

**CALHOUN POINT
HABITAT REHABILITATION
AND ENHANCEMENT PROJECT**

**MANUAL FOR
OPERATION, MAINTENANCE, REPAIR,
REPLACEMENT AND REHABILITATION
(OMRR&R)**

UPPER MISSISSIPPI RIVER SYSTEM
ENVIRONMENTAL MANAGEMENT PROGRAM
POOL 26
MISSISSIPPI RIVER



**US Army Corps
of Engineers
St. Louis District**

April 2009

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SECTION 1 PROJECT GENERAL INFORMATION

1.01. PURPOSE OF THE MANUAL.

This document has been developed to provide the sponsor, the Illinois Department of Natural Resources (IDNR), the necessary information, guidance and requirements for the operation, maintenance, repair, replacement, and rehabilitation of the Calhoun Point Habitat Rehabilitation and Enhancement Project located in Calhoun County, Illinois (hereinafter referred to as the "project"). This manual is to be used by the U. S. Fish and Wildlife Service (USFWS) and IDNR personnel responsible for the maintenance and operation of the project.

The importance of proper maintenance during normal water stages and efficient operation of the habitat protection system during periods of high water stages cannot be overstressed. The failure of even a minor element of the system could jeopardize the overall effectiveness of the project. A thorough knowledge of requisite operation and maintenance procedures is, therefore, essential. Timely operation and maintenance of the various habitat control features will provide for proper regulation of water levels and sediment control within the project boundaries. This manual provides the essential general requirements for satisfactory operation and maintenance of the project. Strict adherence to the guidance presented herein will insure maximum intended habitat protection during the life of the project.

This manual is intended to supplement the Memorandum of Agreement (MOA) between the U.S. Fish and Wildlife Service (USFWS) and the U.S. Army Corps of Engineers (USACE) attached as Appendix A. This manual provides the general standards of operation and maintenance, as well as establishes an initial frequency of management responsibilities to ensure satisfactory project performance.

1.02. PROJECT DESCRIPTION.

A. General. The Calhoun Point HREP, see Figure 1-Project Map, is located in Calhoun County, Illinois, at the confluence of the Illinois and Mississippi rivers and includes the following seven management areas: Pohlman Slough; Chickahominy Lake; Silver Lake; Squaw Island; Royal Lake--South End; Royal Lake--North End and the Goose Fields. The 2,157 acre area consists of bottomland forest (1,379 acres), open water and emergent wetlands (465 acres), scattered agricultural fields (269 acres), and 43 acres of developed land.

The majority of the Calhoun Point site is under federal ownership. All but 100 acres of federal lands were acquired about 70 years ago by the Corps, and were later designated as General Plan lands. The General Plan, dated March 1961, was approved jointly by the Assistant Secretary of the Army, Secretary of the Interior and IDNR; and as prescribed in a cooperative agreement, dated February 1963, between the Department of the Army and Department of the Interior. IDNR has responsibility for the day-to-day management of the

area under the terms of a cooperative agreement with the USFWS. Current management is directed primarily at providing waterfowl habitat, and preserving the bottomland forest ecosystem. Ongoing management practices rely heavily on pumping to (1) dewater areas in the spring to allow for a growing of waterfowl foods; (2) recharging these areas in the fall to make food available for waterfowl; and (3) control the buildup of sediments.

River pool stages at Calhoun Point are controlled by the operation of the Melvin Price Lock and Dam on the Mississippi River near Alton, Illinois. Except during floods, Pool 26 is regulated between 418 and 420 NGVD with an average pool stage of 419.5 NGVD. At normal pool, the open water areas on Calhoun point have an average depth of 1 to 2 feet, and maximum water depths do not exceed 4 feet. Flooding of the low, man-made and natural levees along the Illinois Mississippi River shorelines is common; depositing large quantities of sediment on Calhoun Point.

SECTION 2 PROJECT LOCATION

The Calhoun Point project, see Figure 1, is located in Calhoun County, Illinois, between the Illinois and Mississippi rivers. The project is bounded by the right descending bank of the Illinois River, extending from river mile 2.2 to 3.25, Navigation Pool 26 and the left descending bank of the Mississippi River, extending from river mile 219 to 223, Navigation Pool 26.

SECTION 3 PROJECT AUTHORIZATION

The project was developed through the Upper Mississippi River System - Environmental Management Program (UMRS-EMP). The authority for this project was provided by the Supplemental Appropriations Act (Public Law 99-88), Section 1103 of the Water Resources Development Act of 1986 (Public Law 99-662) and Section 107(b) of the Water Resources Development Act of 1992 (Public Law 102-580). The project was funded and constructed under this authorization by the U.S. Army Corps of Engineers (USACE), St. Louis District, in cooperation with the U.S. Fish and Wildlife Service (USFWS) and the Illinois Department of Natural Resources (IDNR).

SECTION 4 PROJECT PERFORMANCE

A Project Performance Evaluation Monitoring Plan, as identified in the DPR, was developed for pre-construction, construction and post-construction monitoring. Performance monitoring is considered necessary to properly evaluate effects of the constructed project features.

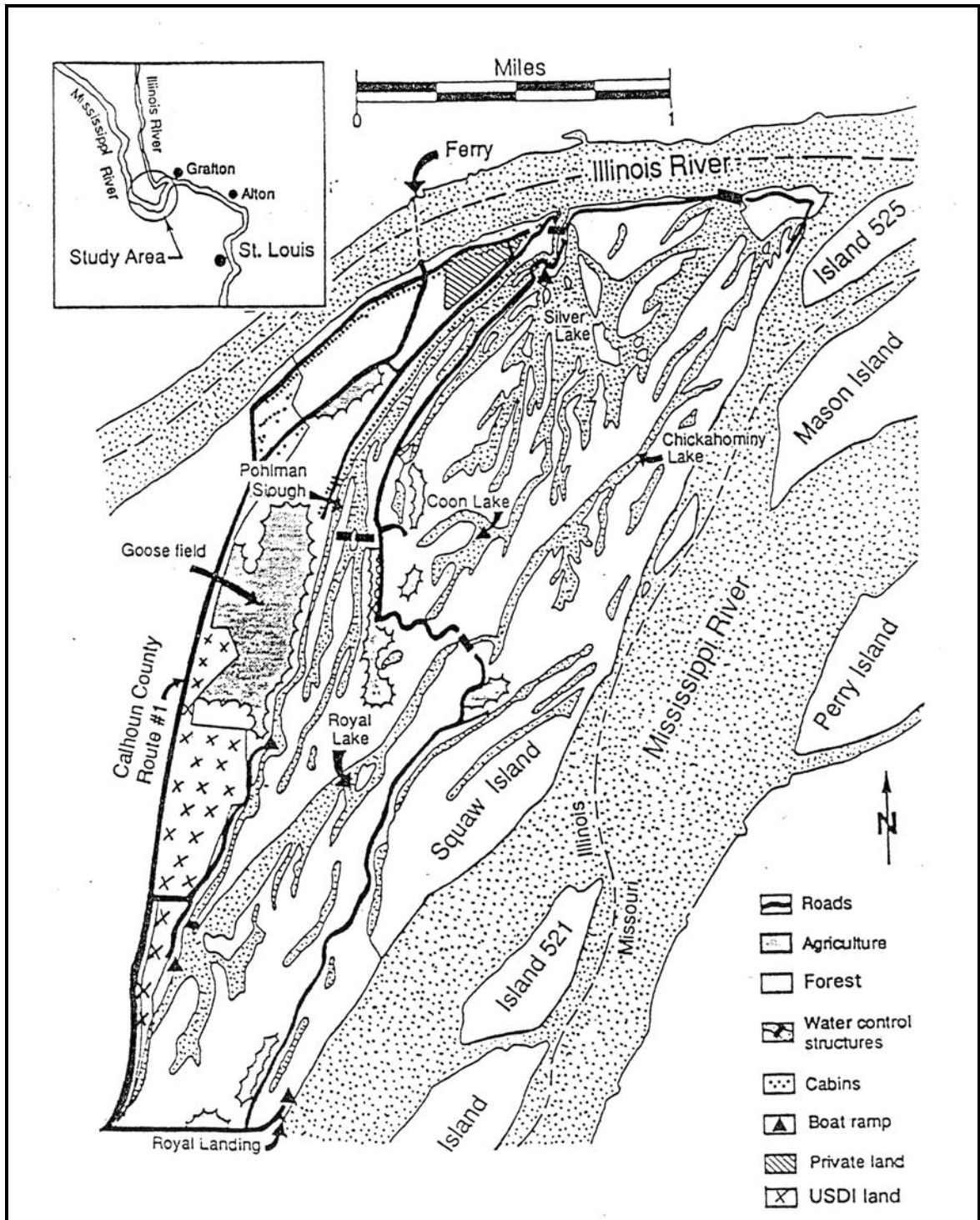


Figure 1 - Project Map

SECTION 5 PROJECT FEATURES

The following features were constructed to provide the most habitat benefits and cost efficiencies to achieve the goals and objectives of the project, see Figure 2:

(1) Riverside (Exterior) Berms. The riverside berms are divided into three segments totaling 30,100 feet in length. Each segment is constructed of compacted borrow material with one on three side slopes.

