

Minnehaha Creek Watershed STORMWATER ADAPTATION STUDY



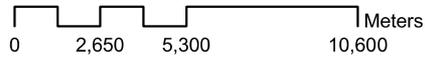
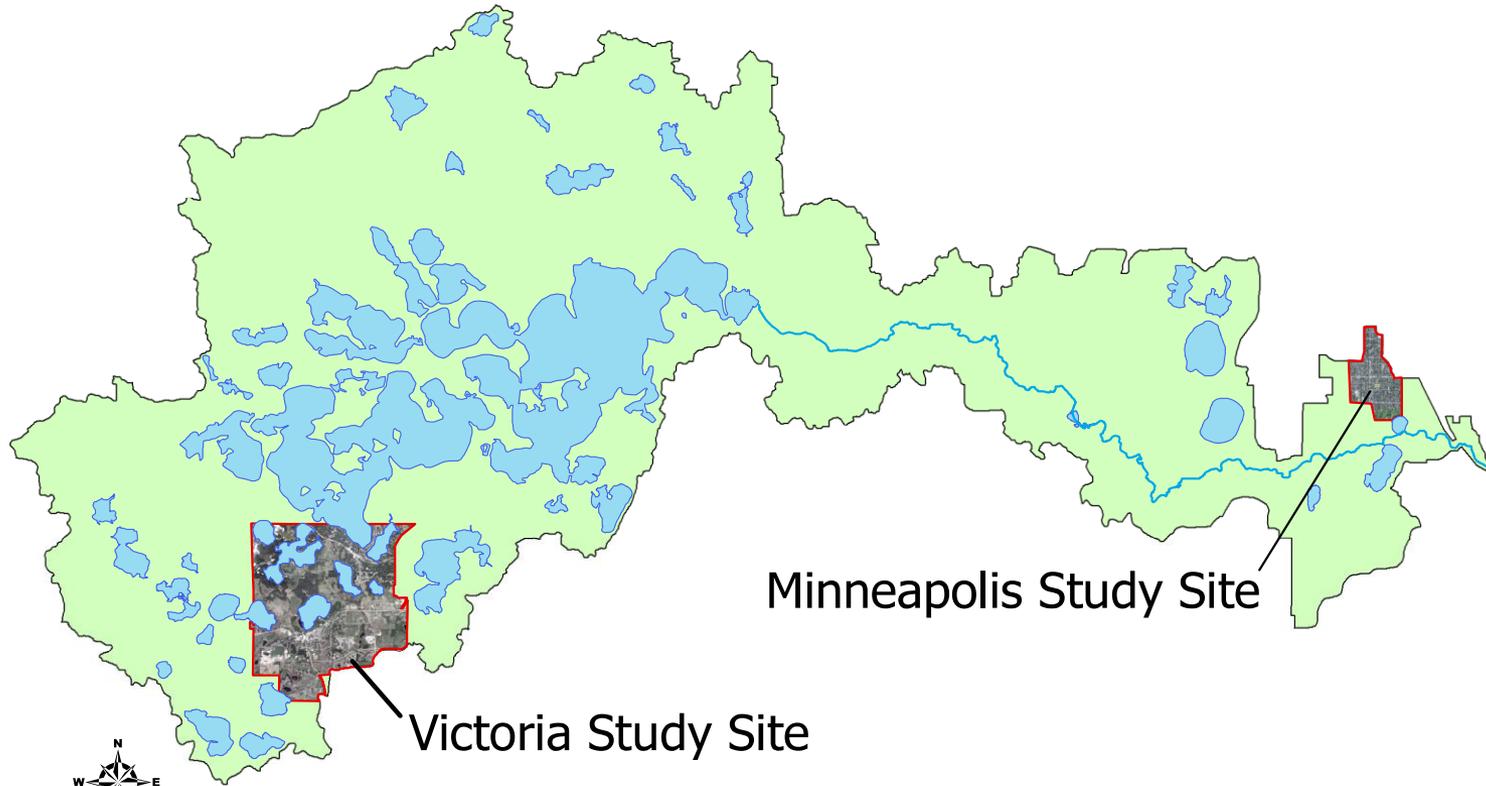
SYNTECTIC
INTERNATIONAL

