CHAPTER 1

Introduction

1.1 INTRODUCTION

Commercial sand and gravel dredging companies (applicants or Dredgers) have filed applications with the Kansas City and St. Louis Districts of the U.S. Army Corps of Engineers (hereafter referenced collectively as USACE unless indicated) to continue to extract sand and gravel from the Missouri River, a navigable water of the United States. Dredging activities to be conducted under permits issued by the USACE would include dredging of river sediments from the navigable waters of the lower Missouri River (LOMR)[1], extraction of suitable sand and gravel, and return (discharge) of some of the dredged material into the river. These activities are regulated under Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 United States Code [USC] 403). Discharge of dredged material into a navigable water of the United States is also regulated under Section 404 of the Clean Water Act (CWA) (33 USC 1344).

Issuance of a permit by the USACE under Section 10 or Section 404 is a discretionary action that requires environmental review by the USACE under the National Environmental Policy Act (NEPA). NEPA requires preparation of a basic environmental assessment (EA) for government-funded or authorized actions that would result in less-than-significant environmental impacts and a more extensive environmental impact statement (EIS) for those actions that could result in significant environmental impacts. The federal action in this case is somewhat different from authorizing a new project. Permitting of commercial dredging in the LOMR involves a decision about ongoing commercial dredging operations, whether commercial dredging should be allowed to continue, and at what amounts and locations.

Prior USACE decisions about permitting of ongoing commercial dredging were made in documents supported by EAs that concluded with a Finding of No Significant Impact (FONSI) (Kansas City District

[1] The "LOMR" generally refers to the portion of the Missouri River from its confluence with the Mississippi River near St. Louis, Missouri, upriver to Gavins Point Dam, which is located near Yankton, South Dakota. Section 3.2.2 describes the LOMR in relation to the Project area for this Draft Environmental Impact Statement.

Permit Evaluation and Decision Document of August 2007, USACE 2007; Kansas City District Supplemental Permit Evaluation and Decision Document of March 2008, USACE 2008; St. Louis District Permit Evaluation and Decision Document of March 5, 2003). The 2007 USACE Kansas City District FONSI was conditioned to require that an EIS be prepared prior to issuing further permits and imposed restrictions designed to minimize the potential for significant impacts associated with river bed degradation resulting from continued dredging operations while this EIS was being prepared.

The prior USACE decisions mandated that an EIS must be completed before further permitting of commercial dredging in the LOMR, to ensure that the USACE is fully informed about the environmental consequences of the permitting action. In 2008, the USACE St. Louis District agreed to participate in a joint EIS for all dredging in the LOMR. In 2009, the USACE extended the expiration date of all eight existing permits (to six applicants) to December 31, 2010, in order to allow time for the EIS to be completed (USACE 2009a). Additional details on dredging history, permits, and decisions related to the LOMR are provided in Section 1.5.

1.2 PURPOSE AND NEED

1.2.1 Framework for Project Purpose and Need

Under NEPA guidelines and implementing regulations in Title 36 of the Code of Federal Regulations at 1502.13 (36 CFR 1502.13) and 33 CFR 320.4, the lead federal agency must state the purpose and need for the agency's proposed action when preparing an EIS. CWA guidelines (40 CFR 230) distinguish between the basic purpose and overall project purpose, and specify that the basic purpose determines whether the proposed action is water dependent. This distinction ensures that the scope of the EIS and the range of alternatives analyzed are sufficiently broad to fully inform the agency decision maker.

To describe the project purpose and need, the proposed project (also referred to as the Proposed Action) must first be defined. In this EIS, the Proposed Action is reauthorization by the USACE of eight existing dredging permits, authorization of three additional proposed dredging permits, and authorization of any as yet unforeseen proposed dredging permits. The Dredgers propose to remove approximately 11.65 million tons of sand and gravel annually from specifically identified reaches of the LOMR totaling approximately 390 miles of the river between St. Louis, Missouri and Rulo, Nebraska.

1.2.2 Project Purpose and Need

For purposes of the CWA, the basic (fundamental, essential, or irreducible) purpose of the Proposed Action is to supply the aggregate required to support the region's construction and manufacturing needs. The overall Project purpose is to profitably extract sand and gravel from the Missouri River that meet certain specifications in order to supply the region's construction and manufacturing needs. As stated by the Dredgers, the Project purpose is to economically provide sufficient quantities of quality sand and gravel to a wide variety of construction and manufacturing customers in the region.

Sand and gravel are essential components of concrete, asphalt, brick mortar, tile grout, and landscape materials. These materials are used to construct local, regional, and interstate roads and highways; public and commercial infrastructure; public, commercial, and industrial buildings and facilities; and residential housing developments. The use of sand and gravel as a constituent of construction materials is pervasive in the economy of the region that encompasses St. Joseph, Missouri; the greater Kansas City metropolitan area; central Missouri; and the St. Louis, Missouri metropolitan area.

The largest use of sand and gravel in the region is for concrete and asphalt, which require material that meets specific requirements related to aggregate size, shape, parent material, hardness, and sorting. Dredging from the LOMR represents one of the most cost-effective methods for supplying sand and gravel because the river provides sorted sand and gravel and does not require the removal of overlying soil called overburden. Sand from the LOMR also meets the specific requirements needed for high-quality concrete and asphalt with relatively minimal additional processing.

Historically, demand for sand and gravel within the region has been almost exclusively supplied by dredging from the Missouri, Kansas, and Mississippi Rivers and supply has met or exceeded local demand. However, in 1990, USACE review of Kansas River dredging permits and preparation of an EIS resulted in a significant reduction in the amount of sand and gravel resources authorized for extraction from the Kansas River. As extraction from the Kansas River was restricted and demand for sand in the region increased with economic growth, annual extraction from the Missouri River increased from 4,240,000 tons in 1990 to a peak of 8,752,714 tons in 2002. With the recent economic downturn, annual extraction decreased to 5,478,262 tons in 2009.

