s) in accordance with Stipulation VII., Resolution of Adverse Effects.
7. Resolution of Adverse Effects: If USACE determines that the Undertaking or any of its elements may adversely affect a historic property, it shall resolve the effects of the Amended Undertaking in consultation with the SHPO, the appropriate Federally-recognized Tribe(s), ACHP, if participating, and other consulting parties, by one of the methods, described in VII.C.7.(a-c). USACE may use the Abbreviated Resolution Process (ABR) to resolve adverse effect and propose it to parties, and if the parties agree, will use the ABR. If the parties do not agree, then USACE will move to develop a MOA, in accordance with 36 CFR § 800.6(c). When, through consultation, USACE determines the Amended Undertaking will adversely affect an NHL, USACE shall notify and invite the Secretary of the Interior and ACHP, as well as notifying Regional National Park Service staff to participate in consultation in accordance with 36 CFR § 800.10.
- a. *Abbreviated Resolution Process*: USACE may propose in writing to the consulting parties to resolve the adverse effects of the Undertaking through the application of one or more Treatment Measures outlined in Amended Appendix D (Historic Property Treatment Plan). USACE shall ensure that the provisions of the Historic Property Treatment Plan, as outlined in the consultation and agreed to by consulting parties, are documented in writing and implemented. The use of these Treatment Measures in a Historic Property Treatment Plan shall not require the execution of an individual Memorandum of Agreement or Secondary Programmatic Agreement.
 - i. In consultation with the SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, USACE shall propose in writing the implementation of a specific Historic Property Treatment Measure, or combination of Treatment Measures, with the intent of expediting the resolution of adverse effects, and provide documentation as required by 36 CFR § 800.11(e) and subject to the confidentiality provisions of 36 CFR § 800.11(c)). The correspondence will include a Historic Properties Treatment Plan that outlines roles and responsibilities for accomplishment of the selected treatment measures, specify the deliverables, and define the timeline.
 - ii. The ACHP at its discretion may participate in the development of Historic Property Treatment Plans, under the Abbreviated Resolution Process, when requested by USACE, SHPO(s), appropriate Federally-recognized Tribe(s), or other consulting parties, or when the ACHP determines that its participation is warranted.
 - iii. Unless a consulting party or the ACHP objects to USACE’s proposed Historic Property Treatment Plan within the timeframe outlined in Stipulation V. Timeframes, USACE shall proceed with the implementation of the Historic Property Treatment Plan and will conclude the Section 106 review.
 - iv. If any of the consulting parties or ACHP objects within the timeframe outlined in Stipulation V. Timeframes, to the resolution of adverse effects through the application of the Abbreviated Consultation Process, USACE shall resolve the adverse effect(s) using procedures outlined below in Stipulation VII., MOA or

Programmatic Agreement. USACE shall invite any individual or organization that will assume a specific role or responsibility outlined in a Memorandum of Agreement or Secondary Programmatic Agreement to participate as an invited signatory to the undertaking-specific agreement.

- v. Because funding and implementation details of a Historic Property Treatment Plan for specific Undertakings may vary by State and Non-Federal Sponsor, USACE shall provide written notice to the Consulting Parties within sixty (60) days of the completion of the Historic Property Treatment Measure(s). This written notice will serve as confirmation that the Historic Property Treatment Measure(s) for a specific Undertaking have been implemented. USACE also shall include information pertaining to the progress and completion of Historic Property Treatment Plans in the annual report pursuant to Stipulation III USACE Roles and Responsibilities.
 - b. *Memorandum of Agreement (MOA)*: USACE shall provide ACHP with an adverse effect notice in accordance with 36 CFR § 800.6(a)(1) if it has not already provided such under the Abbreviated Consultation Process of this Agreement, if a consulting party or ACHP objects in accordance with Stipulation II.C.6(a)(iii), or if USACE in consultation with SHPO(s)/THPO(s), Tribe(s), and other consulting parties has determined that an MOA would be more appropriate than the Abbreviated Consultation Process to resolve the adverse effect(s). In consultation with SHPO(s), appropriate Federally-recognized Tribe(s), and other consulting parties, including ACHP (if participating), USACE shall develop an MOA, in accordance with 36 CFR § 800.6(c) to agree upon Treatment Measures to avoid, minimize, and/or mitigate adverse effects on historic properties. The MOA may also include Treatment Measures that serve an equal or greater public benefit in promoting the preservation of historic properties in lieu of the Treatment Measures (Outlined in Appendix F).
8. Objections: Should USACE or any signatory or consulting party object within the timeframes established by this Amended Agreement to any plans, specifications, or actions taken pursuant to resolving an adverse effect, and the objection cannot be resolved, USACE shall address the objection in accordance with Stipulation XI, Dispute Resolution.
 9. Reports:
 - a. USACE shall ensure that all reports and other documents resulting from the actions pursuant to this Amended Agreement will be provided in a format acceptable to the SHPO and appropriate Federally-recognized Tribes. USACE will ensure that all such reports (e.g., identification surveys, evaluation reports, treatment plans, and data recovery reports) meet or exceed the Department of the Interior's *Format Standards for Final Reports of Data Recovery* (42 FR 5377-79) and the *Field and Report Standards* identified in Stipulation II.A.1(d).
 - b. USACE shall provide all documentation for these efforts to the SHPO(s), appropriate Federally-recognized Tribes, or other Consulting Parties, as appropriate, consistent with the confidentiality provisions of Stipulation IV. of this Amended Agreement.
 - c. Once supporting documentation is received, SHPO and Tribes will have thirty (30)-days to review supporting documentation (e.g., site forms and reports). If the SHPO or appropriate Federally-recognized Tribes intend to review and comment on

documentation, and are unable to do so within the thirty (30)-day review period, a request for additional review time must be made in writing to USACE and specify the anticipated completion date. USACE will consider the request and work with the requesting party to come to a mutually agreeable timeframe. USACE will notify other Consulting Parties of any mutually approved extension by e-mail.

VIII. CURATION

Recovered archaeological collections from a USACE-required archaeological survey, evaluation, and/or mitigation remain the property of the land owner (either private, State, Federal, etc.). USACE, in coordination with the SHPO and appropriate Federally-recognized Tribe(s) may, as determined through consultation, encourage private land owners to transfer any recovered artifacts and related documentation to an appropriate archive or public or Federally-recognized Tribal entity. USACE, in coordination with the SHPO and Federally-recognized Tribe(s), shall work with all Tribal, State, and local agents to support steps that ensure the long-term curation of these artifacts and documents through the transfer of the materials to a suitable repository as agreed to by USACE, the SHPO, and appropriate Federally-recognized Tribes(s) and following applicable State or Tribal guidelines. USACE shall ensure that collections from federal or tribal land, including field and laboratory records sufficient to document the collection, are curated at a repository meeting federal standards (36 C.F.R. 79) as agreed to by USACE, SHPO, and affected Federally-recognized Tribe(s), and follow that repository's guidelines.

IX. TREATMENT OF HUMAN REMAINS AND ITEMS OF RELIGIOUS AND CULTURAL IMPORTANCE

A. Documenting Human Remains: The recordation of human remains in a burial context, or as individual elements is a task that requires sensitivity and good judgment, as defined through consultation. Consultation is a necessary part of documenting any human remains (in a discovery situation or during the treatment of historic properties) following the provisions of this stipulation. In planning how to document human remains (photography, drawing for the purposes of illustration, videography, or other), the determination will be made in consultation and concurrence with the SHPO, Federally-recognized Tribe(s), and, as appropriate, other descendant communities. Even if it is determined to photo document the human remains, the photographs should not be published or made publicly available in any way. The USACE will maintain records for the purpose of management of the human remains, with the intent of satisfying the protection provisions of the federal and state laws governing human remains, the records will be hardcopy and digital. When the records are digital, they will not be connected to externally available electronic resources like GIS servers or other and marked as restricted (per NHPA, FOIA, and, as appropriate, ARPA). As part of the consultation for each Work Item where Human Remains are present, the USACE will ensure that the consultation happens as appropriate to each jurisdiction to determine the course of action for each situation.

B. General Human Remains Discovery Process:

1. In the event that previously unreported or unanticipated human remains, burials, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony are encountered during field investigations, laboratory work, or during construction or maintenance activities originating from Federal, state, or private lands (Federal and Non-Federal Lands) USACE shall notify the relevant historic preservation interests (SHPO and interested Federally-recognized Tribal representatives) within 24-hrs of the discovery. Concurrently, USACE will implement the provisions 2 thru 6 below:
2. Any USACE employee or contractor(s) who knows or has reason to know that they have inadvertently discovered human remains, burials, funerary objects, Native American sacred

objects, or Native American objects of cultural patrimony must provide immediate telephone notification of the inadvertent discovery to the responsible Federal construction official, with written confirmation, to the appropriate USACE District's Point of Contact in this agreement. The written notification should contain the results, if any, of the field evaluation. The appropriate USACE District's Cultural Resources Staff and Tribal Liaison will begin to develop a plan of action to inform the appropriate District Commander of the consultation tasks necessary to address the discovery. No Photographs should be taken at this time of the human remains.

3. All fieldwork, construction or maintenance activities, must stop immediately within a one hundred (100) meter (328 ft.) radius buffer zone around the point of discovery; unless there is reason to believe that the area of the discovery may extend beyond the one hundred (100) meter (328 ft.) radius buffer zone in which case the buffer zone will be expanded appropriately, within the APE. USACE will implement measures to protect the discovery from theft and vandalism. Any human remains or other items in the immediate vicinity of the discovery must not be removed or otherwise disturbed. USACE will take immediate steps, if necessary, to further secure and protect inadvertently discovered human remains, burials, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony, as appropriate, including stabilization, or covering the find location.
4. USACE will notify local law enforcement, coroner, or Medical Examiner, as appropriate, and the SHPO, per the POC in Amended Appendix B, by telephone to assess the nature and age of the human skeletal remains within twenty-four (24) hours of the discovery of unmarked human remains and accompany local law enforcement personnel during all field investigations. USACE will also notify interested Federally-recognized Tribes of the discovery within the same period. If the appropriate local law enforcement official determines that the remains are not involved in a criminal investigation, USACE will follow jurisdictional guidelines as provided for based on land ownership (per Stipulation IX).
 - a. In cases where human remains, burials, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony are discovered during the implementation of a USACE-funded undertaking on Federal Land, USACE will notify by telephone and e-mail, the SHPO, Tribes, and other affected parties (e.g., living descendants) that may that might attach religious and cultural significance to the discovery at the earliest possible time, but no later than forty-eight (48) hours and inform them of the steps already taken to address the discovery.
 - b. In cases where the human remains are discovered on Non-Federal Lands and are determined to be Native American, the individual state's Designated Authority will notify and coordinate with Tribes as required by the appropriate state law, but not later than forty-eight (48)-hours from the time of their notification. As requested, and to the extent of its legal authority, USACE will assist the Designated Authority, to consult with Tribes and affected parties, as appropriate.
 - c. In cases where the human remains are discovered on Non-Federal Lands and determined to be other than Native American, the individual state's Designated Authority will notify and coordinate in accordance with the appropriate state law. As requested, and to the extent of its legal authority, USACE will assist the Designated Authority to consult with the affected parties, as appropriate.
5. USACE will consult with SHPO, THPOs, and appropriate Federally-recognized Tribes, and other affected parties to develop a mutually agreeable action plan with timeframes to take into account the effects of the Undertaking on the discovery; resolve adverse effects if necessary; and ensure compliance with applicable federal laws and their implementing regulations, if the discovery of

Native American human remains, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony occurs on Federal Land (see Stipulation IX for the detailed process).

