Appendix P

U.S. Fish and Wildlife Service Planning Aid Letter

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United States Department of the Interior

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May 1, 2015

Ms. Christina Ostrander, Project Manager
Kansas City District
US Army Corps of Engineers
601 E. 12th Street
Kansas City, Missouri 64106

Dear Ms. Ostrander:

Please refer to the Missouri River Bed Degradation Feasibility Study (Study), Kansas and Missouri, United States. That Study will develop a range of alternatives to address bed Degradation of the Missouri River pursuant to Section 216 of the Flood Control Act of 1970. Section 216 allows the Corps to review completed projects that have experienced significant changes since construction. In this case, the Study will focus on the reach of the Missouri River Bank Stabilization and Navigation Project (BSNP), authorized in 1912, between Waverly and St. Joseph, Missouri. The U.S. Fish and Wildlife Service (Service) provided the Corps our March 27, 2014, scoping comments and includes them herein by reference. The Service submits this Planning Aid Letter pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347), and the Endangered Species Act of1973, as amended (16 U.S.C. 1531-1544).

The Service has prepared these comments based on the following information and materials:

1.) The February 7, 2014, Federal Register Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for the Missouri River Bed Degradation Feasibility Study, Kansas and Missouri, United States;

2.) A September 25, 2014, stakeholders meeting in Kansas City, MO;

3.) Three October 23, 2014, Draft Technical Appendices; and

4.). A December 2014 working draft Integrated Feasibility Report and Environmental Impact Statement with Section 404(b)(1) Evaluation.

Fish and Wildlife Resource Concerns and Planning Objectives

The Service has provided the Corps many reports, letters, and information regarding the fish and wildlife resources in and along the Missouri River, including our 1980 Fish and Wildlife Coordination Act report for the BSNP Fish and Wildlife Mitigation Project (Mitigation Project), and 1999 Supplemental Report for the expanded Mitigation Project, and our 2000 and 2003 Biological Opinions on Missouri River operations and the BSNP. That information is incorporated herein by reference.

Over the last century, the lower Missouri River has undergone considerable change due to dam construction, channelization, and floodplain development. The result has been a greatly reduced river corridor with a commensurate decrease in habitat for fish and wildlife. In fact, the river continues to change. The dams and bank armoring interrupt the natural processes of sediment erosion, downstream sediment transport and deposition. This has already led to an almost complete loss of islands and sandbars in the lower river, and continues to cause bed degradation throughout the main channel as well as impacting the tributaries causing bank erosion and head- cutting. Bank stabilization and channelization of the Missouri River and consequent bed degradation has disconnected floodplain wetlands from underlying groundwater, greatly reducing and degrading this important habitat. Bed degradation along the main stem river is not limited to the main channel. According to the Corps if bed degradation is not addressed, it is expected that the river will degrade an additional eight feet over the next 50 years. As the river bed continues to erode, that degradation works its way up many of the tributaries, affecting not only public infrastructure (e.g., bridges, highways, and pipelines), but also erodes aquatic habitats, adjacent terrestrial habitats, and impedes fish movement between the tributaries and the river.

In response to those system-wide problems, the Service, our state and private conservation partners, and other federal agencies have spent significant time, effort, and funding to acquire and/or restore a portion of the natural form and functions of the Missouri River. The goals of those programs include enhancing habitat and resources for all species of fish and wildlife; providing native habitats similar in type and amount to that which would have existed prior to the BSNP or which would be expected to exist today without the BSNP; preserve, restore, and/or enhance a diversity of aquatic and terrestrial habitats within the meander belt of the lower Missouri River as well as riverine habitats and processes wherever possible; develop projects/sites that are self-sustaining and require mostly passive management. Achieving these goals will support sustainable populations of fish and wildlife along the river, including rare native fishes and the federally endangered pallid sturgeon.

Those various restoration programs address both aquatic and terrestrial habitats and processes. Restoration of aquatic habitats includes design and construction of side channels and chutes, backwater areas, sandbars, islands, scour holes, and increased diversity within the main river channel. Terrestrial habitats that are preserved and restored include grasslands, bottomland forest, scrub-shrub, and mixed open lands. Emergent, scrub-shrub, and forested wetlands are also important habitats that are being preserved and restored.

Given the importance of the ongoing remediation efforts, the fish and wildlife planning goals of this study should:

1.) Complement and support long-term, ongoing conservation efforts noted above. At a minimum, any alternatives considered for implementation should not threaten or further degrade aquatic and terrestrial habitats along the river;
2.) Ensure a comprehensive analysis of project effects not only in the focus reach of the river, but upstream and downstream, as well as the lower tributaries. Prevent moving the bed degradation problem downstream; and
3.) Reinforce natural river processes to effectively and sustainably address bed degradation.