- a. Illinois River segment. This segment lies between Illinois River mile 2.2 and 3.25 and extends from high ground south of Brussels ferry along Pohlman Slough to the river confluence. Approximately 1800 linear feet of C-stone riprap was placed near Illinois River mile 2.54.
- b. Mississippi River segment. This segment lies between Mississippi River mile 219.5 and 223 totaling 18,500 feet. The berm slopes from ground elevation 426 NGVD at mile 223 to ground elevation 424 NGVD at mile 219. Approximately 1800 linear feet of C-stone riprap was placed near Mississippi River mile 220.
- c. Royal Landing Access Road segment. This 3000 foot flank berm starts at Mississippi River mile 223 and ties into the Royal Landing Access Road.

(2) Exterior Water Level Control Features for Wetland Compartments. Pumps, stoplogs, sluice gates and culverts are in place to help control water levels and allow the watering and dewatering of the wetland compartments as management objectives dictate. Culverts have been sized for watering and/or dewatering wetland units within a 2 week period (dependent upon river level conditions). Basic information on these water control features is as follows:

- a. Pohlman Slough Closure Structure (Site 1). This Illinois River feature is a 22 foot wide concrete channel fitted with two 42 inch sluice gates in one half of the channel and stoplogs the other half. The aluminum stoplogs are stored off-site and transported by truck. The stoplogs are lifted using a permanently mounted jib crane that is operated with a portable hydraulic power hoist. The structure has a concrete bridge deck that will allow vehicle passage.
- b. Silver Lake Pumping Station (Site 2). This feature is located on the Illinois River and includes a pump station and two 42 inch sluice gates to allow the control of water levels in Silver Lake by either pumping or gravity flow. The pump station can also be used to dewater the lake when necessary. The 29,000 GPM axial-flow pump is permanently mounted on the riverbank and is driven by a trailer mounted diesel engine. The structure includes concrete pads for the engine and fuel tank trailers.

- c. Chickahominy Lake Pumping Station (Site 3). This feature provides for the pumping of water from Mississippi River into Chickahominy Lake. The 48,000 GPM axial-flow pump is permanently mounted on the riverbank and is driven by a trailer mounted diesel engine. The structure includes concrete pads for the engine and fuel tank trailers.
- d. Squaw Island Water Control Structure (Site 4) and Pump Ramps (Site 5). This feature includes one 42 inch sluice gate closure structure used for interior drainage of the WMU. There are access ramps and corrugated HDPE pipes in place on both the landside and riverside of the sluice gate to allow use of a portable pump to take water from either the WMU or the Mississippi River. Water is drawn using a trailer mounted axial-flow pump is connected by a driveshaft to a portable diesel engine PTO. The pump discharges through a hose into the open ends of the buried HDPE pipes.

(3) Interior Water Level Control Structures for Wetland Compartments Stoplog structures and access ramps have been provided to allow watering and dewatering of the wetland compartments as management objectives dictate. Basic data on these water control structures is as follows:

- a. Chickahominy Lake/Silver Lake Control Structure (Site 6). This feature is an 8 foot wide open topped concrete channel with aluminum stoplogs and two 42 inch sluice gates that may be used to regulate lake levels. The stoplogs are stored off-site and transported by truck. The stoplogs are lifted using a permanently mounted jib crane that is operated with a portable hydraulic power hoist. The structure has a steel bridge that will allow the passage of small watercraft and pedestrians but not motor vehicles.
- b. Chickahominy Lake/ Royal Lake Control Structure (Site 7). This feature is an 8 foot wide open topped concrete channel with aluminum stoplogs that are used to control the flow of water between the two lakes. The stoplogs are stored off-site and transported by truck. The stoplogs are lifted using a permanently mounted jib crane that is operated with a portable hydraulic power hoist. The structure has a concrete bridge that will allow the passage of small watercraft and motor vehicles.
- c. Goose Field Pump Ramp (Site 8). This feature consists of an access ramp and corrugated HDPE pipe are used to flood the fields during the fall migration. Water is drawn from Pohlman Slough using a trailer mounted axial-flow pump that is connected by a driveshaft to a portable diesel engine PTO. The pump discharges through a hose into the aboveground HDPE distribution pipe.
- d. Goose Field Stoplog Structures (Site 9 & 10). These features are concrete structures with wooden stoplogs are installed in the fall to impound water and

removed it for the summer growing season to allow drainage. They are each 3 feet wide by 6 feet deep concrete channels with slots for 4 inch by 12 inch wood stoplogs. The stoplogs are stored off-site and manually lifted.

- e. Royal Lake/ Pohlman Slough (Site 11). This feature is an 8 foot wide open topped concrete channel with aluminum stoplogs that are used to control the flow of water between the two lakes. The stoplogs are stored off-site and transported by truck. The stoplogs are lifted using a permanently mounted jib crane that is operated with a portable hydraulic hoist. The structure has a steel bridge that will allow the passage of small watercraft and pedestrians but not motor vehicles.

(4) Selective Deepwater Dredging -Pohlman Slough. Approximately 75% of Pohlman Slough was hydraulically dredged to ensure adequate water conveyance between the wetland compartments, restore suitable backwater habitat for fish spawning and rearing, and also allow boat passage for fishing and waterfowl hunting. Dredging depths varied from 2 to 4 feet in depth. A 50 foot wide channel approximately 10,200 feet long was dredged from the slough.

SECTION 6 PROJECT CONSTRUCTION HISTORY

The project was constructed under the following two construction contracts. Details of the work done in these contracts can be found in Appendix B).

- A. Calhoun Point - Phase I. Calhoun Point - Phase I consisted of construction of interior and exterior berms; water control structures at sites 4, 9 and 10; pump ramps at sites 5 and 8; and dredging of Pohlman Slough.
- B. Calhoun Point - Phase II. Calhoun Point - Phase II consisted of construction of pumping stations at sites 2 and 3; water control structures at sites 1, 6 and 7; and the pump ramp at site 12.
- C. Calhoun Point - Phase III. Calhoun – Phase III consisted of cleaning shoreline woody vegetation, forest management, and construction of borrow areas from approximately 41 acres of federally owned lands.

