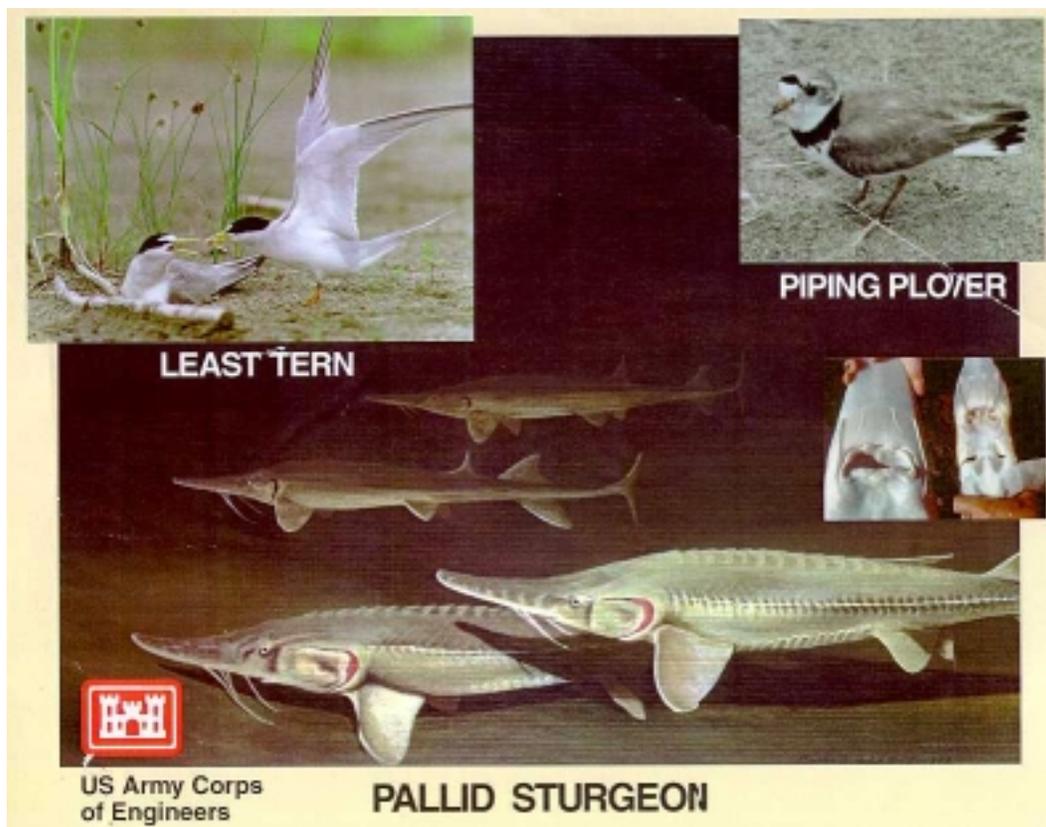




**DRAFT IMPLEMENTATION PLAN
FOR THE
FINAL BIOLOGICAL OPINION ON
OPERATION OF THE MISSOURI RIVER MAIN STEM
RESERVOIR SYSTEM, OPERATION & MAINTENANCE OF THE
MISSOURI RIVER BANK STABILIZATION & NAVIGATION
PROJECT, & OPERATION OF THE KANSAS RIVER RESERVOIR
SYSTEM**



**PREPARED BY:
U. S. ARMY CORPS OF ENGINEERS
Northwestern Division**

December 2000

D r a f t
MISSOURI RIVER BIOLOGICAL OPINION
BASIC PLAN OF IMPLEMENTATION
December 2000

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INTRODUCTION AND PURPOSE OF BASIC PLAN

The Corps of Engineers (COE) is required by the Endangered Species Act to ensure that any actions carried out by them do not jeopardize the continued existence of any endangered or threatened species. This plan begins to address how the COE will insure its actions regarding the operation of the Missouri River Main Stem Reservoirs System, its operations of the Kansas River Tributary Reservoirs, and its operation and maintenance of the Missouri River Bank Stabilization and Navigation Project do not cause jeopardy. The three projects are collectively known as the Missouri River Projects.

The COE has formally consulted with the US Fish and Wildlife Service (FWS) on this requirement, and the FWS has rendered its biological opinion on what alternative and measures are likely necessary for non-jeopardy. The Corps is required to carefully consider the FWS suggested alternative and measures to protect and conserve the species. This plan begins an open process of careful consideration of the FWS biological opinion.

The specific biological opinion addressed by this plan is the one referred to as the Final Missouri River Biological Opinion, dated November 30, 2000. The specific species addressed in that opinion are the endangered least tern, the threatened piping plover, the endangered pallid sturgeon, and the threatened bald eagle.

