1. INTRODUCTION

1.1 BACKGROUND

The Missouri River Mainstem Reservoir System consists of six dam and reservoir projects (Figure 1.1-1). These projects were constructed and are operated and maintained by the U.S. Army Corps of Engineers (Corps) on the Missouri River for flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife habitat. To achieve these multipurpose benefits, the projects are operated as a hydrologically and electrically integrated system.

The recurrent, devastating flooding of the Missouri River and the 1930 to 1941 drought led to the construction of the dams on the Missouri River. The system of six mainstem dams on the Missouri River began with the construction of Fort Peck Dam in the 1930s. Construction of the dam commenced in 1933 by executive order and under authorization by Congress for relief of unemployment. Construction was completed under authorization by Congress in the River and Harbors Act of 1935. Although the project was originally authorized primarily for navigation and flood control, the Fort Peck Power Act of 1938 authorized construction of hydropower facilities.

Following construction of Fort Peck Dam, additional dams were planned under the Pick-Sloan Plan developed from the combined efforts of the Bureau of Reclamation (BOR) and the Corps. The Pick-Sloan Plan, authorized by the Flood Control Act of 1944, called for Corps construction of five more mainstem dams and many tributary dams in the Missouri River basin. Dams were to be constructed by the BOR and by the Corps. The plan also authorized the multipurpose operation of the Mainstem Reservoir System. The five additional mainstem dams are Garrison, Oahe, Big Bend, Fort Randall, and Gavins Point. The six dams form six major reservoirs on the Missouri River: Fort Peck Lake, Lake Sakakawea, Lake Oahe, Lake Sharpe, Lake Francis Case, and Lewis and Clark Lake.

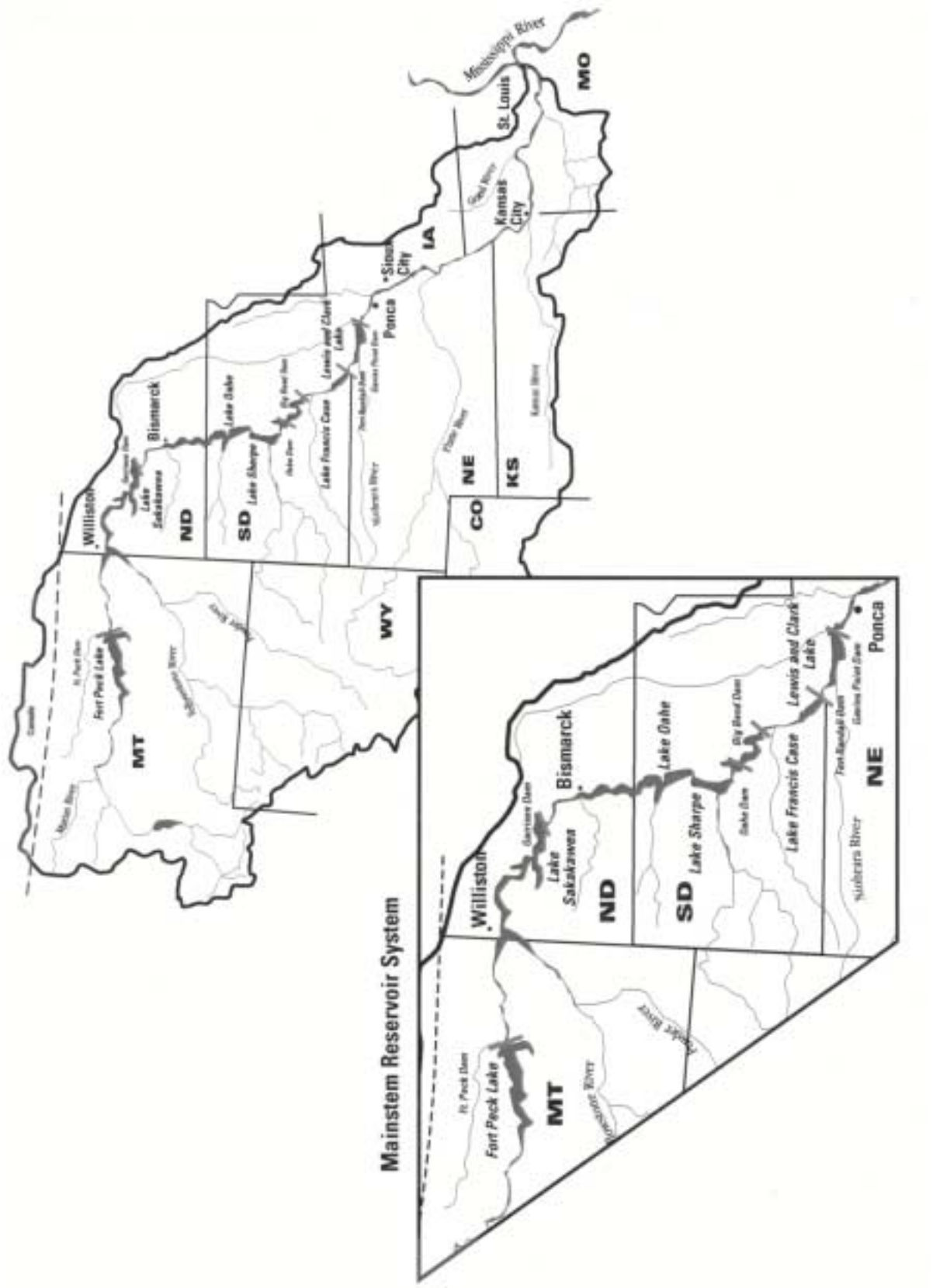
The Corps has also constructed numerous other projects on the Lower River downstream from the Mainstem Reservoir System, including the Missouri River Bank Stabilization and Navigation Project (BSNP) from Sioux City, Iowa, to St. Louis, Missouri. The navigation and bank stabilization projects were authorized under various Congressional acts. The navigation channel in the Lower Missouri River was first authorized as a 6-foot channel from Kansas City, Missouri, to the mouth of the river in the Rivers and Harbors Act of 1912. Several subsequent acts modified the navigation project. The latest modification, the Rivers and Harbors Act of March 1945, authorized construction of a 9-foot-deep by 300-foot-wide channel from Sioux City to the mouth. The release of water from the Mainstem Reservoir System serves the navigation purpose by providing water to the navigation channel at navigation target flow rates. Additional bank stabilization projects were authorized by the Flood Control Acts of 1941, 1946, 1948, 1963, 1968, 1974, and 1978. Further streambank erosion controls were authorized under the Water Resources Development Acts of 1974, 1986, and 1988.