Dredging permit applicants are commercial enterprises engaged in or planning to engage in extraction and supply of sand and gravel to meet regional construction and manufacturing needs. The Dredgers have invested in and developed land and land-based facilities (sand plants) and the capacity to dredge, barge, offload, process, and stockpile sand and gravel at specific locations along the LOMR. Each

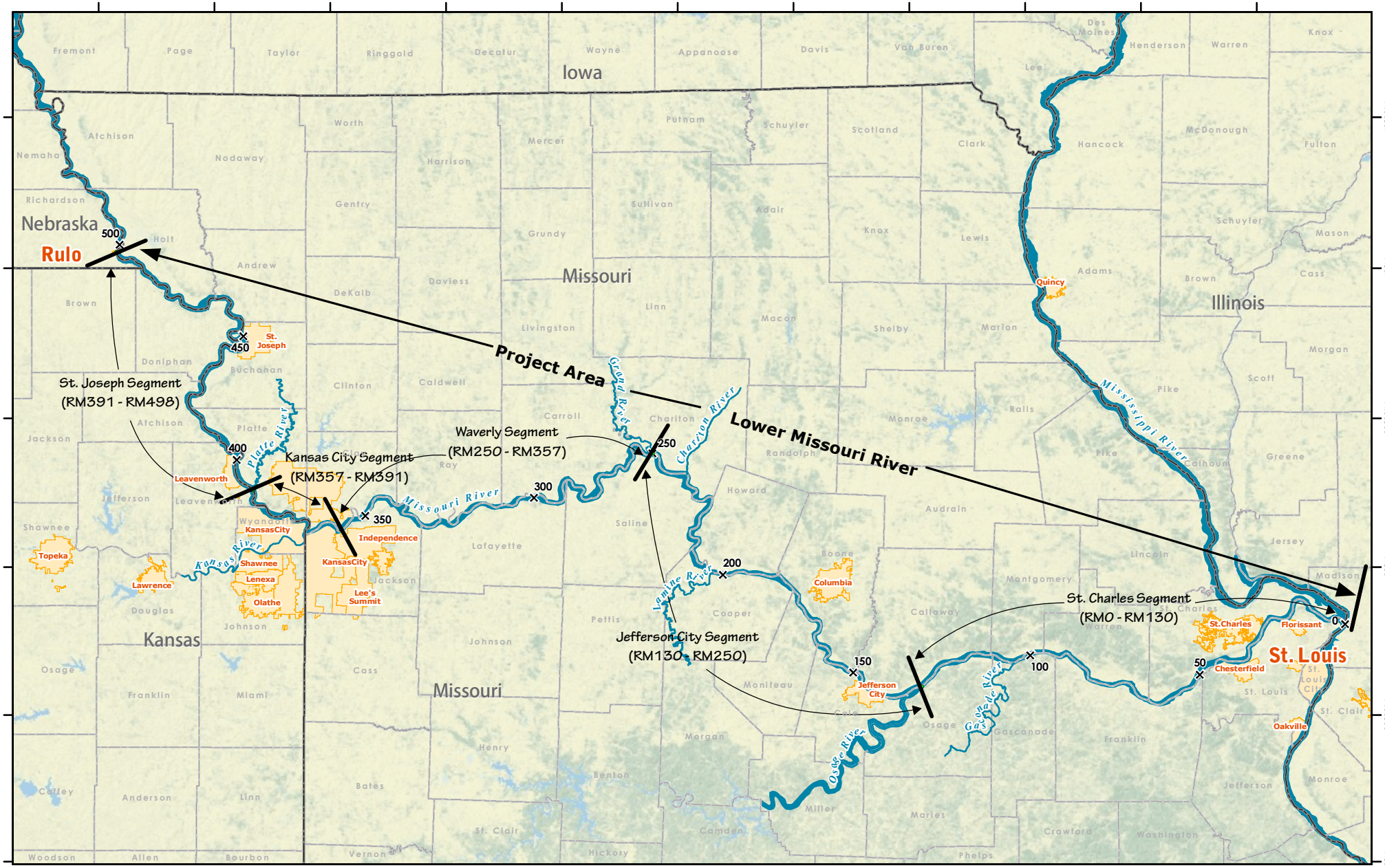
sand plant services a geographic area or market. The potential dredging area for each operation is determined largely by the distance that the operator can effectively transport the extracted material by barge from the dredge to the sand plant without significant down time on the dredge. This distance is governed by the size and number of barges and push boats available to the operator. The market area is determined largely by the shipping costs for the finished sand and gravel, which is primarily the cost of hauling by truck.

Missouri River commercial dredging permits historically have issued for 5 years and reevaluated as they neared expiration. The six existing dredging permits were originally set to expire on December 31, 2009, but were extended until December 31, 2010, to allow additional time to complete this EIS. If the EIS is not complete and if the dredging permits are not reauthorized by that time, these commercial sand and gravel dredging operations will cease to extract sand and gravel from the LOMR on January 1, 2011, and may not resume until the EIS is complete and the USACE determines that dredging permits can be reissued.

1.3 SCOPE OF THE EIS

The purpose of the EIS is to inform USACE decision makers of the environmental effects of decisions regarding authorization of dredging to commercially extract sand and gravel from the LOMR. The scope of the EIS includes:

- Project scope – This EIS directly considers those activities within the jurisdiction of the USACE under Section 10 of the RHA and Section 404 of the CWA. This includes extraction of sand and gravel resources from the river bed using hydraulic dredging equipment. Changes to operations of vessels and barges on the river; moored off-loading barges; and land-based materials handling, stacking, and processing at sand plants are not proposed and therefore are not within the purview of this Section 10 and Section 404 permit decision. Proposed changes to these activities would be evaluated by the relevant state or federal permitting authorities. Dredging operations are evaluated in this EIS to the extent that indirect impacts may be associated with these activities.



