

VIBRANT

Green Infrastructure and Stormwater

Village of Niles Oak Park Bioswale and Permeable Pavement



- Historic Stormwater context • Stormwater Program • Village wide projects • Focus On Green Infrastructure
- Oak Park Case Study

Introduction





Historic Context Niles experienced extensive flooding in:

- 1987 and years prior
- 1996
- 1998
- 2002
- 2008 *
- 2010
- 2011
- 2013

Disaster declarations by President *Straw that broke the camels back? Following 2008 storms there appeared to be a paradigm shift...



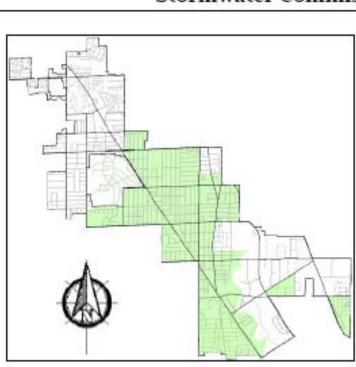


Historic Context

Paradigm Shift

- Stormwater Commission
- Stormwater Commission Internal Report 2009
- Hired Professional Stormwater Experts (Hey & Associates)
- Stormwater Relief Program 2012

Implemented many other incremental steps and programs as well. Multi faceted program approach including traditional and green infrastructure projects



September 22, 2009

Major Stormwater Projects Construction 2014 (expedited by Mayor)



