

Kenilworth Green Streets Initiative Modeling, Design and Construction

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Baxter & Woodman

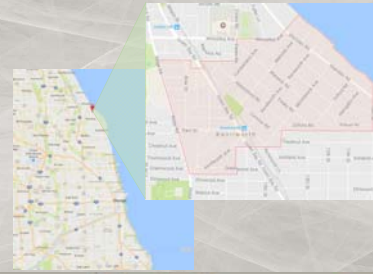
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Bleck Engineering

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Kenilworth Overview



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- Residential basement
- Intersection/street
- Overflow of Skokie Ditch

Existing Conditions – Skokie Ditch



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Kenilworth 2023

- 10-yr capital improvement program aimed at improving Village's infrastructure
 - Reduce surcharge or sanitary sewers into basements, streets and Lake Michigan due to flooding
 - Improve waters distribution system
- 2010 Study by HLR recommends green infrastructure to decrease surcharging of interceptor and set the stage for an eventual outfall.

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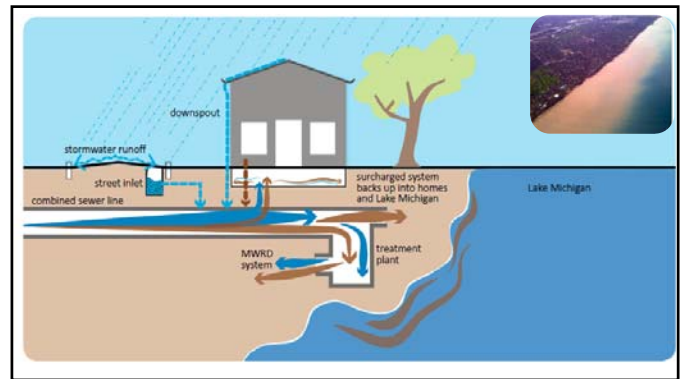
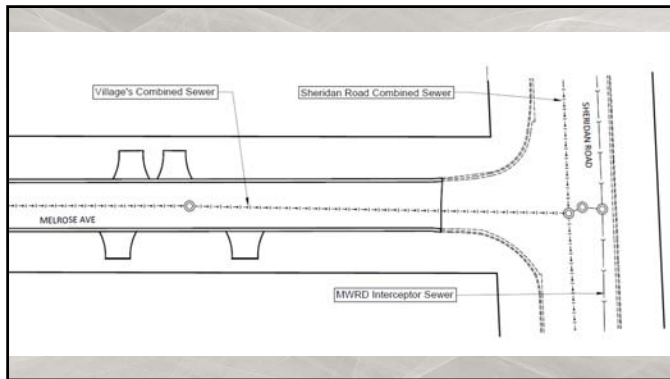
HLR Study Original Design



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Design Objectives

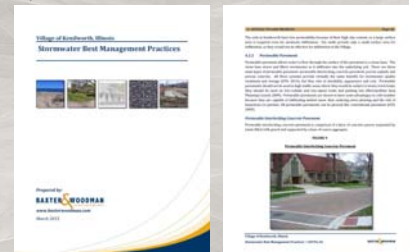
- Allow surcharge, but no flooding for the 10-year storm
- Contain runoff inside the curb line for the 100-year storm
- Allow for potential future permitting of outfall into Lake Michigan
- Analyze cost and feasibility of sustainable design features, including coordination with permitting agencies
- Attempt to reduce pipe size by incorporating green infrastructure

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BMP Report

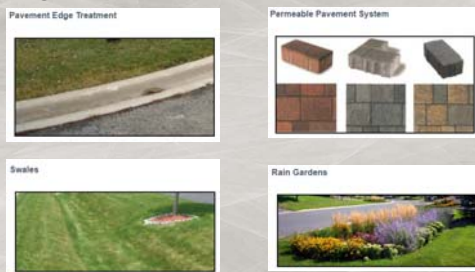


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Design Direction



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Model Selection

EPA SWMM

- Open Source
- RUNOFF hydrology
- Limited display capabilities
- Built-in LID controls