1:2,500,000

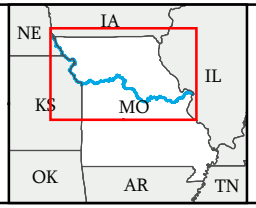
0 10 20 30 40 50 Miles

0 25 50 75 Kilometers

Legend

- River Mile
- River
- Lake/Reservoir
- Metropolitan Area (pop. >35,000)
- County Boundary
- State Boundary

Figure 1-1
Project Overview
Missouri River Commercial Dredging EIS



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Map Projection: Mercator, WGS84

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- Proposed Action and alternatives – The EIS scope includes environmental analysis of the Proposed Action, No Action Alternative, and other action alternatives that would allow continuation of some commercial sand and gravel dredging in the LOMR. Imbedded in the No Action Alternative and each of the action alternatives is the fact that alternate sources of commercial sand and gravel would be needed to supplement sand and gravel dredged from the Missouri River in order to meet some or all of the regional demand.

- Geographic scope – The geographic scope of the EIS includes that portion of the LOMR subject to commercial sand and gravel dredging that extends from its confluence with the Mississippi River at river mile (RM) 0 to RM 498 near Rulo, Nebraska. It also includes the portions of tributaries to the Missouri from RM 0 to RM 498 that are immediately adjacent to the main channel of the LOMR. Figure 1.3-1 shows the Project area.

  The geographic scope of the EIS includes the main channel and floodplain of the LOMR from RM 0 to RM 498, the most downstream portions of tributaries to the Missouri River to the extent that they may be indirectly affected by river bed degradation, and the region surrounding the Project area portion of the river to the extent that specific resources may be affected by dredging or use of alternate sources of sand and gravel. For example, the broader sand and gravel market areas are included when evaluating alternate sources of sand and gravel, and some entire counties are considered when evaluating potential air quality impacts.

- Temporal scope – Dredging activities have occurred on the LOMR for approximately the past 100 years, and previous dredging permits have been authorized for 5-year periods. To the extent that a specific resource analysis considers future trends, trends up to a 20-year time frame were evaluated. For the cumulative analysis, projects and programs reasonably likely to occur within a 20-year time frame were evaluated. Sufficient information on future foreseeable actions was not available to reasonably analyze future trends beyond an approximately 20-year time frame.

1.4 DECISIONS TO BE MADE

Under Section 10 of the RHA and Section 404 of the CWA, the USACE has authority and responsibility to regulate dredge and fill in navigable waters of the United States. In the Proposed Action dredging would occur by extraction of material from the bed of the LOMR, and filling would occur by discharge of unwanted dredged material to the river.

The USACE prepared this EIS in accordance with Appendix B of 33 CFR 325 to identify and fully disclose the environmental consequences of the Proposed Action and the alternatives. The applicants' Proposed Action is identified as the "applicants' preferred alternative" but this does not mean that it will or can be permitted by the USACE.

Appendix C of 33 CFR 325 requires the USACE to consult with the State Historic Preservation Officers (SHPOs) of potentially affected states and Indian tribes concerning potential impacts to historical and archaeological resources from dredging and filling activities under Section 106 of the National Historic Preservation Act (NHPA) of 1966.

The USACE also must consult with the U.S. Fish & Wildlife Service (USFWS) with respect to the potential effects of dredging on federally listed threatened and endangered species under Section 7 of the Endangered Species Act (ESA).

As part of the decision-making process, the USACE also must review the Proposed Action and the alternatives with respect to Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR 230). These guidelines define the process, requirements, and restrictions that must be met for the USACE to issue a permit for the discharge of dredged or fill materials in waters of the United States. In summary, the guidelines state that no discharge of dredged or fill material shall be permitted:

- If there is a practicable alternative to the proposed discharge that would cause less adverse impact on the aquatic ecosystem, so long as the alternative does not result in other significant adverse environmental consequences (i.e., the least environmentally damaging practicable alternative [LEDPA]);
- If it would violate state water quality standards; jeopardize the continued existence of threatened or endangered species; or violate any requirements imposed to protect any marine sanctuary designated under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972;
- That would cause or contribute to significant degradation of waters of the United States;
- Unless appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.

Under the Section 404(b)(1) Guidelines, the USACE may decide to:

- Approve the permit applications as submitted by dredging applicants;
- Deny the permit applications; or
- Approve the permit applications with modifications.

Such authorizations may include conditions regulating the:

- Time, location, and duration of dredge and fill activities;
- Operation of dredging equipment, including the type of equipment used and the locations, amount, and characteristics of material dredged; and
- Characteristics and locations of discharges (fill) of waste materials from the dredging operations.

In summary, this EIS identifies and discloses the environmental consequences of the Proposed Action and the alternatives. The Section 404(b)(1) analysis will be based on, and coordinated with, this EIS but is a separate and independent document that determines which action can be implemented in each segment of the LOMR. Upon completion, the Section 404(b)(1) analysis will be included as an appendix to the Final EIS.

1.5 HISTORY OF COMMERCIAL DREDGING, PERMITS, AND DECISIONS

The Missouri River is a major corridor for travel, development, and commerce and is a major natural resource of the region. Dredging from the river to provide sand and gravel resources for use by local populations has been a historical use that continues today.

1.5.1 History of Missouri River Development

Native Americans used the Missouri River for canoe travel to move about the mid-continent. French explorers first saw the mouth of the Missouri River in 1673, while traveling along the Mississippi River. In 1723, Fort Orleans was built on the banks of the Missouri River in what is now Carroll County, Missouri. The United States procured the region from France in 1803 as part of the Louisiana Purchase. In 1804, the Lewis and Clark expedition's study of the Missouri River corridor opened the door to the western movement of settlers into the Missouri River Valley and Great Plains. Forts near St. Louis and Fort Osage were built between 1804 and 1808. River travel gradually became more commonplace. The Missouri River was the mode of transport for supplies and products to support new,

nearby settlements and was vital to the fur trade, which became the first significant industry in the region. Shortly after steamships began using the Missouri River (1819), Missouri became a state (1821). Steamship traffic peaked in the late 1850s and then declined following the building of railroads.

The population of settlements and cities along the river has steadily risen since the mid-1800s. Development was initially lured by the river's reliable water supply for consumptive, agricultural, and industrial use, and its links to commerce and navigation. The import of supplies and the export of products produced in the region by way of the river supported a new local economy. As the numbers of residents increased, demand for water from the river increased. Today, over one-half of Missouri's residents currently live in the St. Louis or Kansas City metropolitan areas, both of which are associated with the river. The metropolitan areas, small towns, and industries located along the river rely on it for water supply and recreation.

