STORMWATER BACKGROUND

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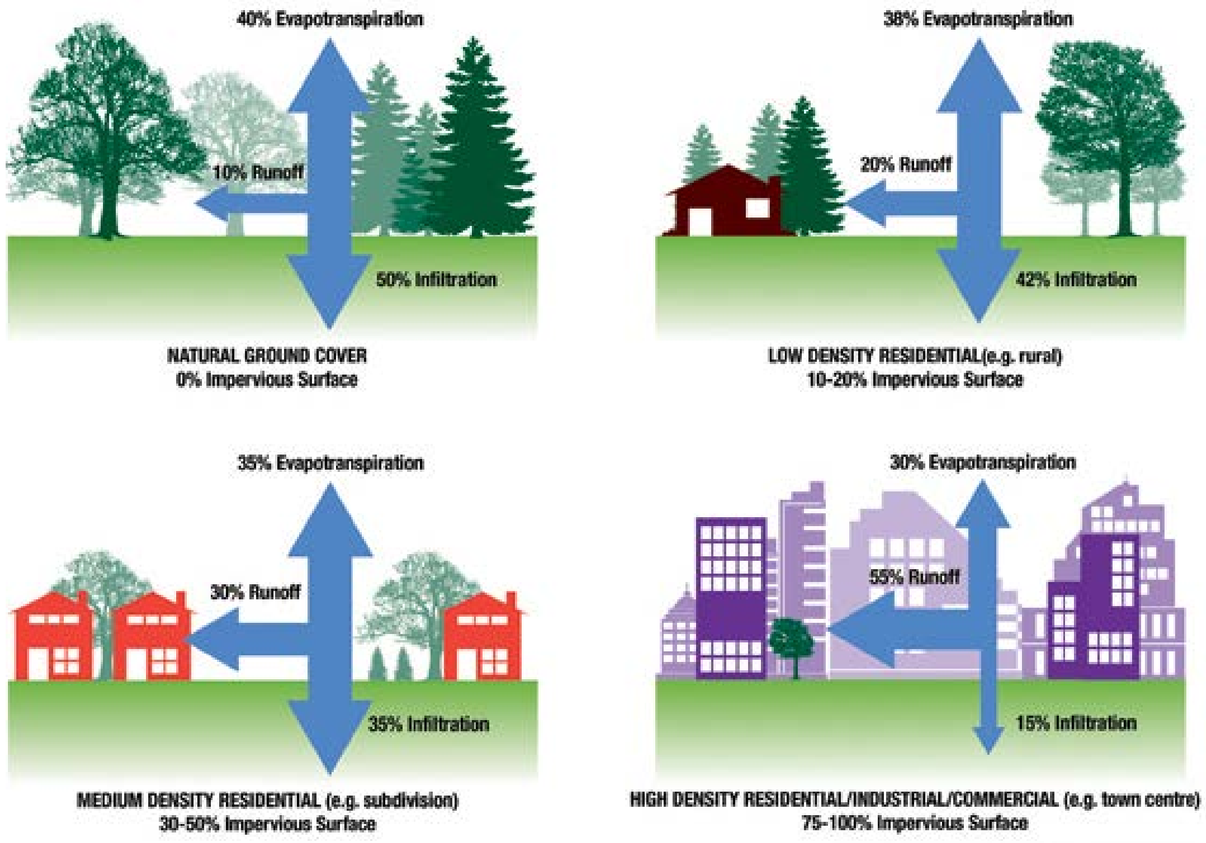
LAND USE AND WATER QUALITY

