The **Colorado River Connectivity Channel (CRCC)** project is the largest aquatic habitat improvement initiative ever undertaken in Colorado. This $33 million project was led by the **Northern Colorado Water Conservancy District (Northern Water)** and **designed by AECOM** to reestablish the natural flow and ecological integrity of the Colorado River near Granby, Colorado.

The Windy Gap Dam had disrupted the natural flow and ecological processes of the Colorado River, impacting aquatic habitats and sediment transport. The dam's presence created barriers for fish passage and altered the river's geomorphic characteristics, leading to a decline in the health of the river ecosystem.

To resolve these challenges, the CRCC project implemented comprehensive engineering and ecological solutions.

Dam Embankment Modifications

Construction of 2,000-linear-feet **of new earthen embankment** that included a 30-foot-high and 40-foot-deep soil-bentonite slurry cut-off wall, and **a new 1,000-foot flood conveyance overflow spillway**. The slurry cut-off wall was designed to be filter compatible with both the new dam and the alluvial foundation soils. The new overflow spillway allows extreme flows to enter the reservoir and be conveyed downstream through the existing spillway.

Diversion Structure

A **75-foot-wide × 8-foot-high hinged crest gate** can divert up to **600 cubic feet per second** under normal conditions from the CRCC into the reservoir while maintaining flows in the CRCC. This structure also supports fish passage from the reservoir into the CRCC and provides the reservoir protection from river sediments.

Connectivity Channel

The reservoir was reconfigured to accommodate a **7,000-foot-long new river channel and floodplain** designed to allow natural geomorphic and ecological processes to take place while maintaining dam safety. The channel includes riffles, pools, glides, large woody debris, and boulder features to enhance aquatic habitat. The project design incorporates criteria from both the **Natural Resource Conservation Service** and **Colorado Division of Water Resources, Dam Safety Branch**.

Permitting and Compliance

The CRCC project obtained **a Clean Water Act Section 404 Nationwide Permit #27 (Aquatic Habitat Restoration)** from the **U.S. Army Corps of Engineers (USACE)** in 2022. Extensive coordination with **Colorado Parks and Wildlife** ensured that applicable permit conditions and mitigation requirements were incorporated into the project.

Monitoring and Adaptive Management

The first year of monitoring following construction completion, involved collecting a database of information related to field-assessed geomorphic and vegetative indicators to document as-built baseline conditions at the project site. This data will be used to compare against future years to determine the evolution of the CRCC up to 5-years post-construction. The monitoring plan includes the **Colorado Stream Quantitative Tool, USACE methodologies**, and project partner protocols.

The CRCC project exemplifies **engineering innovation** by integrating ecological restoration into water infrastructure enhancing aquatic habitat and supporting fish passage and sediment transport. The **collaborative approach and comprehensive design ensured the project's success** in mitigating the impacts of the Windy Gap Dam and promoting the health of the river ecosystem. Early results are promising, **with over 1,000 fish observed in the new river channel during the first year** and the return of native species such as sculpin after decades of absence. The CRCC project **delivers social and environmental value** by restoring ecological function and enhancing recreational opportunities and **long-term environmental resilience** in Grand County.