In 1824, to maintain navigation, the USACE began removing snags and debris that had formed blockages in the river. In 1902 and 1912, Congress passed legislation to fund river navigation projects. Over the next 30 to 40 years, many localized dredging projects were implemented in order to enhance navigation on the river.

Since the 1930s, two major modifications to the Missouri River have been constructed, resulting in dramatic long-term changes to the character of the LOMR. The first major modification was construction of six dams on the upper river. This series of dams and reservoirs at the upper end of the river, known as the Missouri River Mainstem Reservoir System, were built between 1936 and 1963 and substantially altered the character of flows and sediment supply in the LOMR.

The second major modification was channelization of the Missouri River. Beginning in 1910, the USACE began a series of congressionally authorized efforts to improve navigation between St. Louis, Missouri and Fort Benton, Montana. Various techniques, including fascine (brushwood mats) pile, and concrete beam crib dikes and "Kellner jetties," were used to train the river channel to remain in one place; and woven willow and timber mattresses and rock revetments were used to stabilize the banks. Work on stabilizing the river and creating a navigation channel ebbed and flowed through World War I, the Great Depression, and World War II as federal funding and manpower fluctuated. The RHA of 1945 allowed for creation of a 9-foot navigation channel from Sioux City, Iowa downstream to the mouth, located near St. Louis, Missouri; and work continued in earnest until the USACE completed the Missouri River Bank Stabilization and Navigation Project (BSNP) in 1981. This detailed system of dikes and revetments in the lower portion of the LOMR supports the development and economic uses of the

river by providing an adequate, stabilized, reliable, and self-maintaining navigation channel (USACE 2006).

The BSNP today consists mainly of rock revetments and dikes that restrict lateral movement of the river channel and maintain a self-scouring navigation channel that is 9 feet deep and 300 feet wide. Adjustments are made occasionally to these features to maintain the navigation channel at the authorized depth. The BSNP is operated and maintained by the USACE Kansas City District. Construction of the BSNP has highly altered the lower Missouri River by channelizing the river into a single main channel.

1.5.2 Commercial Sand and Gravel Dredging

Records show that sand and gravel have been dredged or excavated from the LOMR since the 1930s, but undocumented dredging may have begun even earlier. Early dredging removed sand and gravel to aid in river navigation, and the materials removed were used for a variety of commercial uses. Beginning in the 1930s, an active commercial sand and gravel industry developed to supply the construction and road building industries in the region. Annual sand and gravel extraction from the river grew from 250,000 tons/year in 1935 to 500,000 tons/year in 1954 (USACE 2009c).

Dredging for commercial purposes gradually increased as populations along the LOMR expanded in the latter half of the 1900s. By 1956, annual dredging had increased to approximately 1 million tons; and over the next 20 years, grew until it exceeded 3 million tons in 1974 (USACE 2009c). From 1975 to 1993, annual dredging stabilized between 3 and 3.5 million tons. In 1994, the total amount dredged increased to 6 million tons and grew year after year until it peaked in 2002, at approximately 8.7 million tons which included 1.7 million tons used by the USACE for a levee construction project.. Since 2002, dredging levels have stabilized near 7 million tons but decreased in 2009 to approximately 4.5 million tons due to the economic recession. Figure 1.5-1 shows commercial dredging tonnage totals by year.

Because detailed record keeping was not required until 1991, records for some earlier years are incomplete or have been estimated by the USACE (USACE 2009a) from waterborne commerce reports.

Based on a review of recent dredging data (1998–2008), commercial sand and gravel dredging primarily occurs at three specific portions of the LOMR. Upstream to downstream, these portions are (1) between RM 360 and RM 380 near Kansas City; (2) at RM 150 near Jefferson City; and (3) between RM 30 and RM 50 in the St. Charles/St. Louis vicinity. Figure 1.5-2 shows dredging totals by company

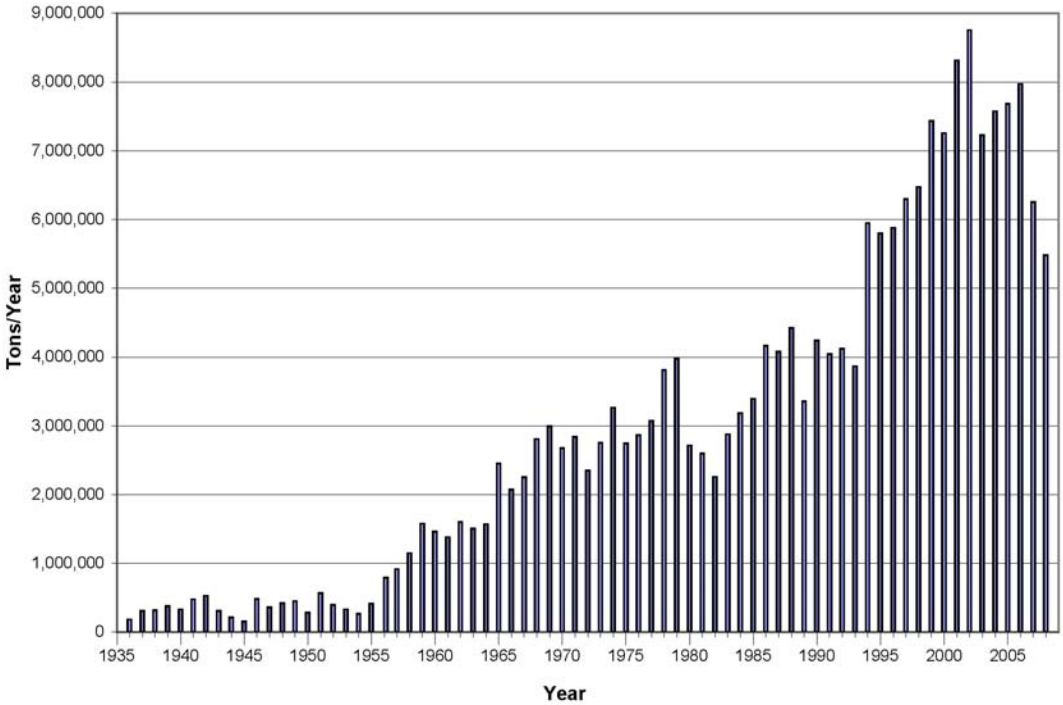

Figure 1.5-1 Annual Commercial Dredging – Lower Missouri River

Notes: 2002 includes 1,700,000 tons for construction of levee L-385 near Kansas City, Missouri; 2006 includes 504,000 tons for Chain of Rocks berm in St. Louis, Missouri.