Description of Measures Under Consideration

The Corps identified thematic management measures that potentially meet at least one of the Corps project objectives. These include modifying BSNP structures, widening channel banks, installing grade control structures, augmenting the river with gravel, bypassing sediment around Gavin's Point Dam, and modifications to commercial dredging for sand and gravel within the river.

1.) Modify BSNP Structures

Lowering the elevations of the BSNP dikes and sills may contribute to a reduction in bed degradation, by increasing the effective size of the channel. This would result in slower water velocities and less scouring of the river bed. The Corps is considering lowering elevations of dikes only, lowering elevations of sills only, lowering elevations of both dikes and sills, and the amount that the structures could be lowered. This measure could be implemented independently or in combination with other measures, and was carried forward for further evaluation.

2.) Widen Channel Banks

Widening the channel banks may reduce bed degradation by slowing water velocities, resulting in less bed scour. This could be done mechanically using either land-based construction equipment or from a combination of land-based equipment and a hydraulic dredge. Alternatively, the channel banks could be widened by excavating around the buried portions of BSNP structures. With time, the force of the river would erode away a portion of the banks between the dikes. Locations for channel widening would be evaluated to maximize benefits from this measure, which could be implemented independently or in combination with other measures. This measure was carried forward for further evaluation.

3.) Install Grade Control Structures

Rock grade control structures could be constructed perpendicular to the flow of the river. Grade control structures protect the river bed from erosion and prevent scour at that location. The location and dimensions of the grade control structures would be modified to maximize

benefits. Grade control structures can contribute to downstream degradation problems, effectively moving bed scour downstream. Additional measures or future channel modifications are often needed to offset downstream impacts. This measure was carried forward for further evaluation.

4.) Augment Sand and Gravel

Sand and gravel would be mined from the floodplain and placed into the Missouri River to increase bed load material and reduce bed degradation. **It** would require major pit mine operations to provide sufficient suitable material. The Corps screened out this option because it would be inefficient, be unsustainable, and possibly have unacceptable environmental impacts from large scale pit mines.

5.) Installing Sediment Bypass

This measure would involve moving sediment from behind Gavins Point Dam, the downstream most dam, to a location below the dam where it would be transported by the force of the river downstream. The Corps determined that because of the distance involved, the poor suitability of the material near the dam, and unacceptability of removing the dams altogether, this measure was not carried forward for further evaluation.

6.) Modify Commercial Sand and Gravel Mining

Commercial sand and gravel dredgers in the lower Missouri River operate under Clean Water Act section 404 permits administered by the Corps. Between St. Joseph and Waverly, they are permitted to remove up to 2,540,000 tons of material annually. This suite of measures would include varying the amount of material removed from the river, including limits on dredged material that could lead to dredgers moving off the mainstem. Initially, modifications to commercial sand and gravel mining were considered as a sensitivity analysis to determine the effectiveness of alternatives under potential future conditions. However, based on the results of the sensitivity analysis, modifications to commercial sand and gravel mining were incorporated as an individual measure for formulation of the intermediate and final array of alternatives.

7.) No action

Under the no-action alternative, nothing would be done to address bed degradation. Nonetheless, the no-action alternative must include other actions that would be reasonably expected to occur in the future. This includes any actions that would be taken by public and private entities in response to bed degradation. The Corps include two assumptions for the no-action alternative: that operation and maintenance of the federal projects (i.e., BSNP, federal levee system) would continue within a similar framework as has been performed in the past; and that the quantities of commercial sand and gravel mined from the river would remain at the currently permitted levels in the future. Within the study area between Waverly and St. Joseph, Missouri, this would be 2,540,000 tons of sand and gravel.

Based on those general management measures, the Corps developed the following preliminary array of seven alternatives from the general management measures that met the screening criteria.

Summary of measures included in the preliminary array of alternatives.

Alterative	Location (river miles)	Dike Height (feet + or - construction reference plane)	Sill Height (feet + or - construction reference plane)	Channel Widening (feet from rectified channel line)	Grade Control (feet + or - construction reference plane)
Alternative 1 – No Action	Not Applicable	No Change	No Change	No Change	None
Alternative 2	294 to 458	+2	-2	No Change	None
Alternative 3	294 to 458	-2	-2	No Change	None
Alternative 4	350 to 410	-2	-2	200	None
Alternative 5	347 to 388	No Change	No Change	No Change	-14
Alternative 6	294 to 458; 347 to 388	+2	-2	No Change	-14
Alternative 7	294 to 347; 347 to 388	-2	-2	200	-14

Evaluation and Comparison of Alternatives

Based on the preliminary array of alternatives, the Corps modeled each alternative over the 50- year period of analysis. The results for the estimated changes in bed elevation and water surface are shown below:

Bed elevations

Segment	River Miles	Preliminary Alternative						
		1	2	3	4	5	6	7
Atchison	458 to 391	-5.9	-6.2	-5.5	-4.7	-2.0	-2.6	-2.3
Kansas City North	391 to 368	-7.8	-8.0	-7.3	-8.0	0.3	0.5	0.1
Kansas City South	368 to 352	-8.6	-8.5	-7.8	-8.2	-3.9	-3.8	-3.7
Lexington	352 to 294	-5.2	-5.1	-4.5	-4.7	-7.5	-7.5	-7.0