6. Following the outcome of any consultation (Federal Lands or Non-Federal Lands) to address the discovery of human remains, USACE will coordinate with any contractor(s) regarding any required scope of project modification necessary to implement recommendations from the consultation and facilitate proceeding with the Undertaking.

C. Specific Authorities and Processes for Addressing Human Remains: If human remains, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony are encountered during project field investigations or laboratory work or during construction activities, the USACE will comply with the provisions based on the nature of the land ownership at the time remains or objects are encountered, in accordance with Engineering Regulation 1102-2-100 (Policy & Guidance), Appendix C-4.

1. Federal Lands: If discovered/recovered from *Federal lands*, USACE shall concurrently implement processes defined in this Amended Agreement, satisfying NHPA, as well as
 - ensuring consultation with appropriate Federally-recognized Tribes for any human remains, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony (objects) as required by the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), as amended (25 U.S.C. §§ 3001-3014) and its implementing regulations (43 C.F.R. Part 10); and
 - ensuring the appropriate provisions of the Archaeological Resources Protection Act, 16 USC §§ 470aa et seq., are followed.
 - a. For discoveries of human remains, burials, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony, USACE will continue to consult with the SHPO, claimant Federally-recognized Tribes, and other affected parties, as appropriate, whether they are Signatories to this Amended Agreement or not, regarding additional measures to avoid and protect or mitigate the adverse effect of the Amended Undertaking. These measures may include:
 - i. Visits to the site by the SHPO, claimant Federally-recognized Tribes, and other affected parties, as appropriate;
 - ii. Formally evaluate the archaeological site for NRHP-eligibility;
 - iii. Explore potential avoidance alternatives;
 - iv. Develop and implement a mitigation plan in consultation and concurrence with the SHPO, claimant Federally-recognized Tribes, and other affected parties, as appropriate, including procedures for disinterment and re-interment.
 - b. Initial Determination of nature of discovered Human Remains when from Federal Lands (Native American or Other)
 - i. USACE, in consultation with the SHPO and claimant Federally-recognized Tribes, whether they are Signatories to this Agreement or not, and other affected parties, may consult with a qualified physical anthropologist, forensic scientist, or other experts as may be needed to examine and assess the discovery. Unless the remains were inadvertently removed, the evaluation will be conducted at the site of discovery. Other than for crime scene investigation, no excavation, examination, photographs, or analysis of Native American human remains or remains suspected of being Native American will be conducted or allowed by USACE archaeologists or any other

professional without first consulting with the claimant Federally-recognized Tribes, whether they are Signatories to this Agreement or not. The consulting expert will be allowed to draw and measure the exposed remains and associated funerary objects. Drawings cannot be published in any form or shown as part of scholarly presentations without the written permission of the appropriate Tribes or next living descendant.

- ii. USACE, in consultation with the SHPO, claimant Federally-Recognized Tribes, and other affected parties, as appropriate, whether they are Signatories to this Agreement or not, will have seven (7)-days to determine if the skeletal remains are human, the degree to which they were disturbed, and if possible, using reasonable measures to assess their potential age, cultural affiliation, and identity, without any further disturbance. Upon making a determination or at the end of the seven (7)-days, whichever comes first, USACE will notify the appropriate affected parties of its findings. This notification will include pertinent information as to kinds of human remains, funerary objects, Native American sacred objects, or Native American items of cultural patrimony discovered, their condition, and the circumstances of their inadvertent discovery.
 - iii. If the remains are determined NOT to be Native American in origin, USACE will follow the principals outlined in the 2007 ACHP "Policy Statement Regarding Treatment Of Burial Sites, Human Remains and Funerary Objects" to respectfully treat the remains and determine proper disposition, disinterment, re-interment, and memorialization, as well as any Real Estate guidance at the time of the discovery.
- c. Initiating NAGPRA Consultation following Inadvertent Discoveries/Recovery of Human Remains from Federal Lands
- i. For the purposes of notification and consultation of an inadvertent discovery, USACE considers the Consulting Tribes, and Federally-recognized Tribes who have identified the County/Parish as an area of interest are likely to be cultural affiliated with inadvertently discovered NAGPRA items found on a specific Work Item.
 - ii. Upon certification of an inadvertent discovery of NAGPRA items by the responsible Federal official, the USACE shall notify the consulting Federally-recognized Tribes. This notification will be made via email and telephone call to the appropriate consulting Tribes' Primary POC within twenty-four (24) hours, and include concurrent hard copy written notification, via regular mail. Notifications shall include a copy of the field documentation and a list of all other parties being notified.
 - iii. No later than three (3) days after the email and telephone notification, the consulting Federally-recognized Tribes and/or claimant Federally-recognized Tribe shall agree to a date and time for a teleconference to begin the consultation process.
- d. Consultation for Inadvertent Discoveries//Recovery of Human Remains from Federal Lands that are Native American
- i. Consultation will begin with the teleconference with all consulting Federally-recognized Tribes and/or claimant Federally-recognized Tribe. At this time both

parties may determine that the cause of the inadvertent discovery is not on-going, that the location where the discovery occurred is secure (or can be secured), and that the NAGPRA items do not need to be removed.

- ii. If all consulting parties participating in the consultation reach the same conclusion under A above, then the USACE will issue a written notice to all parties concluding that the location of the inadvertent discovery is secure and that the NAGPRA items will be left in place. If any consulting parties disagree with this assessment, then consultation will progress with all consulting parties including the signatories to this Amended Agreement.
 - iii. If consensus is not attained, the USACE will notify, in writing, all consulting Federally-recognized Tribes of its intent to complete consultation with a written plan of action in accordance with 43 CFR § 10.5(e). The USACE will produce a NAGPRA plan of action which details the steps it will follow to complete the NAGPRA consultation process (43 CFR § 10.5(e)). This plan will contain a) a list of all materials considered to be NAGPRA items, b) the planned treatment, care, and handling of the materials, c) any planned recording of the find location as an archaeological site, d) any analysis planned for the remains, e) and a description of any anticipated summary reports. USACE and the consulting Federally-recognized Tribes will create a template plan of action to be on file.
 - iv. Within thirty (30) days of receipt of notice to consult and the action plan, the consulting Federally-recognized Tribes agree to provide a summary response containing the names and contact info for any potential lineal descendants, recommendations on any topics that should be included in consultation, request for any additional consultation meetings, recommendations for any treatment actions for the location of the discovery, and a list of any items that should be considered as NAGPRA items. Submission of this report does not preclude on-going discussion on any of these topics as consultation progresses.
 - v. Based on the responses received, USACE may choose to update and resubmit the plan of action to all consulting parties, but at a minimum will notify all consulting parties in writing of its intent to implement the plan of action previously presented to the consulting parties.
 - vi. At the conclusion of implementation of the plan of action, USACE will provide all of the consulting parties, in writing, copies of the draft Notice of Intended Disposition, and will provide the consulting parties thirty (30) days to comment.
- e. Process to Determine Disposition of Native American Human Remains from Federal Lands
- i. Once the thirty (30) days has commenced after providing the consulting parties with the draft copy of the Notice of Intended Disposition, and considering all comments, USACE will publish the Notice of Intended Disposition in a newspaper of general circulation in the local area, and also in a newspaper of general circulation in the local area for the Tribes. Both notices will be published a second time, at least one week later.
 - ii. Copies of the Notice of Intended Disposition, as well as a description of when and where it was published, will be provided to the National Parks Service, National NAGPRA program.

- iii. USACE anticipates that during the notice period described above, discussions will begin with the appropriate claimant Federally-recognized Tribe/s regarding disposition. Disposition will generally take the form of a physical transfer of custody and reburial on USACE lands, or the claimant Federally-recognized Tribe/s may choose to rebury privately once the Tribe assumes control over the NAGPRA items.
2. Non-Federal Lands: If human remains are recovered *from State or other private land*, USACE will require that Mississippi laws are followed, as outlined by state statute. As requested, and to the extent of its legal authority, USACE will support the state lead (Designated Authority) in following the State's processes related to discovery, disposition, disinterment, re-interment, and memorialization.
- a. Mississippi: Mississippi statutes related to the discovery of human remains are collected below.
 - i. Burial Excavation Permits (Native American only). Miss. Code §§ 25-59-1, 39-7-19 (1972, as amended);
 - ii. Abandoned Cemeteries, House Bill 780. <https://www.mdah.ms.gov/historic-preservation/archaeology/permits>
 - iii. For unanticipated discoveries on private, county, or state land in Mississippi, which are Native American, The Chief Archaeologist is the lead authority and will consult with USACE, Tribe(s), landowner, and descendants as appropriate to determine the necessary course of action.
 - b. Regardless of state, if the human remains recovered are determined to be Native American, USACE, in conjunction with the NFS, will identify and secure a mutually agreeable reburial location in which to reinter the human remains removed from the project area. Other arrangements may define at the time it is determined that Native American human remains have been recovered, but will include at a minimum:
 - i. In person consultation regarding the human remains and any objects;
 - ii. The identification of a reburial location as close to the disinterment location, as feasible;
 - iii. A commitment on the part of USACE to facilitate the reburial by an affiliated Tribe and to protect the human remains and associated grave goods, at no cost to the Federally-recognized Tribes, or the SHPO.
 - iv. Acknowledgment of the establishment of the cemetery in the administrative record and in the real estate records as determined best at time of reburial.
 - c. If the remains are determined NOT to be Native American in origin, USACE will follow the principals outlined in the 2007 ACHP "Policy Statement Regarding Treatment Of Burial Sites, Human Remains and Funerary Objects" to respectfully treat the remains and determine proper disposition, disinterment, re-interment, and memorialization, as well as any USACE real estate guidance at the time of the discovery.

X. Provisions for Post-Review Discoveries (Non-Human Remains)

- A.** USACE is responsible for complying with 36 C.F.R. § 800.13(a) in the event of inadvertent discoveries of Historic Properties during implementation of the Project. Discoveries of previously unidentified Historic Properties or unanticipated adverse effects to known Historic Properties are not anticipated, however if there is an inadvertent discovery or unanticipated effect, USACE will ensure that the following stipulations are met. These provisions will be included in all construction, operations, and maintenance plans and project managers will brief field personnel.
- B.** If previously unreported properties that may be eligible for nomination to the NR or that may be of significance to Federally-recognized Tribes, and/or, if unanticipated effects on historic properties are found during the construction phase, USACE will implement the provisions outlined below that are intended to ensure that the Undertaking is in compliance with all applicable federal and state laws and regulations, including Section 106 of the NHPA:
- C.** If there is no reasonable expectation that the property contains human remains, funerary objects, Native American sacred objects, or Native American objects of cultural patrimony, all work within a fifty (50) meter (164 ft.) radius buffer zone must stop immediately. If Human Remains are located or suspected, provision of Stipulation IX will be followed. USACE will notify SHPO and Federally-recognized Tribes, as appropriate, as well as any other affected party, of the discovery, and implement interim measures to protect the discovery from theft and vandalism. Construction may continue outside the fifty (50) meter (164 ft.) radius buffer zone. Within seventy-two (72) hours of receipt of notification of the discovery, USACE, as appropriate, will:
1. Inspect the work site to determine the extent of the discovery and ensure that work activities have halted within the fifty (50) meter (164 ft) radius buffer zone;
 2. Clearly mark the area of the discovery;
 3. Implement additional measures, as appropriate, to protect the discovery from theft and vandalism; and
 4. Provide an initial assessment of the site's condition and eligibility to the MS SHPO and appropriate Federally-recognized Tribes; and
 5. Notify other Consulting Parties, if applicable, of the discovery.
- D.** If USACE, in consultation with the SHPO, Consulting Tribes, and other Consulting Parties, as appropriate, determines the site is either isolated, does not retain integrity sufficient for listing on the NRHP, or will not be further disturbed by construction activities, construction may resume within the fifty (50) meter (164 ft) radius buffer zone.
- E.** If USACE determines that the cultural resource site or artifact either is, or may be, eligible for inclusion on the NRHP, USACE will consult with the SHPO, Consulting Tribes, and other Consulting Parties, as appropriate, regarding appropriate measures for site treatment pursuant to 36 C.F.R. § 800.6(a). The SHPO and Tribes will have seven (7)-days to provide their objections or concurrence on the proposed actions. These measures may include:
1. Formal archaeological evaluation of the site;
 2. Visits to the site by SHPO and/or Consulting Tribes;
 3. Exploration of potential alternatives to avoid the site;
 4. Preparation and implementation of a mitigation plan by USACE in consultation and concurrence with the SHPO, Consulting Tribes, and other Consulting Parties, as appropriate.

