

## Summary

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Differences exist between documents.

### New Document:

[FinalEIS](#)

9 pages (1.42 MB)

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### Old Document:

[Appendices](#)

10 pages (1.54 MB)

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No pages were deleted

## How to read this report

**Highlight** indicates a change.

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**Appendix CC**

**Additional Measures Beyond the Federal Project**

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## APPENDIX CC. ADDITIONAL MEASURES BEYOND THE FEDERAL PROJECT

### Recreational Impacts and Proposed Recreation Facility Modification Measures

The water providers will address adverse recreational impacts through the implementation of the Recreation Modification Plan (Appendix M). The Chatfield Marina Reallocation Impact Assessment Report (Appendix N) also includes additional design features that may be required to ensure the marina operates as effectively as it did prior to the reallocation. As mentioned above, the water providers continue to work with staff of Colorado State Parks to identify additional recreational features that could be implemented in order to enhance the recreational experience beyond what is captured within the federal plan. These features beyond the tentatively Federally Recommended Plan provide additional assurance to State Parks that a like-kind recreational experience at Chatfield State Park will occur following the reallocation of storage space, as well as to ensure Colorado State Parks is compensated for any lost revenue or increased costs incurred as a result of this project.

The following are key features of the recreation modifications that the water providers would implement as part of the tentatively Recommended Plan. Where noted, there are additional measures that the water providers propose to fund and undertake in providing State Parks additional assurances of a like recreational experience, these are also listed in Table 5-23 of the FR/EIS.

1. Impact Issue: Under current conditions, Chatfield Reservoir typically fluctuates no more than 5 feet in elevation during the recreational season (from Memorial Day to Labor Day), with the top of the conservation pool at 5,432 feet msl. If the reallocation is approved, the top of the new conservation pool would be located at 5,444 feet msl, and reservoir fluctuations during the recreational season would increase up to 12 feet for a total of 17 vertical feet. Many of the current facilities would be inundated and require replacement. In addition, the vertical distance over which the shoreline would fluctuate would increase significantly depending on slope of the shoreline, potentially leading to greater setbacks to which recreational facilities, shade trees, and parking areas would be relocated.

Due to these factors, visitors are likely to be required to walk further distances to enjoy both interacting with the shoreline and using the associated recreation facilities. Additionally, particular areas within Chatfield State Park could become more crowded because visitors may preferentially use relocated day use areas that are closer in overall distance to the water level and make less use of day use areas farther from the water. This might be especially true in years where there is not enough water available in priority to keep the reallocated storage space full. Most years, the reservoir is not anticipated to fill.

Method of Mitigating Impact: The Recreation Modification Plan is the component of the tentatively Recommended Plan that addresses impacts to facilities, day use areas and infrastructure by relocating those facilities to elevations higher than the top of the new conservation pool (5,444 feet msl). The Recreation Modification Plan also includes significant amounts of grading in order to provide the beach and other shoreline dependent recreation areas a slope that minimizes the distance between support facilities and the water's edge. The facility relocation along a regraded shoreline is thought to be sufficient to accommodate current uses of the recreation areas. Water providers and State Parks would continue to work closely in

final design to address those key recreational features (e.g., boat ramps, beach, disabled-  
accessible fishing piers) so that these facilities continue to be easily accessible regardless of how much water is being stored in the reallocated space.

Through the adaptive management process, the Chatfield water providers would work closely with the Corps and appropriate resource agencies in the development of a Coordinated Reservoir Operations Plan (during normal operation) to minimize potential reservoir fluctuations and provide greater certainty with regard to the anticipated water level, particularly during the high use recreational season (May 1 – September 30). The ability to minimize these impacts may be opportunistic and/or programmatic. However, these opportunities may also be limited by water rights, costs, or other constraints. The initial outline of a reservoir operation plan can be found in the CMP (Appendix K).

The water providers also propose to work with State Parks and the Division of Wildlife in those particular areas. Where these grading measures are not completed as a result of implementing the Recreation Modification Plan, these features are considered additional to the tentatively Recommended Plan. To deal with recreation density issues, the water providers propose to work with State Parks and landowners adjacent to Chatfield State Park to maximize buffer areas (via easements) to offset the loss of usable land. These features are also being pursued by the water providers and the State outside of the tentatively Federally Recommended Plan.

2. Impact Issue: Natural shade and aesthetics for park visitors would be reduced due to the complete or significant loss of mature cottonwood trees located within the reallocated storage space.

