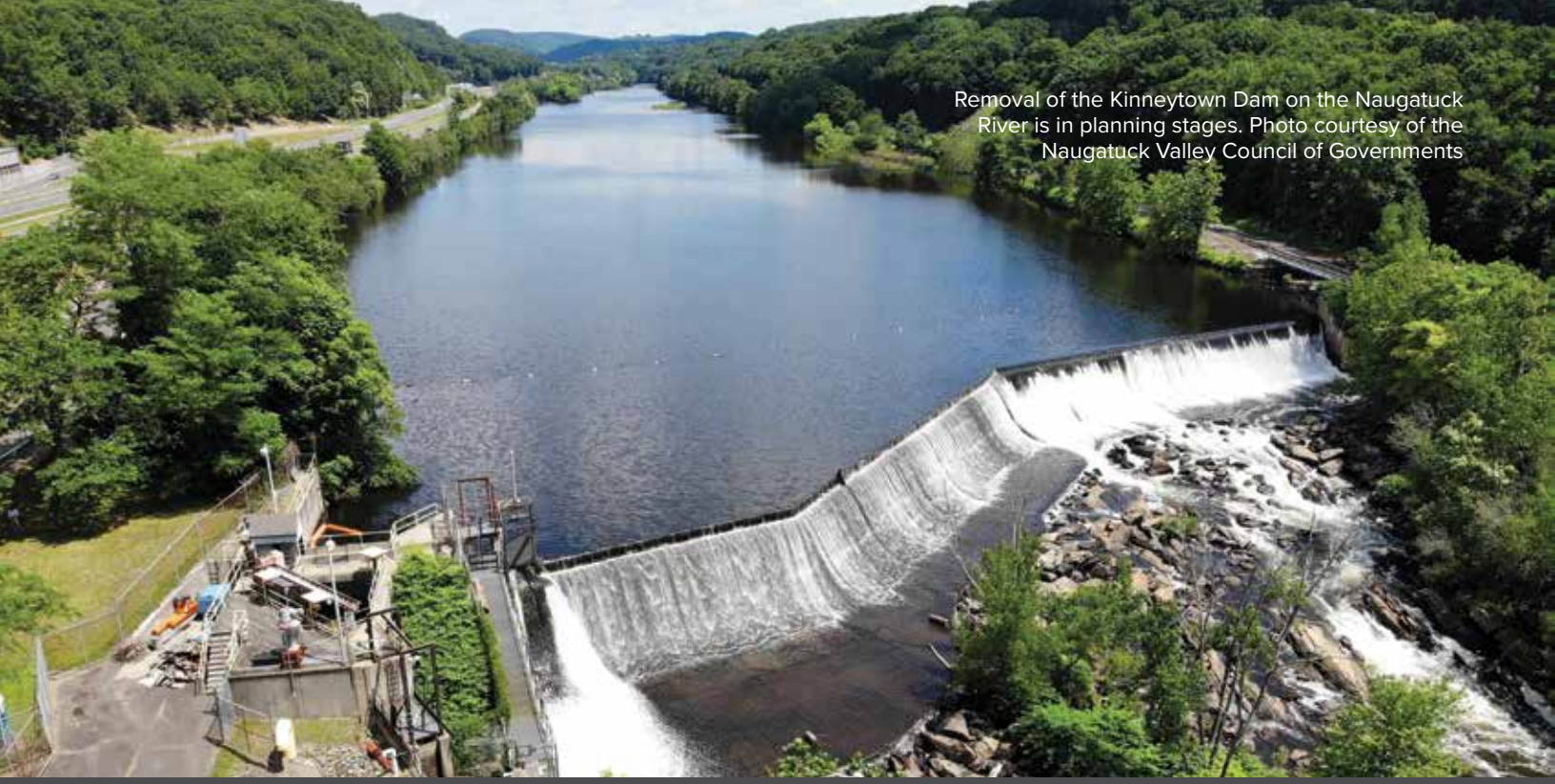

Removal of the Kinneytown Dam on the Naugatuck River is in planning stages. Photo courtesy of the Naugatuck Valley Council of Governments

What's the dam problem?

How removing outdated barriers can reconnect Connecticut's rivers and restore fish passage

By Erica Casper

Most Connecticut residents probably pass a dam every day without realizing it. A small waterfall in a park. A pond behind a stone wall. A mill pond that looks as though it's always been there.

In reality, many of these features are human-made footprints of Connecticut's industrial past when dams were built to harness rivers for power, water, flood control and recreation. And with more than 4,800 dams, Connecticut has more dams per river mile than any other state.