The outline of this plan is primarily that of the FWS recommended reasonable and prudent alternative elements, and species specific measures to prevent take/harm presented in its biological opinion. This plan has been outlined to also include: a basic plan for tribal consultations and a basic plan for coordination with the Missouri River basin stakeholders. Potential partnering in the region with other entities is also discussed.

Each basic element and measure that has been recommended by the FWS is summarized, followed by a COE commitment to implement the recommendation, or implement with modification, in some cases. Discretionary conservation measures are not specifically discussed. Any discretionary conservation measures that end up being accomplished in any given year will be identified in the COE's end of the year annual report.

This basic plan of implementation will be updated and revised as necessary. Detailed annual work plans and budgets for each major measure will also be developed as ongoing work.

Table 24 from the Missouri River Biological Opinion has been appended [Appendix A] to aid in the understanding of this document.

ADAPTIVE MANAGEMENT ELEMENT

The FWS has recommended that the COE utilize adaptive management as a tool to preclude jeopardy to least terns, piping plovers, and pallid sturgeon. Adaptive management is a process that allows regular modification of management actions in response to new information, and to changing environmental conditions. The complexity of the Missouri River ecosystem underscores the need for such an approach.

The adaptive management framework is a particularly effective way to address the unknowns about the lifecycles, behaviors, and habitat requirements of the listed species under consideration. Adaptive management also enables taking maximum advantage of the inherent variability of precipitation and runoff within the river system.

Specific FWS recommendations incorporating the adaptive management approach are:

1. Establish an Agency Coordination Team [ACT] that will guide development and implementation of river management measures to benefit listed species. Meet every March to develop a river management plan for the upcoming months based on river conditions, climate forecasts, and progress over the previous years. Meet every October to evaluate information on river operations conducted that year and the species' responses.
2. Develop, in cooperation with the FWS, a comprehensive threatened and endangered species monitoring plan that will assess the biological value of changes to river operations and maintenance, and to habitat restoration projects.
3. Provide an annual report that documents the results of monitoring; and that documents the results of implementation of the reasonable and prudent alternative, the measures to minimize take, and the conservation recommendations.

The COE commits to the immediate establishment of an appropriate Agency Coordination Team that will meet every March and October in order to allow any necessary modification of management actions in response to changing conditions and new information. The ACT will also meet at other times, as determined necessary, to discuss matters of interest to both agencies as well as to discuss matters of major concern to other basin stakeholders.

The COE commits to the development of a monitoring plan within one year that assesses biological responses resulting from our future changes to river operations and maintenance, and to habitat restoration projects.

The COE commits to providing an annual report at the end of each calendar year that documents its implementation actions and progress.

FLOW MODIFICATION ELEMENT

Fort Peck Dam. In the 200-mile reach of the Missouri River below Fort Peck, the FWS has recommended increased spring flows and increased water temperatures during the open water period, on average, once every 3 years. The FWS believes such action would increase the overall quality and quantity of riverine habitat, provide spawning cues, and improve recruitment success for pallid sturgeon and other native river fish species. Due to questions regarding the integrity of the Fort Peck spillway, and the uncertainty of achieving increased temperatures in this manner, test flows in 2001 and 2002 are recognized as necessary. Also, an evaluation of the response of pallid sturgeon to the modified flows is identified as needed. The FWS also stated that the Corps include flow enhancement releases out of Ft. Peck Reservoir in 2003.

The COE commits to Fort Peck spring rise tests over the next 2 years or the first 2 years reservoir elevation and runoff criteria can be met. The Corps anticipates the next "high flow" year will be 2005, 3 years after the full test. The COE also commits to the monitoring and evaluation of those tests, as well as monitoring and evaluation of spring rises below the mouth of the Platte River in order to add to the body of scientific information. This information will assist the COE and FWS in developing a more meaningful approach to pallid sturgeon conservation.

Garrison Dam. The FWS also recommended that flow modification at Garrison Dam be investigated and implemented, if appropriate.

The COE commits to investigating flow modification at Garrison Dam in the annual planning process for the Annual Operating Plan.

Gavins Point Dam. The FWS has recommended an ecologically improved hydrograph downstream of Gavins Point Dam to restore and maintain sandbars and shallow water habitat, to trigger native fish spawning activity, and to inundate habitats used as spawning, nursery, or production and foraging areas. Spring and summer flow management is identified as an essential component. A flow scenario involving a spring rise on average once every 3 years, and summer low flows every year is identified as an initial starting point, subject to review and modification through the adaptive management process.

Flow modifications are recommended for implementation no later than 2003, provided system storage and runoff are adequate. Prior to 2003 and whenever recommended flow modifications are infeasible, the FWS recommends expedited implementation of some other modified flow, along with expedited implementation of other elements of the reasonable and prudent alternative.