Method for Mitigating Impact: The Recreation Modification Plan would replant trees as part of relocating facilities; however the ability of those trees to immediately provide shade would be limited. The Tree Management Plan (Appendix Z) attempts to minimize the amount of large trees removed by minimizing the number of trees that are removed above elevation 5,439 feet msl due to their higher likelihood of survival. In addition, the CMP also identifies onsite mitigation to be the number one priority for mitigating ecological resources. In completing onsite mitigation, replacement of lost riparian areas and wetlands would occur, not only helping to replace ecological values, but also would eventually provide some replacement value for shade. Where the Recreation Modification Plan, Tree Management Plan and CMP do not provide immediate replacement of natural shade for park visitors, the water providers have agreed to work with the State to provide for the reforestation of certain areas where State Parks feels it would help preserve park aesthetics and provide shade. These additional plantings are being considered outside of the tentatively Federally Recommended Plan.

3. Impact Issue: In more gently sloping areas of the new conservation pool, shallow water levels would increase boating hazards.

Method for Mitigating Impact: This issue would be addressed by adaptive management, which would include proper signage and marking of hazards to minimize risk to park visitors as hazards arise during implementation.

4. Impact Issue: Marina facilities, both on land and on water, would become unusable at their present location due to inundation and more significant water level fluctuations. Marina

facilities would also lose the protection they currently have from wave and ice actions, because the existing breakwater and surrounding land masses would be inundated.

Method for Mitigating Impact: The Recreation Modification Plan (Appendix M) provides a concept design for modifying the marina facility and associated recreation facilities, including the need to maintain breakwaters, and the ability for the marina to deal with higher levels of lake fluctuations. In addition, the Chatfield Marina Reallocation Impact Assessment Report (Appendix N) includes additional design features that may be implemented if required for making the marina fully functional. The water providers would continue to work closely with Colorado State Parks through final design and implementation to ensure the marina is fully operational.

5. Impact Issue: Water quality may be degraded due to increased water level fluctuations and shoreline erosion.

Method for Mitigating Impact: This issue would be addressed by adaptive management which would include increased water quality monitoring within Chatfield Reservoir, in coordination with the Chatfield Watershed Authority's ongoing water quality sampling efforts.

6. Impact Issue: The costs of operating the Chatfield Lake project (Corps) and Chatfield State Park (Colorado State Parks) would increase for the duration of the project due to more frequent and larger water level fluctuations. State Parks may also experience decreased revenues from lost visitation, due to a diminished recreational experience both during and post-construction. In addition, daily, weekly, and monthly park and marina operations would need to be significantly modified to account for more frequent and larger water level fluctuations, and therefore, the marina operators would experience additional annual cost.

Method for Mitigating Impact: The water providers would be responsible for an appropriate share of the Corps' annual costs that include specific and joint-use operation, maintenance, repair, replacement and rehabilitation (OMRR&R) costs. In addition, while it is beyond the requirements of the tentatively Federally Recommended Plan, the water providers would reimburse Colorado State Parks and the operators of the marina on an annual basis for lost revenues that result as a consequence of the reallocation.

### **Environmental Impacts and Proposed Mitigation Measures**

Preble's mouse habitat, bird habitat, and wetlands were identified in the FR/EIS as resources of particular concern and warranting specific mitigation strategies for the estimated adverse impacts to these "target environmental resources". The CMP is designed to offset the adverse impacts to these target environmental resources associated with tentatively Recommended Plan should it be approved as proposed. Through adoption and implementation the Tree Removal Plan by the water providers, it is believed that avoidance and minimization of impacts to mature riparian forest areas would be maximized. The CMP concludes the following: 1) there are adequate opportunities within the Chatfield Reservoir watershed to mitigate for adverse impacts to the target environmental resources; 2) the proposed compensatory mitigation measures have a high likelihood of being successfully implemented; and 3) the estimated costs for implementing, managing, and monitoring the proposed mitigation are within the range of feasibility for the water providers. The CMP is ecologically based and the "currency" of the CMP is ecological functional units (EFUs). The EFUs capture the ecological functions provided by the individual target environmental resources as well as

