



## CUDA WATERLINE AND WINDSTONE PUMP STATION

The Catoosa Utility District Authority (CUDA) located in Catoosa County, GA needed an alternative emergency source of drinking water in the event its primary water source, the Yates Water Treatment Plant, should fail to supply the necessary quantity or quality of water to its customers.

CUDA decided they should create a connection between the water systems of CUDA and the Eastside Utility District (EUD) in Chattanooga, TN. CTI performed a preliminary engineering study, including hydraulic modeling to determine the optimal waterline and water booster pump station size and location.

CUDA partnered with AD Engineering, in association with CTI, for the project and divided it into three separate contracts for design and construction.

The primary water supply source for CUDA is a spring (groundwater) located on the southern side of the distribution system, 12.6 miles from the selected alternative supply source, located on the northern side of the system at the Tennessee-Georgia state line. The design quantity of supply will only be needed during infrequent, emergency events.

All major components of the project were designed to provide the maximum design flow, 9.0 MGD, at 250 psi operating pressure. Since the emergency supply is delivered from the opposite side of the system, the design hydraulic grade line is reversed during the delivery of the emergency supply.



Temporary dams were constructed at each site where the waterline had to cross the South Chickamauga Creek.

A challenge of the hydraulic design was selecting the correct size, material and pressure rating of pipe to provide the desired flow with minimal friction loss while not exceeding pressure ratings of existing components of the distribution system.

The least costly route for the waterline required construction details for three major creek crossings, seven highway and road crossings, one railroad crossing, in addition to, the state boundary crossing into Tennessee. The Georgia portion of the project is owned,

operated and maintained by CUDA, while the Tennessee portion is the responsibility of EUD. The waterline design portion of this project required numerous permits from GA EPD, TDEC, USCOE, TVA, GDOT, TDOT, railroad, gas utilities as well as requiring easements from 70 property owners along the route.

Perhaps the most unique aspect of the project was the design and development of the water booster pump station. CTI determined the optimal location of the station was near the entrance of Windstone; an affluent subdivision of homes on the border of Georgia and Tennessee. Therefore, aesthetic design of the station had to be a large consideration in order to stay in keeping with the surroundings. CTI worked with the pump station manufacturer, EFI-Solutions, to select a craftsman-style home design to accomplish this goal.

The pump station is designed for remote or local operation, monitoring, and control, including the capability of bypassing the station by remote operation of an electrically actuated butterfly valve.



### CONTRACT 1

25,000 LINEAR FEET OF 24-INCH DIP WATERLINE, DESIGNED BY AD ENGINEERING

**CONSTRUCTION COSTS: \$4,422,000**

**EASEMENT & PROPERTY ACQUISITION: \$37,000**

### CONTRACT 2

32,000 LINEAR FEET OF 24-INCH DIP WATERLINE, DESIGNED BY CTI ENGINEERS

**CONSTRUCTION COSTS: \$8,120,000**

**EASEMENT & PROPERTY ACQUISITION: \$410,000**

### CONTRACT 3

CUDA WINDSTONE PUMP STATION, DESIGNED BY CTI ENGINEERS AND EFI-SOLUTIONS

**CONSTRUCTION COSTS: \$1,286,000**

**EASEMENT & PROPERTY ACQUISITION: \$95,000**



The Windstone Pumping Station was designed to resemble a craftsman style home in order to blend in with the properties in the surrounding area.