The majority of Connecticut's dams date back more than 100 years, built before their impacts on rivers and wildlife were fully understood. Now, we know that dams can block fish migration, disrupt wetland habitats, contribute to warming waters in stagnant reservoirs and exacerbate flood risks during storms. In addition, these structures require costly maintenance as they age to keep them from disrepair and unplanned failure, a consequence that threatens public safety.

Most of these structures no longer serve their original need, yet impede efforts to restore rivers for wildlife and improved water quality.

"A lot of the dams in Connecticut are old hydromechanical power dams… they no longer serve a purpose," said Alex Krofta, a project manager with Save the Sound who oversaw the removal of Strong Pond Dam, commonly known as Dana Dam, on the Norwalk River. "They're completely obsolete. They're 8-track players."

A dam's environmental impacts become harder to justify once the dam no longer provides a useful function. That, coupled with concerns such as landowner liability, compromised water quality and fragmented ecosystems have led to increased efforts to remove outdated dams.

"When an impoundment is no longer serving a purpose, removal can have a lot of benefits," said Harry Yamalis, an environmental analyst with the Connecticut Department of Energy and Environmental Protection. "You can eliminate the liability associated with the dam while restoring more natural conditions in the river."

Since 2015, 147 river miles have been reconnected through the removal of 76 dams statewide. But there are still thousands of dams dotting Connecticut's rivers, highlighting an issue with no quick resolution.

Removing a Dam is More Than Taking It Down

Removing a dam can take years, even when there is broad support. A small, fairly simple dam removal project can

Dana Dam on the Norwalk River was built in the 1940s and was torn down in 2023. Photo: Alex Krofta / Save the Sound

cost a hundred thousand dollars or more, and requires multiple permits, plans and engineering designs. Removing a dam can also create new risks. For example, the release of contaminated sediment from behind a dam can have negative impact on downstream habitats. And without careful planning and skilled implementation, removal can lead to downstream flooding, at least in the near-term.

And though we most often think of the downstream effects, the area upstream of a dam removal also requires expert planning, calculation and design—when the slow-moving impoundment transitions back into a flowing river, any adjacent buildings or infrastructure must be shored up against new patterns of water flow and erosion.

The challenges don't mean defunct dams should be left in place. Instead, they illustrate why removal requires careful planning and why resources and grants from many organizations at the local, state and federal level can be critical.

Connecticut may have more than 4,800 registered dams, but each removal begins the same way: with one structure, one river, and a consensus that the status quo no longer makes sense.

Dana Dam in Wilton is one such example of a barrier that has now been removed. But the journey to get there was as winding as the river it reopened.

Dana Dam: Rebuilding a River

Dana Dam was built by Charles Dana in the 1940s to create a swimming and ice-skating pond for his children. The 250-foot-long, 11-foot-high concrete and earthen structure created an approximately two-acre-large impoundment. After the removal of Norwalk's Flock Process Dam in 2018, Dana Dam became the first barrier that fish encountered when swimming upstream on the Norwalk River from Long Island Sound.

Nearly two decades passed between the first discussions about removing Dana Dam and the day the river flowed freely through the site once again. Early plans stalled, support had to be rebuilt, and years of design and permitting followed. By the time the structure finally came down in 2023, the design team had spent years planning and permitting, and construction crews had spent months reconstructing the former impoundment into a river channel.

Part of that work involved rerouting the existing main channel to a secondary channel that moved the waterway away from an adjacent railroad embankment. With that came a need to control erosion and stabilize the new river corridor. Engineered "grade control riffles" were installed to mimic natural riffles and maintain channel stability. These are shallow, rocky sections of streams where water tumbles over stones. Large rocks and vegetation were used to stabilize the riverbank and keep sediment in place. And the project didn't stop when the structure came down. Ongoing management includes engineering inspections, ecological monitoring and invasive species control.

For Dana Dam, like many others, one of the main goals was to restore fish passage. Migratory fish such as river herring, American eels, and sea lampreys depend on connections between Long Island Sound and freshwater rivers and streams during different parts of their lives. A dam can interrupt those journeys entirely. While restoring any opportunity for fish to migrate across what was once a complete barrier to them can be considered a success, Krofta explained that the Dana Dam removal opened the way as completely as possible.

"There are some sites downstream that may still be partial barriers: old dam remnants, sections of disturbed channel, some utility armoring, bridges and culverts. The site that we've restored, the Dana Dam removal site, should not be

A backhoe tears into the concrete wall of Dana Dam. Photo: Melissa Pappas / Save the Sound

a partial barrier at all," Krofta said. "That should be zero barrier."