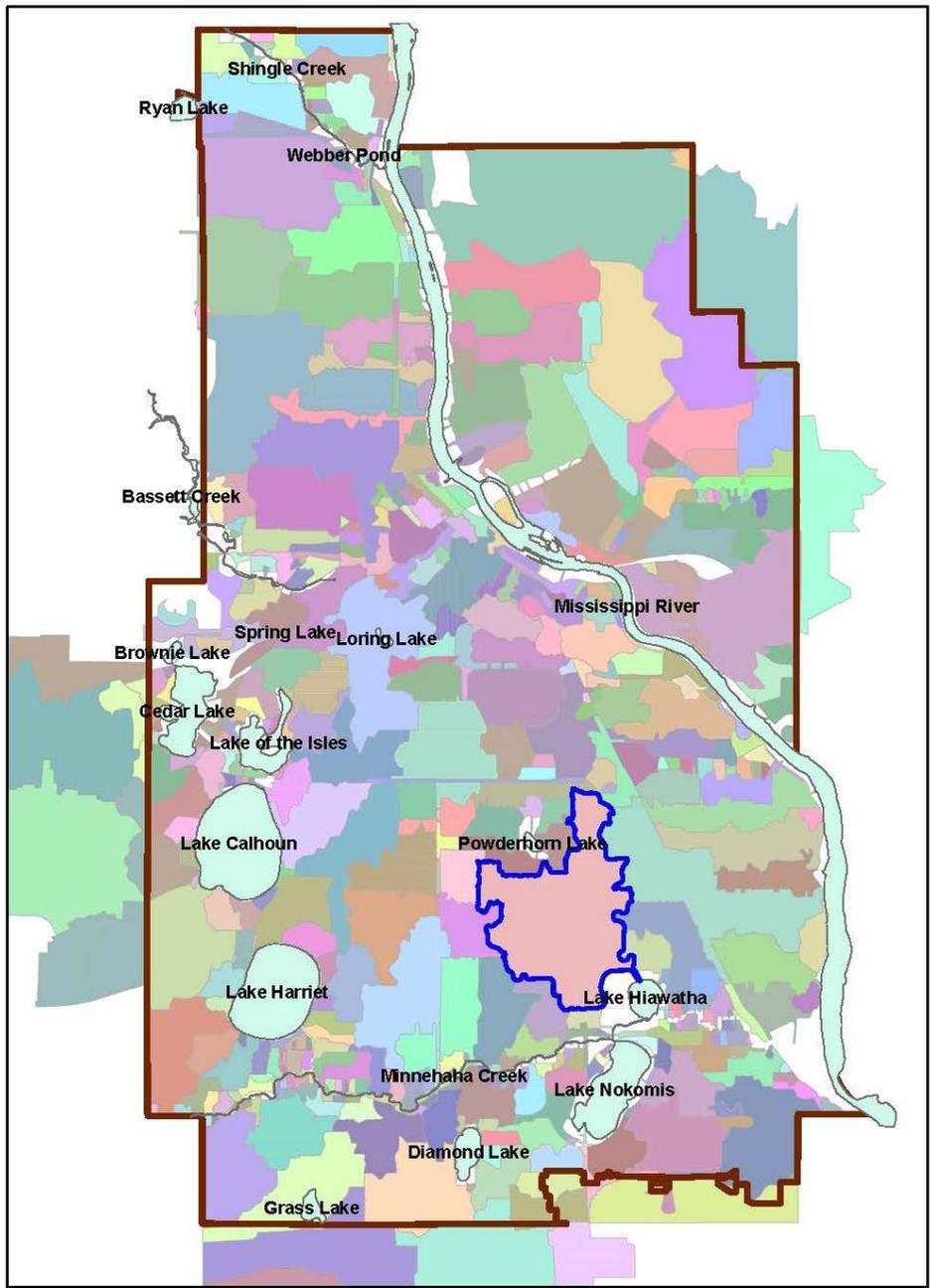
May 14, 2013

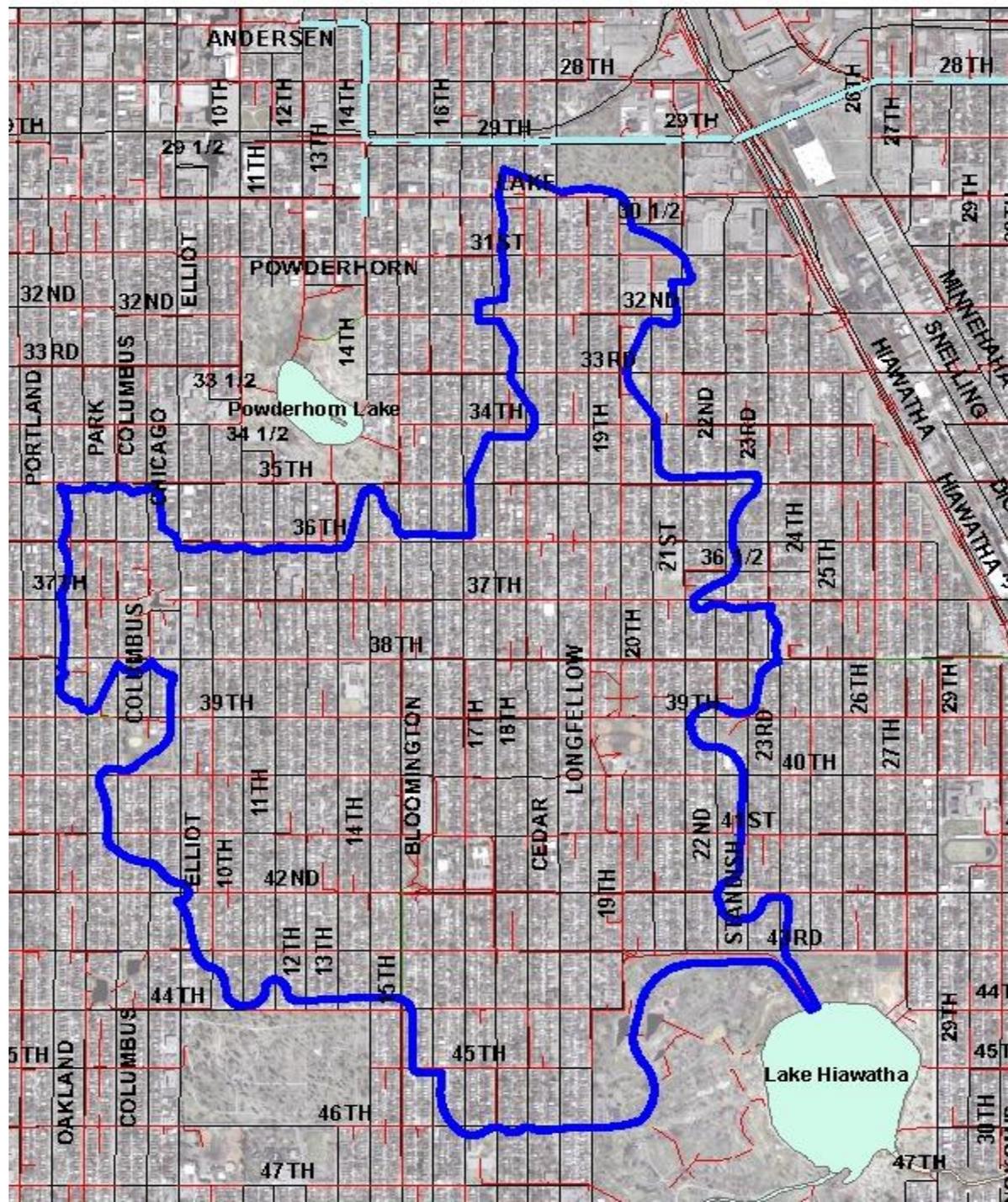
Update to Minneapolis Transportation & Public Works Committee

