Using Rainwater to Grow Livable Communities

Stormwater best management practices (BMPs) are gaining recognition as effective, flexible, and environmentally sound ways for controlling the quantity and improving the quality of stormwater runoff, while also adding amenities to development projects.

Rain garden installation in Burnsville, MN.

This project developed a publicly accessible website, www.werf.org/livablecommunities, that facilitates the integration of stormwater BMPs into development projects. The website provides tools and resources for effective communication and implementation, as well as in-depth case studies that examine BMP integration in several cities across the United States.

To date, most of the literature has focused on engineering requirements for selected BMPs, rather than the human and design factors that may be necessary for successful implementation. This project documents and describes factors that may provide the necessary conditions for successful adoption of water quality BMPs in local communities.

The research team addressed several key questions pertaining to BMP implementation successes and failures, and they explored the values of stakeholders.

- What are the motivations for BMP implementation?
- What incentives can communities offer to encourage BMP implementation?
- Which parties have the drive to exert pressure and aid in BMP implementation?
- How should BMPs be tailored to different settings (regional, public vs. private, etc.), taking into consideration community needs and preferences?
- Should water quality and stormwater management functions be obvious or hidden in BMP designs?
- How do we appeal to engineers, planners, and designers to modify their approach, treating stormwater as a resource rather than a waste product?

Project Implementation

This research project was executed in three phases:

1. identification of community goals and potential case study inventory

2. screening, ranking, and case study development

3. documentation of key factors contributing to success

The research group defined how to measure community goals as well as public acceptance of stormwater BMPs, with the aid of a project expert panel. They selected 12 case study sites, representing a variety of situations and geographic conditions, including some communities that have not been successful in implementing BMPs. The research team analyzed the case studies to identify common relationships that influence success, including: agency coordination/communications practices; capital and maintenance expenditures; and approaches to public education that raise awareness and public acceptance.

BENEFITS

- Provides tools to teach the benefits of successfully incorporating BMPs into development projects.

- Highlights communities that have successfully integrated sustainable stormwater practices into their 'toolboxes.'

- Explores additional resources related to stormwater management.

RELATED PRODUCTS

Critical Assessment of Stormwater Treatment and Control Selection Issues (02SW1)

Performance and Whole Life Costs of BMPs and SUDS (01CTS21Ta)

Decentralized Stormwater Controls for Urban Retrofit and Combined Sewer Overflow Reduction: Phase I and 2 (03SW3 and 03SW3a)

Infiltration vs. Surface Water Discharge: Guidance for Stormwater Managers: Phase 1 and 2 (03SW4 and 04SW3)

International Stormwater BMP Database (www.bmpdatabase.org, 03SW1CO)

RELATED ONGOING RESEARCH

Linking BMP Systems Performance to Receiving Water Protection to Improve BMP Selection and Design (SW1R06)

Decentralized Stormwater Techniques: Training and Dissemination (DEC4R06)

AVAILABLE FORMAT

Interactive website available at www.werf.org/livablecommunities

Refer to: **STOCK NO. 04SW1**

For more information, log on to **www.werf.org**.

The team decided that a website would be the most appropriate way to disseminate research findings. The website includes some unique features.

Website Features

Who Are You?

Every development project is a collaborative effort involving multiple stakeholder groups. Each group brings a suite of skills and interests to the table and has a particular perspective and set of values to

Chicago's first green roof, atop City Hall.

contribute. Users can select which stakeholder group they belong to: elected official, municipal storm water manager, engineer/designer, landscape architect, or homeowner/general public. The website then provides information based on the type of stakeholder selected.

The stakeholder pages provide each group with tools for effective BMP design and implementation. Resources aid in communication and development, and provide links to case studies closely tied to specific groups.

Wherever one is starting — from the mayor's office, a local gardening club, the lower ranks of a storm water utility office, to the corner office of a prestigious engineering firm — one can be a champion for storm water best management practices. People from all groups and all walks of life can become "guiding lights," providing encouragement and a push for greater implementation of BMPs.

Case Studies

Case study locations provide a broad look at BMP implementation across the United States. Users can learn about Kansas City's "10,000 rain gardens" initiative, Chicago's green roofs program, or Philadelphia's conversion of vacant land covered with trash and debris into valuable assets that offer storm water management benefits. Other case study locations include Seattle; Denver; Milwaukee; Orlando; Bellevue, WA; Burnsville, MN; Portland, OR; Santa Monica, CA; and Truckee Meadows, NV. An effort was made to identify both the strengths and weaknesses of each case study.

Toolbox

Everyone brings a set of "tools" to the issue of storm water management. These tools may include an understanding of local hydrology, knowledge of community development plans, technical expertise in designing storm water management systems, or the ability to modify or create local regulations. Each skill or resource contributes to one's ability to encourage the use of stormwater BMPs as a sustainable approach to storm water management.

The information presented in the toolbox strengthens the user's knowledge of BMPs and provides resources that help them bring these ideas to others. Information and tools are divided into several sections including BMP 101, strategies for success, frameworks for success, communication aids, and planning and development aids.

Resource Links

The resource pages provide a compendium of outside sources of information about BMPs and BMP implementation. The "information sources" page lists articles and publications, conferences and training workshops, and case studies, research, links, and tools. The "funding sources" page links to websites dedicated to funding storm water management projects. The "tools" page lists all of the documents available for download from this site, and the glossary provides definitions for common terms.

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