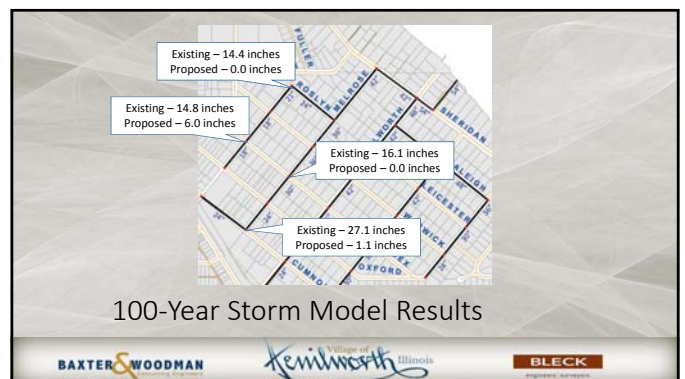
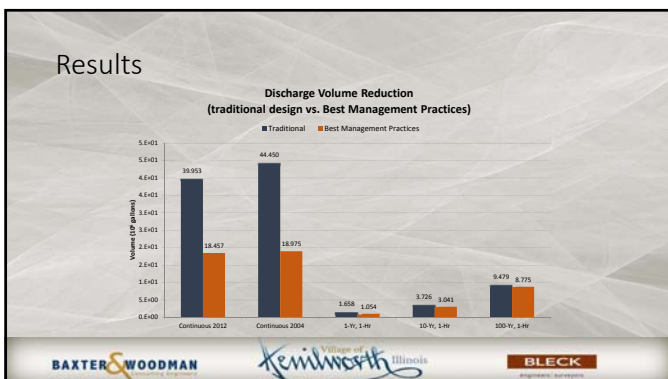
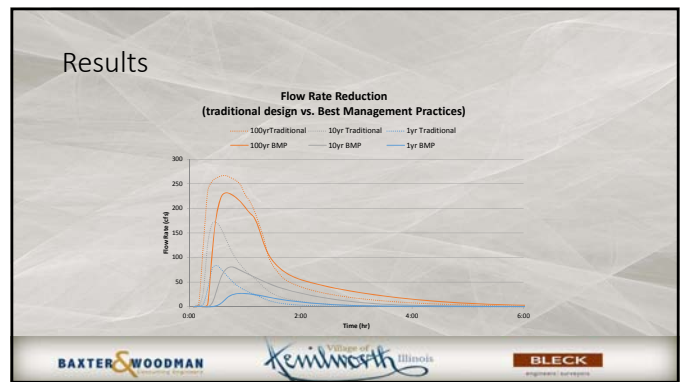
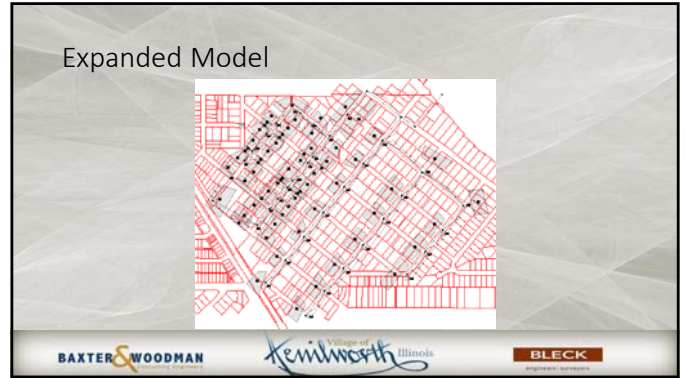
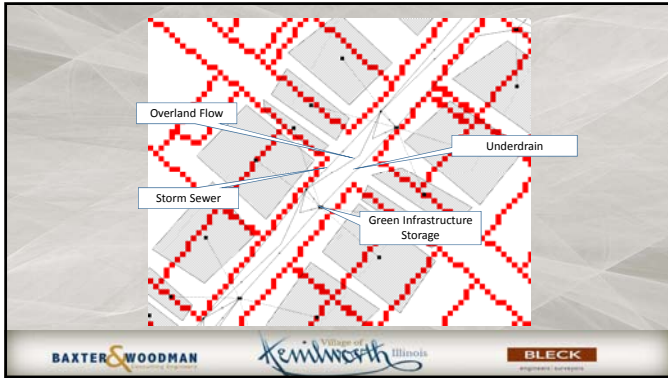
XP SWMM