Water surface elevations

Segment	River Miles	Preliminary Alternative						
		1	2	3	4	5	6	7
Atchison	458 to 391	-5.8	-6.6	-6.0	-5.1	-1.9	-2.6	-2.4
Kansas City North	391 to 368	-8.2	-8.5	-7.7	-8.5	0.1	0.1	0.1
Kansas City South	368 to 352	-8.6	-8.4	-7.7	-8.1	-0.5	-0.4	-0.4
Lexington	352 to 294	-4.7	-5.0	-4.4	-4.5	-6.6	-6.5	-6.1

As can be seen from both tables, only Alternatives 5-6 (Grade Control structures) show significant decreases in future bed degradation, particularly in the Kansas City reach. Of note is the downstream deterioration of the channel as grade control structures transfer the erosion and bed degradation downstream. In additional sensitivity analyses, the Corps evaluated the effects of the grade control alternatives with three levels of permitted commercial sand and gravel dredging in the river. Over the 40-year period of analysis, the height of the drop over the final grade control structure would be approximately 3 feet without dredging, approximately 5 feet with half the currently permitted dredging, and over 10 feet maintaining currently permitted dredging limits. That general pattern also held true the analyses of the other alternatives.

Modification or Additional Measures Needed to address Fish and Wildlife Concerns and Planning Objectives

At this point, the Service has not seen a complete analysis of the intermediate array of alternatives, so our comments are based on the preliminary alternatives noted above. Based on the results of the analyses, the Corps should complete a comprehensive investigation of the expected changes in aquatic habitats that would occur under any alternative they carry forward in the analyses. In addition to effects to aquatic habitats, those analyses should also consider impediments to fish access not only along the main stem of the river, but also along the tributaries as bed degradation moves downstream. Implementing a partial solution to the bed degradation only in the Kansa City reach could not only threaten the tens of millions of dollars of aquatic habitat work the Corps has implemented in the last twenty years, but likely would require future adjustments to the BSNP at significant cost. The cost of addressing downstream bed degradation should be included in this study to most accurately understand the effects and economic investments needed to ensure a feasible, sustainable solution to Missouri River bed degradation.

We also note that the sensitivity analyses conducted by the Corps indicated a consistent pattern of increasing degradation with increasing commercial sand and gravel dredging. While a number of factors cited above contribute to bed degradation along the lower river, there a few factors the Corps has limited influence over (i.e., main stem and tributary dams, BSNP, adjacent development of floodplain) aside from routine operations and maintenance.

Thus, it becomes critical to explore a variety of potential measures that collectively can help address the problem. To that end, the Service believes the Corps should carefully consider potential alternatives that would move commercial dredging off the river to reduce or eliminate its contribution to continuing degradation effects. While this would be a considerable change from current operations, is it not without precedent. Commercial dredging was moved off the lower Kansas River due to bed degradation concerns. Alternative sources of material, such as-on the floodplain, may be a viable way to reduce material removed from the sediment-starved river, and also provide opportunities for aquatic habitat restoration in the areas mined for sand or gravel. Depending on the facility design, it may be more compatible with high river stages than other land uses, thus potentially avoiding future flood damages as well.

Recommendations

Based on the preliminary results to date, the Service recommends the Corps look at the array of alternatives from the context of the entire river system. As we have repeatedly seen, changes in one reach can have significant direct and indirect effects elsewhere along the river. The solution should work long-term, avoiding a reach-specific alternative that will lead to decades of downstream bed degradation and additional investments in repairs, relocations, and remedial structures. This may best be accomplished by revisiting the BSNP and other Missouri River program authorities to more comprehensively explore potential solutions that best meet current conditions along the river, as well as our best projections for expected conditions over the next fifty years. Enlarging project purposes for the study would incorporate greater flexibility in potential options that could reinforce one another, rather than work at cross purposes. The river functions as a system and our most effective and least costly long-term solutions must also operate at that scale. Finally, the Corps should provide the Service a full analysis of expected changes in aquatic habitats along the river and lower tributaries over the project life. A structural solution to address bed degradation should not undo or degrade previous habitat work in and along the lower Missouri River.

Thank you for the opportunity to submit these comments. The Service looks forward to working with the Corps as the Study progresses. If you have questions regarding our comments, or need additional assistance, please contact Jane Ledwin at (573)234-2132, extension 109.

Sincerely,

Amy Salveter
Field Supervisor

cc: USFWS, ES, Manhattan, KS (Blackford)
USFWS, MO River Coordinator, Yankton, SD (Kruse)
MDC, Policy Coordination, Jefferson City, MO (Campbell-Allison)
KDWP, Topeka, KS (Adams)