Sea lamprey have been spotted by Trout Unlimited volunteers upstream from the removal site, an encouraging sign. Save the Sound recently completed its first round of environmental DNA (eDNA) sampling. Samples collected above the restoration site have confirmed that herring are indeed moving through the restored river corridor, into reaches of the Norwalk once inaccessible. Additional years of eDNA sampling will follow, along with attempts to observe and document herring firsthand.

"I want to see them," Krofta says. "I believe they're here now, but I still want to see them."

Not Just a Fish

For Krofta, the significance of the dam removal extends beyond individual fish species.

"That's not just a fish, that's an ecological process," he said. "That's a massive influx of marine biomass upstream into freshwater, laying eggs, reproducing, feeding every creature that is on the banks and in the stream already."

In other words, restoring fish passage also restores connections within the larger ecosystem. Fish moving between Long Island Sound and freshwater rivers transport nutrients, become food for other wildlife and help reconnect ecological processes that dams interrupted.

Kinneytown: Removing a Barrier on the Naugatuck

Elsewhere in Connecticut, another dam on the cusp of removal illustrates the potential benefits of removal and challenges in getting there. Kinneytown Dam in Seymour spans the Naugatuck River, a 40-mile waterway that once powered manufacturing centers in Torrington, Naugatuck and Waterbury. Kinneytown was built in the mid-1800s and provided power for nearly two centuries.

Connecticut began investing heavily in restoring the Naugatuck River in the 1990s, after decades of industrial pollution. Those efforts included bringing migratory fish back to the river and resulted in the construction of a fish ladder at Kinneytown Dam. The hope was that the ladder would allow fish to travel upstream while the dam remained in place. But monitoring showed that the ladder was not working effectively, with virtually no migratory fish successfully making the trip upstream.

That discovery started discussions around 2018 about how to improve the fish ladder or build another way around the barrier. Then the equation changed. The last remaining hydropower station went offline in 2020, with no plans to restore it. The conversation changed from fixing the passage to removing the dam.

"We started realizing around then that the best and only way to really restore fish passage would be to remove the dam," said Aaron Budris, environmental planning director of the Naugatuck Valley Council of Governments. "And removal will also remedy numerous other problems that the dam is causing."

Paul Woodworth, senior director of ecological restoration at Save the Sound, agreed.

"If it's not going to produce power, then all it is is an environmental impact," he said. "If it was producing power, then the environmental impact might be justifiable. But if it's no longer producing power, then it's no justification for its environmental impact."

The project is also part of a much larger transformation of the Naugatuck River.

“At one time, not that very long ago, it was probably one of the most polluted rivers in the country, and just since the 1970s to now, the comeback that it’s made is just unbelievable,” Budris said. “Removing Kinneytown Dam could be the last big project to really bring the river all the way to its potential.”

The Next Step Takes Time

Like Dana Dam, Kinneytown demonstrates that deciding whether a dam should come down is much easier than actually removing it.

Before demolition can begin, engineers must address two major challenges: contaminated sediment accumulated behind the dam and sewer infrastructure buried within those sediments.

“Sediment can build up behind a dam for decades, and if that sediment is contaminated,” said Yamalis, “dealing with it can become one of the most expensive parts of a removal project.”

Both the sediment management and sewer relocation projects are now in the planning and preparatory stages, with work expected to begin as early as 2027. Removal of the dam itself could follow as early as 2028.

Reconnecting Connecticut’s Rivers

Connecticut’s dams are part of its history. Many powered mills, factories, and communities and helped shape the state that exists today. But rivers change, communities change and the purposes those structures once served can disappear.

That is what makes Krofta’s comparison to an 8-track player fitting. Something can have been useful once without remaining useful forever.

Removal may not be the right answer for dams that still provide important benefits. But where a dam no longer serves a meaningful purpose, removing it can provide an opportunity to restore something that has been missing for generations: a connected ecosystem.

“When you remove a barrier, you’re not just restoring fish passage. You’re restoring aquatic organism passage, more natural sediment movement and, in many cases, a more natural river channel and surrounding wetlands,” noted Yamalis.

Dana Dam shows what that can look like. A former barrier is now a river corridor where fish can move freely and ecological processes can begin to reestablish themselves. Kinneytown could bring the same kind of change to the Naugatuck River on a much larger scale.

One dam removal will not reconnect all of Connecticut’s rivers. But each barrier removed restores another piece of the system, opening river miles, reconnecting habitat, and giving migratory fish access to places they have been unable to reach for decades or even centuries.

For a state with thousands of dams, restoring Connecticut’s rivers will happen by removing one barrier at a time.

The Norwalk River now flows freely through the site where the Dana Dam once stood.
Photo: Alex Krofta / Save the Sound