Green Infrastructure & Stormwater Management CASE STUDY

Canal Importation Ponds and Outfall

Location: Fort Collins, CO
Client: City of Fort Collins
Design Firm(s): BHA Design Inc, Anderson Consulting Engineers Inc, Ayres Associates
Landscape architect/Project contact: Jason Messaros
Email: jmessaros@bhadesign.com

Photos: BHA Design, Inc.

Project Specifications

Project Description: The CIPO (Canal Importation Ponds and Outfall) project consists of stormwater detention, stormwater conveyance, and natural areas establishment. This project will remove 175 homes from the floodplain, reduce flooding, improve water quality, improve local street drainage and improve wildlife habitat and public access.

Project Type:
A retrofit of an existing property

Design features: Bioretention facility, bioswale, green roof, and curb cuts. All trail surfaces are pervious, the entire site provides water quality.

This project was designed to meet the following specific requirements or mandates:
State statute, to meet funding criteria, developer/client preference

Impervious area managed: greater than 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres. The total project is 30+ acres of stormwater management area that is almost entirely reclaimed for open space / natural area.

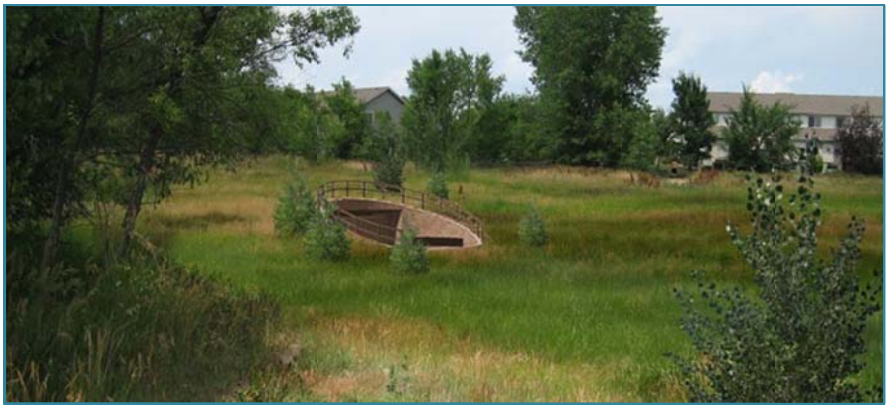
The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? Creating a natural area for wildlife and passive recreation was a requirement from the City and citizens. The reduction in neighborhood flooding and risk to life was the fundamental purpose of the project.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: >$5,000,000 (Public funding: Local, stormwater utility fee & natural areas sales tax)

Related Information: Total Project Budget: $21.5 million (approx. 1/2 for underground utilities and 1/2 for stormwater detention ponds.)



Was a green vs. grey cost analysis performed? No

Cost impact of conserving green/open space to the overall costs of the site design/development project: The overall cost of the project was higher due to the intensity and type of planting required to establish a natural area. Full habitat restoration was initially more expensive but will result in a net increase in value for the community as the project greatly increases local property values and is seen as a low maintenance recreation amenity.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Slightly increased. The CIPO project included many value added features such as varied slope characteristics, habitat islands, multi faceted low flow channels, native plant species, wetland plugs, anchored snags, and custom form liner integral color concrete structures. These features represent an increased project cost over the traditional consistent slope, concrete trickle channel and standard low maintenance seed mix design approach. This cost is offset by the value the project brings to the community and service area.

Number of jobs created: ±75 people have been employed throughout the project

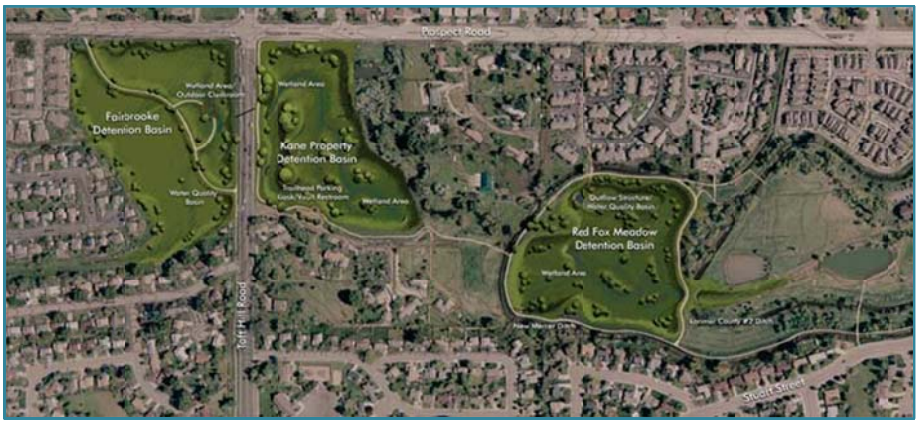
Job hours devoted to project:

Planning and Design: 2006 to 2008
Construction: 2008 to 2011
Annual Maintenance: expected 7 to 10 days per year for maintenance staff

Performance Measures

Stormwater reduction performance analysis:

The CIPO project is designed to meet the City of Fort Collins requirement to provide flood protection to the community. This project is designed to manage up to a 100-year storm event. The design of the CIPO project includes several passive measures for dealing with various rates and volumes of stormwater flow. Base flows are directed through the site differently than flows characteristic of a 2-year storm event which are directed into a separate water quality basin. Flows in excess of the water quality pond capacity flow directly into the larger basin which releases water at a set rate. This project receives water from several sources including two ditches are designed to overflow into the ponds in a controlled way as opposed to overflowing into neighborhoods.



Community & economic benefits that have resulted from the project: Natural Areas: CIPO created a natural area with native plant species that will promote biodiversity and wildlife habitat within the city. Snags and boulders create instant cover and excellent loafing sites for birds, and other animals. CIPO removed 175 homes from the floodplain with a direct positive effect on home values and increased the level of opportunity for redevelopment in some areas.

Recreation: CIPO includes several trail loops, one trail head with a vault toilet and two boardwalk / outdoor classrooms for education and improved ADA access to the wetland features.

Additional Information

Links to images: http://www.bhadesign.com/project.php?gID=75 http://www.fcgov.com/CIPO

Portions of this project are currently under construction with a final completion date for all portions of the project in 2012. This project was jointly funded by the City of Fort Collins Utilities and Natural Resources Departments. Some of the land for the project was jointly purchased by these two departments. Additionally, funds from the Art in Public Spaces program was used to supplement the use of custom form liners on head walls and other concrete structures throughout the project.