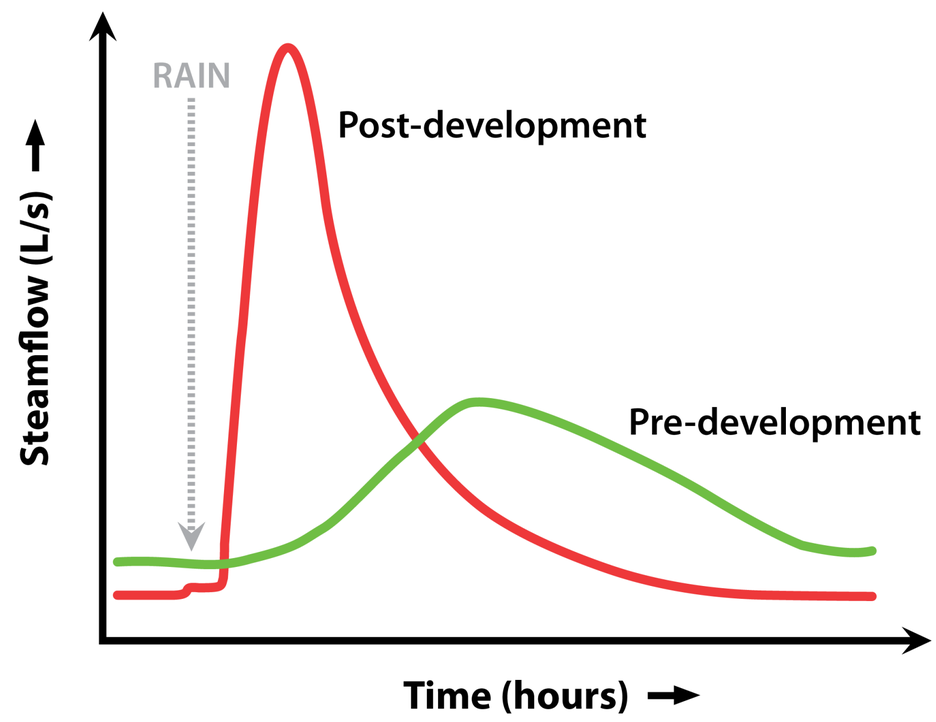
Hydrology 101



Impervious surfaces are hard surfaces, such as sidewalks, streets, and rooftops, that don't allow rain water or snowmelt to soak into the ground. This becomes runoff which picks up and carries numerous pollutants to the nearest body of water. As the amount of impervious surfaces increases, more runoff is created and less water is able to sink in, or "infiltrate," into the ground.

- **Ford site drains to Hidden Falls Creek and Mississippi River**
- **More water, delivered faster, without treatment**

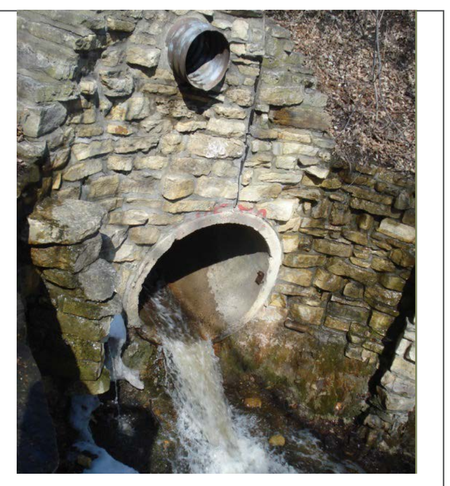
Downstream Impacts



Pre-development consists of natural land cover which allows rain to infiltrate into the ground. Ground water maintains and stabilizes creek flow. Post-development has impervious surfaces which create runoff while urban sewers quickly collect and send this runoff downstream.

Creek flow becomes limited during dry weather. Urban wet weather causes more water to be concentrated to downstream, hitting the creek in a rush which worsens erosion and flooding. Concrete blocks and artificial armor must be used to withstand damaging flows.

- **Flows are not steady; too much or not enough**
- **Creek is highly eroded**
- **Unsustainable armor used to protect creek**



Opportunities

- **Require reduced runoff with redevelopment**
- **Restore the creek to natural conditions**

Informed by:

- Sustainable Stormwater Feasibility Report for the Ford Site (2009)
- Hidden Falls Feasibility Study (2014)
- Great River Passage Master Plan (2014)
- Phase I Summary Report: 5 Major Development Scenarios (2007)

STORMWATER OPTIONS

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CONVENTIONAL REQUIREMENTS

- Stormwater management often built underground below parcels
- Simple steps for redevelopment
- Will improve, but not restore, Hidden Falls Creek

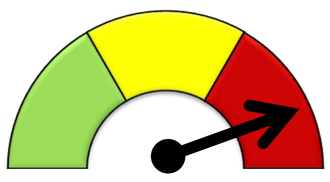
ABOVE STANDARD REQUIREMENTS

- Will allow sustainable natural systems
- Voluntary, innovative steps
- Requires additional land, comprehensive approach

Source: Matt Metzger

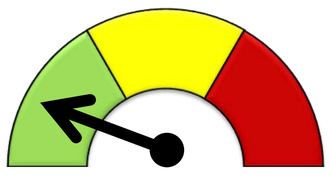
POTENTIAL STREAM SUSTAINABILITY

Existing site conditions



Conventional redevelopment requirements

Desired redevelopment performance goal



Is it important to trade buildable land for more robust stormwater options? Why or why not?

