

West Vine Basin Outfall Channel Project



Client/Owner: City of Fort Collins Utilities

Location: Fort Collins, Colorado

Project Construction Cost: \$1.9 Million

Consultant's Fee: \$490,000

Personnel: Brad Anderson (Project Manager), Brian Smith (Design and Resident Engineer)

Sub-Consultants: BHA (Landscape Architecture); Wildland Consultants (404 Permitting/Wetland Monitoring); Centennial (Section 106/SHPO Compliance); King Surveyors (Pre- and Post-Project Survey)

Start Date of Project: 11/2011 **End Date of Project:** 8/2015 (404/Wetland Monitoring on-going)

Reference: Mr. Matt Fater, 700 Wood Street/P.O Box 580, Ft. Collins, CO 80522, (970) 221-6809

This project included the alternative analysis and final design of a stormwater outfall channel for the approximately 2,350-acre West Vine Drainage Basin located in northwestern Fort Collins, Colorado. The purpose of the project was to provide flood mitigation, improve water quality, and enhance habitat to the lower portion of the drainage basin as identified in the Master Drainage Plan. Approximately 50,000 cubic yards of material was excavated to create approximately 3,300 feet of stream corridor that restored the drainage basin's historic outfall connection to the Cache la Poudre River and also removed approximately 25 existing structures



from the floodplain. This project consisted of the following key elements:

- Alternative analyses, including the **hydrologic and hydraulic modeling** of conceptual outfall channel alternatives;
 - Formulation and **hydraulic design of all drainage improvements and utility relocations;**
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- Preliminary and final design of the following project components:
 - 3,300-feet of stream corridor, including **low flow wetland channels, three drop structures** and an **outfall structure at the confluence with the Cache la Poudre River;**
 - **two extended water quality detention ponds and outlet structures;**
 - 190-feet of 48" H x 76" W HERCP to siphon the Arthur Ditch underneath the outfall channel;
 - 1,650-feet of **36-inch DIP to lower and realign an existing water transmission line;**
 - 600-feet of 12-inch and 10-inch PVC to lower and relocate an irrigation system of adjacent land owners;
 - 67-foot long, 10-foot wide prefabricated pedestrian bridge to relocate approximately 330-feet of the Poudre River recreational trail over the outfall channel;
 - Permanent erosion control measures including spillways, riprap, and turf reinforcement mats;
 - Preparation and coordination of a **37 sheet set of final design drawings, technical specifications, and contract documents;**

- Coordinated the development of a minor land division for the **land acquisition** necessary to construct the outfall channel;



**Outfall Structure at Confluence
with Cache la Poudre River (Post Construction)**



**Outfall Structure at Confluence
with Cache la Poudre River (After 1 Growing Season)**

- **Public Outreach** and coordination with adjacent landowners;
- Procurement of a Nationwide 43 Permit that included a wetland delineation, threatened and endangered species survey, cultural survey, Level II documentation of a historically significant structure, and the development of a wetland mitigation plan;
- Procurement of a Floodplain Use Permit from the City of Fort Collins and Larimer County;
- **Construction management and resident engineering services during the approximately 10-month month construction period;**
- Development of as-built construction drawings; and
- Preparation of a design report documenting post-project condition results and residual floodplain information, including revisions to locally and FEMA regulated floodplains (currently on-gong).



**Poudre River Trail Relocation and Pedestrian
Bridge Over the Outfall Channel**



Completed Outfall Channel with Low Flow/Wetland