VILLAGE OF NILES

Village of Niles, Illinois Stormwater Commission Report



GE OF NILES R RELIEF PROGRAM

hicago, IL 6063

JUNE 15, 2012



Stormwater Program Approach

Regulatory Program

- Niles Ordinance
- County Ordinances
- State/Federal Regulations

Capital Improvements

- Tier 1 Projects
- Tier 2 Projects
- Small Projects

Maintenance and Monitoring

- Slip lining
- Catch basin cleaning
- Flow monitoring

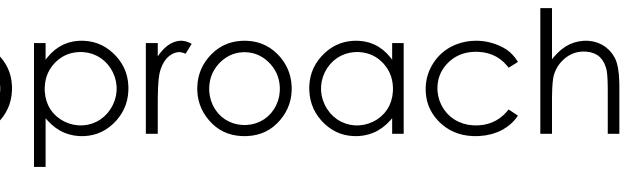
Village of Niles

Stormwater Relief Program

Flood Control Assistance

- Flood control systems
- Flood proofing

Oak Park projects falls under capital improvement category

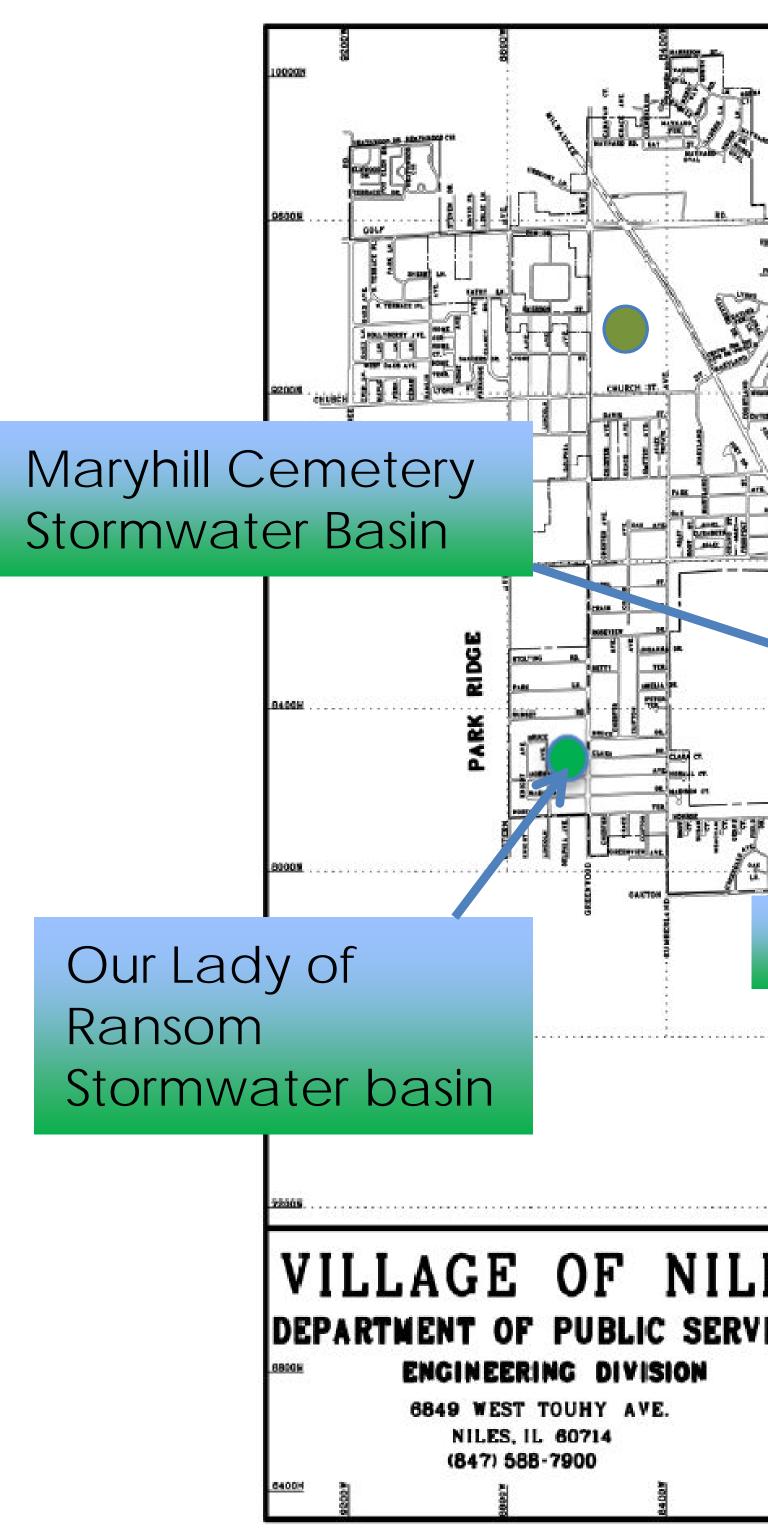