STORMWATER INNOVATION

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DESIGN GOALS

- Use stormwater as a resource
- Embrace emerging practices
- Recognize changing climate
- Balance water visibility and buildable land

What type of innovation do you consider a priority?





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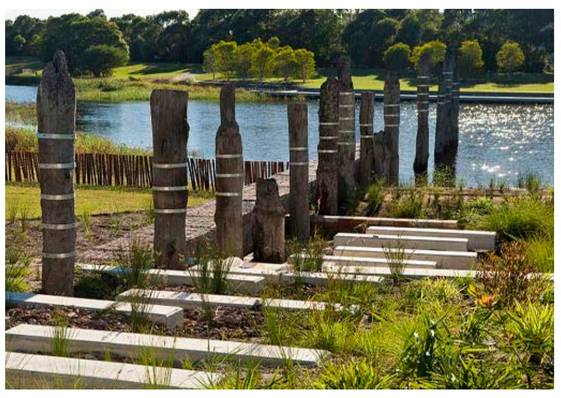
Cistern Storage	Stormwater Park	Alternative Surface Treatments	Green Roofs	Rain Gardens	Other (Please List)



From an aesthetics standpoint, would you want to see stormwater management visible or hidden? *Please indicate with a dot and provide comments below.*

Visible	Not Visible
Comment	Comment

WATER FEATURE CONNECTIVITY

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DESIGN GOALS

- Connect Ford site to Hidden Falls with open stream bed
- Provide quality space for gathering and moving to and from Hidden Falls Park

What does a connection mean to you and why?

What features would draw you to the area and why?

RE-DISCOVERING WATER

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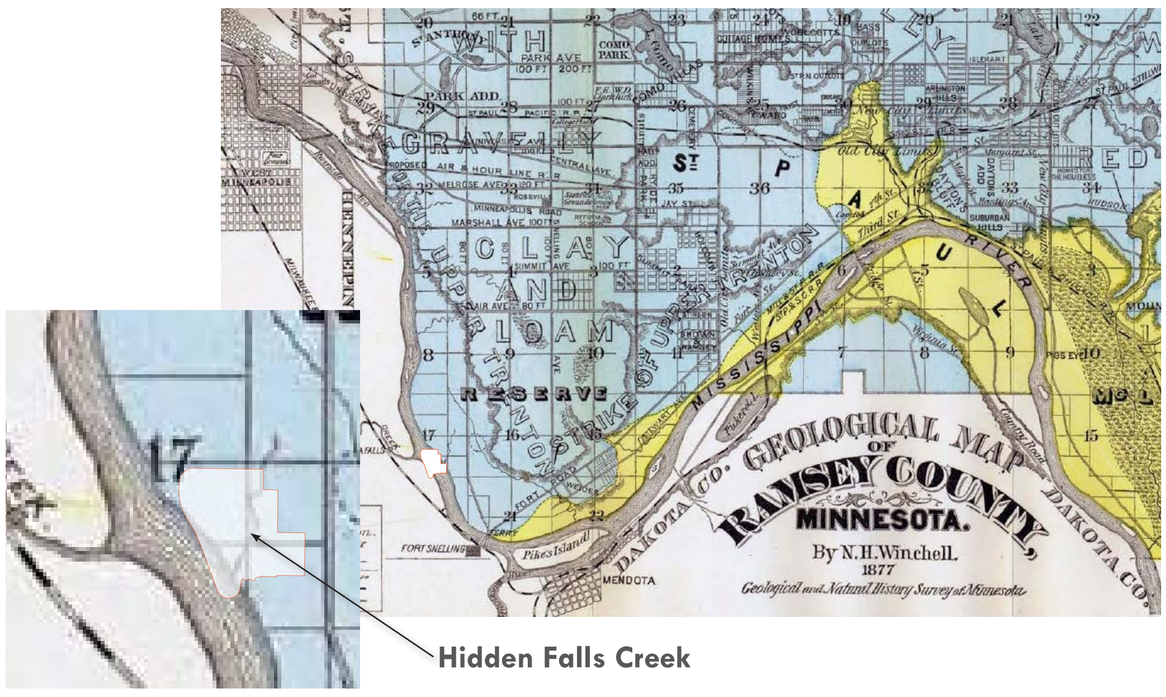
HISTORY