Minneapolis Public Works – Surface Water & Sewers Division

Minnehaha Creek Watershed









1960, 26th and Emerson Avenue South, after rain storm

DATA Input

Outputs

Historical Climatic Data

Precipitation
Evapotranspiration



Precipitation Scenarios

Global Circulation Models
Down-Scaling



Mid-21st Century Projected Precipitation Amounts

Optimistic, Moderate, Pessimistic

Current
Land Characteristics

Projected
Land Characteristics

Pipe Configuration

Modeling

Runoff / Peak Flow
Calculations

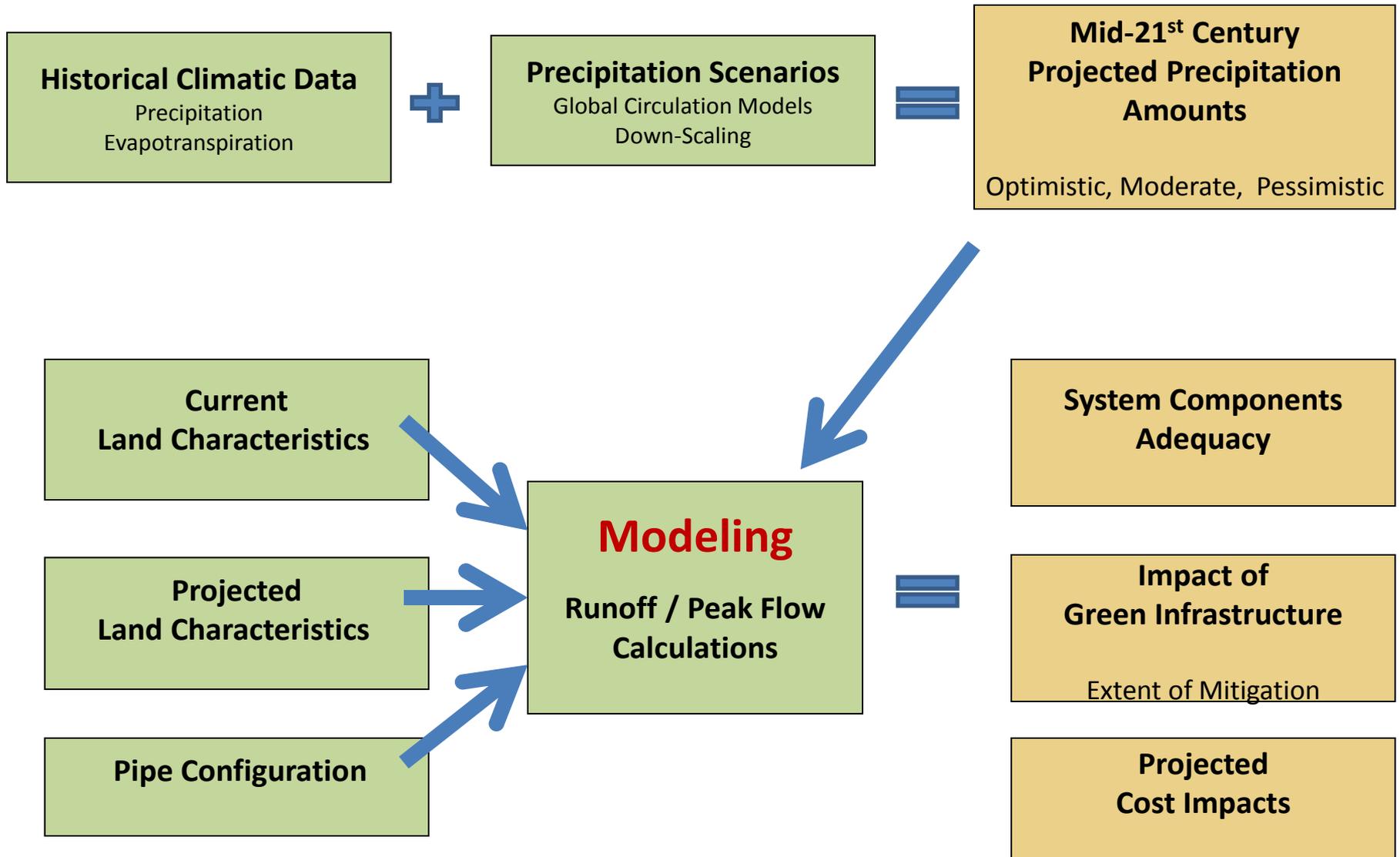


System Components
Adequacy

Impact of
Green Infrastructure

Extent of Mitigation

Projected
Cost Impacts



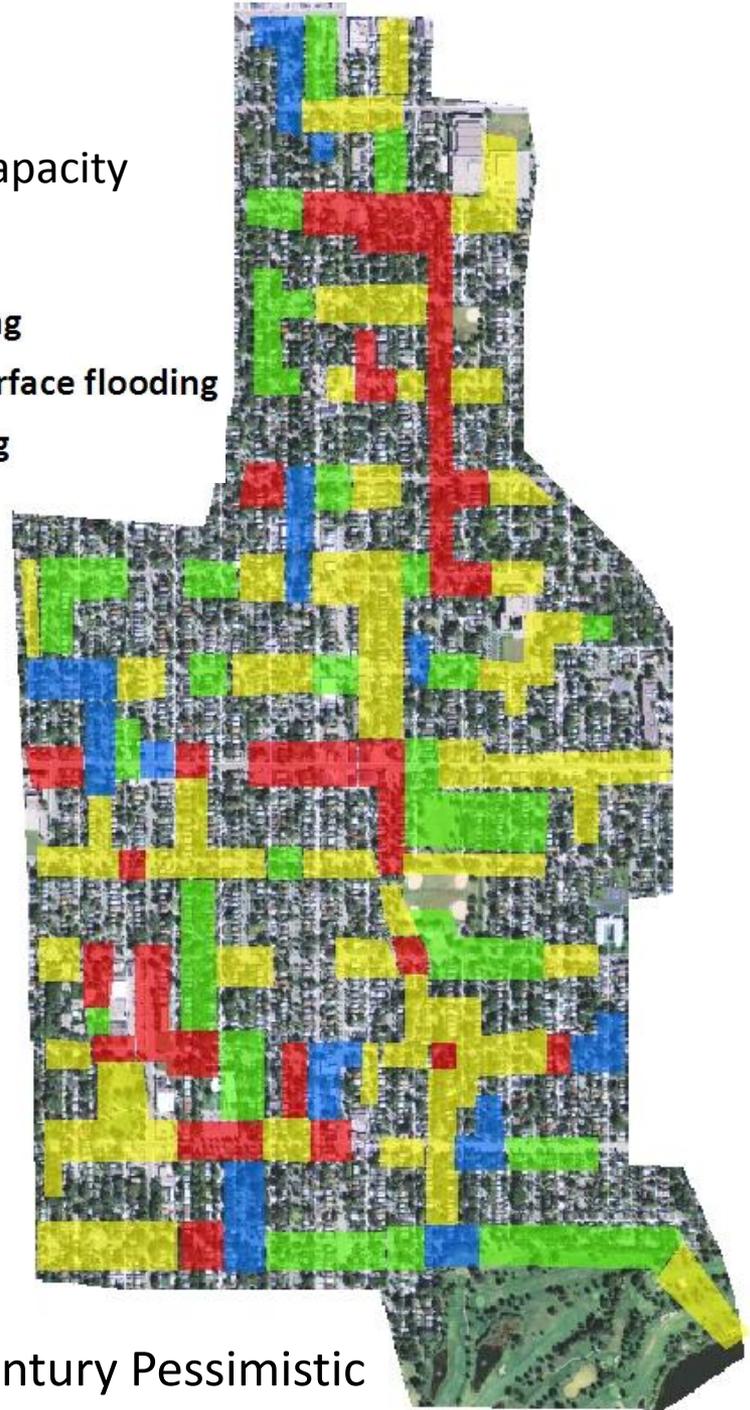
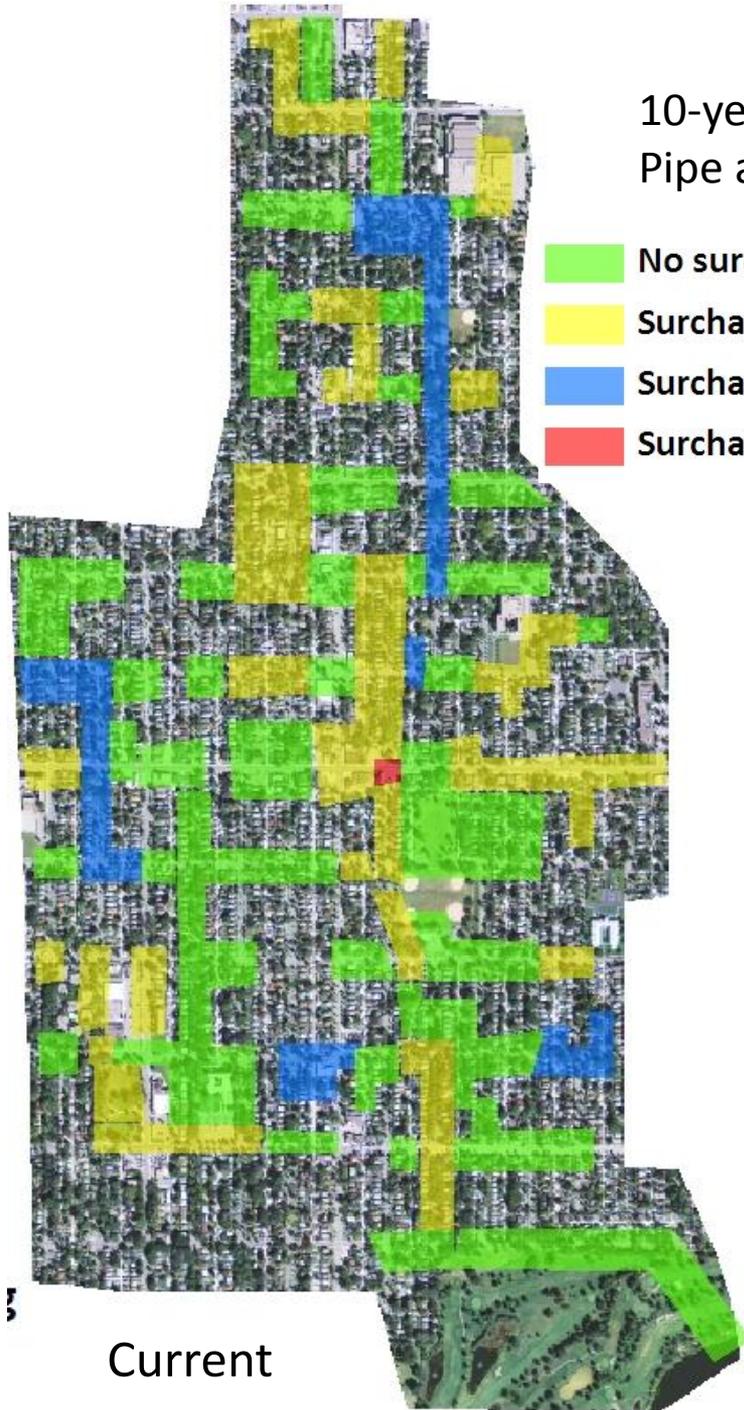
Precipitation Frequency: Current and Future Scenarios

