

Low Impact Development

Living With Water

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Dana Brown & Associates, Inc.

Living with Water

- Water is the most abundant liquid on earth covering more than 70% of the earth's surface

Living with Water

- Potable Water
- Creeks & Bayous
- Navigable Waterways
- Stormwater
- Sewage Wastewater



Living with Water



Living with Water



Major Events

- 1828/1849 – Floods become a cause for concern
- 1915/1947 - Hurricanes devastated the New Orleans area
- 1927 – Devastating floods
- 1965 - Hurricane Betsy
- 1969 - Hurricane Camille
- 2005- Hurricanes Katrina & Rita



Our response did not work.

2005 Hurricanes



1927 Flood

Fears Drive our Response

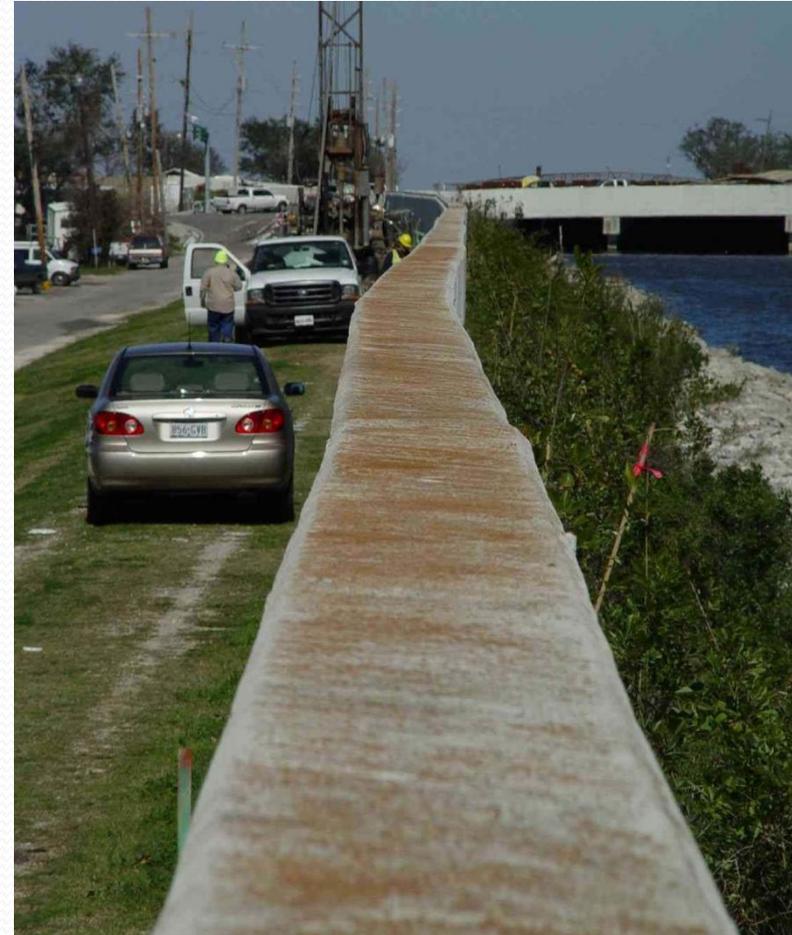


Old basin Carondelet Canal
before



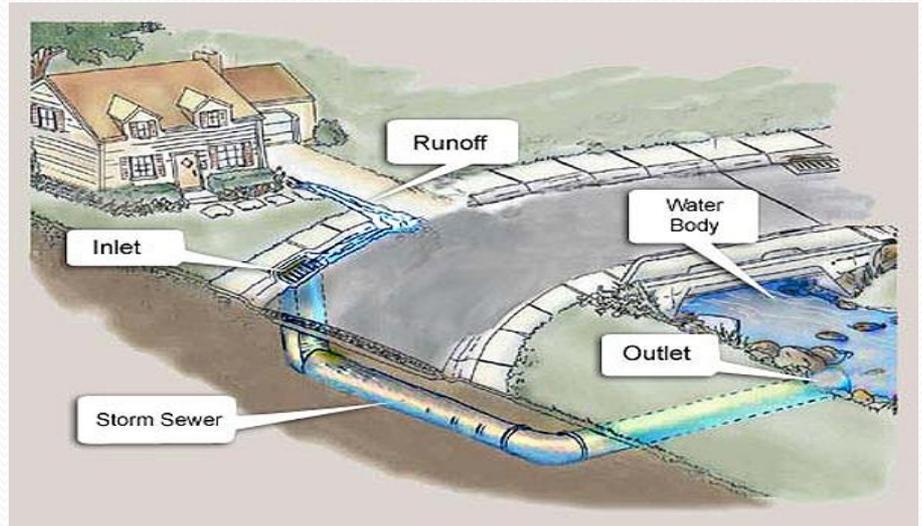
Old Canal Carondelet pumping station
after

Fears Drive our Response



Impacts

- Construction of levees and floodwalls begin in 1850
- Controlling water through **hidden** drainage structures



