



Green River Lock and Dam #5 is slated for removal in fall 2021. © Mike Wilkinson

Green River Lock and Dam #5

Biological assessment clears the way for dam removal

Removing Green River Lock and Dam #5 at the Butler and Warren county line will restore 200 miles of free-flowing conditions to the river for the first time in more than a century. Lock and Dam #5 is the linchpin in the largest river restoration project in state history, and The Nature Conservancy, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service plan to commence removal efforts in the fall of 2021. Before moving forward with actual removal, however, TNC and its partners have to complete a myriad of other steps, including conducting a biological assessment of the river to determine how the dam removal would impact threatened and endangered species.

“Amazingly, there are 16 threatened and endangered species in the dam’s footprint, from the Indiana bat to the Kentucky cave shrimp, the pink mucket mussel, and the cat’s paw

mussel, to name just a few,” says Danna Baxley, director of conservation for the Kentucky chapter. “Our consultants did a really deep assessment on where the species occurred and how the removal process and changes in flow will affect those species.”

The consultants evaluated conditions both upstream and downstream of the dam and found that the 12.6 miles upstream contained no habitat for any of the mussel species. This is because the water is pooled upstream of the dam, and these species thrive in flowing water. Downstream of the dam, where water does flow, are some of the best mussel beds in existence for these species. “The big takeaway for me is how important these natural flows are to species, especially endangered mussels,” Baxley says. “What will be amazing is to see these mussel species hopefully repopulate upstream.”

The assessment found that seven of the threatened and endangered species will not be affected by the dam removal process, while nine have the potential to be negatively impacted. The report outlines mitigation techniques needed to protect those impacted species. Several of the techniques focus on controlling sediments and erosion.

“The dam removal crew will be working during the lowest flows and building work paths that are not near endangered species habitat,” Baxley says. “The project team is going to notch the dam, slowly bringing the water down to try and stabilize the banks as much as possible and reduce negative impacts of trees falling in the river. The team will revegetate the river’s banks at the work site immediately following removal to reduce sedimentation.”

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Safeguarding a community's water supply

Part of The Nature Conservancy's feasibility work for the removal of Green River Lock and Dam #5 included assessing a potential water intake issue for the Edmonson County Water District. The dam's pool extends to Edmonson County, where the county maintains a water intake. Water district officials were concerned that the dam removal and subsequent lowering of the water level would leave the county's intake pipes out of the water.

"The U.S. Army Corps of Engineers conducted an assessment of the most severe droughts that have ever happened in the area, and they modeled the flows that would occur during those hundred-year drought periods," says Danna Baxley, director of conservation for the Kentucky chapter. "There are two intake pipes for the facility, and both would be above the water according to the assessment."

To ensure that the county would still be able to get water, officials requested a portable pump to mitigate the effects of low water levels during future drought conditions. TNC used grant funding from the Ohio River Basin Fish Habitat Partnership to purchase and install this portable pump to provide another assurance that Edmonson County will have access to the river under all conditions.

"The Edmonson County Water District appreciates the concern and commitment that The Nature Conservancy has shown us," says Tony Sanders, general manager for the district. "They have been great to work with and have helped the Water District voice our concerns involving the projected removal of Lock and Dam #5. Without their assistance the Water District would not have been as informed and prepared for the removal."



Clockwise from top left: Endangered sheepnose mussels © Monte McGregor; Green River Lock and Dam #5 © Mike Wilkinson; Removal of Green River Lock and Dam #6 © Philip Scott Andrews

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Completing the biological assessment was the final step in the dam removal's feasibility stage. Now TNC and its partners can focus on other preparations for the removal. Congress appropriated an additional \$4.6 million in federal Fish Passage funding in Fiscal Year 2020, fully funding the project.

"We've been very fortunate to have strong support from Senator McConnell on the project," says Heather Majors, director of external affairs for the Kentucky chapter. "He's always been very supportive of our work on the Green River. These dams pose a safety hazard and a barrier to river-based recreation. Their removal provides a real chance to bring more outdoor recreation and tourism to boost the economies of nearby communities."

Rob Bullard, director of the Tennessee and Cumberland rivers program for the Tennessee chapter, has assisted with a dozen dam removals over the past decade. He says dam removal is the best way to address habitat fragmentation, a major threat to aquatic biodiversity.

"Most fragmentation is caused by physical barriers," Bullard says. "There are few things that give you the kind of bang for your buck that a dam removal achieves."

Bullard says the U.S. Fish and Wildlife Service dam removal team will use a hydraulic hammer, lowering the dam in multiple phases. The project is expected to take four months to complete.

"It's a massive project and a massively important river," Bullard says. "This is a major success for conservation, safety, and recreation, so it's a big win for both people and nature."