The COE believes flow modifications below Gavins Point Dam must be coupled with physical habitat changes through mechanical or other means. The prescribed spring

rise would not change existing hydraulic forces associated with sandbar creation, and it would not appreciably increase floodplain connectivity for pallid sturgeon. The Corps is in agreement with the FWS on the biological goals and attributes necessary below Gavins Point Dam. The Corps proposes to investigate and quantify the biological benefits accrued from various flow scenarios prior to establishing a final range of flow recommendations. These various flow scenarios will be examined in the revised draft Master Manual Review and Update EIS. The final range of flow recommendations will be a result of the adaptive management approach.

In its biological opinion, the FWS states that it believes the Corps should initially implement a spring release from Gavins Point Dam. It identifies a release of 17.5 kcfs above full service navigation level and within a range of 15-20 kcfs. The release is to average once every 3 years, as runoff conditions permit (roughly 33 percent of the years). Those flows shall occur for 30 consecutive days between May 1 and June 15, ramping up at the beginning of the period and down at the end of 2 weeks to full service navigation levels. Summer flows shall be decreased annually stair-stepping down from base current flows to a release of 25 kcfs by June 21, and held at 25 kcfs until July 15. On July 15, the flows shall be stair-stepped down to a flow of 21 kcfs until August 15. Following August 15, releases shall be increased to 25 kcfs until September 1, when the release shall be adjusted to provide full service navigation.

Concerns have been expressed by downstream interests regarding the potential for flooding, interior drainage, and groundwater problems with the high spring release above that required for full service navigation. Also, the low summer release is below that necessary to serve navigation in many years on even part of the river. Recreational boating could also be adversely affected in many years. The water control plan selected at this time will serve primarily as a starting point as the plan may change through adaptive management with time. The Corps commits to examine a range of releases in the spring and summer from Gavins Point Dam coupled with various habitat restoration/creation levels in the proposed Implementation Plan. It's goal shall be to identify alternative flow/habitat combinations that meet the attributes discussed in the Final Missouri River Biological Opinion, while minimizing negative impacts to other project purposes.

These flow/habitat options for the spring and summer timeframes will be examined and shared with Basin interests, including the Tribes, MRBA, and the Missouri River Natural Resources Committee. Consultation with the Tribes and extensive coordination with Basin stakeholders will take place after the release of this Draft Implementation Plan to get feedback on the alternatives. The MRBA has indicated that it would like to facilitate a consensus-building effort for the Gavins Point releases. The Corps will participate in the effort and any others leading up to the Corps proposed Implementation Plan.

In recognition of the needs of pallid sturgeon in the river segments below Gavins Point Dam, the COE commits to aggressively pursuing pallid sturgeon habitat development, as discussed in the Habitat Restoration/Creation/Acquisition Plan Element.

It should be mentioned that fledge ratios for terns and plovers have been met below Gavins Point Dam for three consecutive years, and will likely be met again in 2001 given the fact that there is still an abundance of suitable nesting habitat.

NEPA Compliance. The COE will conduct the required NEPA compliance for any flow modification. The COE anticipates being able to adequately address the Fort Peck spring rise tests with environmental assessments.

Long-term alternative flow modifications from Gavins Point Dam, and potentially from Fort Peck Dam, will be addressed in the Master Manual Review and Update EIS because of the regional debate and controversy surrounding this matter. The COE will describe and evaluate alternative flow/habitat combinations in the Master Manual Review and Update EIS. The EIS will identify a preferred alternative that in combination with the other actions committed to in this document, would avoid jeopardy to listed species.

UNBALANCED SYSTEM REGULATION ELEMENT

The FWS has recommended implementation of an unbalanced system regulation on the upper three main stem reservoirs, as described in the Corps' Preliminary Revised Master Manual Draft EIS released in 1988, beginning in 2001 if water conditions are suitable. This unbalancing consists of lowering the storage in one lake approximately 3 feet lower than 'normal'; holding the level constantly low in the second lake [drawn down the year before], and raising the level in the third lake [held constantly lower the year before] by approximately 3 feet to inundate vegetative growth. This three-lake cycle would rotate among the lakes on a 3-year cycle. The FWS recognizes that implementation is dependent on the storage in the lakes and projected runoff conditions.

The FWS believes such operation would improve reservoir young-of-year fish production and survival, and increase habitat and productivity of threatened and endangered species. The FWS recommends that this element be coordinated with the FWS, the MRNRC, and the upper three basin states' game and fish departments.