- F. The notified Consulting Parties will have seven (7)-days following notification to provide comment regarding USACE's determination of the NRHP eligibility of the discovery.
- G. A report of findings describing the background history leading to and immediately following the reporting and resolution of an inadvertent discovery will be prepared by USACE within thirty (30)-days of the resolution of each inadvertent discovery.
- H. USACE will communicate the procedures to be observed with its contractors and personnel.
- I. USACE will provide Notice to Proceed to the contractor to work in the area. Notices to Proceed may be issued by USACE for individual construction segments, defined by USACE in its construction specifications, after the identification and evaluation of historic properties has been completed.

XI. DISPUTE RESOLUTION

- A. Should any Signatory or Concurring Party to this Amended Agreement object at any time to any actions proposed or the way the terms of this Amended Agreement are implemented, the USACE shall consult with such party to resolve the objection. If USACE determines that such objection cannot be resolved, the USACE will forward all documentation relevant to the dispute, including the USACE's proposed resolution, to the ACHP. The ACHP shall provide USACE with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the USACE shall prepare a written response that considers any timely advice or comments regarding the dispute from the ACHP, Signatories, and Invited Signatories, and provide them with a copy of this written response. The USACE will then proceed according to its final decision.
- B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) - day time period, the USACE may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, USACE shall prepare a written response that considers any timely comments regarding the dispute from the Signatories and Invited Signatories to the Amended Agreement and provide them and the ACHP with a copy of such written response.
- C. The USACE's responsibility to carry out all other actions subject to the terms of this Amended Agreement that are not the subject of the dispute remain unchanged.

XII. SEVERABILITY, WITHDRAWAL, AND TERMINATION

- A. The SHPO or any Invited Signatory may withdraw from this Agreement after providing USACE written notice ninety (90) calendar days prior to its withdrawal. USACE shall consult with the withdrawing party to identify any mutually acceptable measures that would avoid the party's withdrawal. If mutually acceptable measures are identified that would require amendment to the PA, USACE will go through the amendment procedures outlined in Stipulation XIII.
- B. In the case of SHPO withdrawal, the Agreement would no longer apply within that SHPO(s)' state and USACE would comply with 36 CFR Part 800 for all undertakings previously subject to this PA in that state. In the case of an Invited Signatory withdrawing from the Agreement, USACE would consult with that Tribe pursuant to 36 CFR Part 800 for all Undertakings previously subject to this Agreement that would have the potential to affect historic properties of religious and cultural significance to the Tribe. This Agreement would remain in effect in all other jurisdictions and for all other parties.
- C. Signatories and Invited Signatories, who execute this Agreement, may terminate this Agreement by providing thirty (30) days written notice to the other Signatories, provided that the Signatories consult during this period to seek amendments or other actions that would prevent termination. If this

Agreement is terminated, USACE shall comply with Section 106 through other applicable means pursuant to 36 CFR Part 800. Upon such determination, USACE shall provide all other Signatories and ACHP with written notice of the termination of this Agreement.

- D. A Consulting Tribe may notify the other Signatories that it is fully withdrawing from participation in the Agreement. Following such a withdrawal, USACE shall review Undertakings that may affect historic properties of religious and cultural significance to the Consulting Tribe in accordance with 36 CFR §§ 800.3 through 800.7, 36 CFR § 800.8(c), or an applicable alternative under 36 CFR § 800.14. Withdrawal from this Agreement by a Consulting Tribe does not otherwise terminate the Agreement. At any time that this Agreement remains in effect, a Consulting Tribe that has withdrawn from the Agreement may notify USACE and SHPO(s) in writing that it has elected to participate again in the Agreement.
- E. In the event any provision of this Agreement is deemed by a Federal court to be contrary to, or in violation of, any applicable existing law or regulation of the United States of America, only the conflicting provision(s) shall be deemed null and void, and the remaining provisions of the Agreement shall remain in effect.

XIII. AMENDMENTS

A. The Undertaking

May not be subject to amending if the scope and nature of the Undertaking is significantly altered, modified, or changed such that it no longer reflects the scope and nature of the Amended Undertaking as defined and detailed in the Arkabutla Dam (MS01496) Coldwater River, Mississippi Embankment, Outlet Works, Spillway, DSMR, currently listed in Appendix A and Stipulation I.E.

B. Body of the Amended Programmatic Agreement:

May be further amended when such an amendment is agreed to in writing by all Signatories and Invited Signatories. The amendment will be effective on the date a copy signed by all of the Signatories and Invited Signatories is filed with the ACHP.

C. Amended Appendices:

May be further amended at the request of USACE or another Signatory or Invited Signatory in the following manner:

1. USACE, on its own behalf or on behalf of another Signatory or Invited Signatory, shall notify the Signatories of the intent to modify the current Appendix or Appendices and shall provide a draft of the updated Appendix or Appendices to all Signatory parties.
2. If no Signatory or Invited Signatory objects in writing within thirty (30) days of receipt of USACE's proposed modification, USACE shall date and sign the amended Appendix and provide a copy of the amended Appendix to the other Signatories. Such an amendment shall go into effect on the date USACE transmits the amendment to the other Signatories.
3. Current List of Appendices:
 - a. Appendix A: Proposed Work Items
 - b. Appendix B: Point of Contacts (POC)
 - c. Appendix C: (Reserved)
 - d. Appendix D: Treatment Measures

- D. Any Amendments to the Body of the Agreement or the Appendices, shall be posted to the websites currently tracking the implementation of the Undertaking.

XIV. DURATION

- A. The Agreement shall expire ten (10) years from the date of the last signature. One (1) year prior to the expiration of the Agreement, the USACE shall review the Agreement in order to determine whether it should be reissued or allowed to expire. If the Agreement requires reissue, the USACE shall consult with the Consulting Parties, as well as amend the Agreement in order to ensure compliance with the most current version of the Federal regulations implementing the NHPA.
- B. The Signatories and Invited Signatories may collectively agree to extend this Agreement to cover additional calendar years, or portions thereof, through an amendment provided that the original Agreement has not expired.

XV. ANTI-DEFICIENCY ACT

USACE's obligations under this Agreement are subject to the availability of appropriated funds, and the stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act. USACE shall make reasonable and good faith efforts to secure the necessary funds to implement this Agreement in its entirety. If compliance with the Anti-Deficiency Act alters or impairs USACE's ability to implement the stipulations of this Agreement, USACE shall consult in accordance with the amendment procedures found at Stipulation XIII and termination procedures found at Stipulation XII.

XVI. EXECUTION AND IMPLEMENTATION

- A. Nothing in this Agreement is intended to prevent the USACE from consulting more frequently with the Consulting Parties concerning any questions that may arise or on the progress of any actions falling under or executed by this Agreement.
- B. This Agreement shall be executed in counterparts, with a separate page for each Signatory, and shall become effective on the date the agreement is signed by or filed with the ACHP.
- C. USACE shall ensure that each Signatory and Invited Signatory is provided with an electronic (pdf) and physical copy of the Agreement including signatures. USACE shall provide electronic copies of additional executed signature pages to the Consulting Parties as they are received. USACE shall provide a complete copy of the Agreement with original signatures to any Signatory on request.
- D. Execution of this Agreement by the USACE (Vicksburg District), Signatories, Invited Signatories), the Mississippi Levee Board, and Concurring Parties and implementation of its terms evidence that USACE has taken into account the effects of this Undertaking on historic properties and afforded ACHP a reasonable opportunity to comment on USACE's Proposed Actions on these Features.

SIGNATORY PAGE

PROGRAMMATIC AGREEMENT

**AMONG THE
U.S. ARMY CORPS OF ENGINEERS (USACE) VICKSBURG DISTRICT;
TRIBAL NATIONS;
AND SHPO/STATE HISTORIC PRESERVATION OFFICER;
REGARDING
THE ARKABUTLAM DAM PROJECT
SIGNATORY PAGE**

U.S. Army Corps of Engineers, Vicksburg District (CEMVK)

Jeremiah A. Gipson
Colonel, Corps of Engineers
District Commander

Date: _____

SIGNATORY PAGE

PROGRAMMATIC AGREEMENT

**AMONG THE
U.S. ARMY CORPS OF ENGINEERS (USACE) VICKSBURG DISTRICT;
TRIBAL NATIONS;
AND SHPO/STATE HISTORIC PRESERVATION OFFICER;
REGARDING
THE ARKABUTLAM DAM PROJECT
SIGNATORY PAGE**

The Mississippi State Historic preservation Officer (MS SHPO)

Katie Blount
Mississippi State Historic Preservation Officer

Date: _____

INVITED SIGNATORY PAGE

PROGRAMMATIC AGREEMENT

**AMONG THE
U.S. ARMY CORPS OF ENGINEERS (USACE) VICKSBURG DISTRICT;
TRIBAL NATIONS;
AND SHPO/STATE HISTORIC PRESERVATION OFFICER;
REGARDING
THE ARKABUTLAM DAM PROJECT
SIGNATORY PAGE**

Tribal Nation

Nothing in this Agreement shall be construed to waive the sovereign rights and immunities of the Tribal Nation, its officers, employees, or agents.

Chairperson/Chief/Governor/Principal Chief/Mikko/Tribal Governor
Tribal Nation

Date: _____

CONCURRING PARTY SIGNATORY PAGE

PROGRAMMATIC AGREEMENT

**AMONG THE
U.S. ARMY CORPS OF ENGINEERS (USACE) VICKSBURG DISTRICT;
TRIBAL NATIONS;
AND SHPO/STATE HISTORIC PRESERVATION OFFICER;
REGARDING
THE ARKABUTLAM DAM PROJECT
SIGNATORY PAGE**

XXXXXXXXXXXXXXXXXX

XXXXXXXXXXXX
XXXXXXXXXXXX

Date: _____

Appendix A: Proposed Work Items
ARKABUTLAM DAM PROJECT
As of 10 February 2025

The project descriptions below include the latest information regarding Work Items that will be reviewed in accordance with this Agreement. These items are subject to change as additional information and analyses are conducted. In addition, Work Items may be added from other project authorities, but only for alteration or enhancement of the Arkabutla Dam Project features (Figures A-1 through A-6).

The Proposed Plan includes the following features as discussed below.

1. *New Outlet Works (see Figure A-3):*

- New outlet works will consist of new state-of-the-practice reinforced concrete intake structure; reinforced concrete control house with vertical lift gates and an emergency gate; a bridge connecting the control house to the top of the dam; reinforced concrete conduit; and a reinforced concrete stilling basin.
- This plan also includes excavation of a new discharge channel with riprap scour protection to direct water towards the existing discharge channel. Following construction of the new outlet works, complete abandonment of the existing outlet works would occur. Along with the abandonment, the existing outlet channel would be backfilled to top of existing ground to the confluence of the new outlet channel.
- Identification of potential borrow, disposal areas, and laydown areas (see Figure 6).
- Installation of gate house mechanical equipment including gate hoists, a bridge crane, compressed air system, and HVAC system.

