



Green Infrastructure & Stormwater Management CASE STUDY

Beaver Water District New Administration Building

Location: Lowell, AR

Client: Beaver Water District

Design Firm(s): McGoodwin,
Williams & Yates Consulting
Engineers, Roberts & Williams Assoc.
Landscape Architects

**Landscape architect/Project
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ASLA Chapter: Arkansas



Project Specifications

Project Description: The Beaver Water District New Administration Building project has provided the District with much needed new space for staff while placing the public entrance outside of the treatment facility secured area. The project features many systems designed for sustainability while providing the District staff with a safe and comfortable atmosphere that promotes efficient work. The District was able to utilize the LEED program for New Construction to align design goals while creating a huge educational backbone of material including new space for continuing education training. The design team attempted to blend the building and the site into the surrounding landscape and as a part of the project a significant amount of green space is now planted with native plants.

Project Type:

Mixed use

Part of a new development

Design features: Bioretention facility, rain garden, bioswale, cistern, pervious concrete pavement, grass pavers, and water feature fed by downspouts.

This project was designed to meet the following specific requirements or mandates:

County ordinance, local ordinance, to meet funding criteria, LEED New Construction

Impervious area managed: 1 acre to 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres

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? Yes. The District was very clear about the goal of a green, sustainable building that would lend itself to long-term maintenance savings.



Cost & Jobs Analysis

Estimated Cost of Stormwater Project: 500,000-\$1,000,000 (Public funding: Not available)

Related Information: Not available. Refer to:
<http://www.beaverwaterdistrict.org/graphics/12838015470.pdf>

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: Initially the preservation of green spaces for this project included the planting of a varied seed bed for establishment of native prairie. The goal being to approximate what some of the prairies may have looked like in the vicinity of the project area, prior to generations of pasture grazing by livestock. This proved to be very challenging to the contractor, and definitely raised the lump sum bid cost for this work. After two attempts to establish the prairie, the owner and the contractor agreed to move forward with native grass sod.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Slightly increased. Even though we utilized low impact development techniques to manage stormwater that appeared to be lower cost than traditional concrete storm sewer pipe, the lack of familiarity of the systems that were called for caused the contractor to increase the cost for those items to cover the unknowns. Also, the bid price did not change but it is clear that the contractor spent more money than his bid price on the green infrastructure because it had to be done twice. The first time the systems were installed the work did not meet specification requirements, so the contractor had to redo much of the work.

Number of jobs created: many

Job hours devoted to project:

Planning and Design: 5,708

Construction: 11,886
Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

- Pre-Development Site Runoff Rate (cfs) = 14.17
- Pre-Development Site Runoff Quantity (cf) = 15,729
- Post-Development Site Runoff Rate (cfs) = 10.56
- Post-Development Site Runoff Quantity (cf) = 14,047

This project site is underlain by highly cohesive clay soils with low infiltration rates. Through the use of retaining systems the time of concentration for stormwater runoff is increased dramatically. This gives a high potential for maximum infiltration. All of the concentrated storm water discharges for this site are 6-inch pipes. All stormwater that leaves the site is first infiltrated and then passes through a minimum of one grass lined swale. The concentrated discharge locations are set back from the property line to allow for overland flow prior to offsite discharge.

Community & economic benefits that have resulted from the project: This project site is located in the county outside of the town of Lowell, AR. Since it is not directly near any significant other development it would appear that it could only serve to increase the value of adjacent pasture land. The real community benefit has been the value as a showcase of available low impact development technologies and materials. Since completion of the project, design members have given many presentations on the specific components. As one of the only buildings in the state to achieve a LEED rating, it also has served as a tool to educate developers and owners throughout the state.

Project Recognition

Arkansas Chapter MERIT AWARD Category I: Design 2009; American Council of Engineering Companines/Arkansas, Engineering Excellence Awards, Grand Conceptor Award 2009-2010; USGBC LEED Gold Rating

Additional Information

Links to images: <http://www.bwdh2o.org/index.php?fuseaction=p0004.&mod=19>
http://blog.accessfayetteville.org/triple_bottom_line/2010/01/beaver-water-district---leed-gold.html
http://beaverwaterdistrict.org/file/28/The_Source_Spring_2010.pdf?PHPSESSID=22c847d9f3144bac9b0

As a part of this project the District incorporated meeting space into the building that is utilized regularly for continuing education courses as well as being available for other uses.