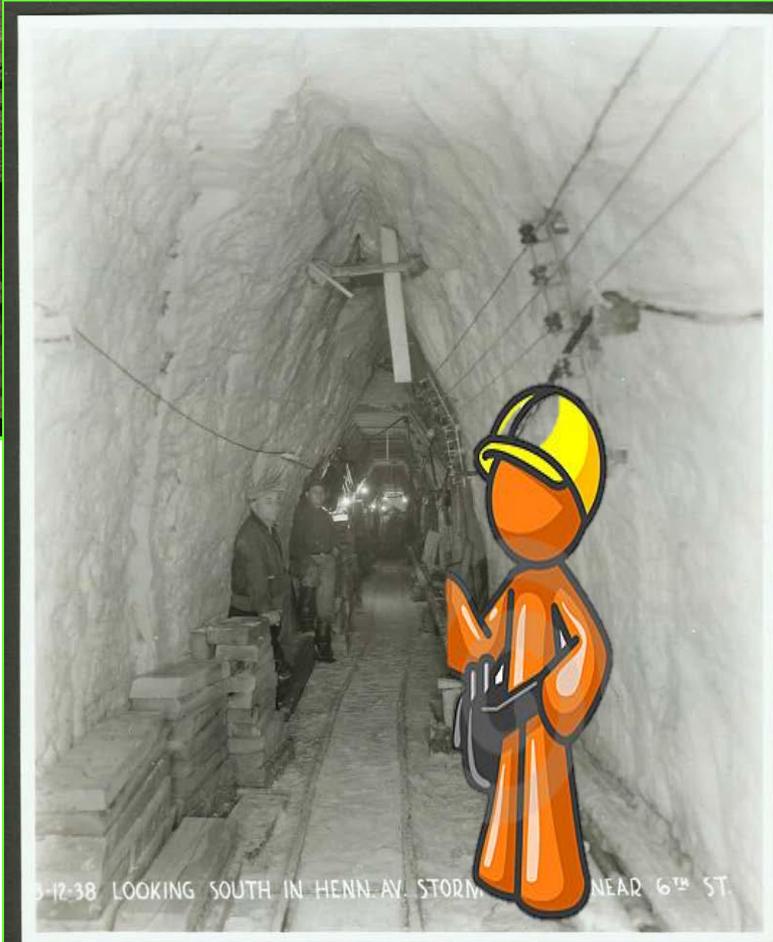
Probability in any given year of having a rain event of this size