- Hidden Falls was larger than it is today
- Headwater buried during development
- Emerging practice: re-discover lost urban water features

Ramsey County Geology (1877)



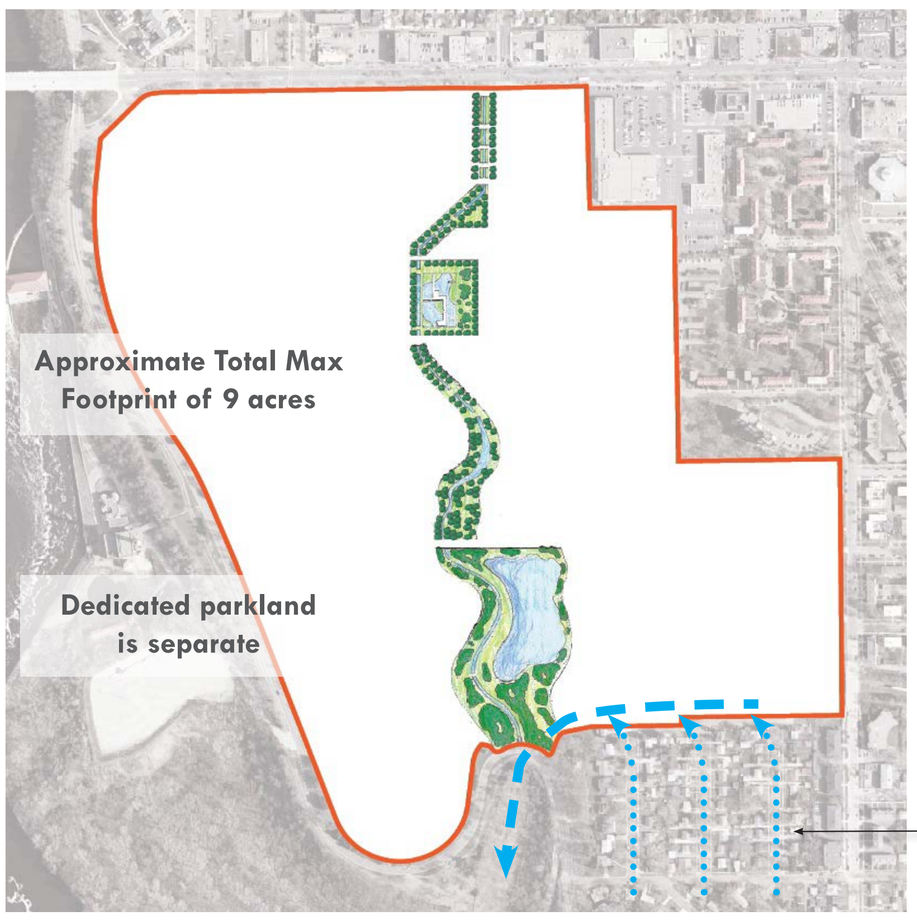
Ford Site - 1927

Ford Site - 2014

CONSIDERATIONS

Sustainable water solutions:

- Require a comprehensive approach
- Could be integrated into public realm design
- Potentially increase market value



DESIGN GOALS

- Recreate upstream Hidden Falls
- Control all flows to downstream Hidden Falls system
- Provide visible public amenity and ecosystem sustainability

How do you feel about the size of the system?

POTENTIAL WATER FEATURE(S)