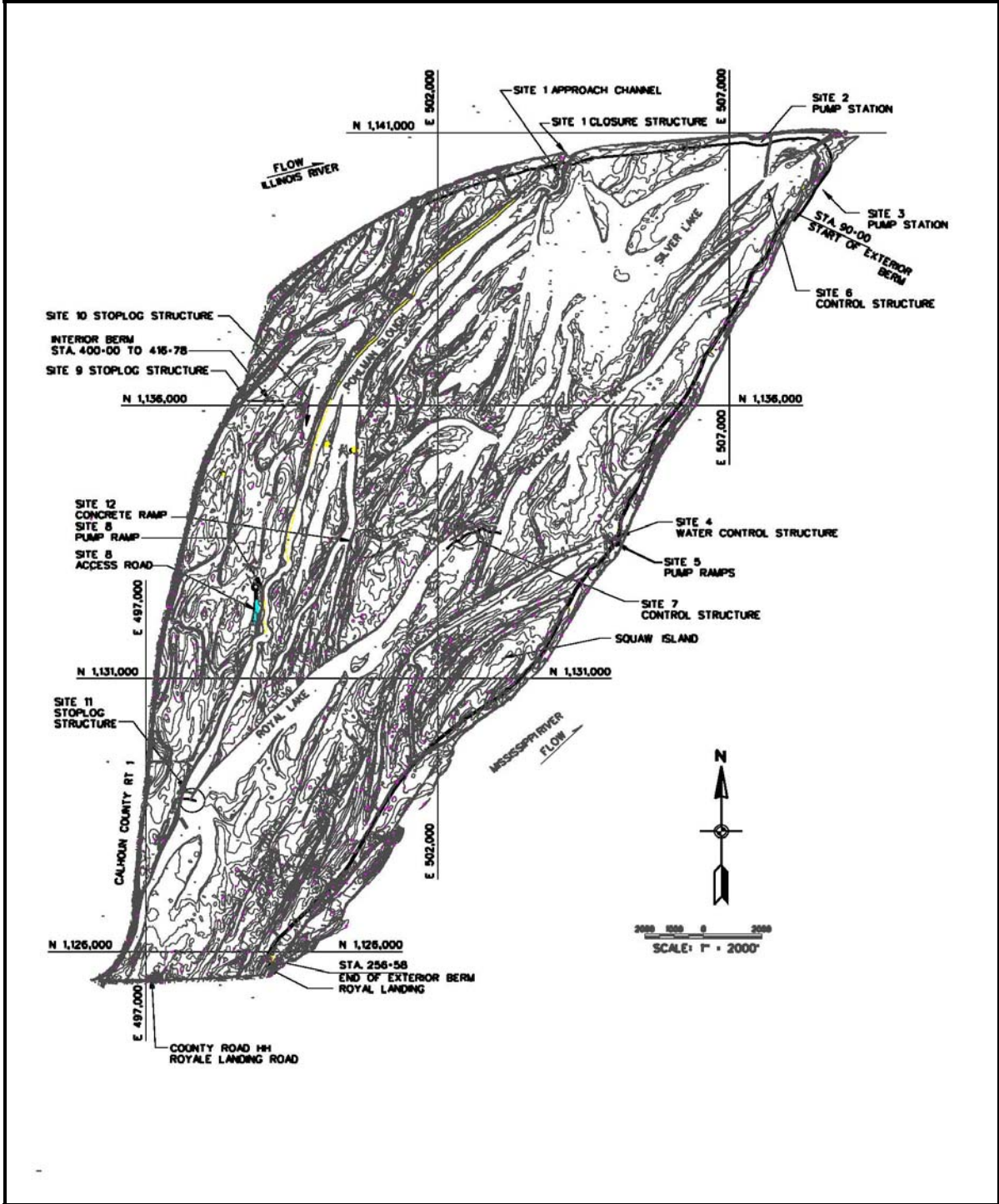


Figure 2 - Project Features

SECTION 7 PROJECT OPERATION PLAN

The Calhoun Point project will require ongoing water resource management in order to maintain an optimum fish and wildlife habitat. The sponsor is responsible for the administration, operation, maintenance, and repair of the project in accordance with the existing MOA, the DPR, and this supplement. The sponsor shall maintain books, records, and accounting of all funds expended on the project within a mutually accepted accounting procedure. The sponsor shall incorporate reports and plans into its Annual Management Report / Plan all necessary information concerning the operation, maintenance and repair of the Project. The sponsor shall be required to fulfill operation, maintenance, repair and rehabilitation tasks for each feature as described elsewhere in this manual.

7.01 **LEVEES**. Operation requirements for the Riverside (Exterior) Levee and the Interior Levees are as follows:

A. After flood periods the levee shall be inspected to verify an acceptable condition as defined by the following conditions:

1. There are no indications of slides or sloughs developing.
2. Wave wash or scouring action is not occurring.
3. No low reaches of levee exist which may be overtopped.
4. No other conditions exist which might endanger the levees.

B. Appropriate advance measures will be taken to insure the availability of adequate labor and materials to meet all contingencies. Immediate steps will be taken to control any condition, which endangers the levee, and to repair the damaged section.

C. Except for those measures described above, no other special procedures are required to operate the levee system.

7.02 **WATER CONTROL STRUCTURES**. Specific operation requirements shall be performed as determined by the IDNR Site Manager. The sources of water for the WMUs are the Mississippi and Illinois Rivers as noted in Section 1. The operation and management of all sluice gates and stoplogs should be coordinated with the water management plan for the project. Sluice gates should be at least one (1) inch from fully closed or fully open (using handcrank) before any use of the hydraulic operator. **Never use a hydraulic operator to travel the final distance to closed or open.**

7.03 **PUMPING STATIONS**. Specific operation requirements will be performed as determined by the IDNR Site Manager. The pumps must be activated manually to fill or empty the Water Management Units (WMUs). The pumps must also be deactivated manually once the desired water elevations are achieved in the WMUs. The pump station is equipped with staff gages to permit determination of local water levels. The following procedures also apply when using the portable trailer mounted pumping equipment.

A. **Prestart Check List**. The following steps shall be performed before starting the pump:

1. Check the intake water level for minimum required submergence.
2. Check the intake for large debris, which might restrict the intake.
3. Check the diesel engine for proper fluid levels and lubricants.
4. Lubricate jackshaft assembly.
5. Lubricate driveshaft.
6. Lubricate all bearings on the pump and reducer.
7. Check the reducer lubricant level and fill as needed.
8. Connect the driveshaft and reducer.
9. Check that all rotating machinery guards are properly attached.
10. Carefully rotate the pump assembly by hand using the engine clutch.
11. Follow engine/pump start-up instructions for warm-up.

B. **Normal Start-up**. The following steps should be performed at system start-up:

1. Thoroughly review and follow the manufacturers' operating instructions for the diesel engine.
2. Start engine with clutch disengaged.
3. Allow engine to warm up at idle, as recommended in the Operator's Manual.
4. Adjust engine speed to 800 revolutions per minute (rpm).
5. Partially engage clutch to observe for smooth operation, drive shaft alignment, belt alignment, belt tension and any noisy operation. Repeat

this step several times for brief periods to verify proper connection of prime driver to system.

6. After verification of connection, engage clutch fully at 800 rpm, then gradually increase speed on the engine to normal operating speed of approximately 1800 rpm.

C. Normal Shutdown. The following steps should be performed at shut-down:

1. Thoroughly review and follow the manufacturers' operating instructions for the diesel engine.
2. Gradually reduce engine speed to approximately 800 rpm.
3. Allow engine to run at 800 rpm for two to three minutes to empty the pump discharge piping of water.
4. Disengage the clutch. (As the pump assembly comes to a stop, some water may backflow through the pump. This is normal, but the non-reverse ratchet on the gear drive should prevent reverse rotation of the pump impeller.)
5. Shut down the engine.

SECTION 8 PROJECT EMERGENCY OPERATIONS

The sponsor is responsible for the administration, operation, maintenance, and repair of the project in accordance with the existing MOA, the DPR, and this supplement. The sponsor shall maintain books, records, and accounting of all funds expended on the project within a mutually accepted accounting procedure. The sponsor shall incorporate reports and plans into its Annual Management Report / Plan all necessary information concerning the operation of the Project. The sponsor shall be required to fulfill operation tasks for each feature of the project as described in this manual.

Reserve supplies of materials needed to provide protection under flooding conditions, such as sandbags, sand and emergency lighting is the responsibility of the local sponsor IDNR.

SECTION 9 PROJECT INSPECTION

9.01 **GENERAL**. The sponsor and the USACE will conduct joint inspections of project facilities at least annually for the purpose of observing and reporting current condition of the facility and to determine the need for required repairs. The sponsor or the USACE will immediately notify the other party when a problem or potential problem of Project facilities is observed, and an additional joint inspection will be held. The sponsor shall request joint inspections of project facilities after specific storm or flood events for the purpose of agreement and determination of project rehabilitation

9.02 **INSPECTION PURPOSE**. An active preventative maintenance program reduces damage to constructed features by taking early corrective action. Additional costs, associated with repair and rehabilitation, are also avoided. An effective preventative maintenance program requires regular, thorough inspections. These inspections will aid the IDNR Site Manager in discovering deficiencies within the project. In addition, they will provide the IDNR Site Manager with baseline condition data. These data are necessary for considering repair options of major damage.

