Metro
p
politan Water Reclamation
District of Greater Chicago

Green and Gray Infrastructure

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STORMWATER MANAGEMENT

• District conveyed authority in November 2004 to plan, manage, implement, and finance activities relating to stormwater management in Cook County

• Engineering Department’s primary activities:

  • Implement Cook County Stormwater Management Plan

  • Capital Improvement Program to address existing stormwater problems

  • Comprehensive stormwater regulations to ensure future development and redevelopment does not exacerbate flooding
STORMWATER MANAGEMENT

Other District Activities

• Small Stream Maintenance Program
• Rain Barrel Program
Stormwater Management Projects

– Detailed Watershed Plans (DWPs)
  • Identify regional streambank stabilization and flooding problems and potential solutions
  • DWPs completed for following watersheds
    – Calumet-Sag Channel
    – Little Calumet River
    – Upper Salt Creek
    – Poplar Creek
    – North Branch Chicago River
    – Lower Des Plaines River

– Total damages for identified regional problems estimated to be just under $1 Billion
STREAMBANK STABILIZATION PROJECTS

• Natural channel design is our goal where practical
• Structural measures when necessary
  • Concrete walls
  • Sheet piles
  • Gabion baskets
FLOOD CONTROL PROJECTS

- Structures and roadways impacted by overbank flooding of regional waterway
HERITAGE PARK FLOOD CONTROL FACILITY

• Will provide compensatory storage for USACE Levee 37 project.

• Approximately 115 Acre-Ft in flood storage

• GI complements traditional detention facility:
  • Preserves existing wetland areas
  • Incorporates bioswales with native planting
  • Provides prairie and riparian buffer zone along Buffalo Creek
Heritage Park Flood Control Facility
Wheeling Park District Master Plan
Heritage Park Flood Control Facility
Proposed Plan
WATERSHED MANAGEMENT ORDINANCE (WMO)

• Proposes performance based regulations for development and redevelopment projects
  • Water quality requirements for sites ultimately discharging to waterways
  • Provide treatment of the first inch of impervious area runoff
  • Detention credits for employing either water quality or volume control

- Economic Impact Study
  • Applies to green and gray
WATERSHED MANAGEMENT ORDINANCE (WMO)

• Draft WMO calls for green and gray
• Green to address smaller, more frequent rainfall events
  • Volume Control / Water Quality
    • Capture of 1st inch on impervious areas
      • Pervious pavement
      • Rain Gardens
      • Bioswales

■ Maintenance Considerations
NEW STORMWATER RULES

• EPA is in the process of developing new stormwater regulations

• Considering the following:
  • Performance standards for new and redeveloped sites
  • Options to reduce discharges from existing development

• Final determination anticipated by November 2012
Green and Gray

• Many urban areas combining Green & Gray
  • Utilize gray to reduce CSOs and store and convey large volumes
  • GI component of Long Term Control Plans to help reduce CSOs
  • Using GI to complement traditional CSO and flood control measures

• Milwaukee:
  • 3 Phase Deep Tunnel Project has over 28 miles of tunnel ranging from 17 -32 ft in diameter which provide approximately 521 MG of combined and floodwater storage.
  • “Greenseams” Program – purchase of undeveloped property in shoreline, stream, or wetland area to preserve open space in areas expected to have major growth.
  • Rain Garden Program – Outreach and demonstration of rain garden construction and function; plants made available at reduced pricing.
  • Rain Barrels – promote use and disconnection of downspouts.
Green and Gray

• Other major metropolitan areas using combination of green and gray
  • St. Louis
  • Cleveland
  • Seattle
  • Washington, D.C.
DISTRICT’S TUNNEL AND RESERVOIR PLAN

• TARP adopted in 1976.
• Phase 1:
  • 4 tunnel systems totaling 109.4 miles and providing 2.3 BG storage capacity.
  • Completed in 2006.
• Phase 2:
  • 3 reservoirs: Majewski, Thornton and McCook
    • Majewski Reservoir completed in 1998; provides 350 MG CSO storage
• When remaining 2 reservoirs are completed, entire TARP system will provide storage capacity of 17.5 BG.
THORNTON COMPOSITE RESERVOIR
THORNTON COMPOSITE RESERVOIR

• Dual purpose reservoir providing 3.1 BG floodwater storage and 4.8 BG CSO Storage as part of the Tunnel and Reservoir Plan

• Construction Cost $421 M

• $40 M average annual flood reduction benefits

• Reservoir serves a population of 556,000 in 15 communities and protects 182,000 structures

• Scheduled to be online by 2015
MWRD GREEN INFRASTRUCTURE PROGRAM

• Approved by the Board of Commissioners on September 1, 2011

• Facilitate planning, design and construction of GI throughout Cook County in collaboration with various stakeholders

• Development Phase
  • Evaluate existing programs
  • Develop program framework and guidelines
  • Public education component
  • Demonstration projects
QUESTIONS

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