accounts for the substantial geographic overlap of the target environmental resources. The CMP establishes quantifiable objectives and maximizes the amount of mitigation that would occur on Corps lands in the vicinity of Chatfield Reservoir. The CMP provides requirements for monitoring, reporting, and adaptive management. The water providers and the Corps are dedicated to implementing the adaptive management strategy detailed in the CMP to address any areas of uncertainty in the impact analysis. The adaptive management strategy would involve several agencies and interested parties. To ensure the CMP is successfully implemented, it establishes milestones for implementing mitigation activities and meeting success criteria as a precondition to use of proportionate amounts of reallocated storage, and an alternate track that would allow use of the reallocated storage, provided the water providers establish an escrow fund for implementation of the CMP and meet the established mitigation milestones. The mitigation milestones are linked to use of the reallocated storage by the water providers, thus assuring the mitigation would be accomplished as a prerequisite to proportionate use of the storage reallocation. The CMP is estimated to take 6 years to implement and another 5 years of management and habitat improvement to realize the target EFU gains.

The following outlines key impacts, and mitigation measures proposed in the CMP to address these impacts as an integral part of the tentatively Recommended Plan. Where noted, additional measures may be pursued by the water providers in coordination with State Parks and the Division of Wildlife, these are also listed in Table ES-8 of the FR/EIS. These measures are intended to provide ecological benefits above and beyond where the CMP has planned to replace lost ecological functions. As such, they are considered outside of the tentatively Federally Recommended Plan.

1. **Impact Issue:** About 789 acres and 1,180 EFUs of the target environmental resources (consisting of Preble's habitat, bird habitat, and wetlands) are estimated to be impacted by the tentatively Recommended Plan. This includes 586 acres (775 EFUs) permanently impacted by inundation, 30 acres (21 EFUs) impacted from the permanent footprints of recreation facilities, and 173 acres (384 EFUs) temporarily impacted by borrow and fill areas and utility relocations.

**Method for Mitigating Impact:** The CMP maximizes the amount of mitigation that would occur on-site; up to 338 acres and 203 EFUs of mitigation are proposed to occur on-site above the maximum pool elevation of 5,444 feet msl. An estimated 384 EFUs would be mitigated on-site and in place with the restoration of the borrow areas and utility relocations, and up to 85 EFUs of combined wetland and riparian habitat would be created on-site that would benefit Preble's and birds, including up to 23 acres of Preble's critical habitat. The mitigation for the remaining EFUs (up to 711) would occur off-site. The total number of off-site acres needed for mitigation would depend on the land's acquired and the number of EFU's gained per acre. The majority of the off-site mitigation would occur on private lands in the Plum Creek watershed upstream of Chatfield Reservoir through the permanent protection, enhancement, and management of riparian habitats and adjoining uplands to benefit the target environmental resources. Off-site mitigation for impacts to Preble's critical habitat on the Upper South Platte is proposed to involve implementation of the Sugar Creek Sediment Mitigation Project and other habitat enhancement measures in the Pike National Forest.

2. **Impact Issue:** Loss of mature cottonwoods around Chatfield Reservoir

Method for Mitigating Impact: One of the goals of the CMP is to compensate for the loss of up to 42.5 acres of mature cottonwood bird habitat by protecting up to 22.5 acres of mature cottonwood woodlands within a defined off-site bird habitat complex and creating up to 13 acres of specifically designated cottonwood recruitment areas on-site and up to 10 acres off-site that would contribute toward the total compensatory mitigation goal of up to 796 EFUs that are estimated to be permanently lost under Alternative 3. The CMP addresses these impacts to wetlands, federally-designated critical habitat, and noxious weeds.

In addition, the water providers propose to fund stream habitat improvements on up to 0.7 miles of the mainstem of the South Platte River above Chatfield Reservoir. The specific site and project design would be done in coordination with the Colorado Division of Wildlife. These habitat improvements are considered to be beyond the requirements of the tentatively Recommended Plan, and are being pursued by the water providers with the Division of Wildlife in order to provide environmental benefits in addition to the tentatively Recommended Plan.

3. Impact Issue: The EIS anticipates benefits to reservoir fisheries resources, including walleye, and no impact to the fish rearing station downstream. However, because the walleye broodstock program and Front Range trout stocking programs are heavily reliant on Chatfield Reservoir, the Colorado Division of Wildlife believes the impacts to those resources, if they would occur, would be highly impacting to their overall program. Specifically the Division of Wildlife is concerned about the impact of water fluctuations on walleye, and flows downstream to the fish rearing station.

