



Green Infrastructure & Stormwater Management CASE STUDY

Carrington Reserve

Location: West Dundee, IL

Client: Pulte Homes

Design Firm(s): Planning Resources Inc. Applied Ecological Services, Bollinger, Lach & Associates, Inc.

Landscape architect/Project contact: Keven Graham, ASLA

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ASLA Chapter: Illinois

Project Specifications

Project Description: Carrington Reserve in West Dundee exemplifies the principles of conservation design. The 232-acre property accommodates 314 luxury single-family homes, 28 acres of retail commercial, and more than 100 acres of open space. The site-development plan for the Pulte Home Corporation preserves and protects the natural features of this property that includes steep ravines and a high quality wetland community, or fen. This luxury-oriented mixed use planned development achieves the Village's goal of preserving the scenic beauty and environmentally sensitive habitat that exists on this site, while responsibly planning for sensible and balanced growth within the community. This project was creatively designed with professionals from a variety of disciplines with a five-part approach to conservation and stormwater management best practices, including:

- Protecting and buffering the high quality wetland, or fen;
- Enhancing open space corridors by creating additional wetland habitat, and restoring degraded high-quality areas;
- Creating swales, planted with native prairie and wetland vegetation, as a first-level treatment of stormwater;
- Managing the point sources of pollutants by requiring the use of organic slow release fertilizers and developing landscaping plans for residential yards that include buffer strips of native wildflower plantings; and
- Designing the site with a unique surface water to ground water reintroduction system .

These innovative techniques were designed to enhance natural areas, manage stormwater runoff, implement pollution reduction measures, and provide for ground water recharge balance, which are committed to preserving and enhancing the natural environment.

Project Type:

Single family residential
Part of a new development

Design features: Bioretention facility and bioswale. Stormwater basins were constructed with a positive treatment train using BMP's & flow management to improve water quality. Infiltration galleries were created to serve a a recharge for the wetland fen underground water system.

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

County ordinance, local ordinance, developer/client preference, close coordination with ILEPA and ACOE

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 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? Both useable green space and property value enhancements were primary design considerations. The project includes passive and active recreation in the green spaces. Two educational overlooks are provided for residents and one play area is provided. The project is designed to maximize the number of homes that directly access the preserved green space.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$1,000,000-\$5,000,000 (Public funding: None)

Related Information: If selected for case study we can provide different cost break outs for both construction and long-term maintenance of infiltration areas.

Was a green vs. grey cost analysis performed? No. Green approaches were part of the base design in order to manage sensitive natural features. Extensive study was conducted prior to developing site development plans. Baseline groundwater data prior to site development provided a benchmark for future performance monitoring.

Cost impact of conserving green/open space to the overall costs of the site design/development project: Additional project costs were accounted for in the project scope.

The preservation and restoration of Jelke Creek was seen as a critical component to the future marketing of the development and a desired amenity for the community. The specific need to insure the health of the wetland fen recharge zone and the creation of infiltration galleries and monitoring systems were also seen as a needed component of the project.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Slightly reduced costs (1-9% savings). Conveyance of stormwater through infiltration areas may have slightly reduced the overall cost. Within the project, traditional conveyance was required to be installed as well. The methods of treatment and creation of green infrastructure methods serve a more important ecological roll in the long term protection of critical natural resources. The creation of amenities for the residents is seen as a vital component for the livability of the development.

Number of jobs created: In addition to construction there is ongoing management by field crews.

Job hours devoted to project:

Planning and Design: 600+ planning and design

Construction: Not available at this time

Annual Maintenance: Ongoing maintenance contract by AES

Performance Measures

Stormwater reduction performance analysis:

As the project has now been installed for a number of years and ongoing monitoring is being reported, we can supply the EPA with a variety of monitoring report summaries to show the impact in stormwater control. As previously stated, significant modeling was prepared for stormwater management, underground hydrology patterns and water quality.

Community & economic benefits that have resulted from the project: Carrington Reserve is an example of how responsible development that respects nature can also provide a great place to live with and in respect to nature. Like a fen wetland area, Carrington Reserve has become a unique place immersed in and surrounded by a rich and diverse environment.

Project Recognition

Greater Chicago Home Builders Association - Silver Key Award; EPA Region 5 and Chicago Wilderness Outstanding Conservation Projects 2010

Additional Information

Links to images: If selected we will gladly provide both design plans and photographs of key site features.

This project has been sited by the local EPA Region 5 in Illinois a a case study and example as to how development can be done around a sensitive natural resource. Extensive hydrologic modeling was conducted and can be shared as necessary.