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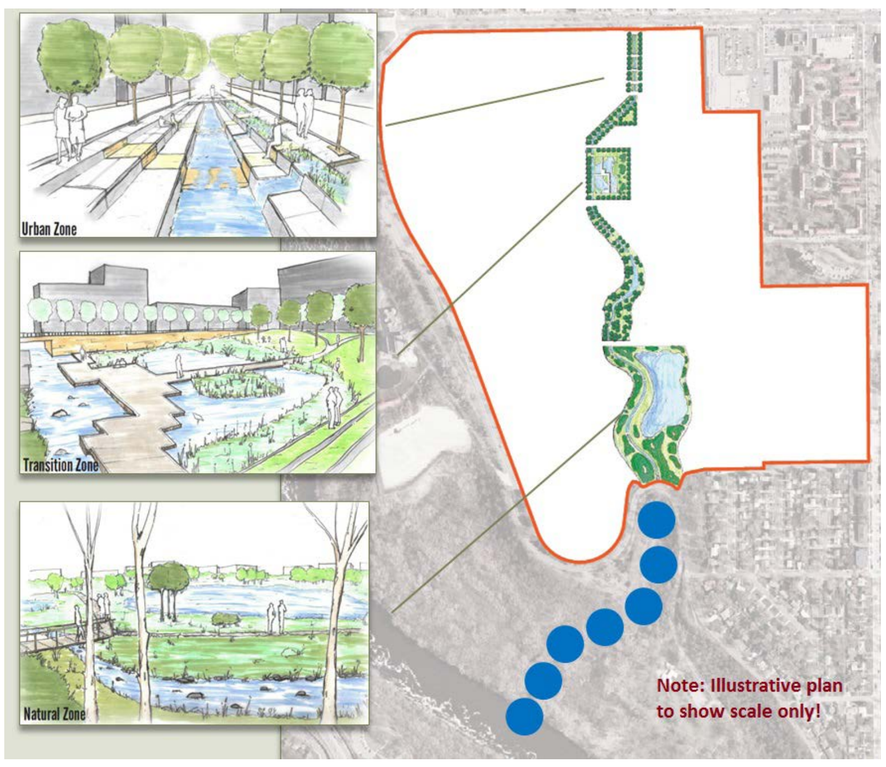
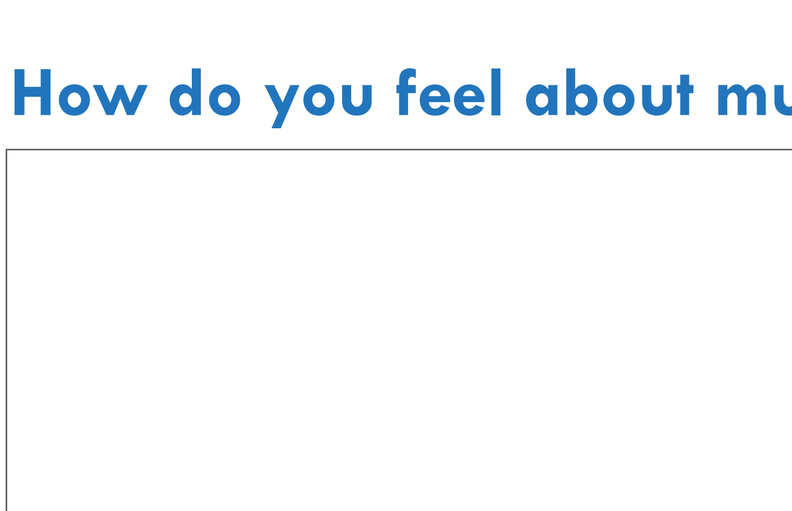
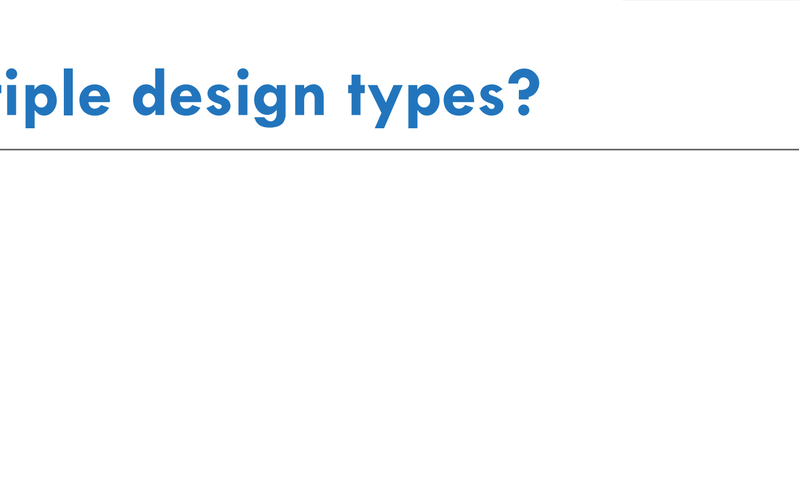
DESIGN GOALS