2. *Dewatering Project Area (see Figure A-4):*

- To dewater the project area, two sets of dewatering wells are needed. A total of eight (8) shallow dewatering wells (four (4) on the north side and four (4) on the south side of the excavation).
- To dewater project area's substrata, an additional nine (9) 12-inch diameter relief wells extending down to an elevation of 130 feet are needed. Therefore, to dewater the whole project area, a total of 17 wells are needed.

3. *Cofferdam (see Figure A-4):*

- A zoned soil embankment cofferdam would be constructed "in the wet" around the excavation with 1:3 side slopes to protect and dewater the excavation area.
- The current pool restriction at the project makes constructing in the wet feasible, leaving only about 4 feet of the constructed embankment below the water surface.

4. *Abandonment of Existing Features (see Figures A-3 and A-5):*

- Following construction of the new outlet works, complete abandonment of the existing outlet works would occur.
- Along with the abandonment, the existing outlet channel would be backfilled to top of existing ground to the confluence of the new outlet channel.
- The existing toe ditches will be modified to redirect discharge into the new discharge channel or to an alternate location for discharge of toe drain waters.

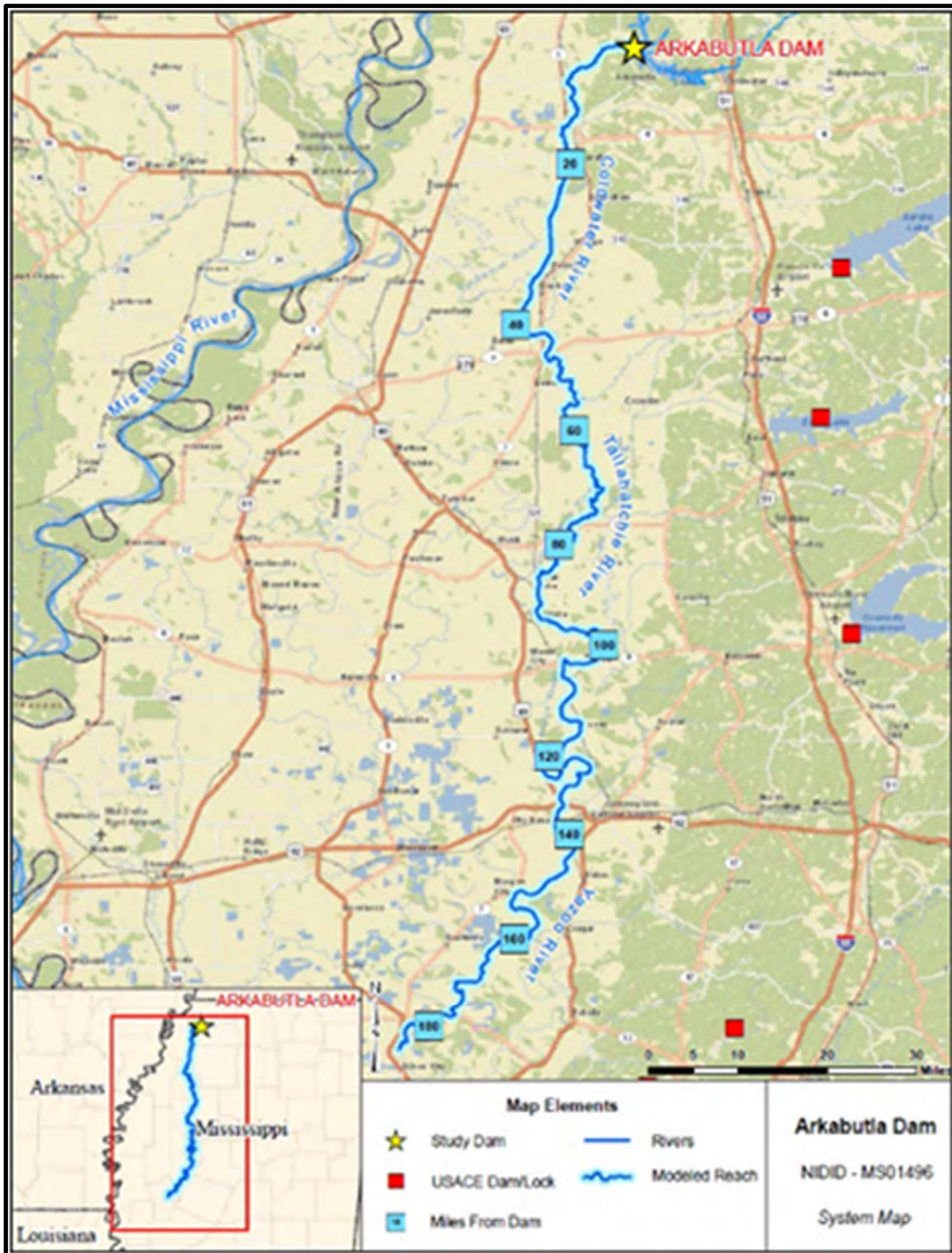


Figure A-1. Arkabutla Dam Project Area.



Figure A-2. Arkabutla Dam Project Features.

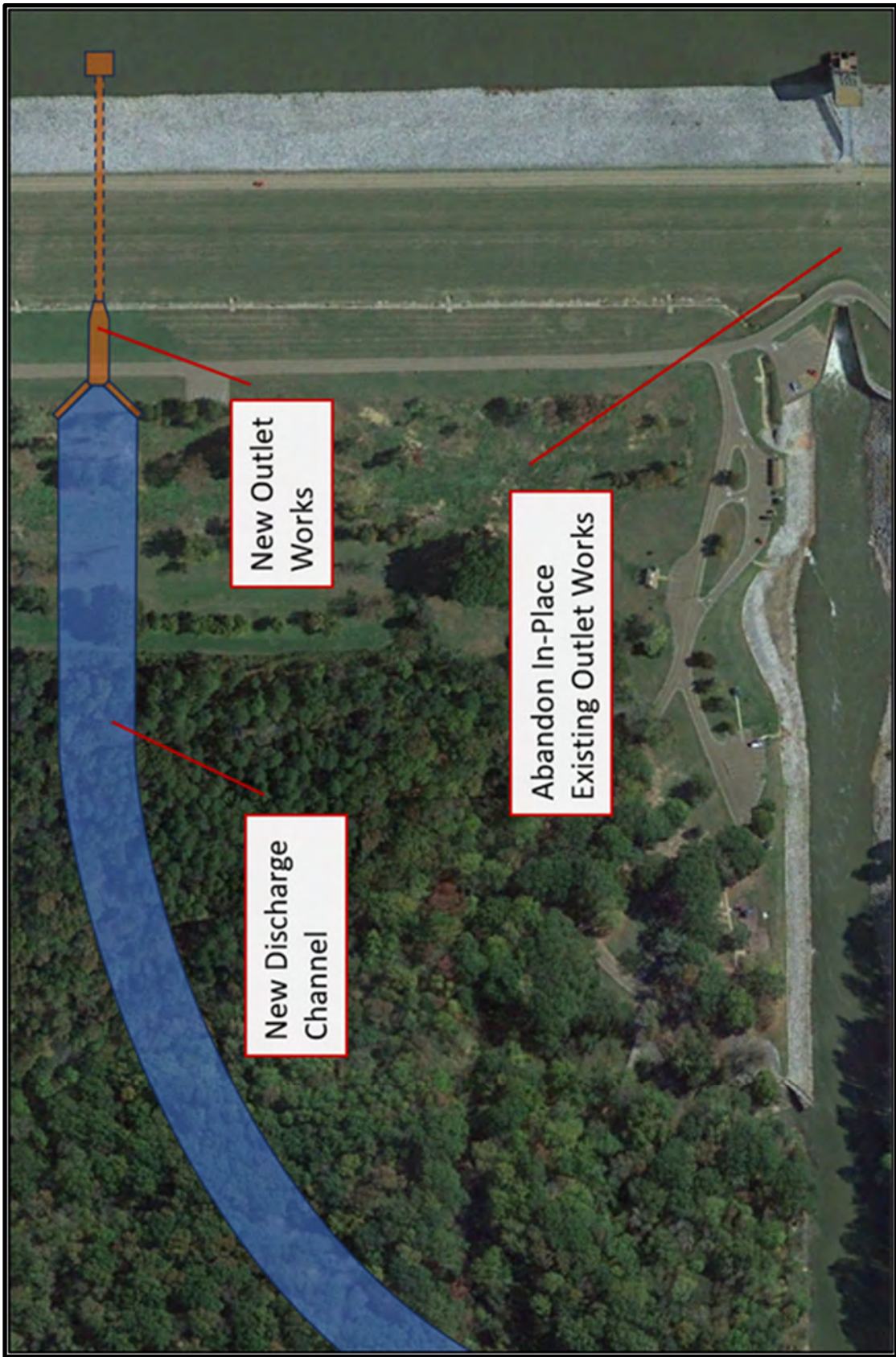


Figure A-3. New Outlet Works and Discharge Channel.

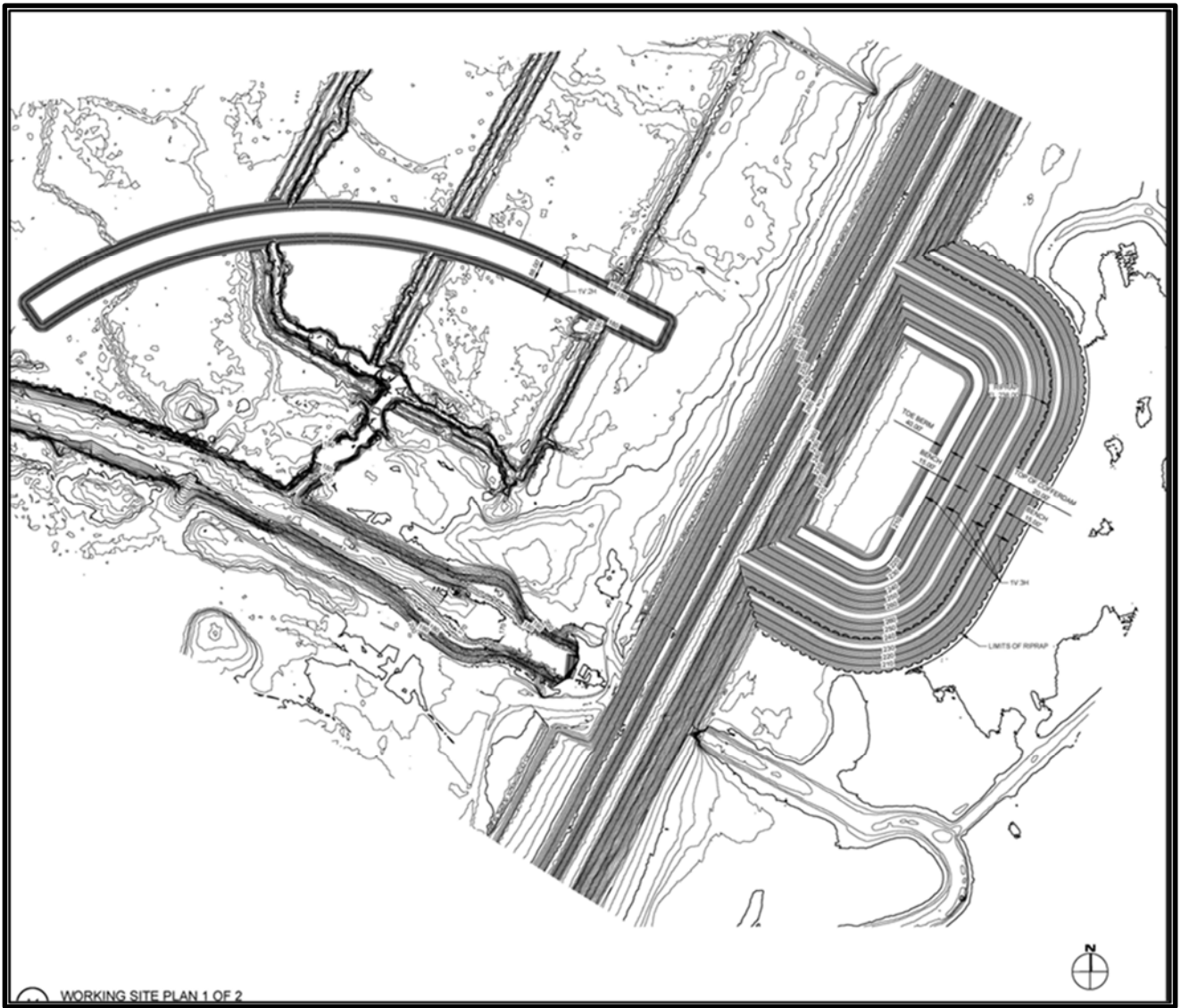


Figure A-4. Proposed Cofferdam and Discharge Channel.