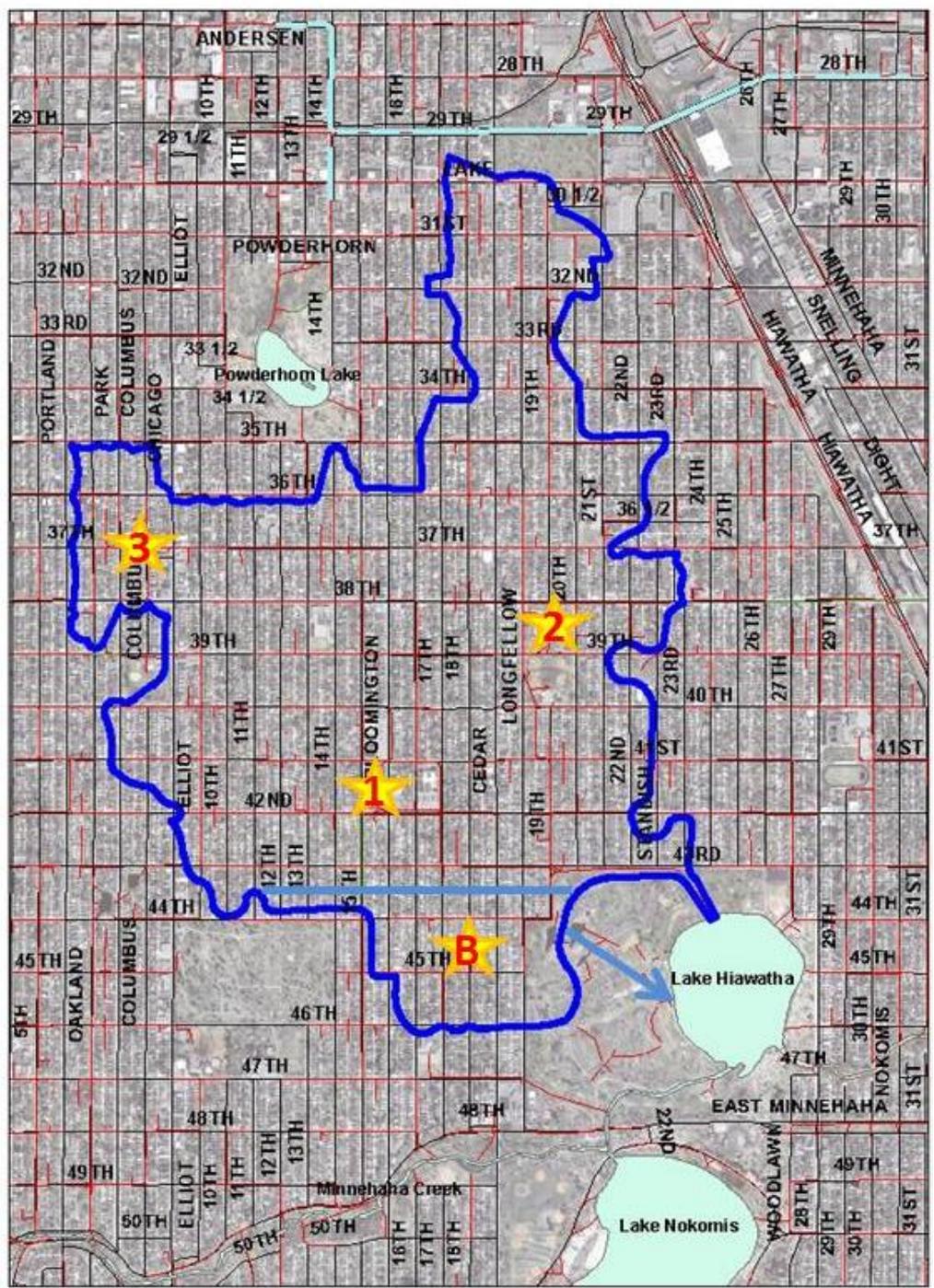
Probability in any given year of having this size of storm	Return period (years)	Corrected Historic (Atlas 14, events over 50 years+)	Mid-21st Century Optimistic	Mid-21st Century Moderate	Mid-21st Century Pessimistic
100%	1	2.5 in.			
10%	10	4.2 in.	4.2 in.	5.1 in.	10.1 in.
1%	100	7.5 in.	7.3 in.	10.2 in.	17.6 in.