The COE commits to implementation of this element, dependent on the storage in the lakes and projected runoff conditions. This element has been included in the Draft 2000-2001 Annual Operating Plan, and will be coordinated with all interested entities through the AOP planning process. The Master Manual Review and Update EIS will also address this element.

HABITAT RESTORATION / CREATION / ACQUISITION ELEMENT

The FWS has recommended the COE use its existing authorities to restore Missouri River habitats. It has also recommended the COE pursue any additional authorizations, appropriations, or partnerships it believes necessary to implement habitat restoration / creation / acquisition.

The FWS believes habitat restoration needs in the Missouri River are multi-faceted, involving a combination of reservoir operational changes, structural modifications, and non-structural actions. The FWS believes maximum benefits of any physical habitat projects can only be realized when coupled with complimentary hydrology.

Shallow Water Habitat. The FWS believes that restoration of 19,565 acres of shallow water habitat in the channelized Missouri River is reasonable and prudent. A habitat goal of 20 to 30 acres/mile for the channelized Missouri River and lower Kansas River is suggested. Restoration through flow management, channel widening, chute and side channel restoration, manipulation of summer flows, or combinations thereof, is suggested. The FWS has recommended performance standards beginning with the development of plans and strategies in 2001, restoration of 2,000 acres by 2005, and restoration of 19,565 acres by 2020.

The COE commits to creating shallow water habitat, and commits to pursuing the habitat goal to the extent existing and additional authorities and appropriations allow. The development of strategies has already been initiated. The near-term goal being pursued is 1,700 – 2,000 acres of shallow, slow water habitat in the 2001-2004 time frame.

In fiscal years 2001 and 2002, notching or deferred maintenance of up to 200 structures will be planned; additional operations and maintenance funding will be sought to accelerate the design and modification of additional structures; modification of existing mitigation property banklines will be pursued; and priority funding will be sought to expedite planning, design, and construction of Missouri River environmental restoration projects that provide shallow water habitat.

In order to accomplish the near-term goal of 2,000 acres by 2004; however, special appropriations such as for an expanded Missouri River mitigation program is going to be necessary.

Emergent Sandbar Habitat. The FWS has recommended that natural nesting sandbar habitat be provided in complexes of various sizes through flow regulation or other means, and be available to nesting birds at least one out of three years in the upper basin above Ponca, Nebraska. Maintenance and enhancement of reservoir tern and plover habitat has also been recommended. River habitat goals would be waived when the Agency Coordination Team recommends high flow releases for habitat creation.

The FWS also recommended that if sufficient habitat is not provided by the above means, then other means be implemented such as replenishment of sandbars, creation of habitat in reservoir depositional zones, creation or enhancement of foraging habitat, removal of early successional vegetation, peninsular cutoffs in reservoir side bays, and dike construction to dewater reservoir side bays.

The COE commits to providing, maintaining, and creating tern and plover nesting and foraging habitat to the goals and desirable conditions recommended, as long as appropriations allow for it. The COE also commits to continuing its investigations into the value of reservoir habitats for least terns and piping plovers.

Flow modifications from Gavins Point Dam to support the tern and plover habitat goals will be addressed in the Master Manual EIS, scheduled to be completed in 2002. The COE preferred alternative would be implemented in 2003.

Other. Under this element, the FWS has also recommended

- the development of a study plan of sediment transport/habitat studies by 2002, and initiation of the studies by 2003; and
- periodic mapping of all essential tern and plover nesting habitat on the Missouri River

The COE commits to the mapping of essential tern and plover habitat, and to the sediment studies as long as appropriations allow for it. The COE agrees with the FWS that because of the large sediment deposition zone at the upper end of Lewis and Clark Lake and its proximity to Gavins Point Dam, this area may provide the best opportunity for a pilot study. Smaller scale sediment transport/turbidity studies will be developed and initiated over the next 2 years in the Missouri National Recreational River reach.

NEPA Compliance. NEPA compliance will be accomplished in an ongoing manner. Each habitat project, or complex of habitat projects, will require the formulation of a plan. As the plans are formulated, environmental assessments will be accomplished. This would be in the same manner the COE Ecosystem Restoration Program is implemented now.

If an EIS were needed for a set of projects, then an EIS would be prepared. A supplemental EIS will be needed for any expanded mitigation program for the Bank Stabilization and Navigation Project because extensive amounts of land would be proposed for acquisition, albeit from willing sellers.

Cumulative adverse effects of implementation of this habitat restoration / creation / acquisition element to agricultural and economic development may become a controversial issue. However, these habitat projects actually address the long-term cumulative loss of endangered species habitat from past agricultural and economic development. No special cumulative effects assessment, other than that which would be presented in an expanded mitigation EIS is planned. All environmental assessments will address cumulative effects to the extent justified.