9.03 **TYPES OF INSPECTIONS**. The two types of inspections for the Calhoun Point project are project inspections, conducted by the IDNR Site Manager, and joint inspections, conducted by the IDNR Site Manager together with personnel from USACE and USFWS.

9.04 **ANNUAL PROJECT INSPECTIONS**. Annual project inspections shall be performed by the IDNR Site Manager, or appropriate representative, for the purpose of noting routine deficiencies and initiating corrective actions. This inspection shall be conducted at periods not exceeding 12 months and shall follow inspection guidance presented in subsequent sections of this manual. It is suggested that the inspection be conducted every Spring or Fall, whichever is representative of site conditions following high river levels. Additional project inspections shall occur as necessary after flood events or as scheduled by the IDNR Site Manager. A project inspection checklist has been developed as presented in Appendix D. It is required that the IDNR Site Manager furnish a signed copy of the completed checklist to the U.S. Army Corps of Engineers; St. Louis District; ATTN: CEMVS-ED; 1222 Spruce Street; St. Louis, Missouri, 63103, immediately following each project inspection.

9.05 **JOINT INSPECTIONS**. Joint inspections by the IDNR Site Manager, USFWS, and USACE shall be completed in accordance with the Memorandum of Agreement. These inspections shall be initiated by USACE. The purpose of joint inspections is to assure that adequate maintenance is being performed as presented in this manual. The St. Louis District Engineer or Authorized Representative shall have access to all portions of the constructed project upon coordination with the IDNR Site Manager.

Additional joint inspections shall be formally requested by the IDNR Site Manager immediately following a specific storm or flood event that causes damage in excess of the

annual operation and maintenance costs specified in this manual. A comparison of project inspections before and after such events together with the joint inspections shall be the basis for determining maintenance responsibility and potential rehabilitation by USACE as stated in the Memorandum of Agreement.

SECTION 10 PROJECT MAINTENANCE

The sponsor is responsible for the administration, operation, maintenance, and repair of the project in accordance with the existing MOA, the DPR, and this supplement. The sponsor shall maintain books, records, and accounting of all funds expended on the project within a mutually accepted accounting procedure. The sponsor shall incorporate reports and plans into its Annual Management Report / Plan all necessary information concerning the maintenance of the Project. The sponsor shall be required to fulfill maintenance tasks as described for each feature of the project in this manual.

10.01 **PROJECT LEVEES**. Maintenance requirements for the Riverside (Exterior) Levees and the Interior Levees are as follows:

A. General Requirements. IDNR shall provide at all times such maintenance as may be required to insure serviceability of the structures. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Where practicable, measures shall be taken to retard bank erosion by planting of willows or other suitable growth on areas riverward of the levees. Periodic inspections shall be made by IDNR to insure that the above maintenance measures are being effectively carried out and further, to be certain:

1. No unusual settlement, sloughing, or material loss of grade or levee cross section has taken place.
2. There are no signs of caving on either the land side or the river side of the levee, which might affect the stability of the levee section.
3. No seepage, saturated areas, or sand boils are occurring.
4. Drains through the levees and gates on said drains are in good working condition.
5. No revetment work or riprap has been displaced, washed out, or removed.
6. No action is being taken which can retard or destroy the growth of sod, such as burning grass and weeds during inappropriate seasons.
7. Access roads to and on the levee are being properly maintained.
8. Cattle guards and gates are in good condition.
9. Crown of levee is shaped so as to drain readily, and roadway thereon, if any, is well shaped and maintained.

10. There is no unauthorized grazing or vehicular traffic on the levees.
11. Encroachments are not being made on the levee right-of-way, which might endanger the structure or hinder its proper and efficient functioning during times of emergency.

B. Detailed Requirements. In addition to the general requirements described above additional detailed maintenance requirements for levee works are as follows:

1. General. It is the responsibility of the sponsor to maintain the integrity of stone protection works and also the vegetated areas that provide stability to levee slopes. Inspections to detect erosion, scour, tension cracks and sinkholes at or adjacent to the protected areas shall be conducted on a regular basis. Visual observations of flaws or defects shall be clearly documented and photographed. Erosion and scour can cause losses of earthen material and may potentially jeopardize the stone protection. If there is severe weathering of some materials in the stone protected areas, additional stone shall be placed to cover these materials and to prevent additional losses of stone protection. Pockets of rearranged or missing stone should be filled with materials similar in size and quality to that provided under the contract documents. It is extremely important to observe the termination points of the stone placement. Inspections of the stone protection work shall be made at least once every 90 days, preferably during the dry periods when the water level is low.

2. Mowing. Levee slopes shall be mowed periodically to discourage the growth of weeds and saplings. A good mowing program will enhance a dense sod that will resist wave wash and erosion during periods of high water. Grass should be kept at a height less than 14 inches. The grass should be cut back to a height of approximately 4 to 6 inches during the growing season; it may be necessary to mow at least two or three times each year to maintain a stand of grass within these prescribed limits. The height of the grass should be at least 8 inches when it becomes dormant prior to winter.

3. Herbicides. Mowing should be supplemented by the periodic use of environmentally acceptable herbicides to discourage the growth of weeds and brush. All riprap areas along the levee slope shall be sprayed once in the spring and once in the fall with "Rodeo" (by Roundup) or equal to eradicate weeds and woody growth.

4. Treatment of Sprouts. The stumps of trees cleared from the levees should be treated by spraying with herbicides to eliminate the growth of sprouts.

5. Rodent and Burrowing Animals. Rodent dens can undermine and potentially damage the levees. Rodents and burrowing animals should be destroyed during inspections and their dens excavated and backfilled with compacted fill. Routine mowing of the levee slopes and chemical control of weeds and woody growth should discourage rodents and burrowing animals from establishing dens in the earth levees. Various other methods are available for removal of rodents and burrowing animals. However, the best methods of removing rodents and burrowing animals from the levee system will be developed by experimentation. Care should be used to determine local game laws and their

applicability to the method chosen for extermination. Following are several methods of extermination that have proven satisfactory. Suggested methods include:

- a. Fish and wildlife cartridge.
- b. Cyanide gas.
- c. Exhaust fumes (carbon monoxide).
- d. Butane or propane gas.
- e. Anhydrous ammonia.

6. Woody Growth. It is necessary to remove trees, brush, and other woody growth from levee slopes in order to maintain the long-term integrity of the levee structure. The periodic removal of this growth is far more economical than extensive tree removal that may be necessary if these saplings are not removed at an early stage.

7. Earth-lined Channel Inspection. During periodic inspection of the levees careful attention should be given to the following items:

- a. No unusual settlement, sloughing, or material loss of grade or levee cross section has taken place.
- b. No caving has occurred within or adjacent to the levee, which might affect the stability of the levee section.
- c. No revetment work or riprap has been displaced, washed out, or removed.
- d. No action is being taken, such as burning grass and weeds, which will retard the growth of sod.
- e. No wave wash or scouring has occurred.
- f. Drift shall be removed from levee slopes at the end of each winter flood season, before the new growth of grass starts in the spring, and after each high water event occurring during the growing season. Drift should not be burned on the levee slope or right-of way.
- g. Gullies, holes and washes in the levee should be filled with materials matching that required by the original contract documents, including all amendments and modifications thereto.

