ASEE Extended Abstract

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Research Purpose & Significance

The purpose of this research is to determine alternative solutions to managing rainfall and storm runoff in the Louisville region. As development increases in a city's community, so does the amount of impervious surfaces and storm runoff. Surfaces such as roads, rooftops, and parking lots replace the natural landscape and therefore disturb the area's natural hydrologic character. Where the Louisville region has continued to rely on traditional stormwater management practices, this research aims to investigate more sustainable options for the future. This research will also seek to suggest as Louisville continues to grow and strive to become a regional leader in industry, education, culture, and lifestyle, so shall our storm management excel in the areas of improved water quality, environmentally responsible development strategies, and integrated management of stormwater between public and private institutions.

Research Overview:

Louisville has made great strides in recent years to become a leader in education, culture, industry, and commerce. Projects in point include Museum Plaza, two new Louisville bridges, a new downtown Louisville arena, Geek Squad Inc. headquarters in Bullitt Co., UPS expansions, University of Louisville athletics, facilities improvements, and research milestones, and landmark achievements in health care and medical procedures. All of these recent projects bring further growth and development to the community. In turn, our storm systems and their management will need the ability to handle the increased volume, pollution, and high flows that will be created. Furthermore, this research has discovered that several cities throughout the U.S. have made pioneering developments in environmental awareness, stormwater management, and sustainable development for the future success of their citizens. Such strategies and techniques include Low Impact Development (LID), Best Management Practices (BMP), Green Building, porous pavements and pervious concrete, advanced stormwater solutions products, and integrated management with combined initiatives between public and private entities. All of these practices have shown to provide effective and cost-saving water conservation and control, pollution prevention, sustainable site design and planning, and environmental benefits for the local community.

Conclusions:

Louisville is growing. This is not only a blessing, but a potential problem. Where other cities have made forward-thinking decisions for the benefit of the local communities, local wildlife, and the citizens they serve, this research contends that Louisville is at the point of making similar decisions. There are several strategies, projects, tools, and techniques that can be directly implemented into Louisville's planning and design for flooding and drainage solutions. With the increase in development will come the increase of potential problems due to increased runoff, peak flow and volume, and higher levels of pollution. However, with proper planning, projects, and municipal programs, Louisville will set the standard for effective and efficient stormwater management.