SPECIES SPECIFIC MEASURES TO OFFSET JEOPARDY

The FWS believes the following measures to be necessary to successfully provide reproduction and recruitments of least terns and piping plovers, and to offset jeopardy to these species:

1. Operate Kansas River to provide overall benefit to the conservation of least terns and piping plovers;
2. Meet or exceed fledgling per pair ratio goals of 0.70 for least terns and 1.13 for piping plovers, utilizing a 3-year running average; and
3. Conduct a piping plover foraging ecology study on the Missouri River.

The FWS believes the following measures to be necessary to offset jeopardy to pallid sturgeons:

1. Support, assist, and increase pallid sturgeon propagation and augmentation efforts; and
2. Conduct a pallid sturgeon population assessment that includes habitat parameters.

The COE commits to accomplishing these measures to offset jeopardy to least terns, piping plovers, and pallid sturgeon to the extent appropriations allow. Any change in operation of the Kansas River Tributary Reservoirs project would require a change to its Master Manual, which could possibly require preparation of an EIS.

SPECIES SPECIFIC MEASURES TO MINIMIZE TAKE

Bald eagles. The FWS has determined that Missouri River Project operations will result in incidental take of bald eagles in the form of harm due to loss of nesting habitat and loss of protective habitat during winter. The FWS believes the following reasonable and prudent measures are necessary to minimize take of bald eagles:

1. Map and evaluate cottonwood forests that provide or may provide nesting or wintering habitat within two years, and monitor thereafter;
2. Develop a management plan for cottonwood regeneration within four years; and
3. Where appropriate, implement actions to ensure no more than 10 percent of eagle nesting and wintering habitat are lost.

The COE commits to accomplishing these measures over time as the budget allows. This species is proposed for delisting; therefore, these measures will be given low budget priority. The implementation of these measures in the Missouri National Recreational River reach has been proposed to begin immediately because sufficient funds exist in that program.

If the bald eagle is delisted, then these measures could be pursued under a regional partnership effort with other entities. Corps authorities such as Planning Assistance to States [Section 22 of WRDA 1974] could be used, which would require 50-50 cost sharing.

Least terns and piping plovers. The FWS believes that even with implementation of the elements of the Missouri River Biological Opinion, a minimal amount of incidental take of terns and plovers will occur directly or indirectly as a result of operations and maintenance of the Missouri River Projects. The FWS believes the following reasonable and prudent measures are necessary to minimize take of least terns and piping plovers:

1. Survey and monitor all tern and plover nesting sites on the Missouri River and Kansas River reaches below dams, including appropriate reservoir areas;
2. Compile and evaluate previous operational impacts on the take of terns and plovers and their habitat;
3. Continue evaluation of operational changes to avoid take;
4. Continue Contingency Plan For Protection and Captive Rearing Program;
5. Implement public information and education programs; and
6. Implement aversive actions to reduce predation.

The COE commits to accomplishing these measures to avoid incidental take of least terns and piping plovers, to the extent appropriations allow.

Pallid sturgeon. The FWS anticipates that incidental take of pallid sturgeon will occur as a result of the operations of the Missouri River Projects until such time as the elements of the Missouri River Biological Opinion are fully implemented, as well as for a short period following implementation. The FWS believes the following reasonable and prudent measures are necessary to minimize take of pallid sturgeon:

1. Evaluate and modify operational changes and maintenance activities to avoid take; and
2. Increase awareness of the pallid sturgeon on the Missouri River.

The COE commits to accomplishing these measures to avoid incidental take of pallid sturgeon, to the extent appropriations allow.

TRIBAL CONSULTATIONS

There are 27 Indian Nations within the Missouri River basin, with 11 reservations bordering the Missouri River or the Main Stem Reservoir System. The COE recognizes that Tribal Governments are sovereign entities, with rights to set their own priorities, develop and manage Tribal and Trust resources, and be involved in Federal decisions or activities which have the potential to affect these rights.

Government-to-government consultation with Indian Tribes will be initiated in the near future, and continue throughout implementation of the elements and measures of the Missouri River Biological Opinion over the next 20 years. Consultation will include correspondence, face-to-face meetings, and other forums as necessary.

An initial letter will be sent to Missouri River Basin Tribes initiating consultation and informing them of this basic plan of implementation. The COE will actively solicit any comments any Tribe may have on the draft basic plan.

Face to face meetings with Missouri River Basin Tribes will also be initiated in the near future. We also plan to address future Great Plains Tribal Leaders meetings.

We also plan to contract with the Mni Sose Intertribal Water Rights Coalition, Inc., a coalition of 27 tribes in the Missouri River basin, for its analysis of the impacts of implementation of the biological opinion on tribal trust resources.