Source: http://www.deldot.gov/stormwater/images2/drain_full.jpg

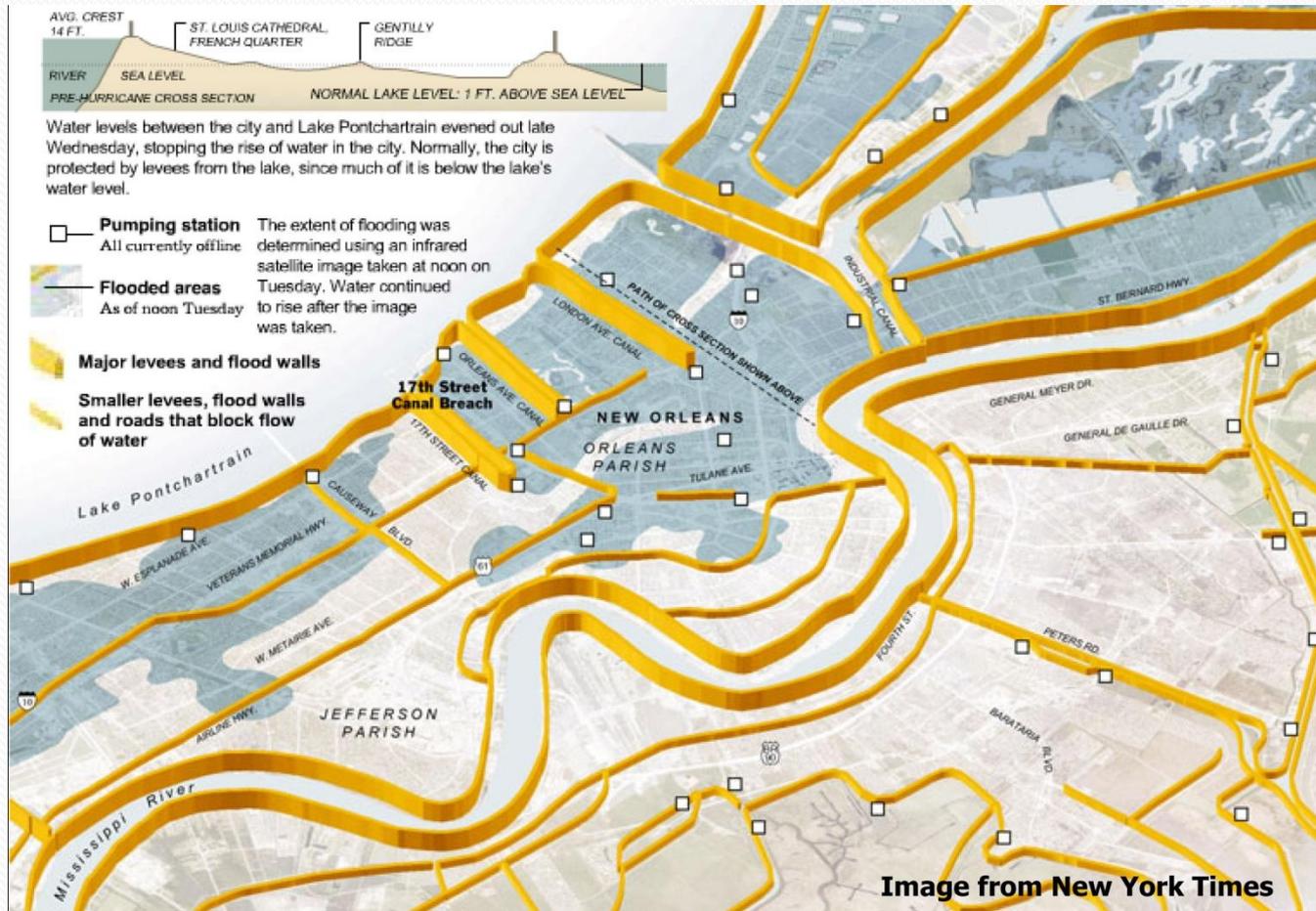


Source: <http://www.nytimes.com/2010/08/24/us/24levee.html>



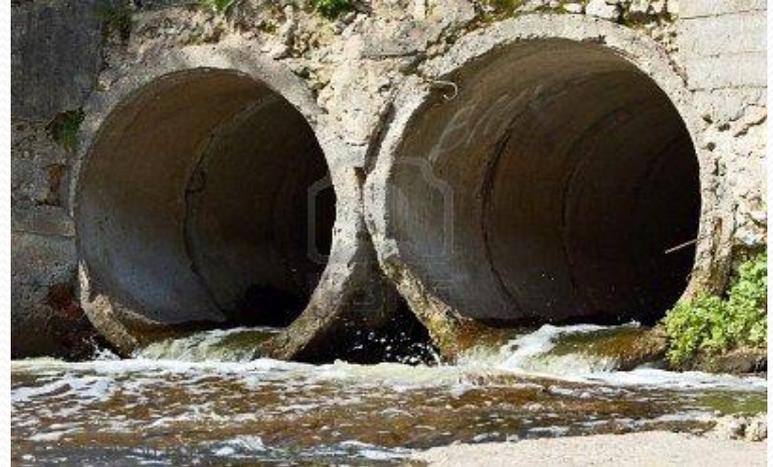
Source: http://cityofdavis.org/pw/stormwater/img/storm_drain3.jpg