Sources: 1935–1993: transportation of sand and gravel reports; 1984–1986: USACE annual commercial dredging reports; 1997–2006: USACE daily commercial dredging reports.

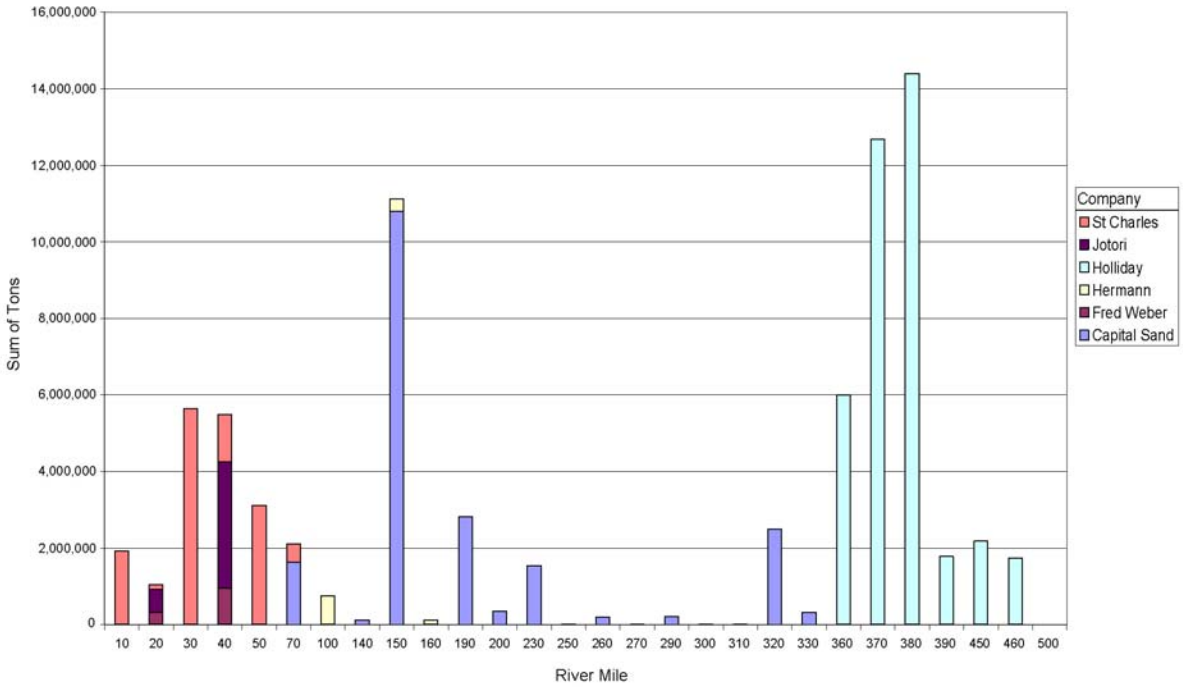

Figure 1.5-2 Commercial Sand and Gravel Dredging by River Mile and Company (1998–2008)

Source: USACE 2010.

throughout the length of the Project area. This figure shows the three areas most heavily dredged. These areas overlap developing population centers, indicative of population centers having a relatively higher demand for sand and gravel for construction aggregate.

Prior to installation of the dams and reservoirs in the upper Missouri River, sediment from sources throughout the upper basin were available for transport and contributed to the sediment bed material load that influenced the geomorphology of the river. With construction of the dams, sediment sources became limited to bank erosion along the LOMR and sediment inputs from tributaries to the LOMR.

Seventeen sand plants have been constructed along the LOMR to accept dredged materials and serve as terminals to stockpile and sell the products. Two additional sand plants are proposed. Dredgers operate under permits issued by the USACE within specific reaches of the LOMR delimited by river mile markers. Detailed information about dredging operations is provided in Section 2.3. Dredging and sand plant locations are shown in Figure 2.2-1 (Sheets 1 through 5).

The USACE Kansas City District and the USFWS have informally consulted under the ESA on every permit extension or change to conditions on the dredging permits since the original Biological Opinion in 1994. Informal consultation was completed and dredging permits were issued in 1996. In 2003, the USACE started consultation with USFWS for reauthorization of the dredging permits, but the permit evaluation process was not complete by the time the permits were to expire. The USFWS was consulted and agreed to extend the dredging permits while the evaluation process continued. The informal consultation continued and focused on the effects of dredging on the pallid sturgeon. In 2005, consultation between the USFWS, the USACE Kansas City District, and the Dredgers culminated in the agreement to exclude dredging in specific segments of the LOMR with certain features believed to provide habitat for the pallid sturgeon.

Soon after conclusion of that ESA consultation, the USACE Kansas City District determined that observed river bed degradation associated with commercial dredging was a serious concern. In 2007, the USACE authorized existing active dredging operations to continue dredging through 2009 with additional restrictions while an EIS was being prepared. However, as 2009 drew to an end and the EIS was not complete, the USACE consulted with the USFWS about a 1-year extension of the existing dredging permits to allow dredging to continue at restricted levels while the EIS was being completed. The USFWS agreed with that last extension but requested preparation of a new biological assessment before they would concur with any further dredging permit decisions.