Future updates of this basic plan of implementation will summarize the major concerns of the Missouri River Basin Tribes at the time of the update. The COE commits to addressing all of the issues and concerns of Tribes, and will work to resolve issues throughout the implementation process, to the extent COE authorities enable it.

COORDINATION WITH MISSOURI RIVER BASIN STAKEHOLDERS

All interested Missouri River basin stakeholders will be coordinated with throughout implementation of the elements and measures of the biological opinion. Future updates of this basic plan of implementation will summarize any major concerns of Missouri River basin stakeholders at the time of the update. The COE commits to resolving major concerns to the extent its authorities allow it.

An example of how stakeholder coordination will be accomplished is as follows. The Missouri River Basin Association (MRBA) is a coalition of Governor-appointed representatives from each of eight Missouri River basin states, and the Executive Director of the Mni Sose Tribal Water Rights Coalition. The MRBA provides a forum for the discussion of issues such as endangered species recovery and drought flow management. Its stated mission is to coordinate Missouri River planning activities. It works with basin's states, Indian tribes, Federal agencies, river users, and other interests to develop and implement plans to enhance the basin's economic and environmental resources.

The MRBA plans to conduct a basin-wide conference in the near future to gather input on the implementation of the Missouri River Biological Opinion. The COE will consider that input as it progresses into the details of implementation. The COE will specifically meet with the MRBA technical subcommittee on an as-needed basis as it considers the input.

The COE will not just meet with the MRBA, but will meet with any and all stakeholder groups that want to provide input into the implementation plan. Both basic and detailed input will be accepted and considered.

The COE will also welcome partnerships with any entity. The Missouri River Biological Opinion stated that other programs, such as the FWS' Big Muddy National Fish and Wildlife Refuge, the NRCS' Wetland Reserve Programs, and State agency activities could also contribute to habitat restoration goals. The COE is willing to develop partnerships with any other entity in the basin having a goal of restoring least tern, piping plover, and pallid sturgeon habitat. The COE will remain alert for any such partnerships.

APPENDIX A

Table 24 from FWS Missouri River Biological Opinion

(Summary outline of the elements of the suggested reasonable and prudent alternative, measures to minimize take, and conservation measures.)

APPENDIX A

Table 24. Summary of Reasonable and Prudent Alternative, Reasonable and Prudent Measures to Minimize Take, and Conservation Measures

Reasonable and Prudent Alternative	Implementation Objective
<u>Elements Applicable for Multiple Listed Species in Ecosystem</u>	
I. Adaptive Management	
A. Establish an Agency Coordination Team (ACT)	March 2001
1. Coordination Meetings	Twice a year
B. Develop Endangered Species and Habitat Monitoring Plan	Within 1 Year
C. Annual Report	Annually
II. Flow Enhancement	
B. Gavins Point Dam:	
1. Spring Rise: 17.5 Kcfs above full service for 30 days between 1 May – 15 Jun	Once every 3 years/start 2003
Summer Low: flows stepped down to 25 Kcfs by June 21 held until July 15	
July 15 flows stepped down to 21 Kcfs and held until August 15	
August 15 flows stepped up to 25 Kcfs and held until September 1	
A. Fort Peck Dam	
1. Implement mini-test	2001
2. Implement full test. Spring release between May and the end of June with: Range of flows 20 to 30 Kcfs, temperature (18 ▼ C) at Frazer, MT for a minimum of 3 weeks.	2002
3. Implement full enhancement flows, modified based on test	2003, once every 3 years

Reasonable and Prudent Alternative

Implementation Objective

B. Other Segments

Investigate the applicability of flow enhancement at Garrison Dam, implement if applicable 2005

III. Unbalanced Intrasystem Regulation

IV. Habitat Restoration/Creation/Acquisition

C. Restoration of Submerged Shallow Water Habitat (Goal: restoration of 19,565 total acres

1. Ensure no-net-loss of existing shallow water habitat from O&M in lower river.
2. Develop habitat restoration plans and strategies in segments 10 through 16 2001
3. Implement habitat restoration plans and strategies 2002
4. Continue implementation of habitat restoration plans and strategies 2003
5. Reached 8% (1,700 acres) shallow-water habitat goal 2004
6. Reached 10% (2,000 acres) shallow-water habitat goal 2005
7. Reached 30% (5,870 acres) shallow-water habitat goal 2010
8. Reached 60% (11,739 acres) shallow-water habitat goal 2015
9. Reached 100% (19,565 acres) shallow-water habitat goal 2020