Impacts

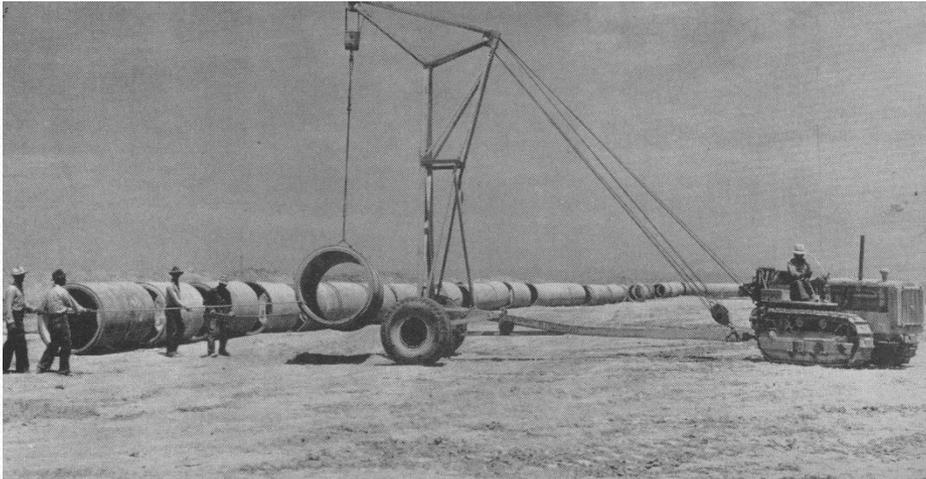


Impacts

- The resulting infrastructure landscape
- Lack of understanding of drainage



Source:
<http://us.123rf.com/400wm/400/400/iglira/iglira0804/iglira080400010/2950920-water-flowing-out-of-two-concrete-drain-pipes.jpg>



Source:
http://2.bp.blogspot.com/_aPddXD4Zkkg/TMTs3kzmImI/AAAAAAAAAnI/zDQGuxXzLrs/s1600/luke.jpg+crop.jpg

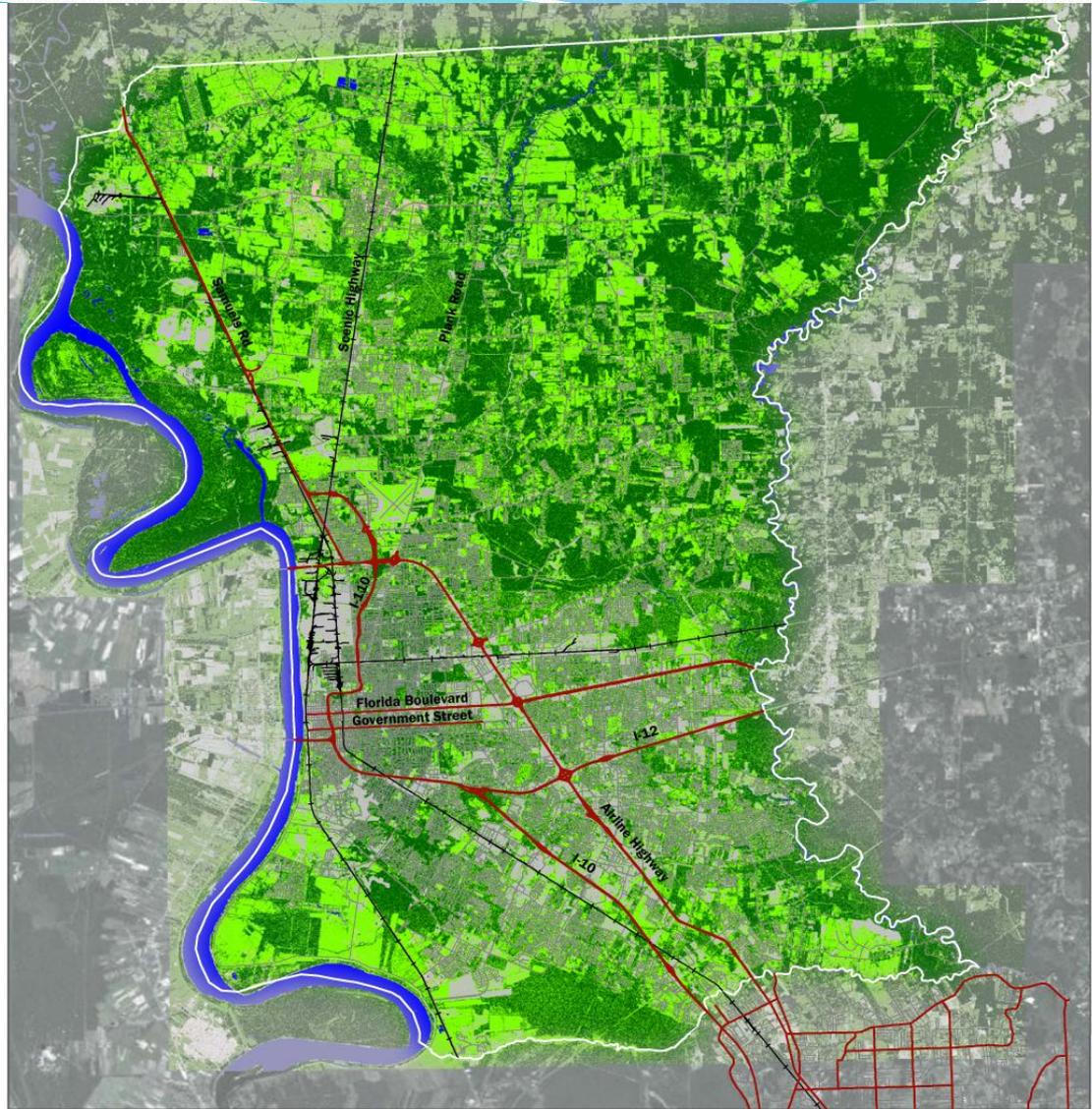


Source: <http://www.state.nj.us/state/darm/links/images/scroo003/SCR00003-019.jpg>

Do we really get it now?

