



Green Infrastructure & Stormwater Management CASE STUDY

Lick Run

Location: Cincinnati, OH

Client: Metropolitan Sewer District of Greater Cincinnati

Design Firm(s): Human Nature Inc., Strand Associates Inc.

Landscape architect/Project contact: Gary R. Wolnitzek, ASLA, Principal at Human Nature Inc.

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Project Specifications

Project Description: The Lick Run Watershed encompasses 2,700 acres of an urban area served by combined sewer system (sanitary and stormwater in the same pipe). While there are natural hillsides and open space in the watershed, the stormwater runoff can only flow to the combined sewer system. During wet weather events, the Lick Run combined sewer system currently overflows approximately 1.7 billion gallons to the adjacent water way, in a typical year. The Lick Run daylighting project will separate, cleanse, and convey stormwater directly to the receiving stream. The result is a reduction of over 800 million gallons of combined sewer overflow from reaching the adjacent Mill Creek and the Ohio River.

This solution enhances natural drainage systems, along with green stormwater features throughout the watershed provide both water quality and volume reduction. The daylighting of the stream not only provides water quality benefits but provide much needed open space to an economically challenged neighborhood. Collectively the project will be the catalyst for a community redevelopment initiative.

Project Type:

Other (please specify)

Part of a redevelopment project

Design features: Bioretention facility, rain garden, bioswale, downspout removal, and porous pavers. A wide range of stormwater management techniques will be used in addition to the daylighting of the stream itself.

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

Federal Clean Water Act, CSO compliance by consent decree

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. Approximately 30 acres of newly developed open space will be created as a result of this daylighting project.

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, in fact a Triple Bottom Line analysis takes into account all these factors and compared to the grey solution this project scored much higher for environmental and social benefits.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: >\$5,000,000 (Public funding: Regional)

Related Information: The comprehensive Lick Run Stream daylighting, stormwater separation, water quality features, and community open space system estimated to cost \$122 million dollars.

Was a green vs. grey cost analysis performed? Yes. The alternative solution to manage this volume of Combined Sewer Overflow is for a deep tunnel to be bored from the treatment plant to the outfall of the Lick Run CSO. The de-watering of the tunnel would require significant energy and treatment costs into the foreseeable future. The Lick Run Watershed approach of separation, water quality features, and daylighted stream will meet the requirements of the mandated CSO control while providing water quality benefits, broader environmental and social benefits, for less cost.

Cost impact of conserving green/open space to the overall costs of the site

design/development project: Much of the newly created open space is required to be acquired for the safe conveyance of the storm water. The corridor currently contains park and recreation space which will be preserved, enhanced and expanded. The remnant parcels of land will be pieced together to provide an open space corridor in which the daylighting stream will flow.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Significantly reduced costs (10% or greater savings). The estimated construction cost of the green alternative is \$122 million dollars. This compares to the cost of the alternative grey deep tunnel

solution of \$245 million with increasing annual costs for pumping and treating the stormwater combined with sanitary flows collected in the tunnel.

Number of jobs created: Numerous

Job hours devoted to project: Not available

Planning and Design: Not available

Construction: Not available

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

Through removing approximately 1.26 billion gallons of stormwater annually, from entering the combined sewer system. This will lead to a reduction in combined sewer overflows by 800 million gallons annually.

Community & economic benefits that have resulted from the project: The Lick Run watershed was a strong neighborhood in the height of the industrial growth in Cincinnati 100 years ago. Since then the neighborhood is characterized by vacant and abandoned properties, high unemployment, declining property values, jobs, and investment leaving the neighborhood. It is anticipated this project will be the catalyst for redevelopment and re-birth of the neighborhood leading to improved environmental conditions, a re-focus of investment with improved living conditions and improved property values.

Project Recognition

State and National Recognition, USEPA has referred to the project as a national pilot for the future of CSO Control

Additional Information

Links to images: <http://projectgroundwork.org/lickrun/watershed/concepts.htm> Please contact for additional information.

Many CSO communities in the country are faced with the cost and complexity of controlling Combined Sewer Overflows to meet the mandates of the EPA. However, Cincinnati MSD has chosen a path that is not only green but sustainable for the long run. The default solution of deep tunnels are being built around the country, a costly and complex engineering solution. An MSD typically completes a sewer project with the goal of leaving very little evidence of what is under ground. Many of our troubled neighborhoods would not benefit from the millions of dollars put underground in a traditional solution. However this project takes an alternative

approach using sustainable solutions to an ecological problem while celebrating the results with improved conditions on the surface that can change the direction of a neighborhood and improve the lives of those who live there.