A. Restoration of Emergent Sandbar Habitat

1. Provide natural sandbar habitat complexes
 - a. Minimum emergent interchannel sandbar habitat acres per river mile:
 - Garrison (25 acres) Fort Randall (10 acres) L&C Lake (40 acres) Gavins Point (40 acres) 2015
 - Garrison (50 acres) Fort Randall (20 acres) L&C Lake (80 acres) Gavins Point (80 acres) 2015
 - b. Complete 1998 baseline habitat evaluations on Fort Peck River (Segment 2) 2003

<u>Reasonable and Prudent Alternative</u>	<u>Implementation Objective</u>
c. Meet minimum baseline acres on Fort Peck River (Segment 2)	2015
2. Provide reservoir beach and island habitat	2001
a. Maintain reservoir habitats through intrasystem regulation	2001
b. Identify all potential habitat enhancement on reservoir segments (Segments 1, 3, 5)	2005
c. Complete 25% of reservoir projects identified above	2010
d. Complete 50% of reservoir projects identified above	2015
e. Complete 100% of reservoir projects identified above	2020
3. Artificially or Mechanically Created Habitat	
a. Provide created sandbar habitat on Segments 2, 4, 8, 9, 10 to supplement B1 above	Years B (1a), B (1c) are deficient
B. Initiate studies of the lack of sediment transport and impacts on habitat regeneration and turbidity	2003
C. Monitoring of tern and plover nesting habitat	Once every 3 years

Elements Applicable to Specific Species

V. Least Tern and Piping Plover

D. Operate the Kansas River to provide overall benefits to conservation of least terns and piping plovers	2001
1. Develop a study plan	2002
2. Gather data and evaluate whether Kansas River provides source or sink	2005
A. Provide habitat to meet or exceed fledge ratio goals of 0.70 for least terns and 1.13 for piping plovers	2001 (3 year average)
B. Initiate and conduct a piping plover foraging ecology study on the Missouri River	2005

Reasonable and Prudent Alternative

Implementation Objective

VI. Pallid Sturgeon

- | | |
|---|---|
| A. Support, assist, and increase pallid sturgeon propagation and augmentation efforts. | 2001-2011 |
| 1. Collect and spawn female broodstock | 2003 – Evaluation |
| 2. Goal – produce 4,700 juvenile to 1 – year olds (Corps Responsibility 2,491) | |
| 3. Production, rearing and release of juvenile fish | |
| 4. Monitor stocked juvenile pallid sturgeon | |
| 5. Meet annually through ACT | |
| B. Conduct pallid sturgeon population assessment including habitat parameters | |
| 1. Identify the causes for the lack of reproduction and recruitment, causes for hybridization, and identify restoration actions | Begin in 2001 |
| 2. Identify and map spawning habitat | Implement strategy by 2001 to conduct mapping by 2002 |
| 3. Channel training structure maintenance | Coordinate construction activities with the Service and affected State agencies |
| 4. Prioritize research needs | 2000 |

Reasonable and Prudent Measures to Minimize Take

Terms and Conditions

Bald Eagle

- | | |
|--|-------------------------------------|
| Measure 1 Map and evaluate current health of cottonwood forests on Missouri River | Complete within 2 years of final BO |
| a. Identify stands with periodic flooding | |

b. Determine baseline mortality and tree vigor

Monitor every 2 years for first 4 years, then every 5 years after that

Measure 2 Develop management plan for cottonwood regeneration

Complete & implement within 2 years of completion of measure 1 above

Measure 3 Implement actions to ensure no more than 10% eagle habitat is lost

Terns and Plovers

Measure 1 Monitor all tern and plover nesting sites on Missouri and Kansas Rivers

Conduct population surveys and productivity monitoring annually

1. Population survey information

a. Total number of colonies

b. Total number of birds

c. Map nest site locations

Report survey and monitoring information in the Annual Report

2. Monitoring information

a. Total number of nests and nest fates

b. Total number of fledged chicks/pairs and other chick fates

c. Elevation of nests above water level

Reasonable and Prudent Measures to Minimize Take

Terms and Conditions

Measure 2 Compile and evaluate the previous impacts to take from:

1. Daily and hourly release fluctuations below dams
2. Changes in release due to maintenance or other isolated causes
3. Changes in releases to prevent downstream flood impacts

Subject report by Jan 2002 of the impacts to take resulting from historic operational changes (1986-2000). To include protocols to prevent historic cases of take from reoccurring.

Measure 3 The Corps shall continue to evaluate operational changes to avoid take.

Avoid operational caused flood and spiked releases.

Report all documented incidental take immediately to Service.

Coordinate regularly through ACT to ensure proposed operations will avoid take. If take is unavoidable – take shall be consistent with incidental take statement.

The Corps will re-consult with the Service if the Corps develops new operational scenarios not considered during initial consultation.