10-year 24-hour event
Pipe and street storage capacity

-  No surcharge
-  Surcharged, No surface flooding
-  Surcharged, Streets contain surface flooding
-  Surcharged, Over-curb flooding

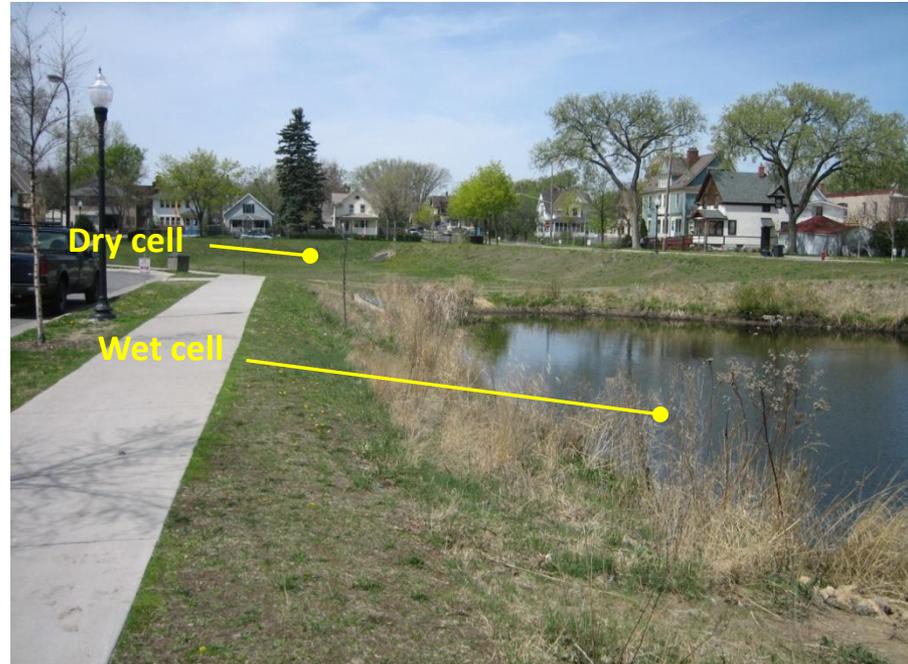
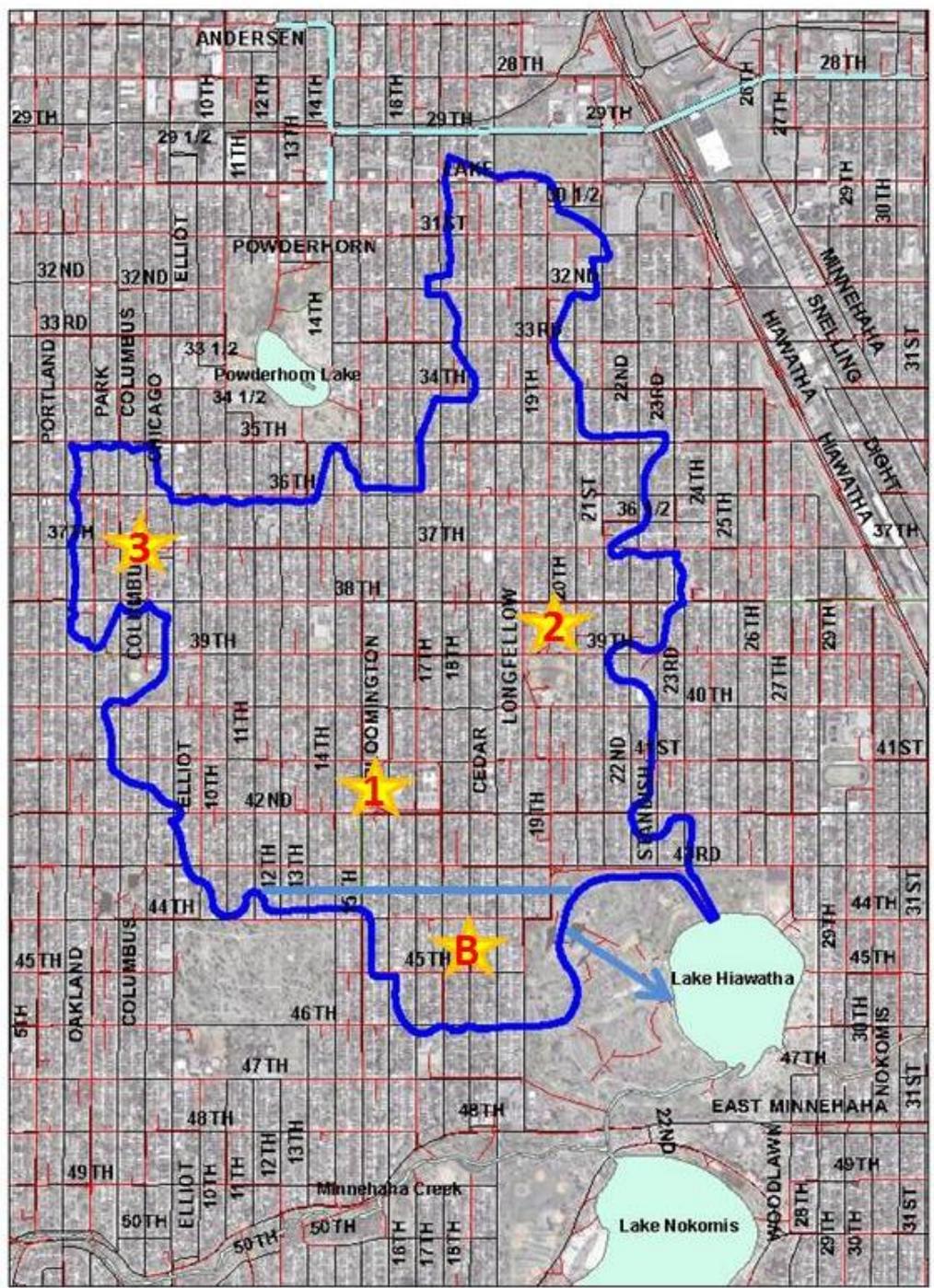