The operation of Corps dam and lake projects, such as the Missouri River Mainstem Reservoir System, are guided by master water control manuals. The Missouri River Master Water Control Manual (Master Manual) records the basic water control plan and objectives for the integrated operation of the mainstem reservoirs. The Master Manual was first published in December 1960 and was later revised in 1973, 1975, and 1979. The first Master Manual and its subsequent versions were developed in consultation with State governments within the Missouri River basin and Federal agencies having related authorities and responsibilities.

1.2 PURPOSE AND NEED

Much has changed since the Mainstem Reservoir System was first authorized, which influenced the Corps' decision in November 1989 to review and update the Master Manual. Development associated with the Mainstem Reservoir System has changed the focus of residents of the Missouri River basin. The use of lake and river water for water supply has increased, as have the awareness and importance of recreation and the environment. Tribal issues and the Corps' awareness of its Tribal trust responsibilities have evolved. Since 1986 two bird species and one fish species have been listed as threatened or endangered under the Endangered Species Act (ESA). Section 7(A)(2) of the ESA states that all Federal agencies shall ensure that any action authorized, funded, or carried out is not likely to jeopardize the survival or recovery of listed species.

Figure 1.1-1. Project area map.



The 1987 to 1993 Missouri River basin drought had significant effects on all project purposes. Recreation around the lake was affected by the largest reduction in lake levels since the lakes were first established at normal operating levels in 1967. Navigation experienced shorter seasons and reduced service due to reduced navigation-designated releases. Lower lake levels caused access problems for water supply intakes. Lower flows in winter accompanied by ice jams caused the shutdown of some city water supply facilities along the river and prompted some water intake owners to modify their intakes. Lower water levels also reduced wetland areas along the river and increased them at lakes.

The drought impacts prompted numerous inquiries from the Tribes, general public, State and Federal agencies, private companies, publicly and privately owned utilities, and Congressional interests regarding the operation of the Mainstem Reservoir System. In response to all of the above issues, the Corps initiated a review of the current Master Manual in November 1989 under the authority of Corps regulations (ER11-2-240a) to determine if the current Water Control Plan (CWCP) best meets the contemporary needs of the Missouri River basin. This review has taken the form of a study called the Missouri River Master Water Control Manual Review and Update (Study).