Reasonable and Prudent Measures to Minimize Take

Terms and Conditions

Measure 4 The Corps shall follow the “Contingency Plan for Protection of Least Tern and Piping Plover Nests and Chicks” and the “Captive Rearing Protocol.”

1. Continue captive-rearing program, coordinate with Service
2. Initiate a peer review on Captive Rearing Protocol
3. Continue research into the effectiveness of the captive rearing program

Any changes to Protocol will be coordinated with and approved by the Service.

Peer review every 5 years start in 2001. Finish the captive reared plover study. Through the adaptive management process, identify if additional research necessary or if captive rearing should continue.

Report all captive rearing activities in the Annual Report.

Measure 5 The Corps shall implement public information and educational programs to increase public awareness and reduce disturbance to nesting sites.

Produce and update public service announcements.

Measure 6 The Corps shall implement aversive action to reduce predation on least tern.

Engage in intensive public relations efforts for tern and plover conservation.

Post all tern and plover nesting areas off limits to human disturbance.

Initiate studies to address cumulative impacts of increased recreational facility expansion.

Apply all available predator management techniques including cages, strobe lights, and trapping.

Reasonable and Prudent Measures to Minimize Take

Terms and Conditions

Pallid Sturgeon

Measure 1 The Corps shall evaluate and modify operational changes and maintenance activities to avoid take.

Avoid operational changes that may affect spawning.

Report all documented incidental take immediately.

Coordinate regularly through ACT to ensure proposed operations will avoid take.

The Corps will re-consult with the Service if the Corps develops new operational scenarios not considered during initial consultation.

Measure 2 The Corps shall increase awareness of the pallid sturgeon on the Missouri River and develop support for recovery and conservation measures.

Produce and distribute public service announcements for use in states bordering the Missouri River.

Project offices shall incorporate pallid sturgeon conservation into public education efforts.

Within 1 year of the final BO, develop and implement an outreach program for pallid sturgeon.

Implement workshops every 3 years starting in 2001 to educate researchers and continue developing of handling protocols.

Conservation Recommendations

Recommendations Applicable to Multiple Species

1. Develop a Recovery and Implementation Program.
2. Document current and future water depletions.

Recommendations Applicable to Specific Species

Bald Eagle

Pursue the recovery tasks assigned in the implementation schedules.

1. Conduct or participate in wintering and nesting bald eagle surveys.
2. Determine population dynamics of wintering and nesting birds.
3. Protect and manage habitat.
4. Conduct public outreach on the value of river habitat to the bald eagle.
5. Protect, maintain, and enhance riparian forest usable by bald eagles through the Section 10/404 permit authorities.

Least Tern and Piping Plover

1. Research connectivity or interchange between Missouri River least terns and least terns' nesting on tributaries and other rivers.
2. Research connectivity or interchange between Missouri River piping plovers and plovers' nesting in the Northern Great Plains.
3. Investigate the response of invertebrate production to operations as it applies to tern and plover survival, growth, and energetics.

4. Modify/eliminate development activities that negatively impact reproductive success or lead to habitat destruction.
5. Assess the feasibility of intensively managing a limited number of tern and plover breeding areas for high reproductive output.
6. Develop a population model of terns and plovers on the Missouri that predicts survival and long-term population trends.

Conservation Recommendations

7. Investigate the role of sandbar complexes to migration, staging, and pre-wintering conditioning of terns and plovers.
8. Work with the Service and other partners to research and examine impacts wintering ground activities have on long-term survival.

Pallid Sturgeon

1. Complete a feasibility study to identify and evaluate the effects of tributary dams and other structures on spawning migrations.
2. Implement basin-wide education and outreach programs for anglers.
3. Assist the Service and States with identifying impacts and extent of commercial harvest in the basin on pallid sturgeon.
4. Provide funding to continue development and conduct sturgeon genetic techniques to ensure genetic variation.
5. Provide funding to conduct Population Viability Analysis to determine appropriate recovery numbers.
6. Evaluate standard recommendations on placement and design of municipal and industrial intakes.
7. Evaluate standard recommendations on practices for channel dredging and sand and gravel mining.
8. Evaluate the cumulative effects of bank stabilization.
9. Evaluate capability and practicality of increasing water temperature in priority reaches during critical periods for native warm-water fish.
10. Participate as a partner in regional pallid sturgeon recovery work groups.
11. Provide funding to develop and validate a sturgeon aging technique.
12. Evaluate effects of severe rapid flow reductions or complete flow reductions on native fish below Ft. Randall Dam.
13. Assist the Service and other partners with fish health issues as they relate to pallid sturgeon.
14. Assist the Service and other partners with cryopreservation banking of pallid sturgeon sperm.