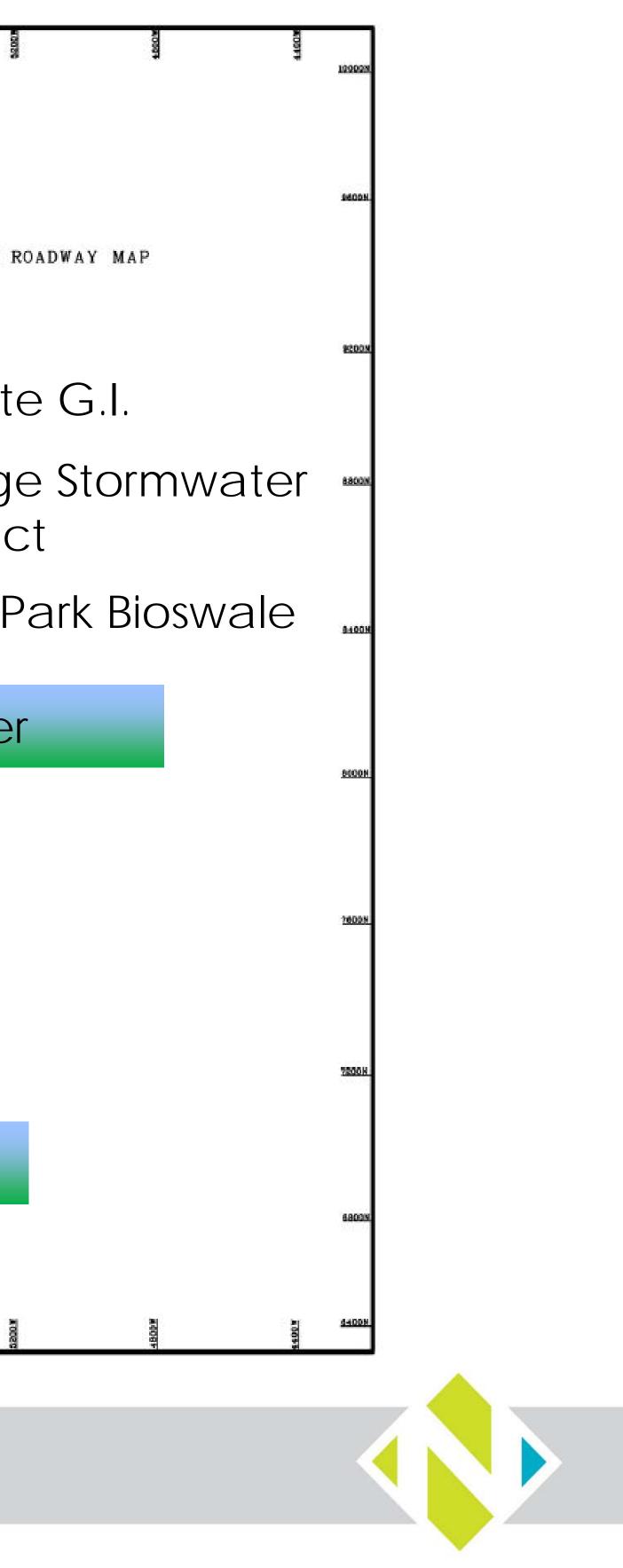






Projects Completed and in Progress GLENVIEW NILES ROADWAY MAP Oak Park Private G.I. MORTON GRO Bioswale Village Stormwater Project Oak Park Bioswale **Cleveland Sewer** TE E TEE Neva Bio-swale SKOKIE VILLAGE OF NILES You are here DEPARTMENT OF PUBLIC SERVICES Community ENGINEERING DIVISION 6849 WEST TOUHY AVE. Rain NILES, IL 60714 CHICAGO (847) 588-7900 Garden





Projects Completed and in Progress Green Infrastructure

Traditional Projects



Green Infrastructure Achievements

- Community education
- Conversation starter
- Volunteerism
- High visibility (Touhy Ave)
- Chloride treatment
- Stormwater relief
- Public-Private Partnerships

RC Creater, Inc.