1.3 HISTORY OF THE STUDY AND NATIONAL ENVIRONMENTAL POLICY ACT PROCESS

The Study includes two phases: Phase 1 focused on a cursory economic evaluation of an array of operating alternatives to the CWCP; Phase 2 consists of technical studies, alternatives development, and economic, environmental, and social impact assessments. Phases 1 and 2 include all environmental studies and public and agency involvement required by the National Environmental Policy Act (NEPA) and other applicable environmental laws.

Phase 2 also includes the preparation of an environmental impact statement (EIS) to document the NEPA process. NEPA requires that a Federal agency prepare an EIS whenever it proposes a Federal action that may significantly affect the quality of the human environment. To ensure an awareness of all environmental effects that may be caused by proposed changes to the Master Manual, NEPA requires that the EIS discuss (1) the environmental impact of the proposed action; (2) any unavoidable adverse environmental effects; (3) alternatives to the proposed action; (4) the relationship between the short-term benefits of the proposed action and the long-term productivity of the environment; and (5) any irreversible and irretrievable commitment of resources caused by the proposed action.

The Corps has followed the Council on Environmental Quality (CEQ) regulations pertaining to NEPA. Scoping meetings were conducted to solicit Tribal, agency, and public input, and issues identified during scoping are addressed in this Revised Draft EIS (RDEIS).

1.3.1 Phase 1 of the Study and NEPA Process

The primary objectives of Phase 1 of the Study were to (1) develop a range of operating alternatives, (2) address basin concerns, (3) complete sufficient preliminary analyses, (4) identify alternatives that merit further study, and (5) identify data gaps and weaknesses in evaluation methodologies. To accomplish these objectives, Phase 1 studies evaluated the CWCP and 22 alternatives. Several of the alternatives evaluated provided additional flood control storage to address flooding problems in the Lower River. Another set of alternatives evaluated the effects of changing permanent pools, seasonal nonnavigation flow criteria, and the navigation service criteria. An existing hydrologic computer model, the Long Range Study (LRS) Model, was updated to analyze alternatives using a monthly time step. An economic model was developed to identify the economic effects of alternatives. Alternatives were characterized in hydrologic and economic terms and, using these models, their performances were compared to that of the CWCP.

A draft Phase 1 report was issued in May 1990, and public meetings were held to identify concerns and issues. The report, which concluded that there was merit in pursuing more detailed studies, recommended a range of alternatives for further study. It identified key economic and environmental resources that may be affected by changes to the CWCP and described methods for determining effects of changes to operation on key resources. Preliminary assessments of the impacts to key resources were presented.

Public meetings were held in June 1990 in Glasgow, Montana; Bismarck, North Dakota; Pierre, South Dakota; Kansas City; and Council Bluffs, Iowa. The meetings were held to obtain comment on the Phase 1 report and additional public input regarding the alternatives that should be evaluated and issues that should be addressed in the Study. A preliminary study plan was developed for Phase 2 based on the comments received (Corps, 1990).

1.3.2 Phase 2 of the Study and NEPA Process

Phase 2 was initiated in July 1990. A study plan was developed to identify the overall process to follow and to outline the technical analyses to be included in this second and more complex phase of the Study. To get Tribal and public feedback on their perceptions of the process and the issues to be addressed in the technical studies, a series of scoping meetings were held in October 1990 at the following locations: Helena and Glasgow, Montana; Bismarck; Pierre; Memphis, Tennessee; St. Louis; Kansas City; and Council Bluffs. The Phase 2 Study plan was modified based on comments made at these meetings.

Phase 2 of the Study includes the following objectives:

- Solicit input from interested parties and determine Tribal and public concerns/issues;
- Identify alternatives to the CWCP;
- Establish a basis for identifying the plan that best meets the wide variety of contemporary needs served by the Mainstem Reservoir System;
- Evaluate social, economic, and environmental impacts of existing and alternative plans;
- Address legal constraints on the selected alternative regarding changes to operations;
- Consult with Native American Tribes on a Government-to-Government level;
- Obtain the input of the basin States' governors and other interested parties;
- Identify the best plan for operating the Mainstem Reservoir System; and
- Expedite the implementation of recommended operational changes, if existing constraints will allow.

