

## **Cane River Dam Removal Project Narrative**

### **General:**

This Dam Removal Project is proposed along the Cane River, a “Class C; Trout” (Aquatic Life, Secondary Recreation; Trout waters), as designated by the North Carolina Division of Water Quality. The Project Reach is located in Yancey County, North Carolina, upstream of the Bailey Branch confluence in Burnsville, NC. Much of the approximately 54.3 square mile drainage area, located within the French Broad River Basin, has seen and will continue to see significant impacts from residential and commercial development. Grant funds are being requested from the NC Division of Water Resources (DWR) to conduct a feasibility study on the potential dam removal and restoration of the degraded project reach to its natural, stable condition.

### **Existing Conditions:**

The Cane River reach currently flows northwest between Pisgah National Forest and Interstate 19E. Portions of the upper and lower project reach border existing farmland and residential areas.

The Cane River Dam experienced significant damage as a result of major flood events in 1977 and 2004. Both events led to degradation and the existing dam breach. As a result, sedimentation is evident, especially upstream of the Dam Project Site.

The Cane River has been listed (NC Natural Heritage Program and Wildlife Resources Commission) as a significant waterway designated as a critical habitat for the endangered aquatic species, the Appalachian elktoe. This invertebrate species survives in a few scattered areas of suitable habitat, including the Cane River, approximately 1.3 river miles downstream from the Cane River Dam. Other endangered species nearby the Cane River Dam include the Mountain Blotched Chub, the Wavy-rayed Lampmussel, and Striped Shiner.

### **Why Remove The Dam?:**

The Cane River Dam was formerly a hydro-power producing structure that provided power to the local community (no longer in service). Today the dam exists in a dilapidated condition and is currently considered a hazard to the downstream community as well as a physical barrier to local aquatic species.

During October and November of 1977, the Cane River Dam experienced significant damage as a result of major flood events. Since the aforementioned flooding, a breach has occurred in a section near the lower-center section of the structure which has become a “bottleneck” funneling the entire river’s flow through an approximate 10’ x 4’ opening, which is rapidly/continually eroding. That said, future flood events causing a backwater effect will place undue pressure on this decrepit structure which is considered a hazard to the local community (the town of Burnsville is located directly downstream).

The project reach is considered a native trout spawning stream, as well as a significant waterway designated as critical habitat for many aquatic species. This dam structure exists as a physical barrier that restricts the upstream migration of the aforementioned species. The physical barrier is both a vertical (4-10’ drop at breach) and velocity (flow bottleneck) hindrance. Removing the dam will allow for the high and low-flow passage of these aquatic species.

As with all on-line dam systems, the Cane River Dam has caused extensive sedimentation of the project reach. This extensive sedimentation is considered a point-source discharge concern. As a part of this dam removal feasibility study, the upstream sedimentation will be investigated as to the extent of the dam impact. Removing the dam and the upstream sediment will greatly benefit the local aquatic communities.

**Feasibility Study Purpose:**

The goal of the Cane River Dam Removal Project is to obtain data that will illuminate the need for changes beneficial to this waterway. This includes seeking willing landowners to allow access to the study site, researching potential stream restoration projects, and determining any environmental impacts (such as sedimentation load) that can be reversed by removing the Cane River Dam. Reversible impacts may be surmised from comparisons of stream survey cross-sections and regional curvatures within the study reach.

By conducting this study, the feasibility of implementing project goals will reveal:

1. Willingness of landowners
2. Removal of sections of the dam
  - a. Will removing the dam create a headcut?
  - b. Is the existing dam structure tied to bedrock?
  - c. What portion of the dam should be removed (all or partial) from a cost/benefit ratio?
3. Potential for stream/watershed restoration projects
  - a. Upstream extent of sediment impact?
  - b. Amount of sediment removal necessary to return stream system to its natural condition?
  - c. How to establish a stable dimension, pattern, and profile increasing available aquatic habitat?
  - d. How to use the site as an educational opportunity to highlight environmental stewardship and restoration to the local community noting their enduring outcomes?
4. Cost estimates and analysis for successful dam removal
  - a. Dam demolition?
  - b. Offsite disposal of waste?
  - c. Contiguous sediment removal/stream restoration project?

Upon attaining data on the project site, future grant money will be requested in order to implement the changes suggested in this study.