8. Seeding. Reseeding of damaged areas, mulching, fertilizing, and preparation, shall be accomplished with seed mixtures, mulch, fertilizer, and rates and

methods of application matching that required in the original contract documents for the particular area requiring repair. Seeding periods are as follows:

a. Fall Seeding: 15 August to 20 September

b. Spring Seeding: 15 February to 15 April

c. Repair and Preparation of Seedbed. Repairs required to correct conditions disclosed by the inspection should be made promptly, especially during non-flood season, in anticipation that high water may retard or prevent later accomplishment. In the event of severe damage a report should be made to the District Engineer, U. S. Army Engineer District, 1222 Spruce Street, St. Louis, Missouri 63103, including a description of the damage and proposed repair action. The channel slopes should be dressed so that they may be traveled with mowing equipment. Prior to mulching, the area to be seeded should be disked or harrowed to loosen the soil.

d. Touchup or Overseeding. Where the stand of grass is thin, the growth shall be thickened by overseeding with grass seed. This should be done in late winter or early spring between 15 February and 15 April, preferably in the early part of the period.

e. Fertilizing. If the soil is suspected of containing insufficient nutrients to provide proper growth, a laboratory analysis shall be performed. Fertilization shall be performed only as a result of such an analysis. At the time of seeding, apply 33% ammonium nitrate fertilizer, or an equivalent thereof, in such quantity to yield 50 pounds of nitrogen per acre. In the case of 33% ammonium nitrate, 150 pounds of fertilizer per acre will be required. Fertilizer should be applied by drill, or broadcast uniformly on the area. The fertilizer should be disked or harrowed into the soil.

f. Supplemental Fertilizing. A thick, healthy stand of grass furnishes protection to the channel against surface erosion, and so minimizes the amount of possible repair needed. It is recommended that a feeder application of fertilizer consisting of 12/12/12 mixture be applied about every third year at a rate of 100 to 200 pounds per acre. Soil sampling is recommended which will indicate the proper mixture required and may reduce the rate and cost of application.

10.02 PUMPING STATIONS. Maintenance requirements for the permanently mounted pumps, associated equipment and trailer mounted diesel power units are described in the manufacturers' operating manuals. Annual periodic inspections will be performed to assess the operating condition of the pumps, gear reducers, engine and appurtenances. Annual inspections should be scheduled for an occasion where the pumps may be operated with sufficient water available for proper demonstration of pumping.

A. Concrete Structure. All visible concrete surfaces should be inspected for cracks, spalling, corrosion, or exposed reinforcement. All structural steel items should be inspected for warpage, damage, corrosion or lost fasteners. Repairs shall be made within 30 days of

discovery, including grouting, coating repair, epoxy repairs and fastener replacement.

B. Pump Assembly. The pump assembly consists of the pump, gear reducer, drive belts, driveshaft assembly, diesel engine assembly, Dresser coupling, discharge pipe, duckbill discharge valve, support piles and appurtenances. The pump assembly should be inspected during operation for any improper vibration, noise, excessive heat, sump vortices, or cavitation. Operation during ice conditions should be avoided. The pump should be throttled down and shut off when cavitation is detected, until the cause can be determined and corrected. Any serious damage should be reported immediately to USACE and USFWS for determination of corrective action. Simple repairs, such as painting and repair of fasteners, should be performed by IDNR prior to any pump operation.

1. Sump. The sump should be checked periodically for excessive siltation and proper suction head. The sump should be cleaned periodically to prevent cavitation. All large debris should be removed from the sump area for proper disposal. The pile supports should be inspected for damage and corrosion during any cleaning or inspection of the sump.

2. Pile Supports. The “H”-pile pump supports should be inspected annually, and prior to any operation, for cracks, dents, bending, twisting and corrosion.

3. Dresser Coupling. The Dresser coupling should be inspected annually, and prior to any operation, for damage to any flanges, middle ring, gaskets, fasteners or pipe. Loose fasteners should be tightened prior to operation. Corroded fasteners should be replaced prior to operation. After commencement of operation the coupling should be inspected for excessive vibration or leakage.

4. Duckbill Discharge Valve. The rubber duckbill valve located on the end of the discharge pipe should be inspected for damage and to ensure there is nothing caught inside that would prevent closure.

5. Right Angle Reducer. The gear reducer should be inspected for proper lubricant level prior to each operation. Sufficient lubricant to meet the manufacturer’s recommendations should be added prior to each operation. After the engine has reached normal speed, and for at least fifteen (15) minutes of subsequent pump operation, the reducer should be checked for excessive noise, vibration or temperature

6. Drive Belts and Pulleys. The drive belts and pulleys should be inspected annually, and prior to any operation, for cracks, wear, bending, twisting, sagging, slack and corrosion. Cracked or worn belts should be replaced prior to any operation. Corroded pulleys should be cleaned and painted. Any slack, sag or twisting of the belts from their normal orientation should be corrected prior to operation.

7. Driveshaft Assembly. The driveshaft assembly should be inspected annually, and prior to any operation, for cracks, bending, twisting, sagging, lubricant and corrosion. The pillow block bearings should be lubricated prior to any operation.

8. Driveshaft. The driveshaft should be inspected annually, and prior to any operation, for bending, twisting, sagging, loose fasteners and corrosion. The universal joints should be lubricated prior to any operation.

C. Diesel Power Units. The diesel power units should be inspected annually and prior to any operation, for proper fluid levels, lubrication, coolant, air filter, fuel filter, battery and muffler. The engine trailer should be inspected for tire inflation and wear, axle lubrication, operating brakes and signal lights, hitch and safety chains, and damage to paint coating. All fluids and filters should be at their proper operating levels and conditions prior to transport to the pumping station. The engine should be operated prior to transport to the pumping station to establish operational worthiness, including function of the clutch and instrumentation. After connection to the driveshaft, the engine should be operated as indicated above. The operator should record oil pressure, coolant temperature, charging amperage, revolutions per minute (rpm), and hours of operation. This data will be used to assess the condition of the engines over time.

10.03 **PUMPING STATION RETAINING WALLS**. Maintenance requirements for the retaining walls should be as follows:

A. Sheet Pile. The aboveground sheet pile should be inspected annually during low water stages for corrosion, perforation, bulging and any other damage. Any serious damage should be reported immediately to USACE and USFWS for determination of corrective action.

B. Tie-Rods. The tie-rod connections at the wales should be inspected annually for loose fasteners, corrosion, weld cracks and any other damage. Any serious damage should be reported immediately to USACE and USFWS for determination of corrective action. Simple repairs, such as painting and repair of fasteners, should be performed by IDNR prior to any pump operation.

C. Discharge Pipe Penetrations. The discharge pipe penetrations should be inspected for loss of material or geotextile at the 3-inch annular space between pipe and sheet pile. Discharge pipe, including flap gates, should be inspected for corrosion or any other damage. Any serious damage should be reported immediately to USACE and USFWS for determination of corrective action. Simple repairs, such as painting and repair of fasteners, should be performed by IDNR prior to any pump operation.

10.04 **DRAINAGE STRUCTURES**. Maintenance requirements for the drainage structures are described herein, and as noted in the Waterman Industries, Inc. Operation and Maintenance Manual for Sluice and Canal Gates. Annual periodic inspections will be performed to assess the operating condition of the gates, operators, access ladders, corrugated metal pipe (CMP) and appurtenances. Annual inspections should be scheduled for low water occasions where the maximum extent of the equipment will be accessible. Any serious damage should be reported immediately to USACE and USFWS for determination of corrective action. Simple repairs, such as painting and repair of fasteners, should be performed by IDNR prior to any operation.

A. Sluice Gate. Periodic cleaning is required to maintain smooth operation. Periodic painting should be performed to minimize corrosion. All adjustments to the wedges, as required by wear, should be in accord with operation and maintenance manual. The gates should be cycled regularly to alleviate “sticking”. Cycling at minimum thirty (30) day intervals is recommended.

B. Operating Stem. The operating stem should be cleaned and greased with Mobilux grease # 2EP, or equal, at least every six (6) months.

C. Gate Operator. The gate operator should be lubricated prior to each new period of operation, but not less than 4 times annually. The handcrank should be turning when grease is pumped into the fittings. Each fitting should receive the amount of grease delivered by 4-5 pumps of the grease gun handle.

10.05 **STOP LOG STRUCTURES**. Maintenance requirements for the stop log structures are described herein, and in the operation and maintenance manual for the jib crane. Annual periodic inspections will be performed to assess the operating condition of the stop logs, concrete structure, jib crane, and appurtenances. Annual inspections should be scheduled for low water occasions where the maximum extent of the equipment will be accessible. Any serious damage should be reported immediately to USACE and USFWS for determination of corrective action. Simple repairs, such as painting and repair of fasteners, should be performed by IDNR prior to any operation.

