

7.1 EFFECTS OF ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

7.1.1 Introduction

This chapter presents the hydrologic; water quality; sedimentation, erosion, and ice processes; economic; and environmental effects of a set of five alternatives to the current Water Control Plan (CWCP). The Corps would like to receive feedback from the Tribes, States, other Federal agencies, stakeholders, and other interested parties on this set of alternatives and their impacts as it moves through the process of determining what the future Water Control Plan should be for the Mainstem Reservoir System.

This chapter identifies the effects of the CWCP and five other alternatives. One alternative includes three basic plan components that were changed from those making up the CWCP. These changed components include unbalanced storage among the three upper and largest lakes in the Mainstem Reservoir System, increased drought conservation measures like those included in the MRBA alternative (see Chapters 4 and 5), and a Fort Peck spring rise approximately every third year (when conditions allow). Because the most dominant factor in this alternative is the modified drought conservation measures, this plan is referred to as the modified conservation plan, or MCP. The other four alternatives include changes to releases from Gavins Point Dam—increased spring releases (a spring rise) and lower summer flows. Because these four alternatives have modified Gavins Point Dam releases, they are called the Gavins Point options, or GP options. Their specific naming convention has six characters: GP followed by two numerals representing the amount of the spring rise in thousand cubic feet per second (kcfs), followed

by two numerals representing the amount of the summer low-flow release from Gavins Point Dam. For example, the **GP1528** option includes a **15**-kcfs spring rise release above that normally required for full service to navigation (modeled as running from mid-May to mid-June), followed by a minimum service flat release (modeled as **28.5** kcfs) that ends on September 1. Similarly, the **GP2021** option has a **20**-kcfs spring rise followed by a 25-kcfs release to mid-July when the release drops to a low of **21**-kcfs until mid-August when it returns to 25 kcfs until September 1. The GP1528 option represents a potential starting point for the Gavins Point Dam release changes because it has the smallest changes of the four options from the releases of the CWCP in the spring and summer (34.5-kcfs flat release). The other two options included in this chapter are GP1521 and GP2028. These two options are included to provide a perspective of what would happen if the summer low-flow release were further reduced without changing the spring rise (GP1521) and if the spring rise were further increased without changing the summer low-flow release (GP2028). Table 7.1-1 shows the features of the alternatives.

A much different approach is taken in this chapter for the comparison of the effects of the alternatives. First, the effects of changing from the CWCP to the MCP are identified relative to the effects of the CWCP. Second, the effects of changing from the MCP to the GP1528 option are identified relative to the effects of the MCP. This is done to demonstrate what might happen to the various economic uses and environmental resources as the smaller (of those in the GP options) Gavins Point Dam release changes are added to the MCP. Finally, the effects of the other three GP options are compared to the relative effects of the GP1528. This comparison identifies what could happen if the greater Gavins Point Dam changes were made assuming that the GP1528 option was implemented before the other three.

Table 7.1-1. RDEIS alternatives selected for detailed analysis.

Feature	CWCP	MCP	GP1528	GP2021	GP1521	GP2028
Adaptive Management	Yes	Yes	Yes	Yes	Yes	Yes
Drought Conservation Measures	CWCP	>CWCP	>CWCP	>CWCP	>CWCP	>CWCP
Unbalancing of Upper Three Lakes	No	Yes	Yes	Yes	Yes	Yes
Fort Peck Flow Modification	No	Yes	Yes	Yes	Yes	Yes
Gavins Point Release Changes:						
Spring Rise	No	No	15 kcfs	20 kcfs	15 kcfs	20 kcfs
Summer Flow	34.5 kcfs	34.5 kcfs	28.5 kcfs	25/21 kcfs	25/21 kcfs	28.5 kcfs

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The analyses identify the relative effects of changing to the other options under an iterative process such as the adaptive management process. The effects are presented in a variety of ways from average annual data to annual data. In some cases, more detailed data is presented to provide the reader with data that more closely match the areas of concern that have been expressed throughout the Study process in general, and more specifically during the preparation of this RDEIS.

The comparative process presented in this chapter will allow the reader to more completely understand the effects of individual plan components. The reader is encouraged to place more emphasis on the relative difference in values among the alternatives than on the absolute value for each alternative. The modeling techniques used in the Study were developed to measure the effects of changing the CWCP and not to forecast the future. Many factors that will influence future economic and environmental performance were not modeled.

Each section of this chapter includes one or more tables that include data broken down by river reaches. In some instances, the data for the individual reaches do not add up to the total value included in the table. This occurs because the

numbers were rounded off after the totals were computed.

As was done in Chapter 5, data specific to many of the basin Tribes are presented. This effort was incorporated into this chapter as the Corps strives to better fulfill its Trust responsibilities to the Native American Tribes in the Missouri River basin.

Finally, this chapter has several more sections than Chapter 5. These additional sections include discussions of the cumulative effects of operating under the alternatives selected for detailed analysis, mitigation measures that must be considered for the alternatives, a depletion analysis (analysis of operations with less water than currently available) of two of the alternatives: the GP1528 and GP2021 options. Another section was also added that presents the results of analyses of two changes that could be made to two or more of the GP options as part of the Annual Operating Plan (AOP) process. Besides these specific additional sections, the results of additional analyses are included under the hydropower and Mississippi River sections that were not included in the corresponding sections of Chapter 5. These additional analyses were for hydropower revenue and consumer rate analyses, capacity and energy at risk during the low-flow period, and shallow water habitat in some representative Mississippi River chutes.