- Water is a connected, integrated system
- Water is a valuable resource we must not waste
- Water cannot be controlled – at least not for long
- Water must be cared for, it must be managed
- Managing water is a key tenet of LID

East Baton Rouge Comprehensive Plan FutuEBR



Legend

Roads 2009

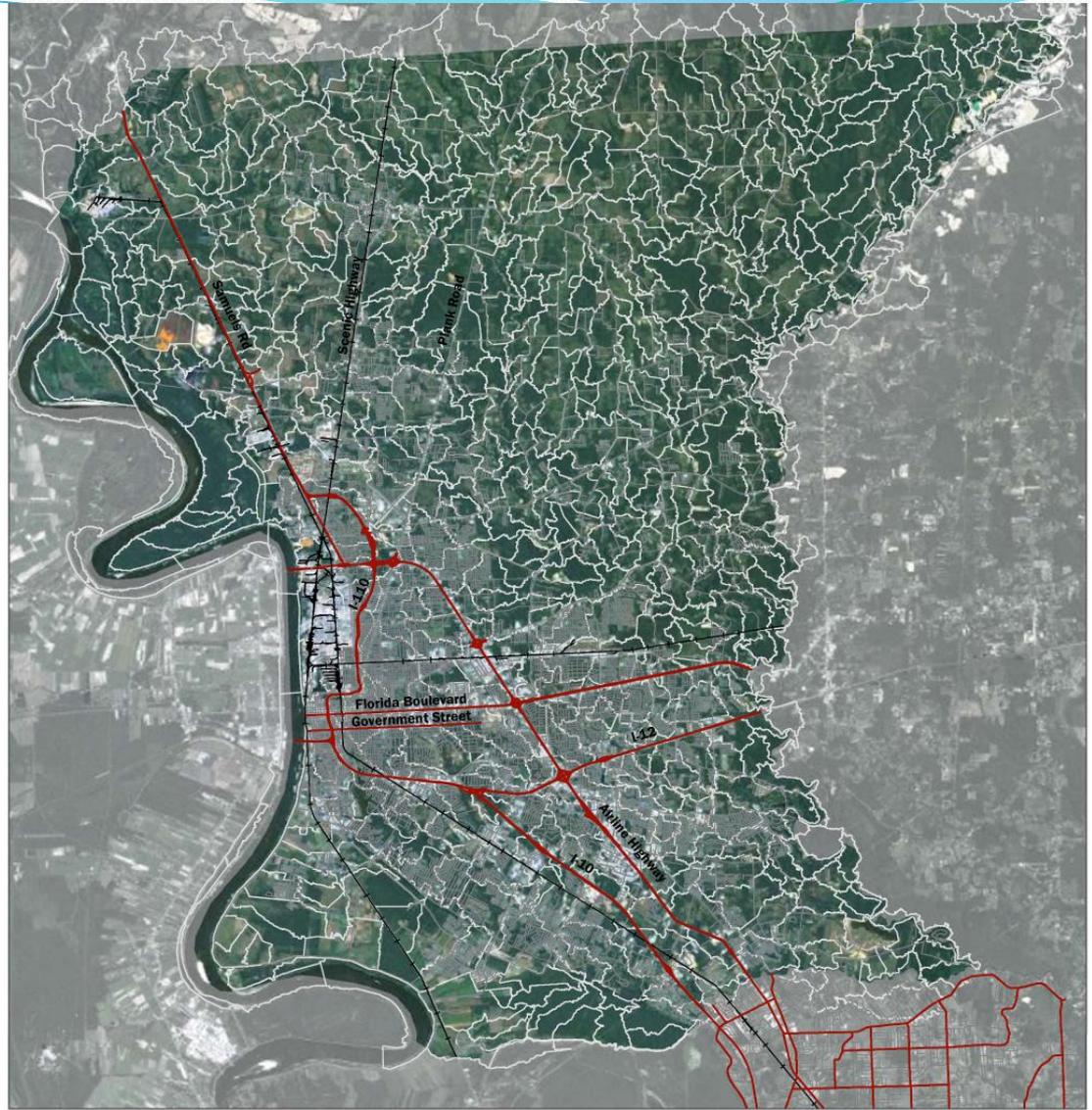
- ACTIVE RAILROAD
- AIRPORT
- PRIMARY ROAD
- SECONDARY ROAD

- CPPC Streams
- Hydrography
- Micro Watersheds