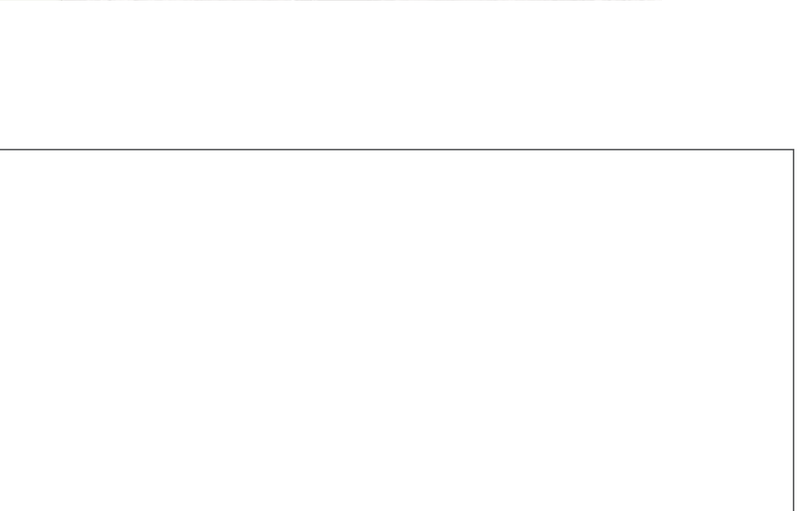
- Remain wet through dry periods
- Contribute to numerous open space priorities



How do you feel about multiple design types?







What impressions do these concepts give you?

What is missing from these ideas?

SOLID WASTE & RECYCLING

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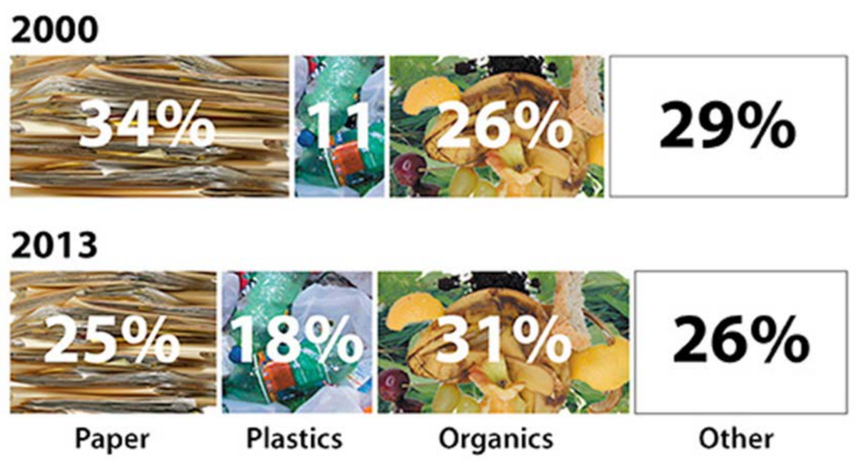
Waste Stream: the flow of materials from the user to final disposal

MN waste stream composition →



Minnesota Pollution Control Agency: *Minnesota Statewide Composition Waste Characterization Study* **(2013)**

ASSUMPTIONS

- **Recently passed (2012) State of MN diversion goals target materials from both the commercial & residential sectors.**
- **City has aggressive goals to divert residential waste from landfills through reduction, reuse, recycling, and organics management:**

2016	2020	2025	2030
35%	50%	65%	80%

Adopted by the Saint Paul City Council March, 2014

What would increase convenience for recycling or capturing organics in the public spaces of the Ford site?

Please indicate where you would be most likely to take advantage of <u>organics</u> collection. *Please indicate your choice with a dot.*

Transit Stop	Square/Park	Street/Curbside	Other (Please list)
			

<u>Informed by:</u>

- Recycle it Forward: a community assessment of solid waste and recycling (2013)
- City of Saint Paul Recycling & Organics Services Procurement Framework (2015)