The Phase 2 Study plan identified ways to obtain additional data and develop methodologies to define the system operation and economic, social, and environmental impacts of those plans that merited further study. Refinements were made to the LRS Model, which was used to simulate monthly discharges and lake levels resulting from changes in operating criteria. Economic and environmental effects models were developed to predict effects of the various alternatives being considered. Detailed studies of the navigation industry, water supply users, river water quality, recreation, hydropower, socioeconomic system, wetlands, historic properties, and wildlife and fish habitat were conducted. Impacts of those plans on economic, social, and environmental resources that merit further study were estimated. These activities were coordinated with technical subcommittees formed by the Missouri Basin States Association (now the Missouri River Basin Association [MRBA]) and the staffs of other State and Federal resource agencies.

In May 1992, a Scope of EIS document was completed and distributed. This document was a compilation of the issues brought forth in the scoping meetings, as well as numerous other meetings and communications since that time. An Initial Evaluation Report was shared with the MRBA and its technical subcommittees in August 1992 to get feedback on the technical models developed for the Study and to share the results of their application to an initial set of alternatives. Based on feedback, some changes were made to the technical analyses. In May 1993, a Preliminary Draft EIS (PDEIS) was provided to State and Federal agencies and the Tribes for a technical review. This document presented the effects of changing from the CWCP to a set of three plans with varying levels of drought conservation and three plans with varying levels of drought conservation and measures to further benefit the environment. A preferred alternative (PA) was not identified in the PDEIS. Drafts of the series of supporting technical reports were also released for review with the PDEIS. The technical review culminated with an issue review conference that was held in August 1993 to address any remaining key issues prior to completion of the Draft EIS (DEIS). At this meeting, the basin States requested

that the DEIS identify a PA on which to receive feedback from the Tribes and public.

Subsequent to August 1993, revisions to the PDEIS and technical reports were completed and the Draft EIS, which included a PA, was released in August 1994. After release of the DEIS, a 6-month public review and comment period was held. During that public comment period, 24 public workshops and hearings were held throughout the Missouri River basin and in St. Louis, Missouri; Memphis, Tennessee; New Orleans, Louisiana; and Quincy, Illinois. At the completion of the public comment period, all comments were evaluated to determine the scope of studies required to respond to the numerous DEIS comments. As a result of this evaluation, the Corps determined that additional or revised technical analyses were necessary. To fully address some of the comments, the Corps determined that daily flow data would be helpful. Completion of a daily hydrologic model, the Daily Routing Model (DRM), was expedited. Three new analysis models were developed—both interior drainage and groundwater models of representative sites on the Lower River and a hydraulic model of the Mississippi River. Other analyses were updated—Missouri River navigation, flood control, physical habitat for native river fish, and Mississippi River navigation. The completion of these analyses and a reformulation and evaluation of alternatives were to be followed by preparation of a RDEIS.

As the Corps team proceeded with its efforts to prepare the RDEIS, coordination continued with Tribes, MRBA, and other interested parties. These discussions prompted the Corps to consider providing detailed impact data on an array of alternatives and to solicit additional Tribal and public input before selecting a new PA. The Corps, therefore, decided to release and coordinate an additional document that is not described in or required by the NEPA process. A preliminary version of the RDEIS was released to provide an extra vehicle with which to present the public with detailed data on an array of alternatives.

The supporting technical reports on the various studies conducted since the completion of the DEIS were published with the Preliminary RDEIS (PRDEIS). The goal was to facilitate both the Tribes' and the public's understanding of the new and updated technical analyses and data that are presented in the PRDEIS. These documents serve as the supporting technical reports for the RDEIS; however, their circulation preceded the distribution of the complete RDEIS.