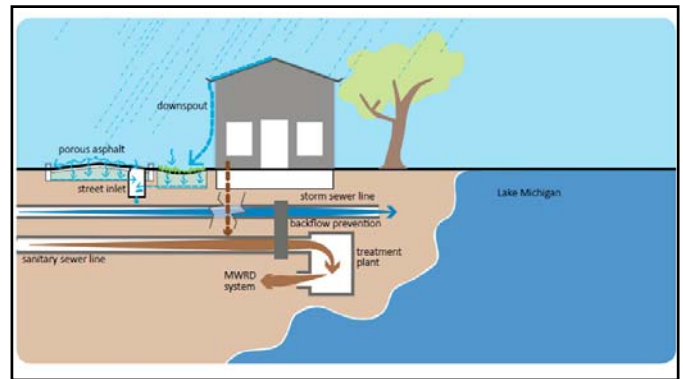
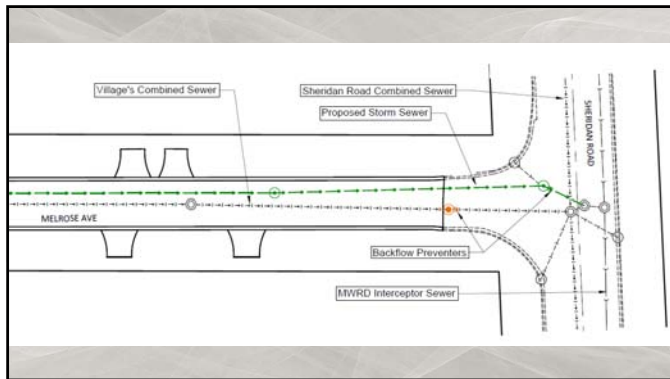
- Proprietary
- Multiple hydrology options
- Robust graphic displays
- Buildable BMP treatment processes

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Resident Concerns

- Aesthetics
- Tree Preservation
- Depth of swales
- Inundation Duration



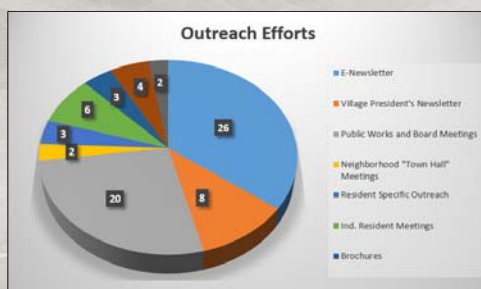
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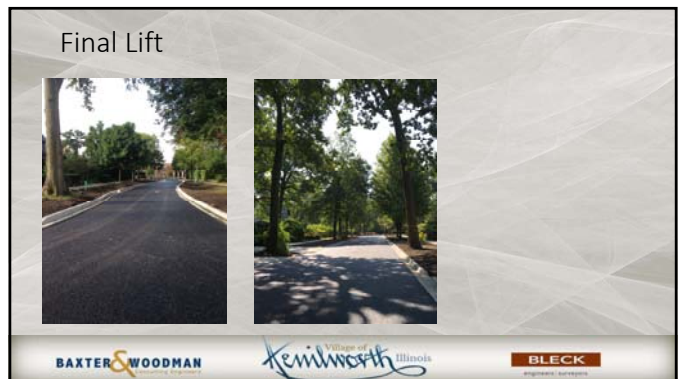
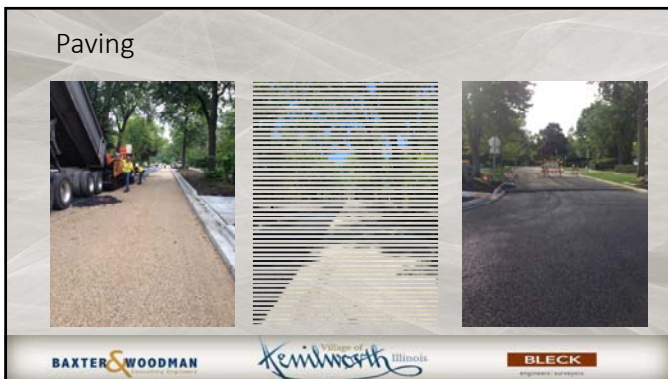
November 2012 – Nov 2015