1.5.3 Missouri River Bed Degradation

As described further in Sections 2.4 and 3.4, the 1900s—and in particular, the latter half of the 1900s—were periods of dramatic change in the river channel of the LOMR. The period from 1940 through the early 1990s included completion of the Missouri River Mainstem Reservoir System and the BSNP. The BSNP included dikes and revetments (to shape the waterway and stabilize the banks), cutoffs (to eliminate sharp and protracted horseshoe bends), chute closure dikes (to close minor and diverted channels); snag removal, and dredging where necessary. In the same time frame as the completion of the BSNP, commercial dredging extraction in the LOMR increased steadily.

The LOMR has exhibited river bed degradation (the lowering of the elevation of the river bottom) during the latter 1900s in locations throughout the LOMR to varying degrees. Investigations in recent years of changes in average water surface and river bed elevations by the USACE Kansas City District have revealed that significant degradation of the river bed has occurred along major portions of the LOMR. Observations near Kansas City indicate that the rate of degradation is accelerating, with the most severe degradation occurring in the Kansas City reach between RM 340 and RM 400 where old bridge piers and other structures are being exposed (USACE 2009b). Since 1995, the average bed elevation has degraded approximately 4 feet (USACE 2009b).

River bed degradation has been demonstrated to result in extensive impacts on the characteristic of the river channel; on infrastructure works; and on important habitats throughout the LOMR especially, where degradation has been the greatest. Documented impacts include the increasing exposure and incapacitation of water intakes for drinking water suppliers, electric power plants, agriculture, and industry. Underground pipelines, recreational boat ramps, and habitat for fish and wildlife (including those federally listed as threatened or endangered) also have been exposed or affected by degradation of the river bed and lowering of the water surface. Finally, channel degradation and instability have historically threatened and presently continue to increase the threat to bridges, dikes and revetments, and levees by undermining them and increasing the chance of their failure. The cost associated with the increased maintenance of these structures as a result of degradation can amount to many millions of dollars (USACE 2009b).

The causes of riverbed degradation, which are interrelated and cumulative, include reservoir construction and the associated change in sediment supply and flow regimes that transport sediments along the river, change in the river hydraulic conditions due to construction of the BSNP, and commercial dredging of sand and gravel (USACE 2009b). The greatest degradation has taken place in those portions of the LOMR that have experienced the greatest amount of dredging.

Recognizing the importance of the river bed degradation problem, the USACE Kansas City District initiated the Missouri River Bed Degradation Reconnaissance Study in 2008. The primary objective of this study was to evaluate the potential for federal interest in implementing solutions to water resources problems and opportunities related to river bed degradation within the lower 498 miles of the Missouri River. The *Missouri River Bed Degradation Reconnaissance Study Report* (Reconnaissance Study Report) (USACE 2009b) describes the many potential causes of river bed degradation and concludes that river bed degradation in the Kansas City reach and other reaches of the lower 498 miles of the Missouri River is the result of a combination of causes. Over time, shifts between degradation causes and interaction between those causes have varied. However, data collected over the last 15 years suggest that increased removal of river bed sediment by dredging, working in concert with the BSNP, has become the dominant cause of river bed degradation (USACE 2009b). The Reconnaissance Study Report demonstrated a federal interest in negotiating and participating in a cost-shared feasibility study. The scope of this feasibility study is currently being negotiated. The purposes of the feasibility study would be to (1) ensure continued flood protection for areas currently protected; (2) address the effects of degradation on the long-term stability and sustainability of the navigation system by determining whether structural or operating changes might minimize or eliminate impacts of degradation on the system; and (3) investigate opportunities to minimize the impacts of degradation on local infrastructure.

1.5.4 2006/2007 Permit Decision

In 2003 and 2004, the USACE Kansas City District received 10 applications from commercial sand and gravel companies for dredging in the LOMR. In August 2007, the USACE Kansas City District authorized four applicants to continue existing and active dredging operations, permitting approximately 6 million tons per year[2] of sand and gravel to be dredged from the LOMR; the remaining six applications for inactive or proposed dredging operations were not approved (USACE 2007).

In conjunction with its review of the applications for renewed or new permits, the USACE Kansas City District determined that significant river bed degradation was occurring in portions of the LOMR. The reaches of the river most degraded – Kansas City, Jefferson City, and St. Charles – coincided with areas where commercial sand and gravel dredging was the greatest. Because dredging in these areas was considered by the USACE Kansas City District to be one of the contributing causes of river bed degradation, the reauthorized permits limited and restricted approved dredging activity.

[2] The USACE Kansas City District permitted approximately 6 million tons, and the USACE St. Louis District had already permitted an additional approximately 2 million tons by two other companies.

Additional concerns included the potential that dredging and associated river bed degradation might contribute to impacts on the habitats of federally listed threatened or endangered species, and that lowered river water levels associated with river bed degradation were affecting the operation of municipal and industrial water intakes and the structural integrity of other public infrastructure. Conditions governing the amount, location, manner, and monitoring of dredging activities were added to the reauthorized permits to provide additional reasonable assurance that public facilities would not be significantly affected while this EIS was being prepared. These additional conditions, along with the permit conditions from previous dredging permits, also provided the basis for the USACE Kansas City District to find that ongoing dredging activities would not likely adversely impact listed species or their critical habitats. The conditions included implementation of buffer or exclusion zones adjacent to numerous existing river features, such as chutes, islands, tributary confluences, water intake points, dikes, revetment, submerged utility crossings, and levees. Operators were required to continuously record Global Positioning System (GPS) coordinates of their dredging location, maintain daily records of the volume of material extracted, and identify the location of higher than normal gravel concentrations or hard substrates. The new authorizations, which were limited to durations of 3 years, also required that an EIS be prepared as the basis for any future permit reauthorizations.

In March 2008, the USACE Kansas City District issued a Supplemental Permit Evaluation and Decision Document responding to appeals of the 2007 Decision Document by the permit holders and applicants whose applications had been denied or further restricted. The USACE Kansas City District findings in the 2007 Decision Document were reaffirmed and clarified in the supplemental document (USACE 2008). In 2008, the USACE Kansas City District also determined that significant river bed degradation was occurring in the lower 50 miles of the Missouri River regulated by the USACE St. Louis District. The USACE St. Louis District agreed to participate in a joint EIS for the LOMR, with the USACE Kansas City District acting as the lead federal agency. The USACE Kansas City District continues to evaluate short and long-term trends in river bed degradation and the contribution of commercial dredging to these trends (USACE 2009b).