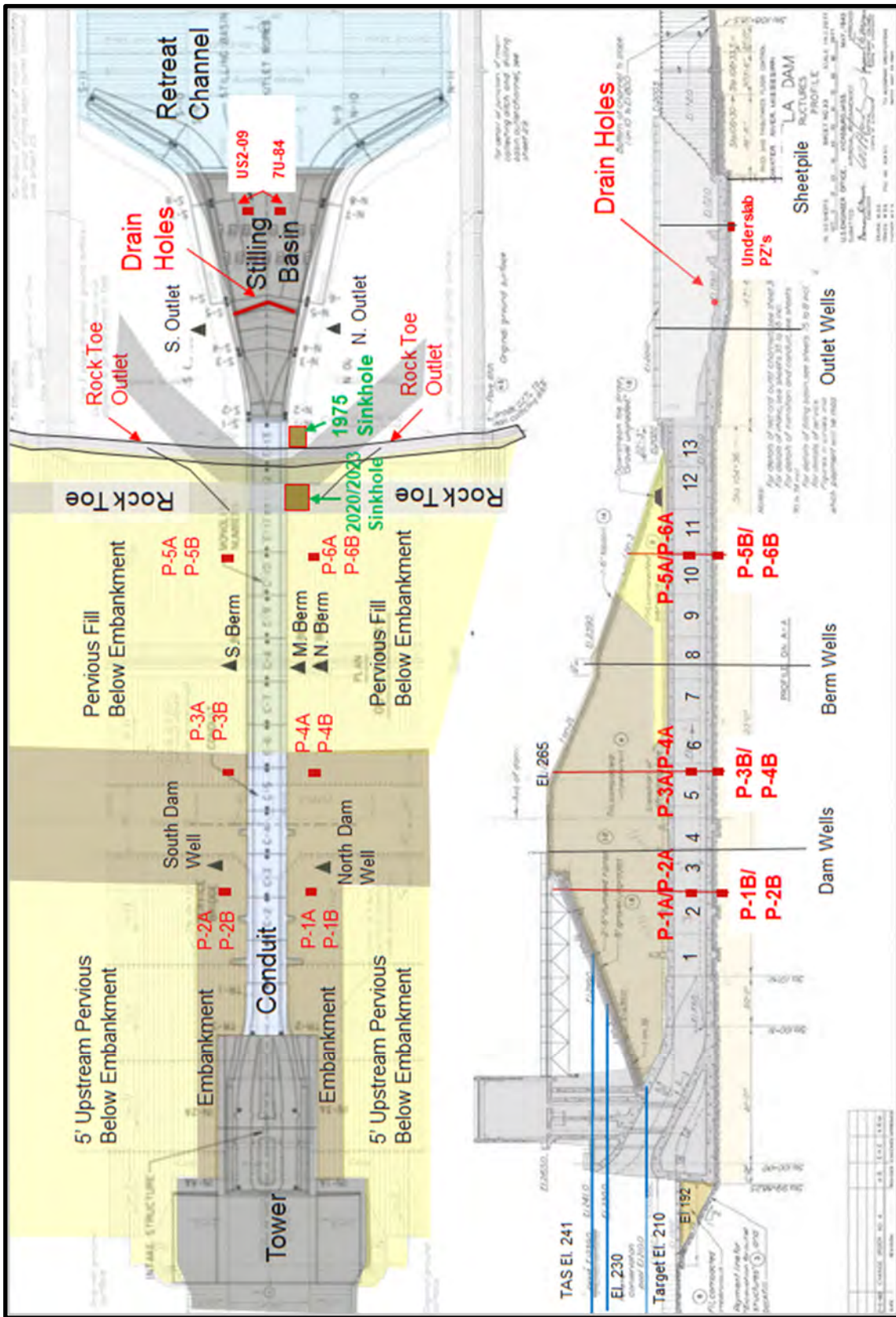


Figure A-5. Existing Outlet Works, plan and profile views.

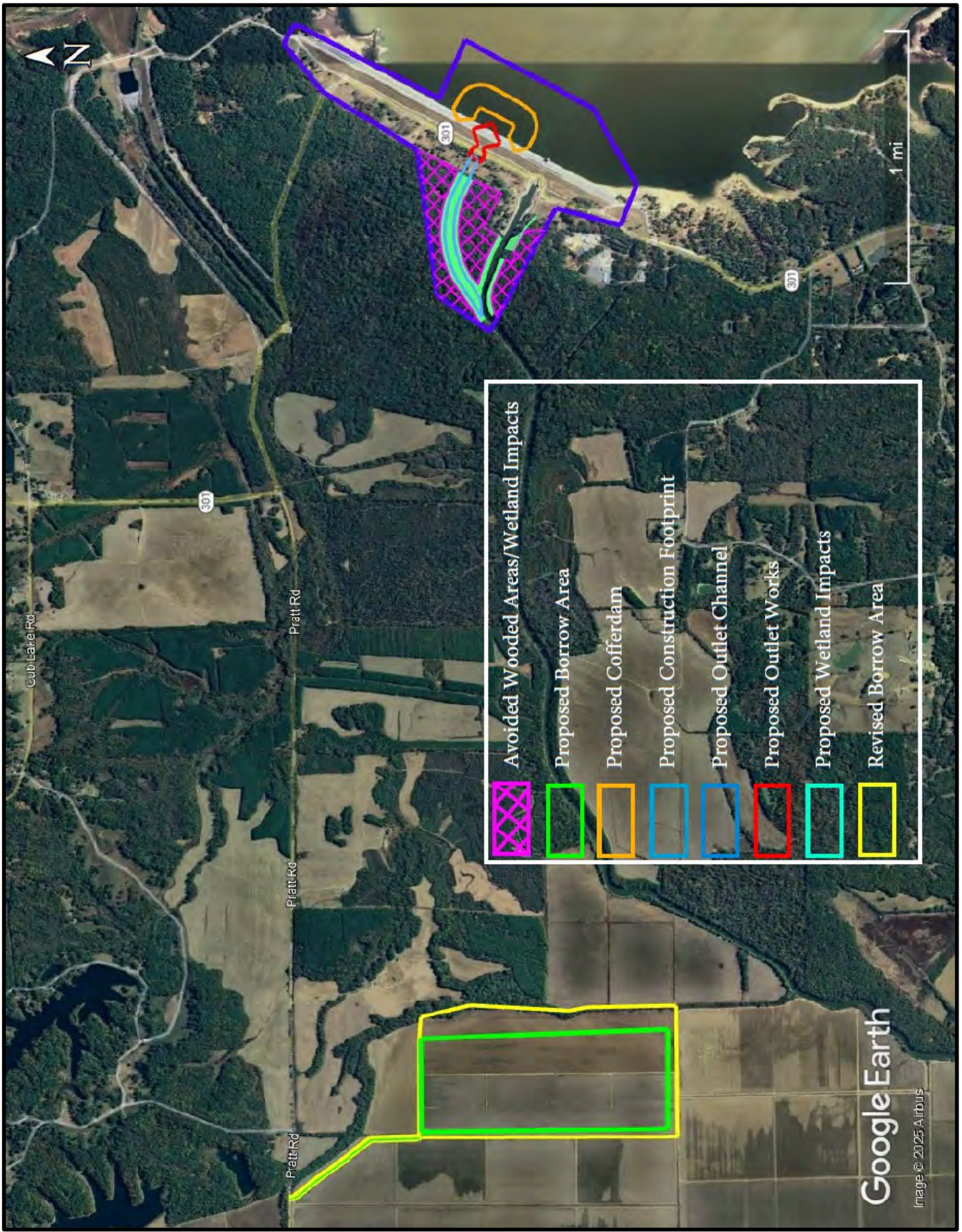


Figure A-6. Proposed Borrow Area and Construction Footprint.

Appendix B: Point of Contacts (POC)

CONTACT INFORMATION FOR SIGNATORIES AND FEDERALLY RECOGNIZED TRIBES

Signatories shall provide USACE with updated contact information as it becomes available, and revisions to this Table will be made without an amendment to this Agreement. This Table will be updated annually by USACE and included in the Annual Report.

Most will be all email (excepting reports), others will be mixed electronic and paper. Just a matter of capturing so that district archaeologist/TL has the right tool to communicate in the future.

Federally-Recognized Tribes	
<p>Absentee-Shawnee Tribe of Indians of Oklahoma</p> <p><u>Primary:</u> Ms. Devon Frazier Tribal Historic Preservation Officer (THPO) Cultural Preservation Department, Tribal Historic Preservation Board 2025 S Gordon Cooper Drive Shawnee, OK 74801 dfrazier@astribe.com</p> <p>106nagpra@astribe.com</p> <p>Method of contact for project notification and documentation: email to Primary contact email.</p>	<p>Absentee-Shawnee Tribe of Indians of Oklahoma</p> <p><u>Secondary:</u> Honorable John Raymond Johnson, Tribal Governor Absentee-Shawnee Tribe of Indians of Oklahoma Building 2 2025 S Gordon Cooper Drive Shawnee, OK 74801</p>
<p>Alabama-Coushatta Tribe of Texas</p> <p><u>Primary:</u> Mr. Delvin Johnson Tribal Historic Preservation Officer (THPO) Alabama-Coushatta Tribe of Texas 571 State Park Road Livingston, TX 77351 Johnson.Delvin@actribe.org</p> <p>Method of contact for project notification and documentation: email to Primary contact email.</p>	<p>Alabama-Coushatta Tribe of Texas</p> <p><u>Secondary:</u> Mikko Kanicu Donnis Battise Alabama-Coushatta Tribe of Texas 571 State Park Rd. 56 Livingston, TX 77351</p>