Method for Mitigating Impact: Through the adaptive management process, a Coordinated Reservoir Operations Plan would be developed that would limit releases of water stored in the reallocated pool during critical seasonal periods, in order to minimize adverse impacts to fish spawning and minimize impacts to water supply to the downstream hatchery. The initial outline of a reservoir operation plan can be found in the CMP. The adaptive management process would allow the water providers, Corps, and resource agencies to be responsive to issues should they arise.

4. Impact Issue: The following impacts to water quality, while not anticipated to be significantly impacted in the analysis found in the EIS, remain an area of uncertainty due to the uncertainty that surrounds modeling of such attributes. The following lists the main points of concern for State Parks and the Division of Wildlife.
  - a. Aquatic species within Chatfield Reservoir could be harmed if increased erosion of fine sediment would occur due to increased fluctuations.
  - b. Dissolved oxygen levels could decrease to levels considered to be “worst case” in the EIS, potentially causing aquatic species in Chatfield Reservoir to be exposed to higher levels of mercury, which could be picked up in the food chain.

Method for Mitigating Impact: The following actions would address potential impacts to water quality:

- a. As part of adaptive management, a water quality monitoring program would be developed for within and downstream of Chatfield Reservoir to monitor possible



- impacts that result from a reallocation. A Coordinated Reservoir Operations Plan would help to identify where downstream flows might be improved. It is also thought that water retention times in the reservoir could be key to maintenance of water quality. Reservoir operations could be manipulated in such a way as to reduce retention times to ameliorate impacts of nutrient concentrations on water quality should the issue arise.
- b. The Sugar Creek Project, as outlined in the CMP, would mitigate for impacts to Preble's meadows jumping mouse and its habitat and should provide stream stabilization and potentially reduce the sediment and pollutant loads into the Chatfield Watershed, including Chatfield Reservoir. The water providers would monitor the water quality within Sugar Creek for a period of time after construction of the Sugar Creek Project.
  - c. The habitat improvements and creation of new wetlands along Plum Creek should also help improve water quality. The water providers have offered to review wetland design concepts with the Chatfield Watershed Authority to identify design elements that may further enhance water quality and to monitor water quality for a period of time after completion of the new wetlands projects.
5. Impact Issue: Increased storage of water in Chatfield Reservoir could result in loss of stream habitat below Chatfield Reservoir due to additional zero and low flow days.

Method for Mitigating Impact: Through the adaptive management process, a Coordinated Reservoir Operations Plan would be developed in which those water providers that release their stored water through the Chatfield Outlet Manifold and then subsequently divert it at a downstream location would use their individual and collective "best efforts" to coordinate their releases in a strategic manner that would assist in reaching stated water flow goals in the South Platte River below Chatfield Reservoir, to assist in the flow requirements at the Chatfield State Fish Unit and to minimize the potential for increased low-flow or zero flow days. The availability of additional water in Chatfield Reservoir is also thought to provide potential in the future to pursue instream flow goals that may produce benefits as identified in the Draft Ecosystem Restoration Evaluation Report (Appendix D) via other Corps and non-Corps authorities.

While loss of habitat downstream was not considered to be a significant issue in the EIS, to allay concerns of the Division of Wildlife, the water providers have agreed to pursue stream habitat improvement on up to 0.5 miles of the mainstem of the South Platte River downstream of Chatfield Reservoir as an effort outside of implementing the tentatively Recommended Plan. The specific site and project design would be done in coordination with the Colorado Division of Wildlife.

6. Impact Issue: There would be increased shoreline exposure leading to creation of large mudflats, loss of existing wetlands and new weed proliferation due to more frequent and greater water level fluctuations. The possibility of introducing aquatic nuisance or invasive species (i.e., Eurasian Water Milfoil) from surrounding positive areas would increase during high water and flooding.

Method for Mitigating Impact: Water providers would work with the state to increase noxious weed management on lands inundated by reallocation storage and below elevation 5,444 feet



msl, in order to avoid an influx of invasive species, maintain vegetative diversity, and preserve park aesthetics.

The measures listed above are conceptual and intended to provide the public with information for review and comment during the NEPA Process, and provide decision makers a basis upon which to base their decisions. The specific measures used to mitigate adverse recreational impacts may be revised or expanded based on input received during the public comment period, continued coordination with and input from Colorado State Parks, the Division of Wildlife, and other resource agencies. Adaptive management will be necessary in order to address unforeseen or unanticipated impacts as they may arise in the future.

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