The PRDEIS, published in August 1998, identified eight alternatives that represented the full range of interests in the Missouri River basin. A Tribal and public coordination period followed, with 13 informational workshops held within the Missouri River basin and 2 held in the Mississippi River basin. Two of the Missouri River basin workshops were held in Tribal towns. The purpose of the PRDEIS and subsequent coordination period was to maximize the opportunity for agreement on a flow management alternative by the Missouri River basin entities. Subsequent to the PRDEIS, the Corps worked intensely with all Missouri River basin entities in the development of consensus flow management plans and initiated formal Government-to-Government consultation with the 30 Federally recognized Missouri River basin Tribes. Recommendations for flow management alternatives were submitted by the MRBA, American Rivers, the Missouri River Natural Resources Committee (MRNRC), and the Missouri Levee and Drainage District Association (MLDDA). The Mni Sose Intertribal Water Rights Coalition also provided recommendations for further studies. In January 2000 a Corps Northwestern Division (NWD) PA was announced. In March 2000, the U.S. Fish and Wildlife Service (USFWS) indicated that the NWD PA would not preclude jeopardy of listed Missouri River species. At that time, the Corps requested the USFWS move to formal consultation so that the USFWS could identify the components that needed to be added to the CWCP to preclude jeopardy. On April 1, 2000, formal consultation on the current operation of the Missouri River Mainstem Reservoir System, operation and maintenance of the Missouri River Bank Stabilization and Navigation Project, and Kansas River operations was initiated. A Final Biological Opinion (BiOp), issued November 30, 2000, concluded that current operations jeopardize the continued existence of the piping plover, interior least tern, and pallid sturgeon. The BiOp included a Reasonable and Prudent Alternative (RPA) to avoid jeopardy. While both the Final BiOp and the RPA are broader in scope than the Corps' operation of the Mainstem Reservoir System, prescribed changes in the Corps' operation of the Mainstem Reservoir System are a major element of the RPA. NEPA compliance for the Gavins Point Dam and Fort Peck Dam flow

modifications will be accomplished in this NEPA review. Subsequent to receipt of the BiOp, the Corps has struggled to arrive at a plan that meets the following three goals:

1. Serves Congressionally authorized project purposes;
2. Meets the contemporary needs of the Missouri River basin as defined by the basin; and
3. Does not jeopardize the continued existence of threatened or endangered species.

Four alternatives that the Corps believes largely meet the above goals are presented and analyzed in Chapters 6 and 7 of this RDEIS. Following a 6-month public comment period to include public workshops and hearings throughout the Missouri and Mississippi River basins, the Corps intends to publish a Final Environmental Impact Statement (FEIS) with a selected alternative, prepare a Record of Decision (ROD), revise the existing Master Manual, prepare an Annual Operating Plan in accordance with the guidelines established by the revised manual, and implement the flow management plan.

1.4 PUBLIC CONCERNS AND ISSUES

Comments presented during scoping meetings and letters received during the scoping process identified many concerns and issues of the public and the Federal and State resource management agencies. A summary of general public comments and the Corps' responses was presented in a scoping document, entitled "Scope of Environmental Impact Statement" (Corps, 1992), dated May 1992. The following is a list of some of the major concerns and issues identified during scoping.

- Flood control and navigation requirements in the Lower River have caused problems in the Upper River and lakes (e.g., low river flows and lake levels).
- Releases required to meet seasonal, daily, and hourly hydropower demands have affected other beneficial uses.
- Protection against drought is needed for many resources.
- Minimum flows are needed in tail waters below the dams.
- Operations affect marina operation.
- Operations affect channel configuration, which in turn affects navigation, wetlands, fish habitat, bird nesting habitat, and other resources.
- Operations affect shoreline erosion.
- Operations affect local, regional, and National economies (cities, counties, States, and Tribal Reservations).
- Operations affect threatened and endangered fish and wildlife.
- Operations affect public safety (transportation, boating, and flooding).
- Operations affect regional electric power production, especially during peak demand periods.
- Operations affect river icing, which in turn affects water supply, flooding, channel configuration, and fish and wildlife habitat.
- Operations affect water supply (agricultural, municipal, and industrial).
- Operations affect cultural resources.
- Operations affect water quality (pollution dilution, river temperature, and dissolved oxygen).
- Operations affect air quality (shift to steam electric power generation and more land-based transportation).

Comments received during the review period for the DEIS identified the need for additional analysis techniques and re-identification of a PA. The Corps focused on the following impacts and activities in response to the comments received during the DEIS review period:

- Missouri River interior drainage impacts to lands behind levees;
- Missouri River groundwater impacts to riparian lands;
- Development of a daily model for Missouri River hydrology to provide required data for the interior drainage and groundwater analyses;
- Missouri River flood control analysis using updated land use information and the capability to compute damages and benefits (the analysis uses data from the daily flow model for Missouri River hydrology);
- Missouri River sedimentation/erosion cumulative impacts;

- Missouri River navigation analyses of National and regional economic impacts;
- Missouri River navigation viability analysis;
- Missouri River navigation alternative mode pollutant analysis;
- Missouri River native river fish physical habitat analysis;
- Hydrologic effect of Missouri River operations on the Mississippi River based on daily data from the Missouri River;
- National and regional economic impact analyses of Mississippi River navigation; and
- Mississippi River resource reviews to determine if any are potentially affected by Missouri River daily operations using the updated hydrologic data.