PUBLIC ART

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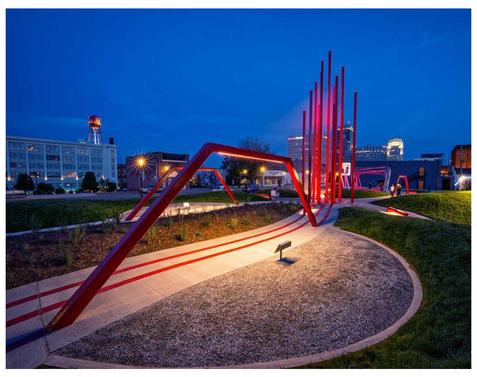
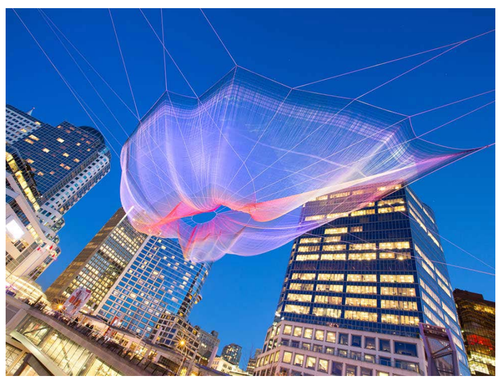
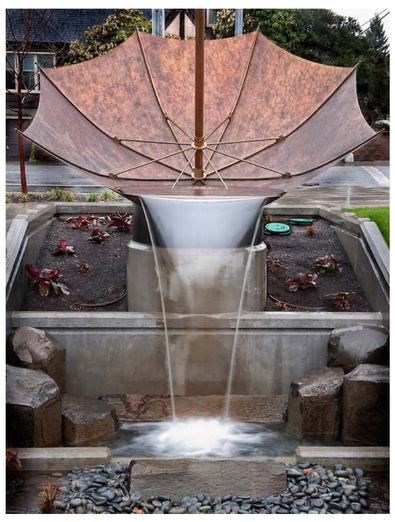
ASSUMPTIONS

- 1% of capital projects for public property shall be dedicated to public art
- Public art can and will be an important element of the public realm at the redeveloped Ford site

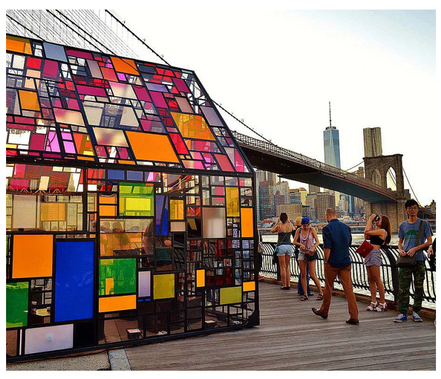


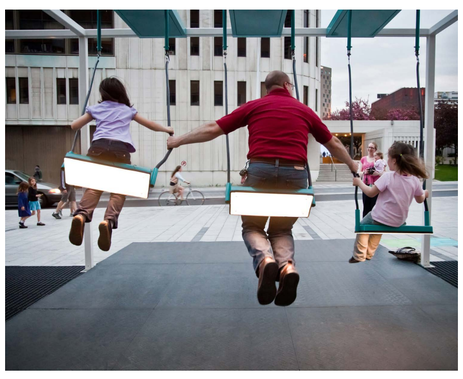




In your opinion, what is the function of public art? What should it accomplish?




Where have you seen public art succeed? Fail?

VEGETATION IN PUBLIC SPACES

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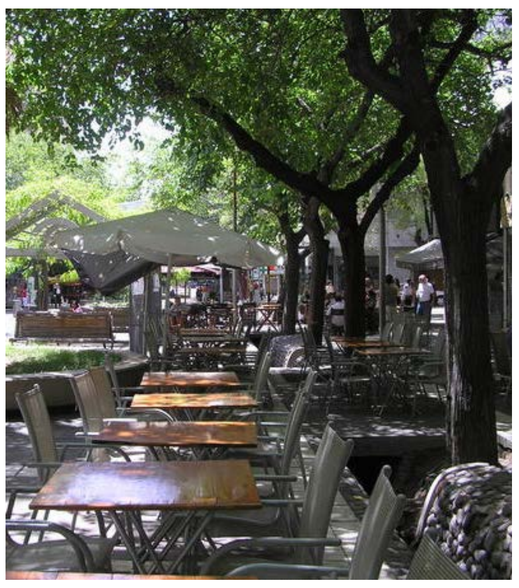
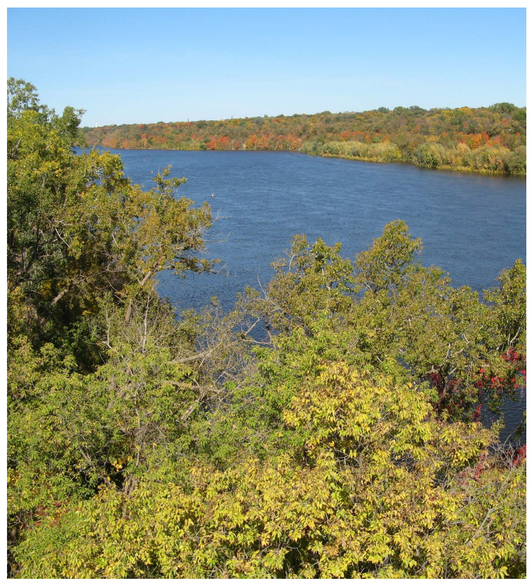
BENEFITS