<p>Alabama-Quassarte Tribal Town</p> <p><u>Primary:</u> Ms. Samantha Robinson, THPO Alabama-Quassarte Tribal Town P.O. Box 187 Wetumka, OK 74883-0187 samantha.robinson@alabama-quassarte.org</p> <p>Method of contact for project notification and documentation: email to Primary contact email</p>	<p>Alabama-Quassarte Tribal Town</p> <p><u>Secondary:</u> Honorable Tarpie Yargee, Chief Alabama-Quassarte Tribal Town P.O. Box 187 Wetumka, OK 74883-0187</p>
<p>Caddo Nation</p> <p><u>Primary:</u> Mr. Jonathan M. Rohrer, THPO 117 Memorial Lane Binger, OK 73009 jrohrer@mycaddonation.com section106@mycaddonation.com</p> <p>Method of contact for project notification and documentation: email to Primary contact email.</p>	<p>Caddo Nation</p> <p><u>Secondary:</u> Tamara Francis Fourkiller, Chairman Caddo Nation PO Box 487 Binger, OK 73009 tffourkiller.cn@gmail.com</p>
<p>Chickasaw Nation</p> <p><u>Primary:</u> Ms. Karen Brunso, THPO Division of Historic Preservation PO Box 1548 Ada, Oklahoma 74821 (580) 272-1106 Karen.Brunso@chickasaw.net HPO@chicksaw.net</p> <p>Method of contact for project notification and documentation: email to HPO@chicksaw.net.</p>	<p>Chickasaw Nation</p> <p><u>Secondary:</u> Bill Anoatubby, Governor PO Box 1548 Ada, Ok 74821 (580) 436-2603</p>
<p>Chitimacha Tribe of Louisiana</p> <p><u>Primary:</u> Ms. Kimberly S. Walden, THPO Chitimacha Tribe of Louisiana 155 Chitimacha Loop Charenton, LA 70523 kswalden@chitimacha.gov</p> <p>Method of contact for project notification and documentation: email to Primary Contact</p>	<p>Chitimacha Tribe of Louisiana</p> <p><u>Secondary:</u> Honorable Melissa Darden, Chairman Chitimacha Tribe of Louisiana 155 Chitimacha Loop Charenton, LA 70523</p>

<p>Coushatta Tribe of Louisiana</p> <p><u>Primary:</u> Mr. Dakota John Tribal Historic Preservation Officer Coushatta Tribe of Louisiana 1940 C.C. Bell Road Elton, LA 70532</p> <p>dakotajohn@coushatta.org</p> <p>kdawsey@coushatta.org</p> <p>Method of contact for project notification and documentation: email Senior Compliance Review Officer with a copy to THPO.</p>	<p>Coushatta Tribe of Louisiana</p> <p><u>Secondary:</u> Gary Batton, Chief Choctaw Nation of Oklahoma Attn: Choctaw Nation Historic Preservation Department P.O. Box 1210 Durant, OK 74702-1210 (800) 522-6170 gbatton@choctawnation.com</p>
<p>Jena Band of Choctaw Indians</p> <p><u>Primary:</u> Ms. Johnna Flynn, THPO Jena Band of Choctaw Indians P.O. Box 14 Jena, LA 71342 jflynn@jenachoctaw.org</p> <p>Method of contact for project notification and documentation: email to Primary contact.</p>	<p>Jena Band of Choctaw Indians</p> <p><u>Secondary:</u> B. Cheryl Smith, Chief Jena Band of Choctaw Indians 1052 Chanaha Hina Street Trout, LA 71371 (318) 992-2717 chief@jenachoctaw.org</p>
<p>Mississippi Band of Choctaw Indians</p> <p><u>Primary:</u> Ms. Melanie Carson, THPO Mississippi Band of Choctaw Indians MBCI Planning Office 101 Industrial Rd Choctaw, MS 39350 MCarson@choctaw.org</p> <p>THPO@choctaw.org</p> <p>Method of contact for project notification and documentation: email to THPO@choctaw.org and a copy to the Primary contact.</p>	<p>Mississippi Band of Choctaw Indians</p> <p><u>Secondary:</u> Ben Cyrus, Chief Mississippi Band of Choctaw Indians 101 Industrial Road Choctaw, MS 39350 (601) 656-5251 info@choctaw.org</p>

<p>Muscogee (Creek) Nation</p> <p><u>Primary:</u> Dr. Savannah J. Waters, THPO Historic and Cultural Preservation Office The Muscogee (Creek) Nation P.O. Box 580 Okmulgee, OK 74447 swaters@muscogeenation.com</p> <p>Section106@muscogeenation.com</p> <p>Method of contact for project notification and documentation: email to Section106@muscogeenation.com</p>	<p>Muscogee (Creek) Nation</p> <p><u>Secondary:</u> Principal Chief, David Hill Muscogee (Creek) Nation Historic & Cultural Preservation Office P.O. Box 580 Okmulgee, OK 74447</p>
<p>Quapaw Nation</p> <p><u>Primary:</u> Ms. Billie Burtrum, Preservation Officer, THPO Quapaw Nation Historic Preservation Program (QNHPP) Director Quapaw Nation P.O. Box 765 Quapaw, OK 74363 Billie.Burtrum@quapawnation.com</p> <p>section106@quapawnation.com</p> <p>Method of contact for project notification and documentation: Section106@quapawnation.com and copy to Primary contact.</p>	<p>Quapaw Nation</p> <p><u>Secondary:</u> Honorable Wena Suernaw, Quapaw Nation Chair Quapaw Nation P.O. Box 765 Quapaw, OK 74363-0765</p> <p>Ms. Cheyenne Greenup, Preservation Officer QNHPP P.O. Box Quapaw, OK 74363 Cheyenne.greenup@quapawnation.com</p>
<p>Seminole Nation of Oklahoma</p> <p><u>Primary:</u> Mr. Benjamin Yahola, THPO Seminole Nation of Oklahoma 36645 US-270 Wewoka, OK 74884 yahola.b@sno-nsn.gov</p> <p>Method of contact for project notification and documentation: email to Primary Contact.</p>	<p>Seminole Nation of Oklahoma</p> <p><u>Secondary:</u> Honorable Lewis J. Johnson, Principal Chief Seminole Nation of Oklahoma 36645 US-270 Wewoka, Oklahoma 74884</p>

<p>Seminole Tribe of Florida</p> <p><u>Primary:</u> Ms. Tina Osceola, THPO Seminole Tribe of Florida 6300 Stirling Road Hollywood, FL 33024</p> <p>Chairman@semtribe.com</p> <p>Method of contact for project notification and documentation: email to Primary Contact.</p>	<p>Seminole Tribe of Florida</p> <p><u>Secondary:</u> Honorable Marcellus W. Osceola Jr., Chairman Seminole Tribe of Florida 6300 Stirling Road Hollywood, FL 33024</p>
<p>Tunica-Biloxi Tribe of Louisiana</p> <p><u>Primary:</u> Mr. Earl J. Barbry, Jr., THPO Tunica-Biloxi Tribal Historic Preservation Office 151 Melancon Drive Marksville, LA 71351 Telephone: (800) 272-9767, ext. 6451 earlii@tunica.org</p> <p>Method of contact for project notification and documentation: email to Primary Contact and copy TMartin@tunica.org</p>	<p>Tunica-Biloxi Tribe of Louisiana</p> <p><u>Secondary:</u> Chairman Marshall Pierite Tunica-Biloxi Tribe of Louisiana 151 Melancon Drive Marksville, LA 71351 Telephone: (318) 253-9767 marshallpierite@tunica.org</p> <p>Mr. Tim Martin, Administrator 151 Melancon Drive Marksville, LA 71351 TMartin@tunica.org</p>
<p>United Keetoowah Band of Cherokee Indians</p> <p><u>Primary:</u> Mr. Jason Dalton, THPO United Keetoowah Band of Cherokee Indians P.O. Box 746 Tahlequah, OK 74465-0746 jdalton@ukb-nsn.gov</p> <p>ukbthpo@ukb-nsn.gov</p> <p>Method of contact for project notification and documentation: email to Primary Contact and copy ukbthpo@ukb-nsn.gov</p>	<p>United Keetoowah Band of Cherokee Indians</p> <p><u>Secondary:</u> Honorable George Wickliffe, Chief United Keetoowah Band of Cherokee Indians P.O. Box 746 Tahlequah, OK 74465-0746</p>

SHPOS & Other Non-Federal Organizations	
<p>Advisory Council on Historic Preservation</p> <p><u>Primary:</u> Mr. Christopher Daniel, Program Analyst Advisory Council on Historic Preservation 401 F Street NW, Suite 308 Washington DC 20001-2637 (202) 517-0223 e106@achp.gov; cdaniel@achp.gov</p> <p>Method of contact for project notification and documentation: email to e106@achp.gov and copy to Primary contact email.</p> <p>Method of contact for other communication: email, phone call.</p>	<p>Advisory Council on Historic Preservation</p> <p><u>Secondary:</u> Ms. Jamie Loichinger, Director Office of Federal Agency Programs Advisory Council on Historic Preservation 401 F. Street NW, Suite 308 Washington, DC 20001-2637 (202) 517-0222 jloichinger@achp.gov</p> <p>Method of contact for project notification and documentation: email to e106@achp.gov and copy to Primary contact email.</p> <p>Method of contact for other communication: email, phone call</p>
<p>Mississippi Department of Archives and History</p> <p><u>Primary:</u> Mr. Hal Bell, Review and Compliance Officer State Historic Preservation Office Mississippi Department of Archives and History Historic Preservation Division P.O. Box 571 Jackson, Mississippi 39205-0571 Telephone: Office (601) 576-6957 hbell@mdah.ms.gov</p> <p>Method of contact for project notification and documentation: online submission at https://www.mdah.ms.gov/historic-preservation/section-106-review</p> <p>Method of contact for other communication: email, phone call</p>	<p>Mississippi Department of Archives and History</p> <p><u>Secondary:</u> Ms. Cindy Carter-Davis, Chief Archaeologist State Historic Preservation Office Mississippi Department of Archives and History Historic Preservation Division P.O. Box 571 Jackson, MS 39205-0571 Telephone(office): 601-576-6945 E-mail: ccarterdavis@mdah.ms.gov</p>

Appendix C: (Reserved)

Appendix D: Heritage Study

As provided in Stipulation VII E. of this Agreement, a heritage study will be developed by USACE after discussions with the MS SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, and will be documented in writing. USACE will provide the MS SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, with the opportunity to concur on the proposed scope/plan. This scope shall identify the natural, cultural, historic, and scenic resources of the Coldwater River basin as they combine to form a cohesive, nationally distinctive landscape that has arisen from patterns of human activity shaped by geography. In association with the above information, a comprehensive listing of repositories housing archaeological collections identified as falling within this cultural landscape will be compiled for reference purposes.

The scope shall identify, at a minimum and as appropriate: the responsible party/entity that will implement and complete the proposed work; the scope of work and the standards that will apply to the preparation and distribution of a deliverable; the deliverable(s) (e.g. the quantity, approximate size, materials, content, final ownership/copyrights); any professional qualifications that will be required to prepare deliverable(s) described in the scope; the repositories and/or parties that will receive copies of a deliverable and the disposition of any deliverable that is not curated; points when USACE, agent or contractor, SHPO/THPO, and/or Federally-recognized Tribes, and other consulting parties, as appropriate, will be given the opportunity to review and comment on the deliverable; and timeframes for each review and deliverable.

USACE will provide written notice to the MS SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, within sixty (60) days of the completion of the scope. Any dispute regarding the implementation of this study will be resolved following the process set out in Stipulation XI, Dispute Resolution.

This Appendix may be amended in accordance with the process set out in Stipulation XIII of this Agreement for amending appendices.

Appendix E: Monitoring Measures

Lake/Reservoir Cultural Resources

The National Historic Preservation Act (NHPA) of 1966 (as amended) plays a central role in the nation's historic preservation and CRM programs. Section 110 of the NHPA requires agencies to "establish ... a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties" (Section 110, 16 U.S.C. 470h-2). Little guidance is provided as to how this protection can be accomplished. Nevertheless, this mandate to protect historic properties clearly demands an awareness of potential threats and changes (i.e., deterioration) in a site's condition.