2010 Landcover 1meter

- Water
- Impervious
- Field
- Canopy

East Baton Rouge Comprehensive Plan FutuEBR

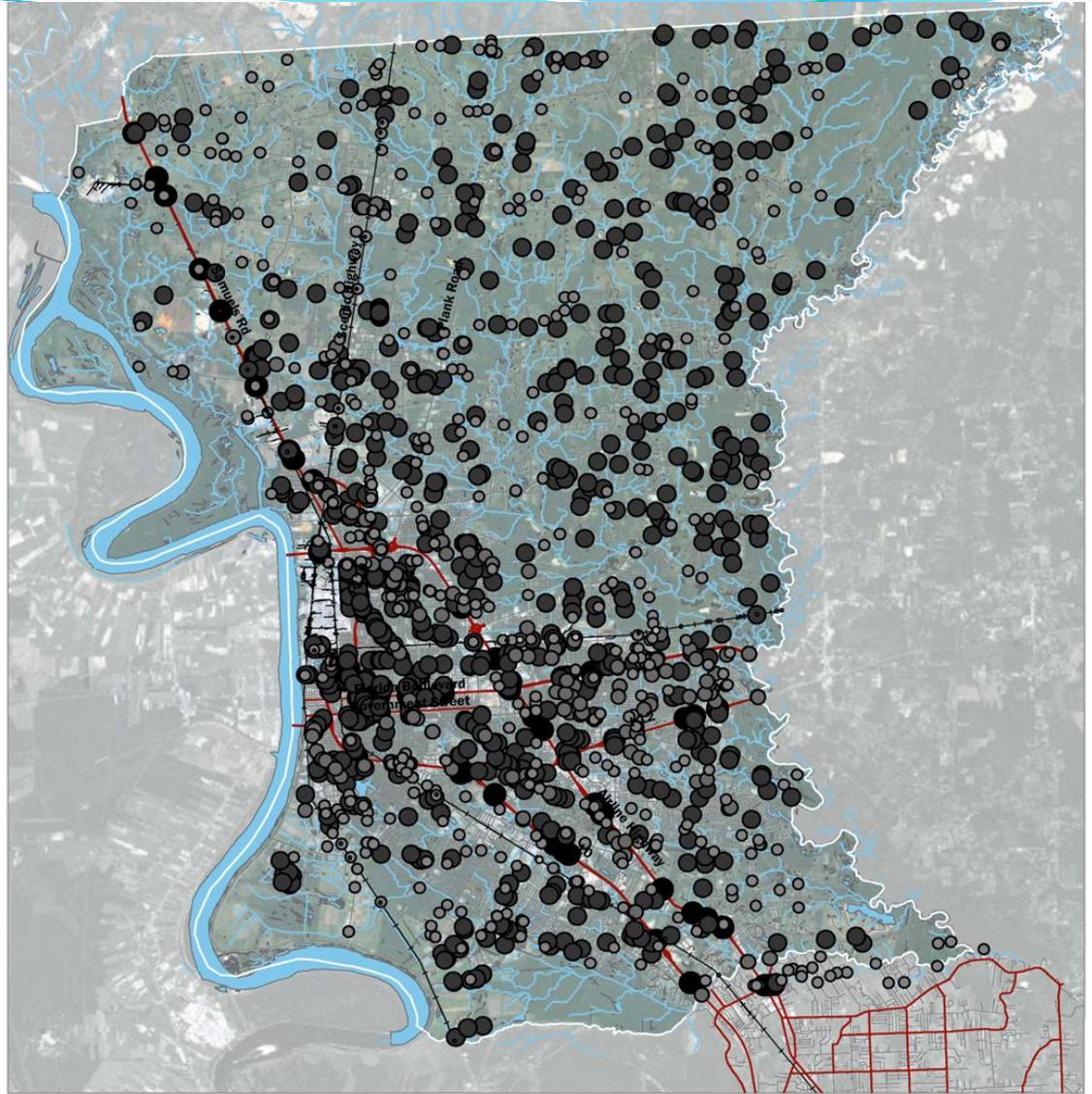


Legend

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East Baton Rouge Comprehensive Plan FutuEBR



Legend

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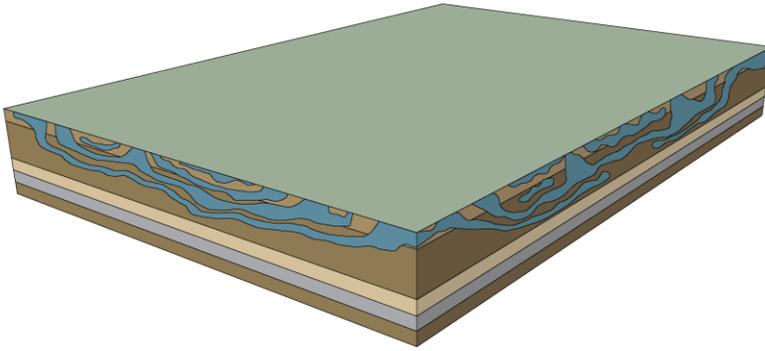
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Rd/Stream Intersection Impact