Outreach Results, design selection May 2015

- Pavers
- Porous Concrete
- Permeable Asphalt
- Rain Gardens – Bio Swales (native grasses)
- Porous Parkways (turf grass)





Sod



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Test Video



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Before

After



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Lessons Learned

- Utility Conflicts
- Paving Equipment

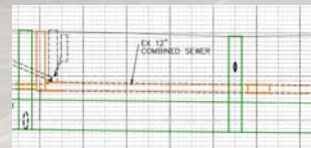
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Lessons Learned

- Sand Seams



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Lessons Learned

- Stone type
- Weather / Temperature
- Base Course vs. Curb
- Mix Design
- Moisture Content

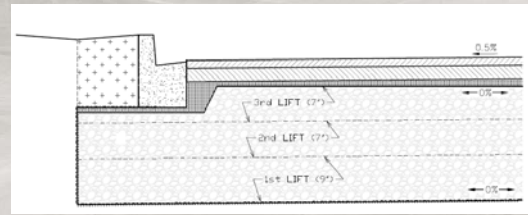


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Lessons Learned



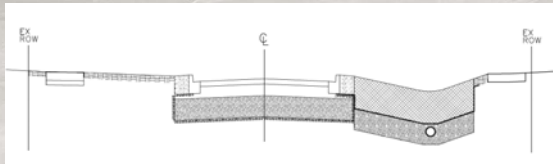
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Lessons Learned

- Extent of amended soil



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Lessons Learned

- Resident Involvement / Support Critical

Lessons Learned

- Ongoing Education Required



Kenilworth's Green Streets Program

Information on Regulations
Protecting the Public Right-of-Way



Help Protect Our Streets
Landscaper Brochure

Regulations Protecting Streets

Do Not Place or Store Any Materials on Village Streets

Porous asphalt contains more space between the aggregate than traditional asphalt. These spaces need to be kept clear to prevent the road from "flooding." It has long been the Village's policy that materials cannot be placed or stored on the roadway. Tires, windshields, gravel, sand, and other small materials will fall into the spaces and will ruin the drainage capabilities of the road. If a section of the street faces its potential due to illegal dumping, the Village will be responsible for repairing the road to a functioning state. In addition to repairing the road, the damaging party will be subject to a citation. Do not use Village property for the storage or disposal of landscaping materials.



Lessons Learned

- Intersections - raffling
- Continue Observation



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Questions?

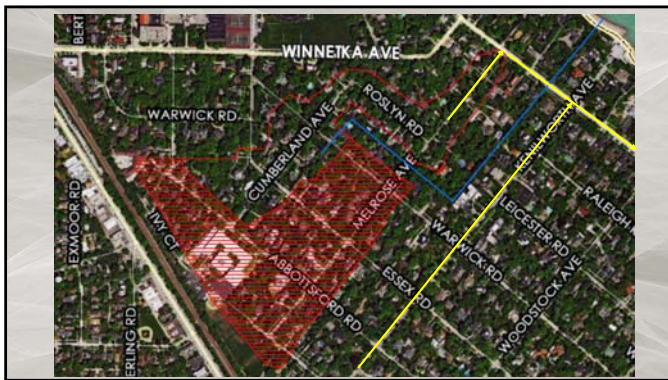
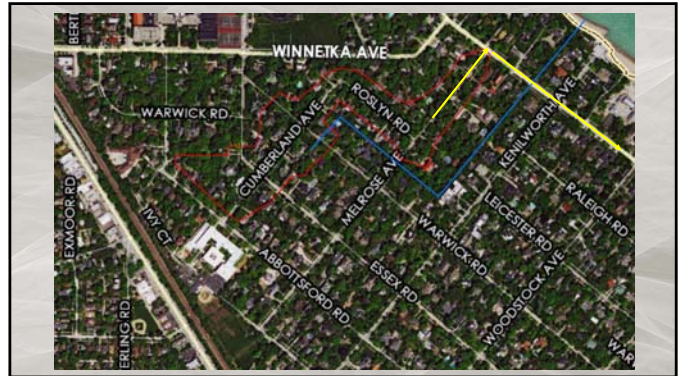
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4th Lift