1.6 NEPA SCOPING PROCESS

Following publication in the Federal Register of the Notice of Intent (NOI) to prepare an EIS, the USACE initiated the public and agency scoping process. The scoping process provided opportunity for the general public, non-governmental organizations (NGOs), government agencies, and other stakeholders to learn about the Proposed Action and to comment on the issues that should be evaluated in the environmental analysis, as well as alternatives to the Proposed Action that should be

considered during preparation of the EIS. Comments provided during the completed scoping period were considered as the USACE formulated alternatives, focused the impact analysis, and selected a reasonable range of alternatives. Opportunity for stakeholder input occurred over a 2-month period. Public scoping was opened on December 5, 2008, and was closed on February 10, 2009.

1.6.1 Stakeholder Notification

Public awareness of the USACE intent to prepare an EIS and to obtain stakeholder input to the scoping process was created by:

- Publication of a "Notice of Intent to Prepare a Joint Environmental Impact Statement for Commercial Dredging of Construction Aggregate from the Missouri River in Missouri and Kansas" on December 5, 2008, in Vol. 73, No. 235 of the Federal Register (73 FR 235, P. 74150). This NOI announced the USACE intent to prepare an EIS and listed the dates, times, and locations of public scoping meetings to be held at various locations in the Project area, as well as contact information for the USACE representative for preparation of the EIS.
- Posting on December 10, 2008, on the USACE Kansas City and St. Louis District websites of a "Notice of Public Scoping Meetings for the Preparation of an Environmental Impact Statement to Analyze the Effects of Continued Commercial Sand and Gravel Dredging from the Missouri River in the States of Missouri and Kansas." This notice announced the USACE intent to prepare an EIS and listed the dates, times and locations of public scoping meetings to be held at various locations in the Project area, as well as contact information for the USACE representative for preparation of the EIS. Notification of this posting was distributed by email to various local, state, and federal government agencies; Indian tribes; NGOs; and individuals who had previously requested to be notified of USACE public notices (USACE 2010).
- Distribution of a media release to the Jefferson City News Tribune on January 2, 2009 and the Kansas City Star on January 5, 2009, announcing the public scoping meetings and listing the dates, times and locations of the public scoping meetings and contact information for the USACE representative for preparation of the EIS.
- Distribution, by letter dated December 2, 2009 of an invitation to state and federal agencies to attend the public and agency scoping meetings. Agencies receiving the letter included the U.S. Environmental Protection Agency (USEPA), USFWS, U.S. Geological Survey (USGS), U.S. Coast Guard (USCG), Federal Highway Administration – Kansas (FHWA-KS), Federal Highway

Administration – Missouri (FHWA-MO), Kansas Department of Health and Environment (KDHE), Kansas Department of Wildlife and Parks (KDWP), Kansas Water Office (KWO), Kansas Department of Agriculture (KDA), Kansas State Historic Preservation Office (KSHPO), Kansas Geological Survey (KSGS), Kansas Department of Transportation (KDOT), Missouri Department of Natural Resources (MDNR), Missouri Department of Conservation (MDC), and Missouri Department of Transportation (MoDOT).

- Distribution, by email dated December 19, 2009, of an invitation to Congressional delegates and Indian nations potentially affected by the Proposed Action to attend the public and agency scoping meetings.

1.6.2 Scoping Meetings

The USACE hosted four meetings to obtain public and agency input to the EIS scoping process. Three meetings for public participation were held at locations throughout the Project area. The dates, times, locations, and number of attendees for the public scoping meetings are shown in Table 1.6-1. The USACE hosted an Interagency Coordination Meeting at the Kansas City District office in Kansas City, Missouri on January 9, 2009. This meeting was attended by the USACE, contractor staff, and agency personnel.

Table 1.6-1 Public Scoping Meetings

Date/Time	Location	Attendees
Tuesday, January 6, 2009 4 p.m. to 8 p.m.	Missouri River Regional Library, The Art Gallery 214 Adams Street Jefferson City, MO 65101	20
Wednesday, January 7, 2009 4 p.m. to 8 p.m.	St. Charles Community College, Auditorium 4601 Mid Rivers Mall Drive Cottleville, MO 63376	12
Thursday, January 8, 2009 4 p.m. to 8 p.m.	KCI Expo Center, The Lobby Courtyard 11730 NW Ambassador Drive Kansas City, MO 64153	19
Total meeting attendees		51

During each meeting, the USACE gave a presentation that described the Proposed Action, potential environmental impacts, the EIS development process, opportunities for public involvement and comment throughout the process, and a timeline for preparation of the EIS. The USACE representatives and the third-party EIS contractor were available to provide information and to answer

questions. Comment forms were provided, and meeting attendees were encouraged to use the forms to submit specific detailed comments. A court reporter was available to allow members of the public to submit oral comments.

At the interagency coordination meeting held on January 9, 2009, USACE representatives provided the same information that had been provided at the public scoping meetings. They asked agency representatives to summarize the interest of their agency in the process of authorizing continued dredging and the environmental issues and alternatives that should be evaluated in the EIS.

1.6.3 Scoping Comments Received

Members of the public and interested agencies had the opportunity to submit comments via standard mail, email, or fax at any time during the scoping period from December 5, 2008 to February 10, 2009. At the close of the comment period, 25 letters or emails had been received from governmental agencies, environmental organizations, and interested citizens for a total of 149 individual comments. Table 1.6-2 provides a summary of the comments received.