A. Stop Log. All stop logs should be inspected for warpage, cracks, deformities or other damage, which would prevent proper installation or sealing prior to each use. Damaged stop logs should be replaced before installation.

B. Concrete Structure. All visible concrete surfaces should be inspected for cracks, spalling, corrosion, or exposed reinforcement prior to each use.

C. Jib Crane. The jib crane should be inspected prior to each new period of operation. All structural steel items should be inspected for warpage, damage, corrosion or lost fasteners. Repairs should be made within 30 days of discovery, including any grouting, coating repair and fastener replacement.

D. Hydraulic Power Unit. The hydraulic power unit should be prepared for use as recommended by the manufacturer prior to each use in the field. Check all fluid levels and fill to appropriate level. Check all hoses, motor, pump, directional control valve, etc. for leaks. Tighten leaking connections, or replace parts as required.

SECTION 11 PROJECT REPAIR, REPLACEMENT AND REHABILITATION

11.01 **GENERAL**. The sponsor is responsible for the repair, replacement, and rehabilitation of the project in accordance with the existing MOA, the DPR, and this supplement. The sponsor shall maintain books, records, and accounting of all funds expended on the project within a mutually accepted accounting procedure. The sponsor shall incorporate reports and plans into its Annual Management Report / Plan all necessary information concerning the repair, replacement, and rehabilitation of the Project. The sponsor shall be required to fulfill repair, replacement, and rehabilitation tasks as described for each feature of the project in this manual. Repair is considered to entail those activities of a routine nature that maintain the project in a well-kept condition. Replacement covers those measures taken when a worn-out element, or portion thereof, is replaced. Rehabilitation refers to a set of activities necessary to bring a deteriorated project back to its original condition. Project repair, replacement and rehabilitation actions are to conform to the project as-built plans and specifications, unless other arrangements are made with the USACE, St. Louis District Commander. These activities are the responsibility of the project sponsor.

11.02 **REHABILITATION REQUIREMENTS**. The USACE is responsible for the federal share and the performance of any mutually agreed upon rehabilitation of the project in accordance with the existing Memorandum of Agreement, the DPR and this supplement. The federal share of rehabilitation is defined to be reconstructive work needed in excess of estimated annual operation, maintenance and repair costs as a result of specific storm or flood events, exceeding the design event.

11.03 **IMPROVEMENTS, REPAIRS OR ALTERATIONS**. The USACE, St. Louis District Commander shall be informed of all future improvements, repairs or alterations to this environmental enhancement project. Any portions of the existing levee works damaged by flood waters shall be repaired to the original condition in accordance with the requirements of the contract documents, including all amendments and modifications thereto.

11.04 **PROJECT FEATURE REPLACEMENT**. If a project feature, such as an area of levee, riprap revetment, pumping station, or structure, is damaged to the point where it needs to be completely replaced, the sponsor shall coordinate with the USACE, St. Louis District Commander about the planned replacement. In general, the replacement feature should conform to the original design of that feature.

11.05 **PROJECT FEATURE ALTERATION**. Whenever it is necessary to alter project features that have been constructed with Federal funds, or rehabilitated with Federal funds, for which operation and maintenance assurances have been executed by IDNR, it is necessary to secure prior approval from the USACE, St. Louis District Commander. When a third party, such as a utility or pipeline company, desires to alter the levee work, they must secure approval from IDNR, who, in turn, will secure approval from the USACE, St. Louis District Commander. All matters pertaining to “Alterations” should be addressed to the USACE, St. Louis District Commander.

SECTION 12
NOTIFICATION OF PROJECT DISTRESS

12.01 **GENERAL**. Evidence of distress at the Calhoun Point Project shall be immediately reported to the USACE, St. Louis District Commander. Notification shall be in writing. Special inspections, to evaluate damages or changed conditions, should be made immediately following the report of project distress. This is particularly important in the case of earthquake damage.

12.02 **REPORTABLE DISTRESS SIGNALS**. Typical signals of project distress to be reported are as follows:

- A. Sloughing, settlement, or slides in embankments, such as levees, dams, bridge abutments or slopes of channels.
- B. Evidence of piping or muddy water boils in the vicinity of a structure such as embankments, abutments, and retaining walls.
- C. Abnormal increase or decrease of flow from foundation drains, structural joints, or face drains of concrete dams.
- D. Any increase in seepage quantities through or under embankments or abutments.
- E. Unusual vertical or horizontal movement or cracking of embankments, abutments or structures.
- F. Significant cracking of mass concrete structures.
- G. Sinkholes or localized subsidence in the foundation of, or adjacent to, embankments or other pertinent structures critical to the safe operation of the project.
- H. Excessive deflection, displacement, or vibration of concrete structures (e.g., tilting or sliding of structure).
- I. Erratic movement, binding, excessive deflection, or vibration of outlet gates, stop logs, or pump mounting piles.
- J. Significant damage to any structure.
- K. Significant damage to any feature resultant from a seismic event.
- L. Any other indications of distress or potential failure that could inhibit the operation of the project or endanger life and property.
- M. Excessive vibration, binding, unusual noises, movements, or deflections of gate hoist operating equipment.

N. Actual hydraulic equipment operating pressure in excess of 125 percent of the normal operating pressure.

O. Erratic movement or unusual sounds such as bumping, jumping, or popping of mechanical equipment and appurtenances.

P. Wire rope lifting cables, chains, etc. having broken, deformed worn or corroded elements.

Q. Frequent power interruptions.

R. Failure of major mechanical or electrical equipment.

APPENDIX A

**MEMORANDUM OF AGREEMENT
BETWEEN
THE UNITED STATES FISH AND WILDLIFE SERVICE
AND
THE DEPARTMENT OF THE ARMY
FOR
ENHANCING FISH AND WILDLIFE RESOURCES
OF THE
UPPER MISSISSIPPI RIVER SYSTEM
AT
CALHOUN POINT COMPLEX
HABITAT REHABILITATION AND ENHANCEMENT PROJECT
JERSEY COUNTY, ILLINOIS**

I. PURPOSE

The purpose of this Memorandum of Agreement (MOA) is to establish the relationships, arrangements, and general procedures under which the U.S. Fish and Wildlife Service (USFWS) and the Department of the Army (DA) will operate in constructing, operating, maintaining, repairing, and rehabilitating the Calhoun Point Complex Habitat Rehabilitation and Enhancement Project (HREP), Illinois, separable element of the Upper Mississippi River System-Environmental Management Program (UMRS-EMP).

II. BACKGROUND

a. The project lands of the Calhoun Point Complex HREP are managed under a cooperative agreement between the Department of the Interior, USFWS, and the U.S. Army Corps of Engineers, dated 14 February 1963. Management of these project lands has been assumed by the Illinois Department of Natural Resources (IDNR) under a cooperative agreement between the USFWS and the IDNR.

b. Section 1103 of the Water Resources Development Act (WRDA) of 1986, Public Law 99-662, authorizes construction of measures for the purpose of enhancing fish and wildlife resources in the Upper Mississippi River System. Under conditions of Section 906(e) of WRDA 1986, Public Law 99-662, all construction costs of those fish and wildlife features for the Calhoun Point Complex HREP are 100 percent Federal, and pursuant to Section 107(b) of WRDA 1992, Public Law 102-580, all costs of operation and maintenance for the Calhoun Point Complex HREP are 100 percent non-federal.

III. GENERAL SCOPE

The project to be accomplished pursuant to this MOA shall consist of complex wetlands managed primarily for migratory waterfowl habitat. Moist soil and aquatic vegetation management techniques shall be employed by manipulating water levels of the five wetland units in the complex.

IV. RESPONSIBILITIES

a. DA is responsible for:

1. Construction. Constructing a low sediment deflection levee 5.5 miles long paralleling the Illinois River shoreline and the perimeter of the Calhoun Point waterfowl management area, constructing seven low-level interior levees around the perimeters of the four main wetland compartments, installing sluice gates and stoplog structures, and constructing a reversible pumping system.

2. Major Rehabilitation. The Federal share of any mutually agreed upon rehabilitation of the project that exceeds the annual operation and maintenance requirements identified in the Definite Project Report and that is needed as a result of specific storm or flood events.