Considerable time was spent following the release of the PRDEIS and subsequent workshops to further educate basin entities on the tradeoffs associated with the combinations of the plan components included in the eight representative alternatives. As some of the entities worked to develop their proposals for consideration, they expanded upon the components included in the eight representative alternatives. During this rather intense and lengthy process, no requests were received to modify or develop new models. The jeopardy declaration made by the USFWS in March 2000 prompted the development of additional models to better analyze the Mainstem Reservoir System operational changes that were being proposed by the USFWS for inclusion in its RPA. As other entities became aware that the USFWS was going to issue a BiOp with an RPA that included a spring rise followed by low summer flows downstream of Gavins Point Dam, additional analyses were requested by these entities. The following analyses were performed during and following the preparation of the BiOp:

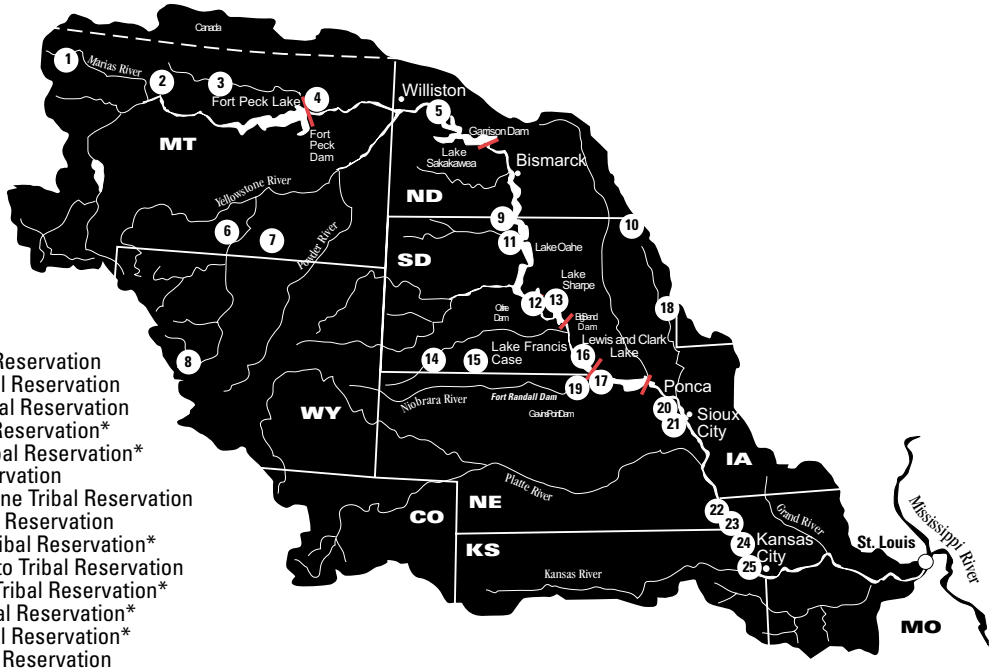
- Connectivity of the Lower River to adjacent low-lying lands;
- Quantification of shallow water habitat along the Lower River;
- Evaluation of the frequency at which potential spawning cues would occur;
- Quantification of potential hydropower revenue losses;
- Effects of hydropower revenue losses on consumer power rates;
- Quantification of the risk of lost power-generating ability for both capacity and energy from hydropower and thermal powerplants;
- Reevaluation of the hydropower benefits;
- Reevaluation of the navigation benefits; and
- Determination of ways to reduce risks of crop damages along the Lower River.