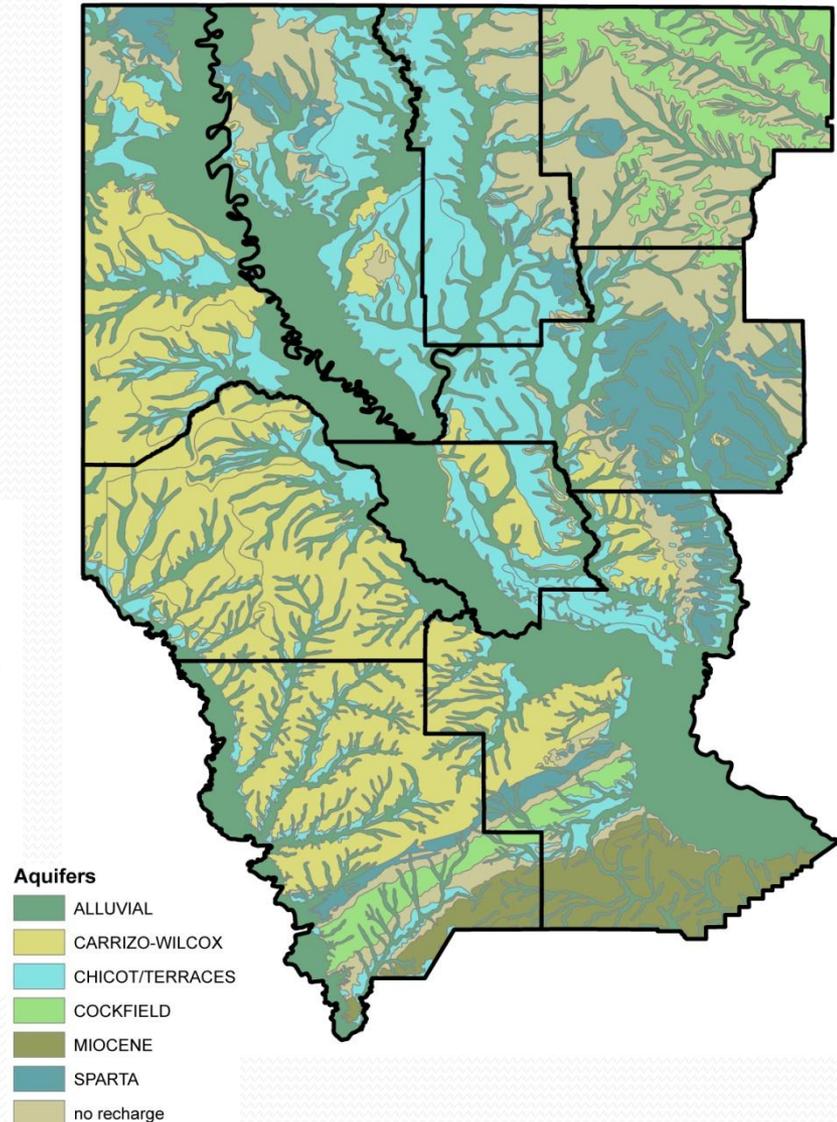
- 1
- 2
- 3
- 4

Northwest Louisiana Aquifers

- Source for Drinking Water
- Source for Agriculture
- Source for Industry



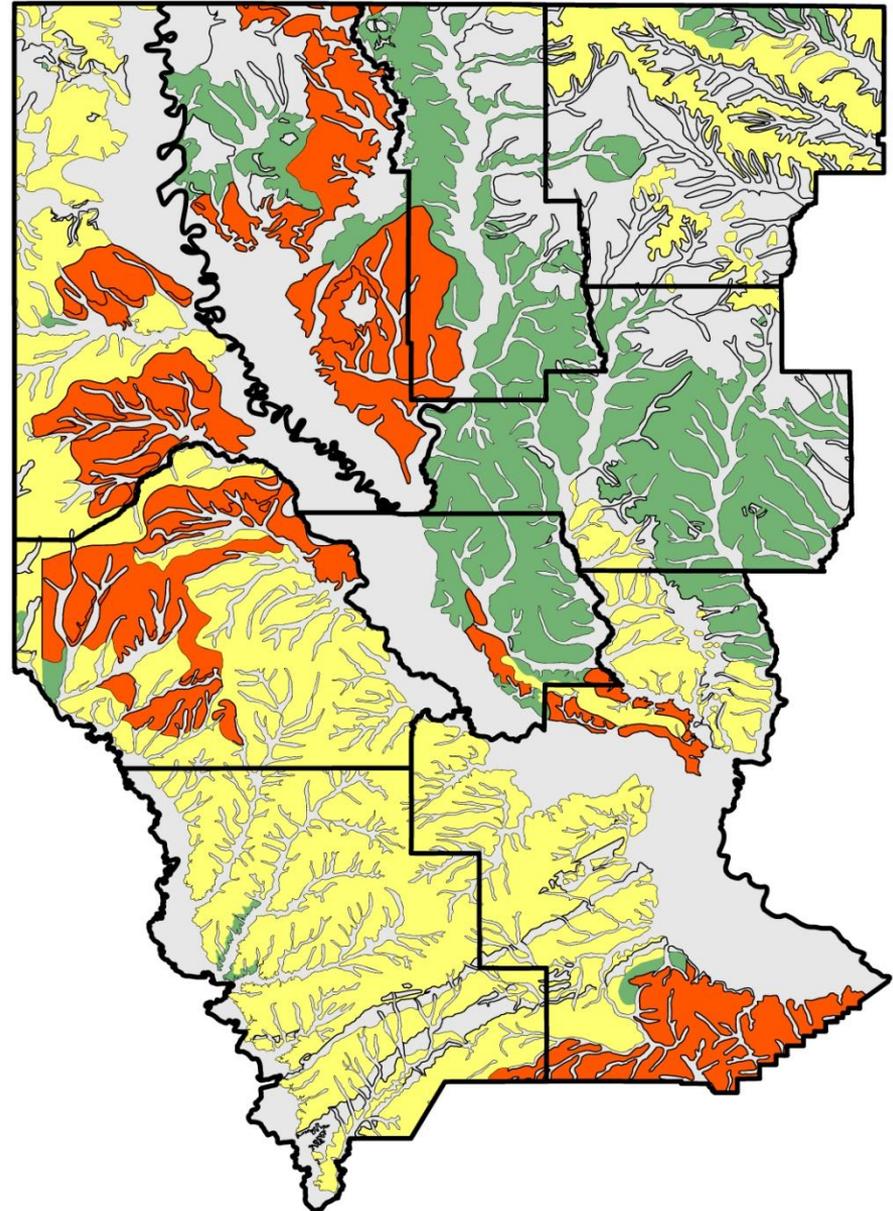
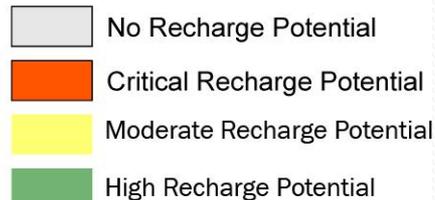
NW Louisiana Haynesville Shale



Aquifer Recharge

- Development affects recharge rate
- Several regional aquifers are at risk
- What effect do gas and oil operations have on aquifer depletion and recharge?