- Trees & other vegetation provide numerous environmental, economic, social, and health benefits
- Enhance canopy cover in Saint Paul and foster ecological connections to the Mississippi River

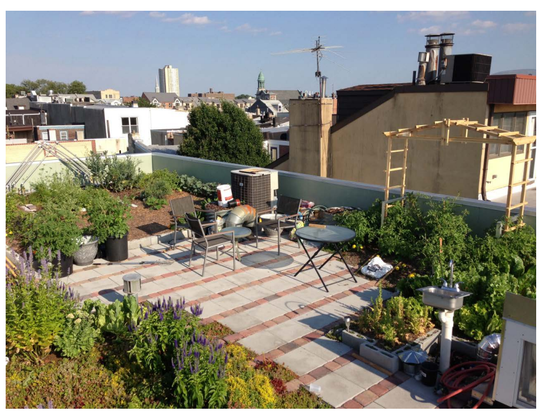


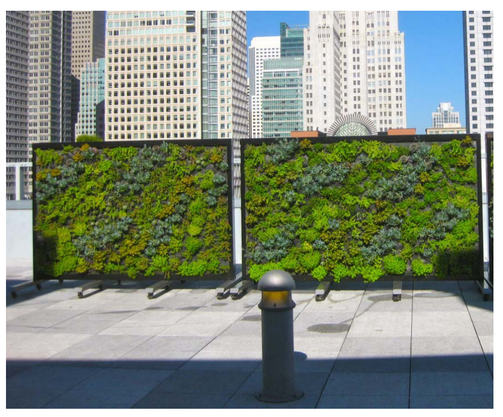


CHOICE

- Specialized planting groups to be used in view corridors and park areas
- Boulevards will include grass alternatives such as ground covers, perennials, shrubs, and no-mow turf
- Winter form is important
- A diverse mix of plant types will be used – the right plant for the right condition
  - Species diversity at multiple scales
  - Climate & drought resilience
  - Disease and pest resistence
  - Native plantings (when appropriate)

ALTERNATIVES TO TRADITIONAL VEGETATION





What are your thoughts on the function of trees and other vegetation?

HONORING THE SITE'S HISTORY

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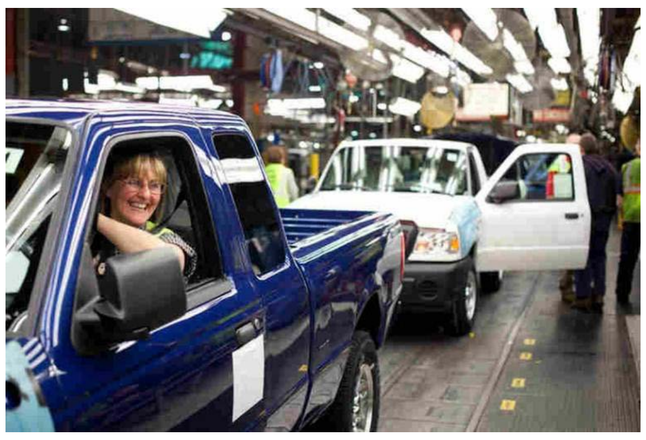
ASSUMPTIONS

- The history of the Ford site and the thousands of people that worked there will be honored through historic interpretation at the site
- Retained elements from the site will be re-utilized, including the Ford mural and the corner façade of the original show room
- Interpretive pieces might be in the form of public art, infrastructure, signs, etc.



What elements of the site's history do you think are most important to recognize?

What suggestions do you have for honoring the site's history in the redevelopment?