Archaeological sites are at risk of being adversely impacted even before they have been identified and evaluated by a Federal agency or other organization. Many sites are discovered during the course of a field survey conducted in compliance with NHPA's Section 106 (16 U.S. Code [U.S.C.] 470f and its implementing regulations 36 Code of Federal Regulations [CFR] Part 800), which require Federal agencies to "... take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register." Field surveys (supplemented by archival research) are designed to locate historic properties that may be impacted by planned or possible future undertakings.

Federal land managing agencies also conduct archaeological surveys to comply with the NHPA Section 110 requirement that agencies maintain a historic preservation program to identify and protect historic properties. Large-scale surveys conducted on military installations under Section 110 sometimes identify dozens of sites that require a formal NRHP eligibility assessment. Often available funds permit the assessment of only a few sites per year, leaving many sites in the category of "potentially eligible." Both NRHP eligible and potentially eligible sites are vulnerable to a wide range of adverse impacts. Protecting historic properties (including archaeological resources) as mandated by NHPA clearly requires that sites be revisited periodically to ensure that they are not being damaged by natural processes or cultural activities.

Full compliance with several other Federal laws designed to protect archaeological resources also requires monitoring. The Archaeological Resources Protection Act (ARPA) of 1979, as amended (Public Law [P.L.] 96-95) is designed to preserve archaeological resources on public and Indian lands for the benefit of the American people. ARPA states that "No person may excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands or Indian lands unless pursuant to a permit ..." (ARPA Sec. 6 [a]). The Native American Graves Protection and Repatriation Act (NAGPRA) of 1991 (P.L. 101-601) requires anyone who intentionally excavates sites on Federal or Indian lands where human remains or items of cultural patrimony may be present to first secure an ARPA permit. A Cultural Resources Manager clearly cannot know if ARPA or NAGPRA violations are occurring unless he/or she monitors site conditions.

A monitoring program will be developed by USACE for sites located within the Arkabutla Lake/Reservoir and will include but not be limited to the following:

1. Natural Impacts (i.e. erosion, seasonal water action/movement); and
2. Human Impacts, including construction, artifact collecting, recreational vehicles, and vandalism.

Initial (baseline) monitoring visits, conducted by individuals who meet the professional qualifications described in 36 CFR Part 61 (Secretary of the Interior [SOI] standards) focus on recording and submitting site forms for new resources as well as updating site forms for previously known resources and (including the acquisition of GPS data) and photography, the goal being to determine the relative level of disturbance and current conditions.

Baseline monitoring procedures include a general evaluation: walk the site, locate the boundaries, search for human and natural impacts, and take photographs from each corner of the site and elsewhere as needed. Cultural, erosion, or human impacts will be documented using GPS and photography: Photographs will be taken from the same position on the site, oriented the same direction during the monitoring cycle to ensure comparability of results. Evidence of artifact collecting and looting will be recorded on the site form and documented with photographs. That information will be passed on to lake personnel and local law enforcement.

Routine monitoring can be conducted by individuals who do not meet the requirements stipulated in 36 CFR Part 61. Monitoring visits will focus on the collection of GPS and photographic data that can be compared with data from previous visits in order to detect the existence and magnitude of changes in site condition. Photographs must be well documented as to the camera's location and view. All monitoring data (including photographs, GPS data, and site forms) will be confidentially maintained by RPEDS cultural resources personnel.

Construction Monitoring

1. Monitoring Methodology

- a. An SOI qualified archaeologist(s) must be present for all monitored excavations. Selection of a prehistoric or historic qualified archaeologist should be based upon the type of archaeological deposits anticipated to be encountered.
 - i. The monitor should be present for all excavations within high site probability areas.
 - ii. Circumstances that limit or prevent visual examination of project excavations must be described/reported and the unexamined or minimally examined areas delineated on a project area mapping.
 - iii. At the discretion of the monitoring archaeologist(s), excavation or other ground-disturbing activities must be halted any time a suspected archaeological feature or deposit is encountered.
 1. Excavations in the area of the discovery must remain halted until the archaeologist(s) can determine the nature, extent, and age of the archaeological deposit.
 2. If the initial examination determines the deposit may have sufficient integrity and content to be considered potentially eligible for nomination to the National Register, all further excavations in the vicinity of the deposit must be halted until a complete eligibility determination can be made.
 3. Excavations outside of the find location may proceed with continued monitoring.
 - iv. Reporting document(s) must include a map showing the locations of all excavations, surface features/structures, topography, and identified archaeological deposits within the project area where archaeological monitoring is occurring.
 - v. Representative profiles of all excavations should be recorded in the field by both photographs and illustrations.
- b. In the event human remains should be encountered during an archaeological monitoring project, work must stop immediately in the vicinity of the uncovered human remains. Immediate notice regarding the discovery should be made to the appropriate local law enforcement agency, the lead federal agency, the County Coroner's Office, and the State Archaeologist following the provisions of the Mississippi Burial Law in accordance with Stipulation IX (TREATMENT OF HUMAN REMAINS AND ITEMS OF RELIGIOUS AND CULTURAL IMPORTANCE) of this Agreement.

2. Defining Archaeological Site Boundaries

- i. If archaeological deposits are encountered within the mechanically excavated construction area, investigators must provide the UTM coordinates of the center point of an archaeological deposit by a Global Positioning System (GPS) device.
- ii. Locations of cultural material that are more than 50 years old, but do not meet other qualifications for being recorded as a site should be considered Isolated Finds and included in the report on monitoring investigations.
- iii. At the completion of the monitoring, investigators must assess if an identified site is eligible, not eligible, or undetermined for nomination to the National Register of Historic Places. Documentation for these assessments should be provided in the report submitted to all consulting parties.
- iv. A site form or site update form must be filed for every site identified or revisited during a monitoring project.

3. Collection Standards

- i. Investigators must retain all diagnostic artifacts and a representative sample of non-diagnostic items recovered from these disturbed contexts. After counting or weighing in the field or lab, bulk materials such as brick, mortar, plaster, shell, and gravel may be discarded except for a 10% representative sample per provenience.
- ii. Investigators must separate all archaeological materials by their provenience for curation.
- iii. Investigators must retain all field notes, field forms, photographs, and other documentation for curation.

Appendix F: Treatment Measures

As provided in Stipulation VII B. 7, if an Undertaking may adversely affect a historic property, USACE may propose to resolve the adverse effect through the application of one or more of the Treatment Measures set out below. The selected measures will be developed by USACE after discussions with the SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, and will be documented in writing (in a Treatment Plan). USACE will provide the SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, with the opportunity to concur on the proposed Treatment Measures as set out in Stipulation VII.B.

The Treatment Plan shall identify, at a minimum and as appropriate: the responsible party/entity that will implement and complete each treatment measure; the scope of work and the standards that will apply to the preparation and distribution of a deliverable; the deliverable(s) (e.g. the quantity, approximate size, materials, content, final ownership/copyrights); measures to ensure that any treatment measure documenting the condition of or requiring the data recovery on the historic property is implemented before the property is adversely affected; any professional qualifications that will be required to prepare deliverable(s) described in the Treatment Measure(s); the repositories and/or parties that will receive copies of a deliverable and the disposition of any deliverable that is not curated; points when USACE, NFS, agent or contractor, SHPO/THPO(s), and/or Federally-recognized Tribes, and other consulting parties, as appropriate, will be given the opportunity to review and comment on the deliverable; and timeframes for each review and deliverable.

USACE will provide written notice to the SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, within sixty (60) days of the completion of the Treatment Measures as required by Stipulation VII. B. USACE shall include information pertaining to the progress of and completion of all Treatment Measures in the annual report pursuant to Stipulation III. USACE Roles and Responsibilities.

Any dispute regarding the implementation of a Treatment Plan will be resolved following the process set out in Stipulation XI, Dispute Resolution.

This Appendix may be amended in accordance with the process set out in Stipulation XIII of this Agreement for amending appendices.

****Reminder**** should there be human remains associated with/anticipated during implementation of a Treatment Plan, review Stipulation IX Treatment of Human Remains to ensure accepted protocols are followed.

If USACE, in consultation with the MS SHPO, Federally-recognized Tribes, and other consulting parties, determines that a treatment measure, including Alternative Mitigation*, *not included* in the list below is in the public interest and is the most appropriate means to resolve an adverse effect, USACE will initiate consultation to develop an MOA or a Programmatic Agreement as set out in Stipulation VII.B.

*Alternate Mitigation means something alternative to either the location or the action that is agreed to be a meaningful offsetting of the adverse effects. Easy examples are for survey of lands unaffected by the project in exchange for no mitigation/data recovery for the specified archaeological site. Agencies have a difficult time justifying the funding for these actions unless it can clearly be demonstrated to be in the public interest.

List of Treatment Measures:

1. **PHOTOGRAPHIC RECORDATION:** USACE, in consultation with the SHPO, and/or, Federally-recognized Tribe(s), and other consulting parties, will select the photographic medium or mediums from the options described below and identify a list of photographs that will serve to document the historic property that will be adversely affected by an Undertaking. The photographic specifications set out below were previously determined by USACE, in consultation with the appropriate SHPO, to meet archival standards and are provided for guidance. Photographic images may include existing drawings and plans. If the parties determine that it is in the public interest to document a property through the preparation of measured drawings, USACE will initiate consultation to develop an MOA.
- A. Recordation for Standing Structures (Flexible Standards):** The responsible entity will **ensure that a trained professional** photograph the exterior and/or interior, if it is accessible, in the selected photographic format(s) with an emphasis on documenting those portions of the exterior and/or interior that will be altered. The trained professional will take photographs of the views identified by USACE, in consultation with the National Park Service (NPS), agent or contractor, SHPO, and/or Federally-recognized Tribe(s), and other consulting parties, as appropriate, and will print specifically identified images.
1. Digital Photography: The digital photography and color photographs must comply with the “Best” category of requirements from the National Register Photo Policy Fact Sheet: http://www.nps.gov/nr/publications/bulletins/photopolicy/Photo_Policy_update_2013_05_15.pdf, with the following additional requirements:
 - Image files must be saved as both TIFF and JPEG files.
 - Color images must be produced in RGB (Red/Green/Blue) color mode as 24-bit or 48-bit color files.
 - In addition to the requirements specified by the latest National Register Photo Policy, photographs will be digitally labeled to state the address (name of facility, street number, street name, city, and state); date of photograph; description of view, including direction of camera; and name of photographer/agency.
 2. 35mm Black/White and Color Photography: Photographs must be taken with a 35MM SLR Camera or a 35 MM point-and-shoot camera using 35 MM black/white or color film. Photographs taken with disposable cameras are not acceptable.
 - The 35 mm film black/white or color film photography package will include one (1) full set of 35mm film black/white or color photographs printed on acid free paper specifically designed for color prints, the corresponding 35mm film negatives in acid free sleeves.
 - Photographs will be labeled in pencil on the back to state the address, name of facility, street number, street name, city, and state; date of photograph; description of view, including direction of camera; and name of photographer/agency.
 3. Large Format Photography: Photographs must be taken with a large-format view camera with ample movement for perspective correction. The minimal complement of lenses includes a sharp rectilinear wide angle, a normal, and a mildly telephoto lens.
 - Acceptable film formats are 4x5, 5x7, and 8x10. Acceptable polyester-based films include those of medium and slow speed (100 and 400 ASA) produced by Kodak, Ilford, and others.