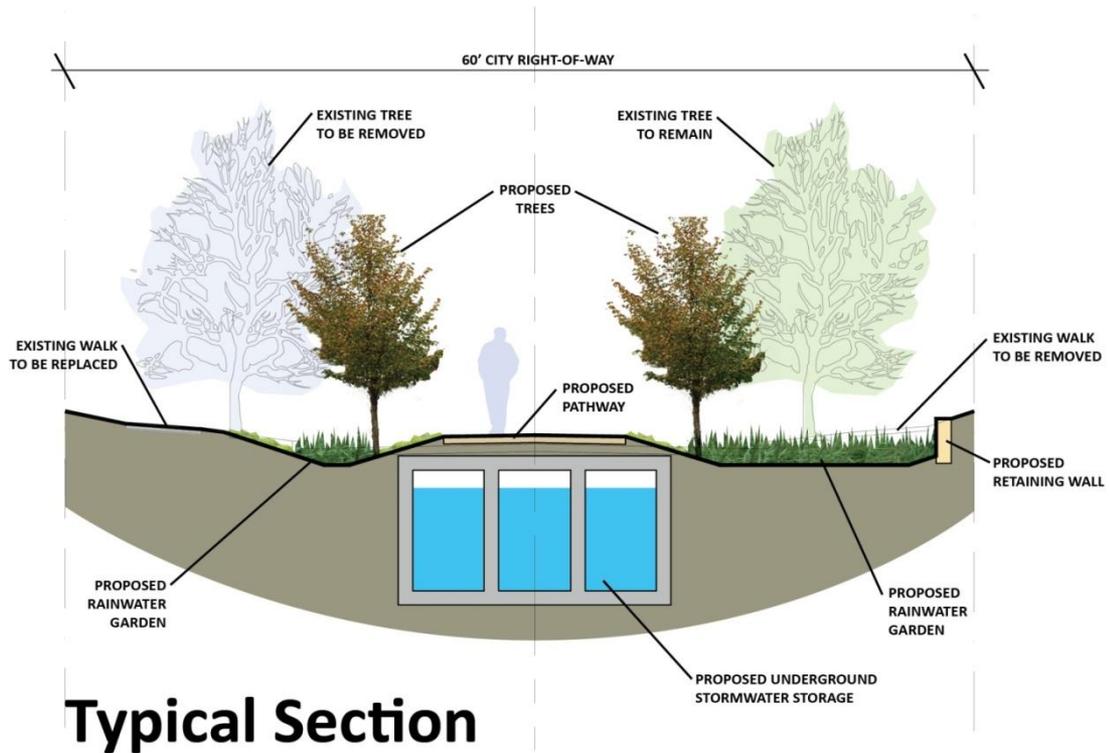
1 Bancroft Meadows Flood Basin Built 1989
(Bloomington and 42nd)





3 37th & Columbus 2-Cell Flood Basin Built 2003





37th Avenue Greenway Flood Project Built 2011

Other approaches, besides bigger pipes and additional storage?

The study will describe additional measures, such as:

- Requiring development projects to create areas for rain to soak into the soil (infiltrate) where conditions are suitable (this is sometimes called LID – low impact development)**
- Looking for retrofit opportunities to infiltrate where conditions are suitable**

- **June 2013 - Final report for study due**
- **Major focus of study has been public participation, to develop awareness and understanding of adaptation planning for climate change/extreme events**
- **Introduce Leslie Yetka, Education Manager for Minnehaha Creek Watershed District, leader for public participation**
- **Public Participation Activities to date:**
 1. **Compiled list of hundreds of neighborhood groups, elected officials, interested parties**
 2. **Sent newsletters and fact sheets**
 3. **May 2012 - Large stakeholder forum**
 4. **September 2012 and January 2013 - Small workgroups**

Topics:

 - **Education, Outreach and Stakeholder Engagement**
 - **Land Use, Planning and Policy**
 - **Stormwater Infrastructure (green/gray) and Low Impact Development**
 - **Sustainable Funding for Stormwater Infrastructure**
- **Future**

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