Table 1.6-2 Summary of Written Comments Received during the Scoping Period

Topic	Number of Comments	Comment Summaries
Alternatives	25	Nine comments related the need to include an economic analysis of alternatives. These comments expressed concern for the economic implications of finding an alternate source of suitable sand to the transportation and construction industries.
		Eight comments expressed concern related to environmental and human health risks of alternatives to dredging, including impacts to cultural resources, air quality, and floodplains, and general environmental issues.
		Two comments expressed an opinion that an environmentally and economically suitable alternative to dredging may exist.
		Six comments suggested items to include in the alternatives analysis, such as open-pit mining and expanding mining reaches within the Missouri River.
Geomorphology	23	Five comments expressed concern that impacts to existing infrastructure due to geomorphic changes in the river are exacerbated by dredging.
		Five comments expressed the opinion that dredging does not exacerbate geomorphic changes that impact infrastructure.
		Twelve comments expressed concern for geomorphic issues associated with dredging, including channel bed stability, downcutting, channel habitat characteristics, and replenishment of dredged materials.

Table 1.6-2 Summary of Written Comments Received during the Scoping Period

Topic	Number of Comments	Comment Summaries
Geomorphology (continued)		One comment noted that the river is an engineered structure and that dredging does not result in significant impacts compared to other accepted engineered projects.
General Comments	2	Two comments were general and do not relate to specific issues to address in the environmental impact statement (EIS).
Land Use, Population, Housing, Social Elements, Economics	8	Two comments expressed an opinion that the Proposed Action would have a positive economic impact for the area.
		Two comments noted that the dredged sand is ideal for construction projects because of its size class and industry specifications.
		Four comments expressed concern that hydrokinetic turbines will interfere with existing permitted dredging uses.
Mitigation	5	Two comments expressed a need for a monitoring plan to be put in place and suggested what that monitoring should entail.
		Three comments expressed a need for mitigation measures to be put in place and suggested what that mitigation should entail and how it should be implemented.
Natural Environment and Built Environment	5	Five comments expressed concern for negative effects of the Proposed Action on the ecosystem and conflicts with existing environmental programs.
NEPA Process and Scope	59	One comment expressed concern for understanding the role of bed load in creating and maintaining shallow-water habitat.
		Four comments objected to the Project because it would interfere with navigation.
		Eight comments expressed concern about current permitting practices and currently permitted uses, and how these will be considered in the EIS.
		Fourteen comments suggested new and existing data, studies, and study methods that should be included in the EIS process. These studies pertained to background information, water volume, sediment budgets, effects of dredging, geomorphic processes, dredging company surveys, and the effectiveness of previous permit conditions.
		Six comments suggested that the EIS take into account the type of dredging equipment used at different locations, noting distinctions between suction dredging and cutter head dredging.
		Fourteen comments related opinions about the National Environmental Policy Act process, including those both in favor of and against the requirement for an EIS for this Proposed Action and general comments related to the EIS process.
		One comment expressed support of dredging in general.
		One comment expressed opposition to dredging in general.
		Ten comments expressed concerns about the scope of the analysis in the EIS, and suggested information to be included in the affected environment and purpose and need sections of the document.

Table 1.6-2 Summary of Written Comments Received during the Scoping Period

Topic	Number of Comments	Comment Summaries
Parks and Recreation	3	Three comments expressed concern that the Proposed Action would negatively impact the recreational value of the river.
Plants and Animals	6	Six comments expressed concern for impacts of the Proposed Action on fisheries, including the pallid sturgeon, which is protected by the Endangered Species Act.
Secondary and Cumulative Impacts	8	Eight comments made suggestions for factors to include in the cumulative effects analysis. Suggestions included economic issues, watershed environmental and land use issues, and long-term environmental effects.
Water Resources	5	Three comments objected to the Proposed Action because of surface water quality or quantity impacts.
		Two comments objected to the Proposed Action because of a potential to reduce groundwater levels.
Total written comments	149	

1.7 EIS OVERVIEW

The Draft EIS includes the following major sections:

- Chapter 1 – Introduction – This chapter describes the purpose and need for the Project and the scope of the Draft EIS. It provides a brief summary of the history of development of the Missouri River and its associated commercial sand and gravel industry, recent permitting decisions, and the process completed by the USACE to obtain stakeholder input regarding alternatives and issues to be considered in the EIS.
- Chapter 2 – Proposed Action and Alternatives – This chapter summarizes the permit applications submitted by the Dredgers and describes the dredging equipment and operations. It discusses the No Action Alternative and three action alternatives, each of which would authorize less dredging than proposed under the Proposed Action. The chapter discusses other alternatives considered but not evaluated in detail. A summary comparison of the results of the environmental analysis of the Proposed Action and alternatives is provided in Section 2.6.
- Chapter 3 – Affected Environment – This chapter includes an introductory discussion of the history of development of the Missouri River, including major programs to control the lower river for navigation. It then describes the present status of 17 environmental resources with respect to ongoing and future dredging. To aid in organizing the description of the affected environment and

the impact analysis, the Project area (RM 0 – RM 498) was divided into five river segments. Environmental resources were then described for each segment.

- Chapter 4 – Environmental Consequences – For each resource category described in Chapter 3, a corresponding environmental impact analysis was completed and documented. This chapter contains a comprehensive analysis of impacts related to the Proposed Action, the No Action Alternative, and each of the action alternatives.
- Chapter 5 – Cumulative Impacts – This chapter contains an analysis of the potential cumulative impacts of the Proposed Action and the alternatives when considering other programs and projects that are likely to occur within the same geographic and temporal scope.
- Chapter 6 – Potential Mitigation Measures – This chapter discusses existing and proposed measures that could be implemented to avoid, minimize, or mitigate the adverse effects of Project operations under the Proposed Action and the alternatives.
- Chapter 7 – Environmental Statutes, Executive Orders, and Governing Agencies – This chapter lists environmental statutes and executive orders relevant to the Project. The chapter also describes the roles of government agencies in administering and managing lands and activities in and around the Project area.
- Chapter 8 – List of Preparers – This chapter identifies the USACE and third-party contractor staff who contributed materially to preparation of the Draft EIS.
- Chapter 9 – List of Reviewing Agencies, Organizations, and Indian Tribes – This chapter lists the cooperating agencies, organizations, and Indian tribes that received a copy of the Draft EIS for review and comment.

1.8 REFERENCES

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