NLED GATEWAT



HOUCATIONAL BIOMASK

ILLUSTRATIVE PLAN

NILES COMMUNITY RAIN GARDEN



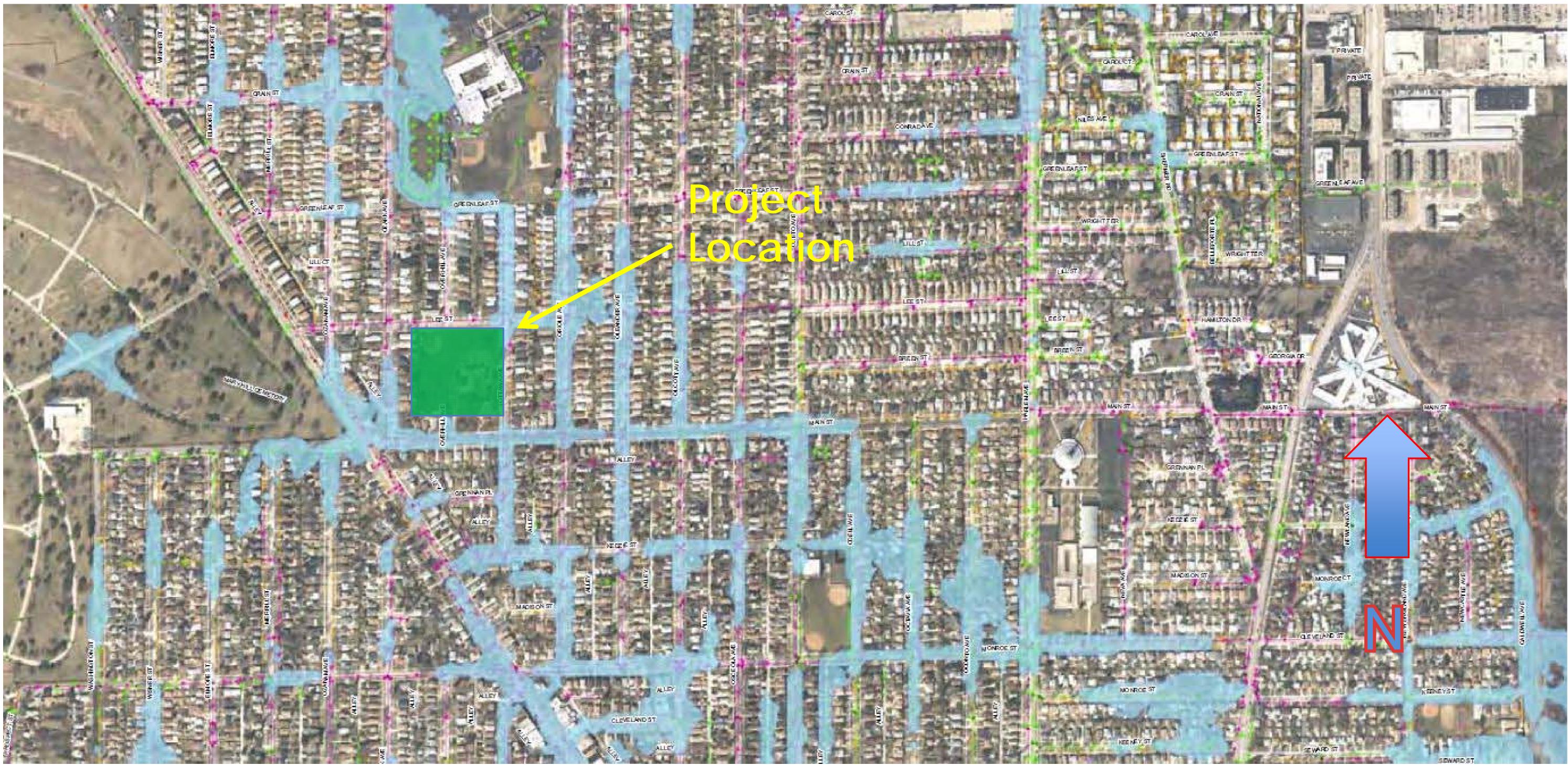
Oak Park Existing Conditions



- Combined Sewer Area
- Naturally Tributary to North Branch of the Chicago River
- "Upland " Zone
- Heavily used Public Park



Flood Projections





Traditional Solutions





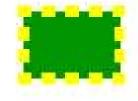


Green Infrastructure Solutions

VILLAGE OF NILES, OAK PARK GREEN INFRASTRUCTURE COMBINED SEWER OVERFLOW CONTROL PROGRAM

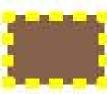
PRELIMINARY SITE PLAN





BIOSWALE (APPROX. 3,200 SQFT):

FLAT / GENTLY SLOPING BOTTOM SALT / MOISTURE TOLERANT VEGETATION ENGINEERED TOPSOIL (MINIMUM 12") AGGREGATE STORAGE (24" CA 16 GRAVEL)



PERMEABLE PAVEMENT (APPROX. 9,200 SQFT):



Sponsored By:

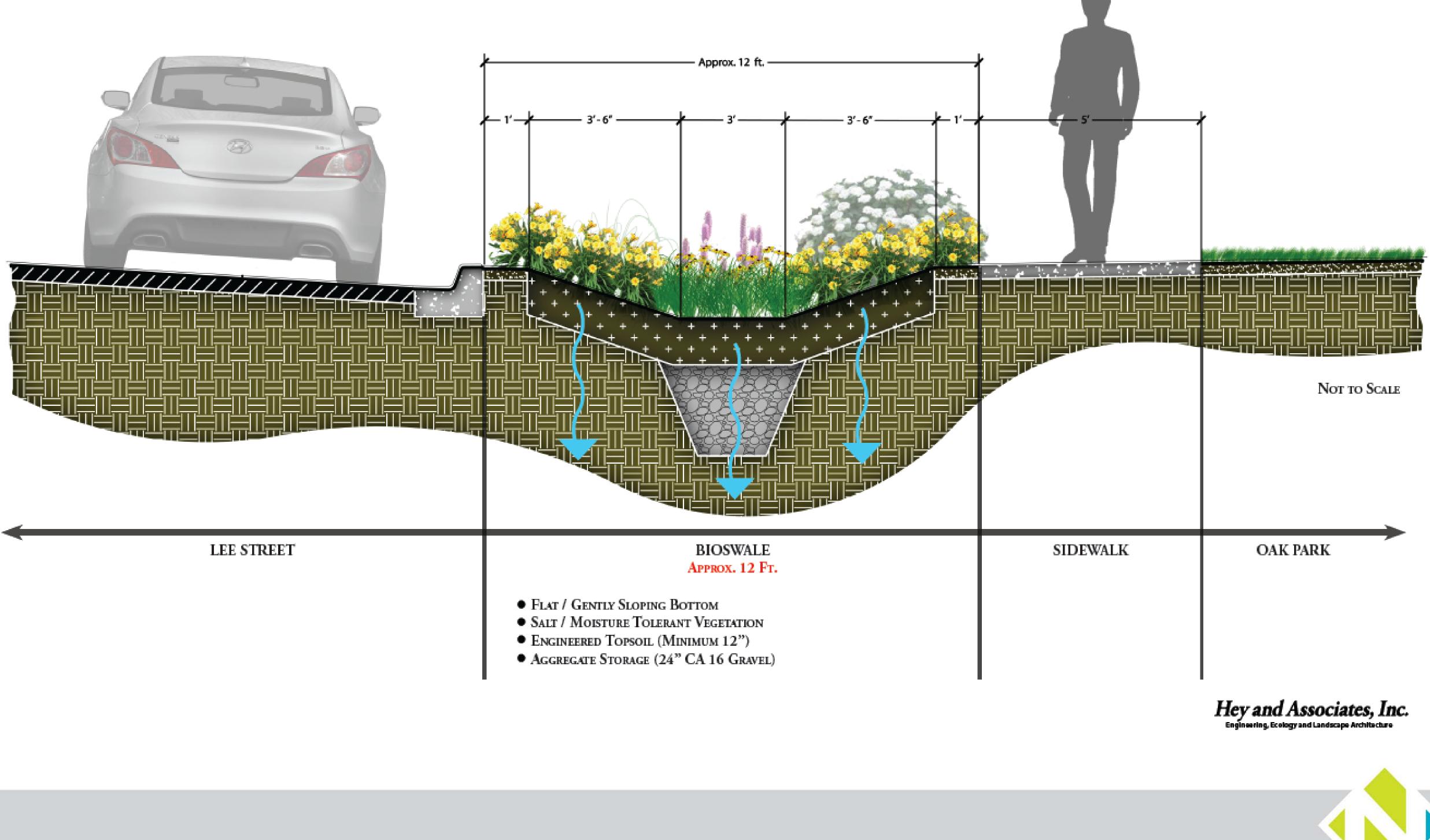


Metropolitan Water Reclamation District of Greater Chicago

Hey and Associates, Inc.



VILLAGE OF NILES **GREEN INFRASTRUCTURE COMBINED SEWER OVERFLOW CONTROL PROGRAM** BIOSWALE TYPICAL CROSS SECTION [Lee Street west of Ottawa Avenue]



Bioswale

Permeable Pavement



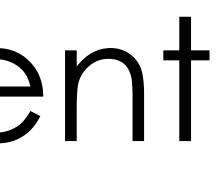


- Prop. Sidewalk Varies Storage zone Aggregate Leveling Pad CA-16, 2" Aggregate Base Washed CA-7, 24" Existing subgrade Woven Geotextile Fabric Table 1 Class 1, along sides of open-graded base