Aquifer Recharge Potential



Benefits of Water Management

- Erosion and sediment control
- Air and water purification
- Reduced runoff
- Human health
- Habitat Preservation

Strategies

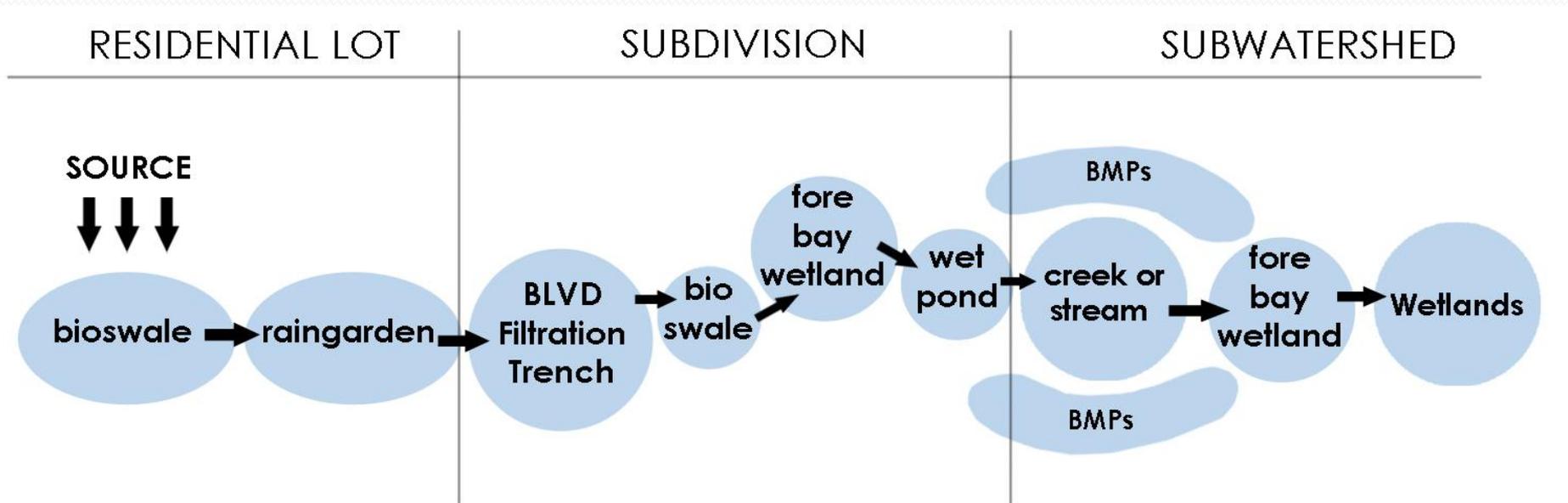
- Infiltration
 - Filtration
 - Retention/Detention
-
- All involve extending the time of concentration
 - All involve increasing residence time in BMPs

BMP Techniques & Tools

- bioswales
- rain gardens
- wetlands
- cisterns
- rainwater harvesting
- green roofs
- soil amendments
- permeable paving
- sustainable landscaping

Manage Water

- Interconnected ponds
- Treatment train



Manage Water

- Interconnected ponds
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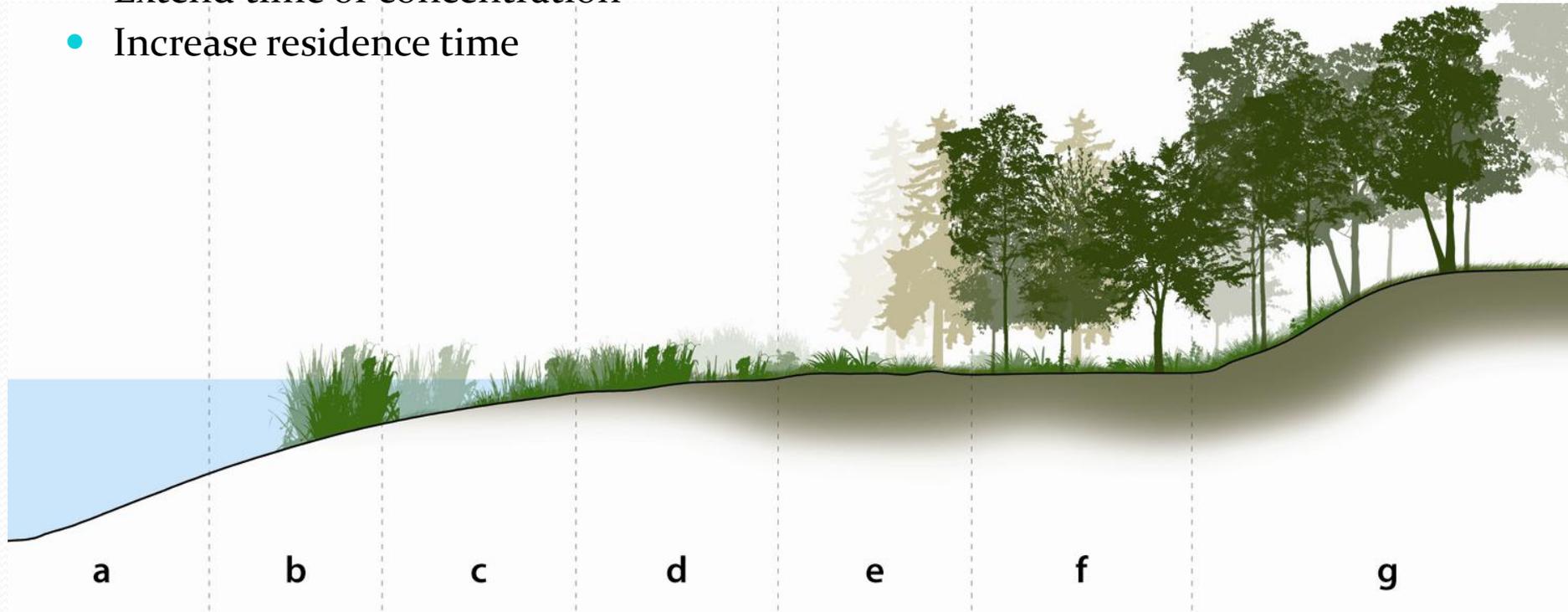
Manage Water