3. Construction Management. Subject to and using funds appropriated by the Congress of the United States, and in accordance with Section 906(e) of the WRDA 1986, Public Law 99-662, DA will construct the Habitat Rehabilitation and Enhancement Project of the Calhoun Point Complex, Illinois, as described in the UMRS-EMP Definite Project Report with Integrated Environmental Assessment dated January 1992, applying those procedures usually followed or applied in Federal projects, pursuant to Federal laws, regulations, and policies. The USFWS will be afforded the opportunity to review and comment on all modifications and change orders prior to the issuance to the contractor of a Notice to Proceed. If DA encounters potential delays related to construction of the project, DA will promptly notify USFWS of such delays.

4. Maintenance of Records. The DA will keep books, records, documents, and other evidence pertaining to costs and expenses incurred in connection with construction of the project to the extent and in such detail as will properly reflect total costs. The DA shall maintain such books, records, documents, and other evidence for a minimum of three years after completion of construction of the project and resolution of all relevant claims arising therefrom, and shall make available at its offices, at reasonable times, such books, records, documents, and other evidence for inspection and audit by authorized representatives of the USFWS.

b. USFWS Responsibilities. Upon completion of construction as determined by the District Engineer, St. Louis, the USFWS shall accept the Project as part of the Mark Twain National Wildlife Refuge of the Calhoun Point Complex HREP, Illinois.

c. Non-Federal Responsibilities. In accordance with Section 107(b) of WRDA 1992, Public Law 102-580, 100 percent of all costs associated with the operation, maintenance, and repair of the Calhoun Point Complex HREP, Illinois, will be borne by the USFWS and IDNR.

V. MODIFICATION AND TERMINATION

This MOA may be modified or terminated at any time by mutual agreement of the parties. Any such modification or termination must be in writing. Unless otherwise modified or terminated, this MOA shall remain in effect for a period of no more than 50 years after initiation of construction of the project.

VI. REPRESENTATIVES

The following individuals or their designated representatives shall have authority to act under this MOA for their respective parties:

USFWS: Regional Director
 U.S. Fish and Wildlife Service
 Federal Building, 1 Federal Drive
 Fort Snelling, MN 55111-4056

DA: District Engineer
 U.S. Army Engineer District, St. Louis
 1222 Spruce Street
 St. Louis, MO 63103-2833

VII. EFFECTIVE DATE OF MOA

This MOA shall become effective when signed by the appropriate representatives of both parties.

DEPARTMENT OF THE ARMY

U.S. FISH AND WILDLIFE SERVICE

BY: _____
C. KEVIN WILLIAMS
Colonel, U.S. Army
District Engineer

BY: _____
ROBYN THORSON
Regional Director
U.S. Fish and Wildlife Service

DATE: _____

DATE: _____

**APPENDIX B
GENERAL PROJECT DRAWINGS**

Note: The following drawings are of principle interest for OMRR&R purposes. Complete "As-Advertised" drawings and complete "As-Built" drawing files are located on the CD furnished as part of this manual. Hard copies of the drawings are not provided but may be printed from the CD.

CALHOUN POINT REHABILITATION - PHASE I	
SHEET	TITLE
G1	PROJECT LOCATION AND VICINITY MAP
G2	DRAWING INDEX, NOTES AND LEGEND
C1 – C13	EXTERIOR BERM ALIGNMENT PLAN AND PROFILE
C14 – C15	INTERIOR BERM ALIGNMENT PLAN AND PROFILE
C16	SITE 4 APPROACH CHANNEL ALIGNMENT PLAN AND PROFILE
C17	BORROW AREA
C18 – C20	DREDGED MATERIAL PLACEMENT
C21	SITE 5 PLAN AND DETAILS
C22	SITE 8 AND ACCESS ROAD ALIGNMENT PLAN PROFILE
C23 – C24	POHLMAN SLOUGH DREDGING PLAN AND PROFILE
C25	POHLMAN SLOUGH DREDGING HORIZONTAL CONTROL POINTS
C26 – C27	TYPICAL SECTIONS
C28	CROSS-SECTIONS AT CULVERTS
C29	CLEARING
S1	GENERAL STRUCTURAL NOTES
S2	PLAN, SECTIONS AND DETAILS SITE 4
S3	GATEWELL STRUCTURE DETAILS SITE 4
S4	PLAN, SECTION AND DETAILS SITE 9 AND 10
S5	DREDGE MATERIAL CONTAINMENT SITE DETAILS
S6	PUMP RAMP DETAILS
S7	MISCELLANEOUS DETAILS
F1 – F5	BORING LOGS
H1 – H2	STAGE HYDROGRAPH GRAFTON, ILLINOIS

CALHOUN POINT REHABILITATION - PHASE II	
SHEET	TITLE
G- 1	VICINITY MAP
G- 2	SWAN LAKE AND CALHOUN POINT PROJECT LOCATIONS
G- 3	ABBREVIATION LIST, LEGEND AND DRAWING INDEX
C- 9	SITE 1 APPROACH CHANNEL PLAN AND PROFILE 600+00 TO 616+72
C- 10	SITE 2 APPROACH CHANNEL PLAN AND PROFILE 600+00 TO 616+72
C- 11	SITE 7 APPROACH CHANNEL PLAN AND PROFILE 600+00 TO 616+72
C- 12	SITE 1 SITE PLAN
C- 13	SITE 2 SITE PLAN
C- 14	SITE 3 SITE PLAN
C- 15	SITE 6 ACCESS ROAD PLAN AND PROFILE 200+89 TO 209+36.22
C- 16	SITE 6 SITE PLAN
C- 17	SITE 7 PLAN AND PROFILE 698+51 TO 701+90
C- 18	SITE 11 PLAN AND PROFILE 948+40 TO 950+37
C- 20	BOAT RAMP ACCESS ROAD
C- 24	SITE 1 APPROACH CHANNEL SOUTH EXCAVATION DISPOSAL AREA
C- 27	CULVERT CROSS-SECTIONS SHEET 1
C- 28	CULVERT CROSS-SECTIONS SHEET 2
C- 29	CULVERT CROSS-SECTIONS SHEET 3
C- 30	CULVERT CROSS-SECTIONS SHEET 4
C- 31	CULVERT CROSS-SECTIONS SHEET 5
C- 40	TYPICAL SECTIONS SHEET 1
C- 41	TYPICAL SECTIONS SHEET 2
C- 42	TYPICAL SECTIONS SHEET 3
C- 43	TYPICAL SECTIONS SHEET 4
C- 44	TYPICAL SECTIONS SHEET 5
S- 1	GEN. STRUCTURAL NOTES
S- 2	MISCELLANEOUS DETAILS
S- 11	SITE 1 PLAN AND ELEVATION
S- 12	SITE 1 ENLARGED BRIDGE PLAN
S- 13	SITE 1 STOPLOG STRUCTURE DETAILS
S- 14	SITE 1 BRIDGE ABUTMENT PLANS AND DETAILS
S- 15	SITE 1 STOPLOG SUPPORT STRUCTURE DETAILS
S- 16	SITE 1 GATE SUPPORT DETAILS
S- 21	SITE 2 SITE PLAN
S- 22	SITE 2 WALL SECTIONS
S- 23	SITE 2 SECTIONS AND DETAILS
S- 24	SITE 2 BOX CULVERT AND HEADWALL PLAN
S- 25	SITE 2 HEADWALL DETAILS

