4 MINUTE READ

Arden Park

from **Engineering With Nature: An Atlas, Volume 3.**

by **US Army Engineer Research and Development Center**

Edina, Minnesota, United States

Restoring fish passage and recreational opportunities through dam removal. Arden Park lies along Minnehaha Creek, a tributary of the Mississippi River, flowing from Gray's Bay Dam on Lake Minnetonka through the first-ring Twin Cities suburb of Edina, which is located just southwest of Minneapolis. Efforts were sought to improve the six-hectare park and to restore a section of the creek, which is included on the State of Minnesota's Impaired Waters List and has been impacted by years of urbanization. The Minnehaha Creek Watershed District and the City of Edina partnered to analyze and design a restoration plan for Arden Park. Working with the design team at InterFluve, the project involved removing a dam to restore fish passage and natural stream function, planting trees, restoring and remeandering over 610 meters of the creek, enhancing wildlife habitat and natural vegetation, improving water quality by treating over 40.5 hectares of untreated urban runoff, and considering a range of potential future flow conditions. Additionally, because of its prominent location in the metropolitan area, the project included significant public outreach efforts to capture community goals and sentiment relative to the

existing park and dam. An extensive and well-planned public engagement campaign was key to the planning, design, and construction of the project in 2020. For its work, the project received the 2022 National Recognition Award from the American Council of Engineering Companies–Minnesota Chapter.

Article Cover: Process-based design and natural dynamics were used for the revamped channel at Arden Park. (Photo by Inter-Fluve)

Producing Efficiencies

A complex aspect of the new stream design was the promotion of natural geomorphic processes within a channel partially restricted by adjacent site constraints. Through process-based design and natural dynamics, the new design protects infrastructure while fostering a “wild” river that maintains dynamic pools and riffles and promotes aggradation of bars and sedimenttransport processes. The creek’s hydraulics—partially regulated by the Gray’s Bay Dam on Lake Minnetonka, the creek’s headwaters, to manage flooding, sustain aquatic habitat, moderate stormwater inputs, and support recreational usage—also required unique design attention to potential current and future flow conditions under the changing climate.

Using Natural Processes

Urban restoration projects often battle pervasive invasive species. In addition to removing existing terrestrial invasive species (and continually treating and managing their removal), this project was specifically designed to allow native species to outcompete them. Changes to light and soil moisture conditions allowed a range of native floodplain vegetation to germinate from the seedbank, replacing monocultures of reed canarygrass (*Phalaris arundinacea*). Additionally, the dam at Arden Park happened to have ideal conditions for invasive carp (*Cyprinus*). By removing the dam and creating a series of smaller pools with moving water, the design now nurtures a full ecosystem for native fishes.


OCEAN KAYAK

The project included the planting of trees, shrubs, and plugs to restore the native ecology and define boundaries between the landscaped areas and the “wilder” restoration areas.

(Photo by Inter-Fluve)

Broadening Benefits

Arden Park is now a thriving park and urban oasis that offers an immersive nature-based experience and provides improved and increased access to a multitude of recreational opportunities, such as kayaking, paddleboarding, tubing, walking, ice-skating, and fishing. The project also enabled the construction and expansion of almost two kilometers of accessible trails and boardwalks, an updated outdoor skating area, and a new park shelter. The restoration aligned with the need for outdoor spaces during the outset of the COVID-19 pandemic, and it was not uncommon for hundreds of people to be enjoying the park’s recreational opportunities throughout the year.

