New & Improved

Cache Water Restoration Project returns flows to Cache Valley in time for summer

By B. Garn

Whitaker Construction reconstructed seven miles of irrigation canals as part of the Cache Water Restoration project in Northern Utah. The project includes new precast pipeline, box culverts, a section of pressurized pipe, metering systems, turn-outs, head gates, and improved maintenance access. (photos courtesy Whitaker Construction)

Let the water flow.

Water from the Logan River will again be flowing to the fields of Cache Valley this summer with the completion of the $20 million Cache Water Restoration Project, which reached substantial completion in April. The project to reconstruct and improve the approximately six miles of mostly open, unlined channels that make up the Logan and Northern, as well as the Hyde Park and Smithfield canals, has been underway since 2009. That year, a landslide tore out a nearly 20 ft. section of the Logan and Northern (known as the Crockett canal) that ran along Canyon Road in Logan sending mud and water crashing into a home below and killing three people.

Jim Huppi, a board member and shareholder representative for both canal companies, said after the slide the operators began earnestly looking for a solution to deliver water more safely and efficiently to the nearly 1,000 shareholders that include a range of individual, agricultural and institutional users.

Canal operators were able to get the project classified as an emergency and secured funding from the Natural Resources Conservation Service's (NRCS) Emergency Watershed Protection Program. The NRCS supplied nearly 75% of the funding with the remainder paid by canal shareholders.

Zan Murray, from the Logan office of project manager J-U-B Engineering, said an early cost/risk analysis of the project showed a CM/GC method would best deliver the project in the desired time frame.

"Given the risks of the project, which included difficult working conditions and working during the winter, it was determined that (CM/GC) was the way to go," said Murray. "We could work on design while construction was underway in other areas. We wanted to involve the public with the design and also meet our budget, our construction schedule and restore water to the shareholders."

Following the completion of an Environmental Impact Study in 2011, a CM/GC contract was issued in early 2012 to J-U-B Engineers for program management, Montgomery Watson Harza (MWH) of Salt Lake for design and Whitaker Construction of Brigham City as general contractor.

Previously the water flowed in open channels, some lined and some unlined. Today, water is carried in a combination of pipelines, box culverts and open, lined channels, reducing water loss to seepage and evaporation. The project also added a section of pressurized pipe, metering systems, new turn-outs and head gates and improved access for maintenance. The system can handle a peak flow of 130 cfs but will average about 90 cfs according to project engineers.

Murray said the project was essentially broken down into five parts with construction being carried out in stages. Among the most significant was a new intake diversion in the Logan River about 1.6 miles up Logan Canyon. The new diversion includes a screened intake designed to allow water to flow through, but prevent fish and debris from entering. Screens required by the U.S. Forest Service are designed to keep fish from becoming trapped against the screen and move them along downstream.

Water from the diversion is channeled into a box culvert that flows under U.S. Highway 89 and proceeds along the north wall of Logan canyon. Prior to the reconstruction the water flowed in an open channel popular with the public for recreation like tubing, but posing a risk for the canal company and making maintenance difficult. ››

Cache Water Restoration Project

"The canal operators used to have to drive a truck in the channel to do maintenance like removing rocks. The box culvert eliminates that problem. We've built an access road on top of the box culvert with openings for access," said Murray.

Placing the box culvert along the narrow right-of-way was one of the greatest challenges for contractors, said Judd Hamson of Whitaker Construction, which specializes in underground and trenched utility lines.

"We were working on that section during the winter when the flow from the river was the lowest and we had some terrible weather to deal with," he said.

The pre-cast box culvert sections had to be placed on concrete said Hamson. Placing the concrete in the cold weather and in an operating corridor as narrow as 9 ft. in some sections along the canyon wall was also difficult, Hamson said.

"We could pump the concrete in hoses along the canyon only so far," he said. "There was about 4,000 ft. we couldn't reach with hoses and had to move it with small dumpers and smaller pumps. It was definitely challenging, but we enjoy those kinds of projects."

Murray said some areas along the steep wall of the canyon were identified as areas where the soil under the channel could slide causing another breach. Those areas were "bridged" using reinforced sections of box-culvert. The top of the box culvert is now gated at both ends and can be used for maintenance as well as access by the U. S. Forest Service.

After emerging from Logan Canyon the water is transferred from the box culvert to a 66 in. concrete pipeline that heads north, traversing the eastern edge of the Logan Country Club golf course. At that same point, a section of 18 in. HDPE pipe splits southwest to service users of the Crockett Canal along Canyon Road where the 2009 breach occurred.

The project was not without controversy. Many home owners along the eastern bench enjoyed the open canal as a landscaping feature and were resistant to plans that originally had the pipe partially buried.

Murray said meetings with home owners resulted in a redesign using a combination of buried pipe and open channel with landscaping features. Water is now flowing in the canal but some landscaping will not be completed until later this year. Part of the construction process also resulted in improvements to the right-of-way which had become inaccessible due to overgrowth by trees and vegetation.

In addition to property owners, the project involved coordination with a host of agencies including Logan City, Cache County, the U.S. Forest Service, NRCS and unincorporated cities with users north of Logan.

Huppi, Murray and Hamson all said the CM/GC process helped facilitate changes and keep the project on schedule.

"Between the project management team and the CM/GC process we are well under budget and the project has turned out as good, or better, than we expected," said Huppi. ■


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