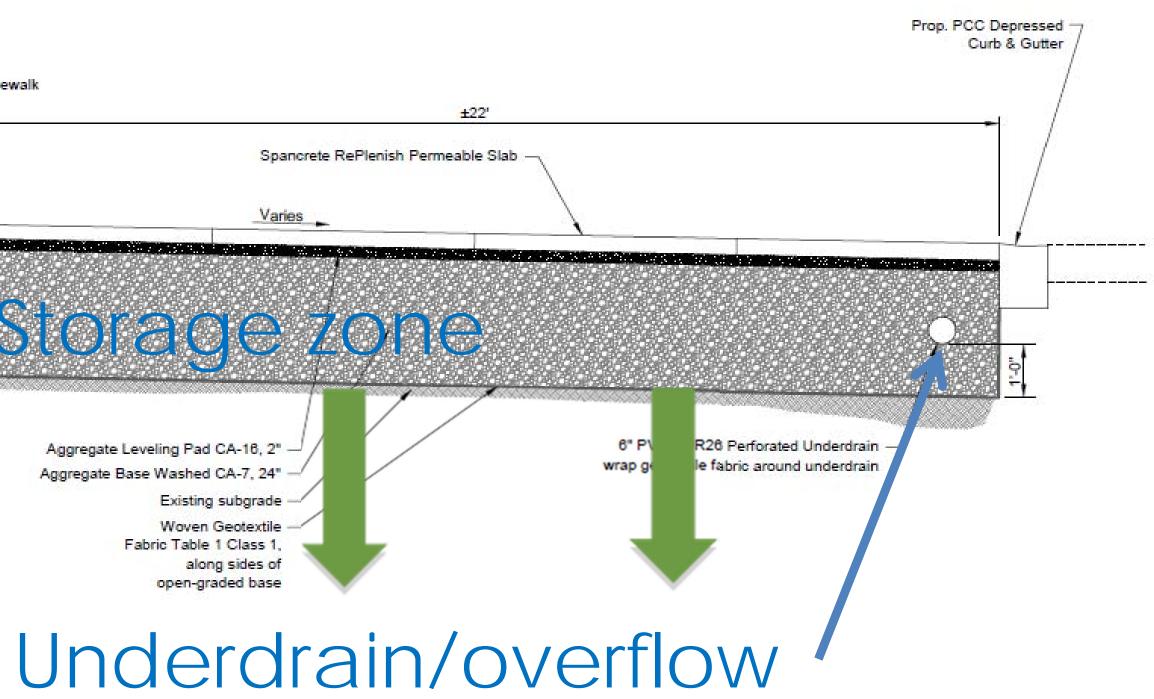
3

RePlenish Features:

- Pervious Precast Strength Exceeds traditional concrete strength
- Withstands Freeze and Thaw
- Industry-Leading Infiltration up to 500 inches/hour
- Contaminant Removal Up to 85% of dissolved metals and more than 65% of phosphorous
- Interlocking Hollowcore Sections
- Flood Mitigation A great way to manage and reduce flood conditions
- Low Maintenance
- ADA Compliance
- Credit for Green Building Standards







Typical Permeable Paver Pavement Section (Not to Scale)



Unique Project Features

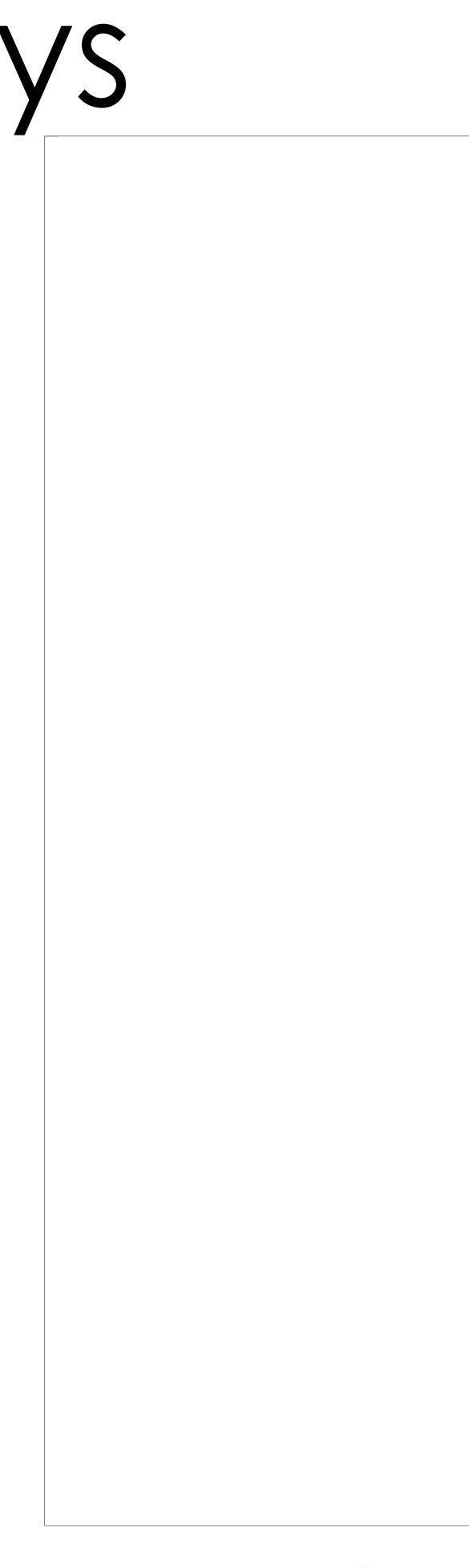
- 53,811 Gallons of Storage as certified by MWRD
- Equivalent to almost 1000 Rain Barrels
- Park District Cooperation and Coordination
- MWRD
- Spancrete debut in Illinois –Road Trip to Summer fest CSO Volume reduction
- Reduced Waterway Impacts

Multiple Funding Sources Royal Bank of Canada and



Project Take Aways

- Persistence Pays
- Local agency coordination
- Incremental solution Tool for the tool box
- Used in combination with traditional solutions • Retrofit possibilities
- Cost premium offset by infrastructure replacement COST
- Maintenance Considerations 3 years
- Stormwater does infiltrate! Even in clay!
- Combined Sewer Area appropriate
- Add to grant applications when possible





Thomas Powers Village Engineer 847-588-7900 Tjp@vniles.com

Questions?

Thank you