CALHOUN POINT REHABILITATION - PHASE II	
SHEET	TITLE
S- 31	SITE 3 PLAN
S- 32	SITE 3 SECTIONS-SHEET 1
S- 41	SITE 6 PLAN AND ELEVATION
S- 42	SITE 6 PEDESTRIAN BRIDGE PLAN AND DETAILS
S- 43	SITE 6 ABUTMENT AND SILL BEAM DETAILS
S- 44	SITE 6 STRUCTURAL STEEL DETAILS
S- 45	SITE 6 SHEET PILE WALL LAYOUT AND DETAILS
S- 46	SITE 6 SHEET PILE DETAILS
S- 47	SITE 6 GATEWELL STRUCTURE PLANS
S- 48	SITE 6 GATEWELL STRUCTURE DETAILS
S- 51	SITE 7 PLAN AND ELEVATION
S- 52	SITE 7 ENLARGED BRIDGE PLAN AND STOPLOG STRUCTURE DETAILS
S- 53	SITE 7 BRIDGE ABUTMENT PLANS AND DETAILS
S- 54	SITE 7 STOPLOG SUPPORT STRUCTURE DETAILS
S- 61	SITE 11 PLAN AND ELEVATION
S- 62	SITE 11 PEDESTRIAN BRIDGE PLAN AND DETAILS
S- 63	SITE 11 ABUTMENT AND SILL BEAM DETAILS
S- 64	SITE 11 STRUCTURAL STEEL DETAILS
S- 65	SITE 11 SHEET PILE WALL LAYOUT AND DETAILS
S- 66	SITE 11 SHEET PILE DETAILS
S- 81	VEHICLE BRIDGE STANDARD GUARD RAIL DETAILS
S- 82	MISCELLANEOUS GUARD RAIL AND HANDRAIL DETAILS
S- 84	STOPLOG LIFTER ASSEMBLY & STOPLOG DETAILS FOR SITE 1, 6, 7, & 11
S- 85	STANDARD DETAILS SHEET 1
S- 85A	STANDARD DETAILS SHEET 2
S- 86	STANDARD DETAILS SHEET 3
S- 87	STANDARD DETAILS SHEET 4
S- 80	SITE 1 AND 7 VEHICLE BRIDGE DECK SLAB DETAILS
S- 89	SITE 6 AND 7 PEDESTRIAN BRIDGE HOLLOW CORE SLAB DETAILS
S- 90	SITE 12 PUMP RAMP DETAILS
S- 91	MISCELLANEOUS DETAILS
M- 21	SITE 2 PUMP STATION DETAILS
M- 31	SITE 3 PUMP STATION DETAILS
F- 1	SOIL AND ROCK LEGEND
F- 2 - 6	BORING LOGS
H- 1 -2	GRAFTON, ILLINOIS STAGE HYDROGRAPHS

APPENDIX C
PROJECT INSPECTION CHECKLISTS

DATE _____ TIME _____
 ANNUAL _ FLOOD EVENT _

EMP - HREP OMR&R INSPECTION

PG ____ OF ____

CALHOUN POINT SITE _____		PUMPING PLANTS												ESTIMATED COSTS (\$000'S)				
PROJECT FEATURE	LOCATION	PUMPS		POWER			LUBRICANTS		CONTROL SYSTEMS			PIPES / GATES			SUMPS	ANNUAL MAINT	MAINT TO SAT COND	RY / R TO SAT COND
		MOTORS	ENGINES	DIESEL	ELECTRIC	PORTABLE	OIL	OTHER	SWITCHGEAR	MOTOR	ENGINES	EMBEDDED METALS	TRASH RACKS	GATES				

REMARKS: _____ IMAGES: _____

PERSONNEL ATTENDING: _____ INSPECTOR: _____

APPENDIX D
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

FINDING OF NO SIGNIFICANT IMPACT

UPPER MISSISSIPPI RIVER SYSTEM ENVIRONMENTAL MANAGEMENT PROGRAM

CALHOUN POINT HABITAT REHABILITATION AND ENHANCEMENT PROJECT
POOL 26, ILLINOIS RIVER, CALHOUN COUNTY, ILLINOIS

(1) I have reviewed and evaluated the documents concerning the proposed rehabilitation and enhancement of Calhoun Point.

The purpose of the project is to rehabilitate and enhance wetland habitat at Calhoun Point for both migratory waterfowl and fish. This is to be done by reducing sediment deposition from river flooding, by controlling interior water levels, by shoreline woody vegetation control and by forest management. The project would be funded under the provisions of Public Law 99-662.

(2) Prior to my decision, I evaluated other pertinent data and information which addresses the various practicable alternatives. As part of that evaluation, I considered:

- a. the "No Action" alternative,
- b. the proposed or recommended plan, referred to as the "Wetlands Protection" alternative, and
- c. various alternative component features leading to the recommended plan (e.g., various dike and levee heights and alignments, various water control structures, etc.).

(3) These alternatives have been studied, and major findings of this investigation include the following:

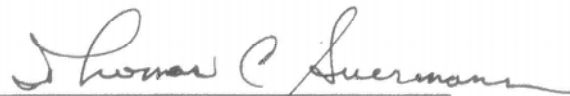
- a. The "No Action" alternative was evaluated but subsequently rejected. This alternative would do nothing to address study objectives relating to the habitat restoration goals of improved: wetlands habitat diversity, dabbling duck feeding habitat, wood duck brood rearing habitat, goose field habitat, and forested habitat improvement.
- b. The "Wetlands Protection" alternative was found to be fully responsive to the project objectives, and was designated as the Selected Plan. Most importantly, it would greatly reduce the sedimentation rate, it would restore (in varying degrees) fish access to the interior, and it would provide deep water overwintering habitat for fish. It would increase the protection of moist-soil plants during the summer growing season from damaging flood waters, it would expand moist-soil areas via shoreline woody vegetation removal, and it would allow for independent water control of the moist-soil management units. It would improve forest habitat by providing mast-tree plantings. It would help prevent slough dry out conditions in spring to improve wood duck brood rearing habitat, it would make available invertebrates as a food source to migrating waterfowl during the fall, it would make shallow water available for residual crops at the goose field area. Specific options considered in detail included: selective deepwater dredging, riverside dike/levee, meander scar improvements, water control structures, clearing of woody vegetation, interior pumps, and forest management plan.

(4) The possible consequences of the recommended plan have been studied for physical, environmental, cultural, social and economic effects. Major conclusions of this study are as follows:

- a. The construction of the project represents a permanent change in the topographic and hydrographic conditions of the Calhoun Point area. These changes are necessary for water and sediment control.
- b. The project is in compliance with the requirements of the Clean Water Act Section 404(b)(1) guidelines. State water quality certification under Section 401 has been issued with special conditions. The proposed project would likely have minimal adverse impacts on water quality.
- c. No project effects are expected on upstream river elevations during floods. No impacts are expected to occur to nearby Grafton, Il. Any project induced bank erosion is expected to be minimal.
- d. There would be a major benefit to waterfowl and fishes. The project would result in an estimated net gain of +546 wildlife average annual habitat units (AAHUs) and +129 AAHU's for fish. To make these wetland benefits possible, a total of 51 acres of forested wetland would have to be cleared as part of project construction. This loss will be more than offset by the effects of the forest habitat management plan that calls for mast-tree plantings on 230 acres of the site.
- e. A professional archaeologist would monitor construction activities for the presence of archaeological remains. If such remains are found, construction will be postponed until an archaeological investigation is conducted.
- f. Fishing and hunting at Calhoun Point are expected to improve as a result of project habitat improvements.
- g. It is anticipated that the proposed action will have little or no adverse impact on air quality, noise, socioeconomic resources and aesthetics.
- h. A loss of 78 acres of prime farmland will occur as a result of the project.
- i. No Federally listed endangered species will be adversely affected by the proposed action.

(5) Based on my analysis and evaluation of the alternative courses of action presented in the Environmental Assessment, I have determined that the restoration of Calhoun Point will not have significant adverse effects on the human environment, but will have important beneficial effects on specific fish and wildlife resources. Therefore, no Environmental Impact Statement will be prepared prior to proceeding with this action.

September 14, 1995
Date


Thomas Suermann
Colonel, U.S. Army
District Engineer

APPENDIX E ACRONYMS

CMP - Corrugated Metal Pipe

DA - Department of the Army

DPR - Definite Project Report

FONSI - Finding of No Significant Impact

GP - General Plan

HREP – Habitat Rehabilitation and Enhancement Project

IDNR - Illinois Department of Natural Resources

MOA - Memorandum of Agreement

NEPA - National Environmental Policy Act

NGVD - National Geodetical Vertical Datum

OEM - Original Equipment Manufacturer

UMRS-EMP - Upper Mississippi River System – Environmental Management Plan

USACE - United States Army Corps of Engineers

USFWS - United States Fish and Wildlife Service

WMU - Water Management Unit

WRDA - Water Resources Development Act