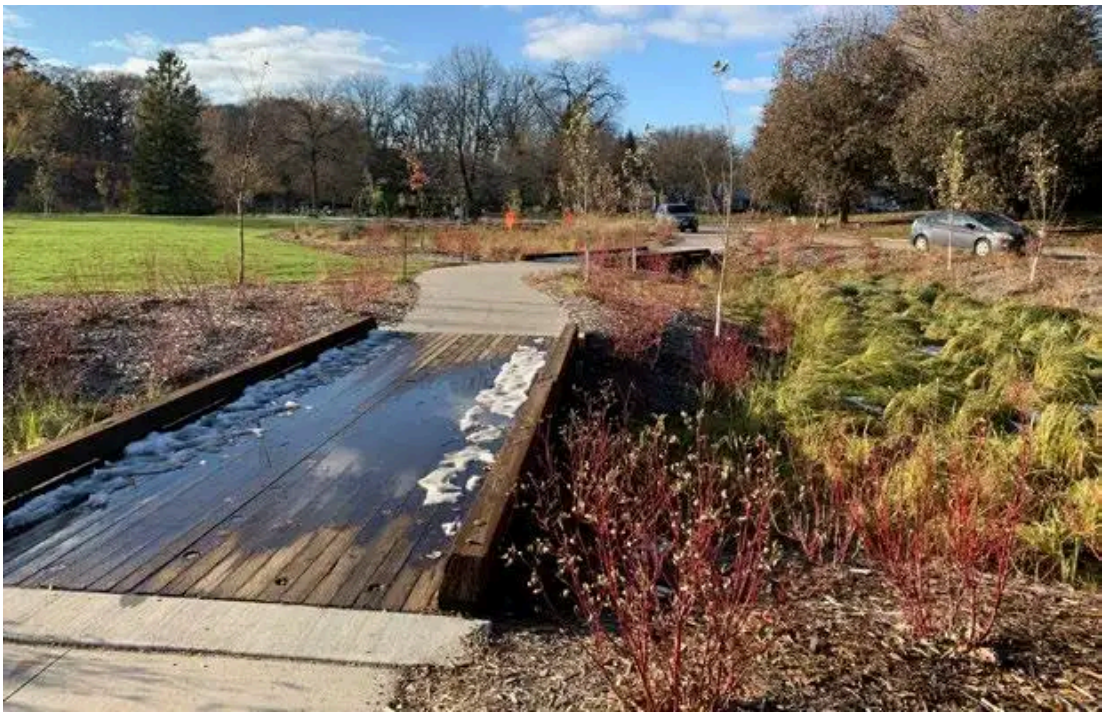
A dam was removed to improve paddler passage, fish passage, water quality, and creek geomorphic function. The design incorporated small pools with moving water to remove carp habitat and replace it with native fish habitat.

(Photo by Inter-Fluve)

Construction of the boardwalk that runs through Arden Park.
(Photo by Inter-Fluve)

Promoting Collaboration

The project necessitated complex coordination and collaboration between various stakeholders. There were several rounds of master planning and conceptual design, including stakeholder and board meetings, city council presentations, and multiple iterative design deliverables and reviews. Concerns and feedback about changes to the beloved park were considered in planning and design, and several skeptical adjacent residents became vocal supporters of the renovated park. All design team members—hydraulic engineer, civil engineer, and landscape architect—were required to understand the full scope of the site restoration plans to work cohesively to progress the design in real time.



The stormwater treatment facility was designed to maintain multiple benefits, including the treatment of previously untreated stormwater and the support of pollinator species.

(Photo by Inter-Fluve)

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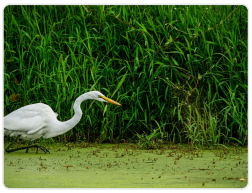

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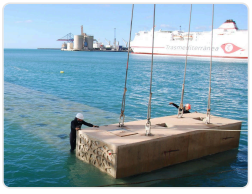

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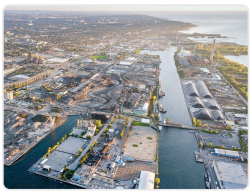

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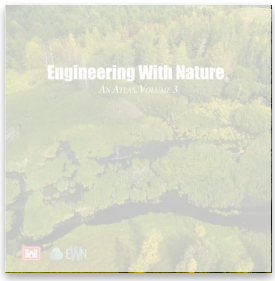

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