1.5 NATIVE AMERICAN TRIBES AND THE MASTER MANUAL REVISION

There are 30 Native American Tribes located within the Missouri River Basin. Thirteen of the 25 Tribal Reservations shown on Figure 1.5-1 are located directly on the Mainstem Reservoir System and lower 811 miles of the Missouri River, while others are dispersed within tributary stream basins. The U.S. Government has a special and unique relationship with Federally recognized Tribes. This relationship is not only defined by law and regulation, but also is deeply rooted in the Nation's history. Federally recognized Tribes are dependent sovereign nations, and Tribal governments are sovereign entities with rights to set their own laws and priorities, to develop and manage Tribal and trust resources, and to be involved in Federal decisions or activities that have the potential to affect these rights. Federally recognized Tribes have a legal relationship to the United States through treaties, Acts of Congress, executive orders, or other administrative actions that are independent of States. The Tribes, as sovereign Nations, retain inherent powers of self-government.

Accordingly, the Corps acknowledges that the operation and maintenance of the Missouri River can and does significantly affect Tribal trust assets and, therefore, the Corps has a legal and trust responsibility to the Tribes affected. These responsibilities are described in the President's Memorandum on Government-to-Government Relations with Native American Tribal Governments signed on April 29, 1994, and the Department of Defense's American Indian and Alaska Native Policy signed by the Secretary of Defense on October 20, 1998. In no way does this Study attempt to define, regulate, or quantify water rights or any other rights that the Tribes are entitled to by law/treaty, but rather attempts to set up the framework for future relations for protection of Tribal trust resources.

Figure 1.5-1. Tribal Reservations in the Missouri River Basin.



1. Blackfeet Tribal Reservation
2. Rocky Boys Tribal Reservation
3. Fort Belknap Tribal Reservation
4. Fort Peck Tribal Reservation*
5. Fort Berthold Tribal Reservation*
6. Crow Tribal Reservation
7. Northern Cheyenne Tribal Reservation
8. Wind River Tribal Reservation
9. Standing Rock Tribal Reservation*
10. Sisseton-Wahpeto Tribal Reservation
11. Cheyenne River Tribal Reservation*
12. Lower Brule Tribal Reservation*
13. Crow Creek Tribal Reservation*
14. Pine Ridge Tribal Reservation
15. Rosebud Tribal Reservation
16. Yankton Tribal Reservation*
17. Santee Tribal Reservation*
18. Flandreau Tribal Reservation*
19. Ponca Tribal Lands*
20. Winnebago Tribal Reservation*
21. Omaha Tribal Reservation*
22. Iowa Tribal Reservation*
23. Sac and Fox Tribal Reservation*
24. Kickapoo Tribal Reservation
25. Potawatomi Tribal Reservation

***Tribal Reservations located directly on the Mainstem Reservoir System or along the Lower River**

In the course of the Master Manual Review and Update, the Corps has attempted to ensure that it has met its legal and trust responsibilities, both procedurally and substantively. In addition to the basin Tribes' involvement in the Study process, for several years the Corps held numerous informal discussions with the basin Tribes. Following publication of the PRDEIS in 1998 and subsequent Tribal workshops, the Corps accelerated its efforts to fulfill its Tribal responsibilities. In February 1999, the Corps initiated formal consultation with the 30 basin Tribes. A facilitated Tribal Summit was held in Rapid City, South Dakota, to initiate that consultation. Additionally, following the PRDEIS, the Corps worked with the Mni Sose Intertribal Water Rights Coalition toward development of a Tribal alternative. That effort culminated with the submission of recommendations by the Mni Sose Intertribal Water Rights Coalition in March 1999.

At the time this RDEIS was prepared, five basin Tribes had accepted the Corps' offer of Government-to-Government consultation, and initial consultation meetings were held with those Tribes. The Corps continues to offer consultation to all basin Tribes. Consultation with the Tribes relative to the Master Manual revision will continue through the ROD. The Corps' evolving awareness of its Tribal responsibilities is reflected in this RDEIS. In addition to analyzing and summarizing impacts to Tribal resources in the main body of this RDEIS, a separate Tribal appendix (Appendix A) to this document has been prepared. This appendix is intended to centralize Tribal information for easy reference. The appendix addresses several issues that are extremely important to basin Tribes. These issues include Tribal Sovereignty, Treaties, Trust Responsibilities, Water Rights, Cultural Resources, and the Corps' Tribal Policy Principles. Further, the appendix contains the Government-to-Government consultation history, process, and record to date. Finally, in the course of Tribal consultation and discussions, the Corps has recognized its limited ability to accurately capture issues from the Tribal perspective. For this reason, and for easy reference, all correspondence received from basin Tribes throughout the Study has been included in Appendix A.

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