- The large format film photography package will include one (1) full set of 4 x 5 or 5 x 7-inch photographs printed on acid free paper, the corresponding 4 x 5 or 5 x 7-inch negatives in acid free sleeves.
- Photographs will be labeled in pencil on the back to state the address name of facility, street number, street name, city, and state; date of photograph; description of view, including direction of camera; and name of photographer/agency.

4. Video: A video documentary regarding the historic property may include on-camera interviews, archival footage and/or images, current footage of the historic property, and current footage of other similar historic properties. The content and length of the video will be described in the treatment measure.
5. Narrative History: A narrative history may be prepared to provide a context for the photographs following the Historic American Building Survey (HABS) Historical Reports: Short or Outline format.
6. Recordation Package: The recordation package will include a photo log, printed copies of selected photographs, digital copies of photographs, and may include a narrative history. The recordation package may include reproductions of historic photographs, existing building plans, contemporary sketch plans, and/or maps. All materials will be packaged in archival sleeves and boxes. Archival disks will be used for all digital materials.
7. Review: The responsible entity may informally consult with USACE and SHPO, and/or Tribe(s) to select photographs and other images that will be included in the recordation materials. The process to review and finalize the photographs and other images will be described in the treatment measure.
8. Distribution: The responsible entity will prepare a minimum of three archival quality copies of the recordation materials and will forward two copies to the SHPO and one copy to the U.S. Army Corps of Engineers, Office of History. In consultation with the SHPO, and/or Federally-recognized Tribe(s), and other consulting parties, as appropriate, may identify additional archives and/or parties that will receive copies of the recordation materials. The responsible entity will provide USACE with documentation confirming that the recordation materials have been archived as described in the treatment measure.

B. Recordation for Standing Structures (Established Standards): The treatment plan will document the proposed Level and Standard that will be most appropriate to capturing the significance of the historic property prior to alteration and define the responsible entity. Choices will be made between the **Historic American Building Standards (HABS), the Historic American Engineering Standards (HAER); or the Historic American Landscape Standards (HALS) at Level III, Level II or Level I.** During the development of the Treatment Plan USACE will coordinate with the SHPO and appropriate Federally-recognized Tribe(s), as necessary to make the selection. For any project requiring recordation to any of these standards, USACE will ensure that a trained professional photograph the exterior and/or interior, if it is accessible, in the selected standard with an emphasis on documenting those portions of the historic property that will be altered or demolished. The trained professional will take photographs of the views identified by USACE, in consultation with the SHPO and/or the appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, and will print specifically identified images and produce the required historical narrative:

2. Public Interpretation

USACE shall consult with the SHPO and appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, to design an educational or public interpretive plan. The educational or public interpretive plan may include historical markers, signs, displays, educational pamphlets, websites, workshops, videos, and other similar mechanisms to educate the public on historic properties within the local community, state, or region. In certain instances, the MS SHPO may request that the proposed historical marker conform to the requirements of the state in question, and request that the NFS apply to state programs to provide for a uniform interpretive program.

3. Historical Context Statements

USACE shall consult with the SHPO and appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate to identify the topic; audience; framework of a historic context statement; and format for the final deliverable. The context statement may focus on an individual property, a historic district, a set of related properties, or relevant themes as identified in the specific statewide preservation plan or the National Park Service's National Historic Landmark Thematic Framework.

4. Oral History Documentation

USACE shall consult with the SHPO and appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, to identify the list of potential interview candidates; the parameters of the oral history project; qualifications of the individual or individuals conducting the oral interviews; the process for any ongoing coordination with the appropriate SHPO and relevant Tribe(s); and format for the final deliverable.

5. Historic Property Inventory

USACE shall consult with the SHPO and appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, to establish the appropriate level of effort to accomplish an inventory/re-inventory. Efforts may be directed toward the resurvey of previously designated historic properties, per 36 CFR 800.16(l), which have undergone change or lack sufficient documentation, or the survey of new historic properties and/or districts that lack formal designation. The proposed treatment measure will describe the boundaries of the survey area and the data collection method in keeping with the MS SHPO's guidance for surveys and define the survey objective.

6. National Register and National Historic Landmark Nominations

USACE shall consult with the SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, to identify the individual properties that would benefit from a completed National Register of Historic Places (NRHP) or National Historic Landmark (NHL) nomination form. Once the parties have agreed to a property, the responsible entity will continue to coordinate with USACE, the MS SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, through the drafting of the NRHP nomination form or will contact the NHL Program to begin the nomination process. The MS SHPO and/or Federally-recognized Tribe(s) will provide adequate guidance to the responsible entity during the preparation of the nomination form. The responsible entity will work with the MS SHPO to ensure the completed NRHP form is presented to the particular state's National Register Review Committee in a timely manner for consideration by the State Historic Preservation Officer and the Keeper of the Register.

7. Geo-References of Historical Maps and Aerial Photographs

USACE shall consult with the SHPO, appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, to identify the historical maps and/or aerial photographs for scanning and geo-referencing. Once a list of maps and/or aerial photographs have been agreed upon, the responsible entity will continue to coordinate with USACE, the appropriate SHPO, Tribe(s), and other consulting parties, SHPO, and/or Tribe(s), and other consulting parties, as appropriate, through the scanning and geo-referencing process and will submit drafts of paper maps and electronic files to USACE, the appropriate SHPO, Tribe(s), and other consulting parties, SHPO, and/or Tribe(s), and other consulting parties, as appropriate, for review. The final deliverable produced by the responsible entity will include a 1) paper copy of each scanned image, 2) a geo-referenced copy of each scanned image, 3) original high-resolution digital image of map/aerial photograph in TIFF file format, 4) copies of the user agreements for every geo-referenced image with transferability of use to all parties, 5) a process report outlining the research, and 6) the metadata relating to both the original creation of the paper maps and the digitization process.

8. Archaeological Research Design and Data Recovery Plan

USACE shall develop and implement a data recovery plan with a research design in consultation with the SHPO, appropriate Federally-recognized tribe(s), and other consulting parties, as appropriate, to recover data from archaeological properties listed in, or eligible for listing in the NRHP, which will be adversely affected by ground-disturbing activities that are part of the Undertaking. The research design and data recovery plan will be consistent with the Secretary of the Interior's Guidelines for Archaeological Documentation (http://www.nps.gov/history/local-law/arch_stnds_7.htm) ACHP's recommendations on the recovery of significant information from archaeological sites. <http://www.achp.gov/archguide.html>. All work shall conform to the most current guidelines per the MS SHPO and as augmented by Federally-recognized Tribal or other local guidelines, as provide in Stipulation VI. Standards, and, if applicable, Stipulation IX. Treatment of Human Remains and Items of Religious and Cultural Importance.

9. Marketing Plan for Demolition or Abandonment

USACE shall consult with the SHPO, appropriate Federally-recognized tribe(s), and other consulting parties, as appropriate, to develop and implement a feasible marketing plan to advertise the availability of historic structures identified for demolition or abandonment for sale and/or relocation. A good faith and reasonable marketing plan will include publicizing and advertising the property in newspapers, magazines, and/or websites of record for a specific period of time. The plan may require the purchaser to relocate the property outside of the Special Flood Hazard Area (100-year floodplain), and the plan will give preference to a purchaser who proposes to use a professional house mover that follows the recommendations in Moving Historic Buildings by John Obed Curtis (1975, reprinted 1991 by W. Patram for the International Association of Structural Movers) or other similar updated reference material. If a good faith and reasonable marketing effort does not result in the identification of a party or parties willing to purchase and, if necessary, relocate the property, the property may be demolished or abandoned. This marketing plan will be used in conjunction with Treatment Measure I, Recordation Package. USACE will ensure that the property is recorded prior to relocation or demolition.

10. Salvage

The contractor shall work with USACE, the MS SHPO, and/or appropriate Federally-recognized Tribe(s), and other consulting parties, as appropriate, to identify selective architectural elements that

may be salvaged from a building/structure slated for demolition. The elements will be removed at the agent or contractor's expense. The salvaged elements may be re-used in another structure or in displays for educational purposes. As an alternative, the agent or contractor, in consultation with USACE, SHPO, and/or Tribe(s), and other consulting parties will attempt to identify a private or public not-for-profit local or regional historic preservation organization interested in receiving a donation of the architectural features. The organization may sell the architectural features to the general public for the specific purpose of raising funds to support future historic preservation activities in the region. Any income derived by the agent or contractor from the sale of architectural features may be considered project income by the program to be deducted from proceeds of the grant. Salvage activities shall not occur at or below grade in order to avoid affecting unevaluated archaeological resources.

11. Assessment and Reduction of Vibratory Affects

USACE shall consult with the SHPO, appropriate Federally-recognized tribe(s), and other consulting parties, as appropriate, to develop and implement a feasible vibratory reduction strategy. The plan will follow the best practices outlined in NCHRP 25-25, *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects* (2012) or similar. Generalized steps are the following: 1) Consultation between historic building owner, Project Delivery Team and reviewing agencies such as SHPO and local planning departments to identify potential risks, negotiate changes and agreement on protective measures. 2) Documentation of the condition of the building prior to commencement of adjacent work, including a detailed photo survey of existing damage as specified in the particular treatment plan. 3) Establishment of vibration limits not to be exceeded based on condition of building, founding soil conditions, and type of construction vibration. 4) Implementation of protective measures at both the construction site and the historic building, which could include specific means and methods to be used and those that will not be used and as specified in the BCOES. 5) Implement regular monitoring during construction to identify damage, evaluate the efficacy of protective measures already in place and to identify and implement additional corrective steps. The results of any implemented plan will be shared with the consulting parties to the particular adverse effect and summarized in the annual plan.

12. Public Participation in Effects Mitigation/Resolution

USACE shall include public participation in developing and implementing mitigation measures. Providing information and opportunities for the public to interact with historic properties reinforces the public value of the Section 106 review process. Public participation measures can be incorporated as standalone stipulations, or there can be a public or community involvement aspect incorporated in another stipulation. Interpretation stipulations can encompass a range of activities designed to make information about the significance of historic properties accessible to the public. Agencies and consulting parties should consider the vast array of possible interpretive efforts, including but not limited to the following:

- Development of websites
- Managing and enhancing heritage tourism
- Interpretive or wayside panels/signage
- Articles and scholarly papers/presentations
- Development of school curriculum and vocational training
- Partnering with Tribal parties for interpretation and education
- Involving community or youth groups in implementation of interpretation

- A comprehensive program of documentation and research leading to a variety of interpretive products: videos, podcasts, apps, websites, brochures, books, museum exhibits, visitor kiosks, lesson plans, posters, walking tours, pocket guides, and games.

13. Indigenous Knowledge/Traditional Ecological Knowledge/Native Science

USACE recognizes the importance of Indigenous Knowledge (IK), also known as Traditional Ecological Knowledge (TEK) or Native Science, in its work with Tribal Nations (see Engineering Pamphlet [EP]-1105-2-64) (https://www.publications.usace.army.mil/Portals/76/EP%201105-2-64_2024%2002%2022.pdf). This represents a body of knowledge that includes observations, practices, beliefs, and innovations developed by Indigenous Peoples over thousands of years. It is based on direct contact with the environment and is often passed down through generations. The USACE's Tribal Consultation Policy recognizes and promotes Tribal sovereignty and self-determination. The policy emphasizes the use of Indigenous Knowledge and Tribal expertise in the USACE's Civil Works programs. USACE and consulting parties should consider the vast array of possible partnership opportunities, including but not limited to the following:

- Water resources/watersheds:
 - i. Cultural and natural resource preservation – training and public outreach
 - ii. Educational outreach
- Climate change assessments/analyses:
 - i. Weather patterns
 - ii. Changes in seasonal water levels