- Interconnected ponds



Manage Water

- Good design practices
- Water quality
- Extend time of concentration
- Increase residence time



a open water (3'-7') **b** deep marsh (18"-3') **c** shallow marsh (6"-18") **d** wet meadow (0"-6")
e scrub/shrub wetland **f** forested wetland **g** upland buffer

Manage Water



Woman's Hospital New Campus

AIRLINE HIGHWAY

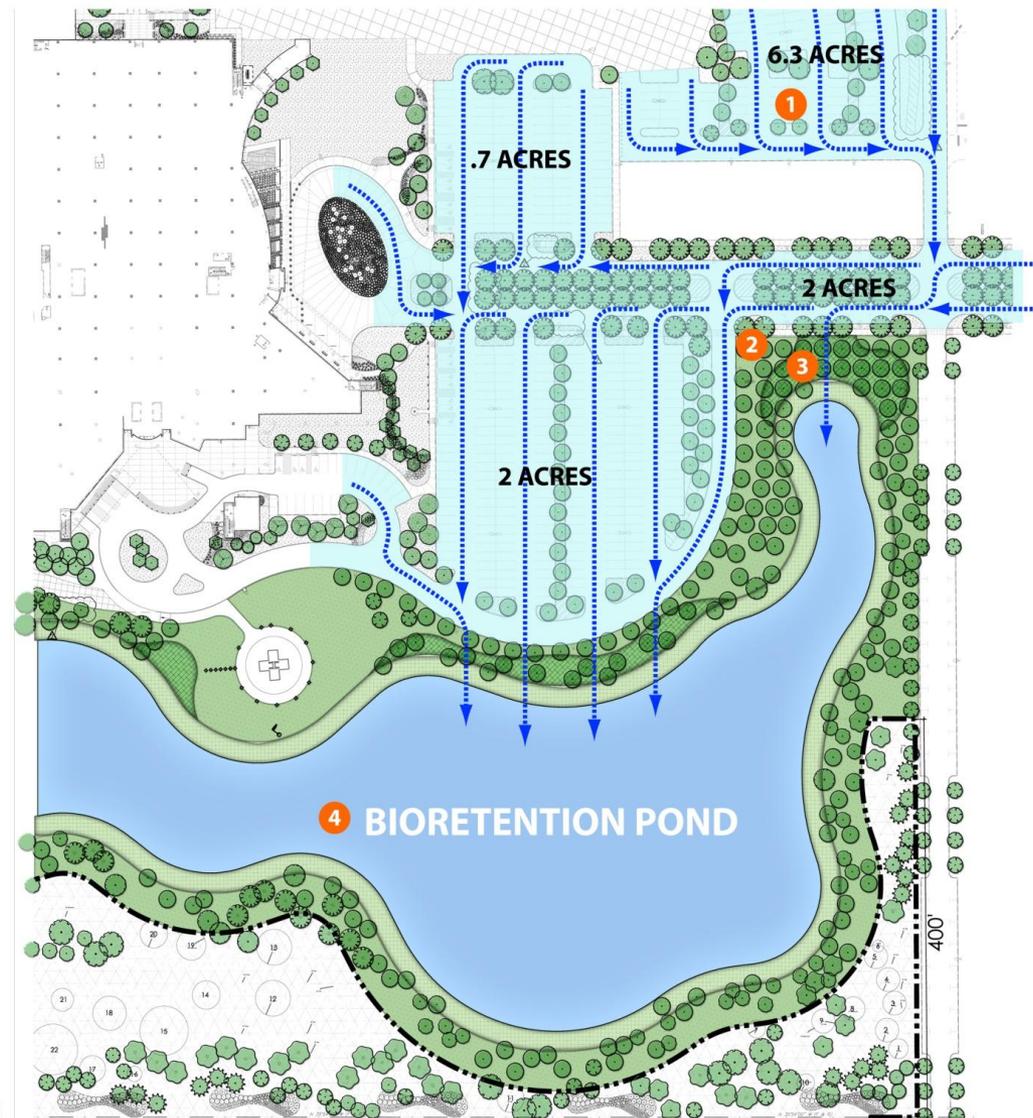
FUTURE DEVELOPMENT

FUTURE DEVELOPMENT

STUMBERG ROAD

Manage Water

- Good design practices
- Water quality



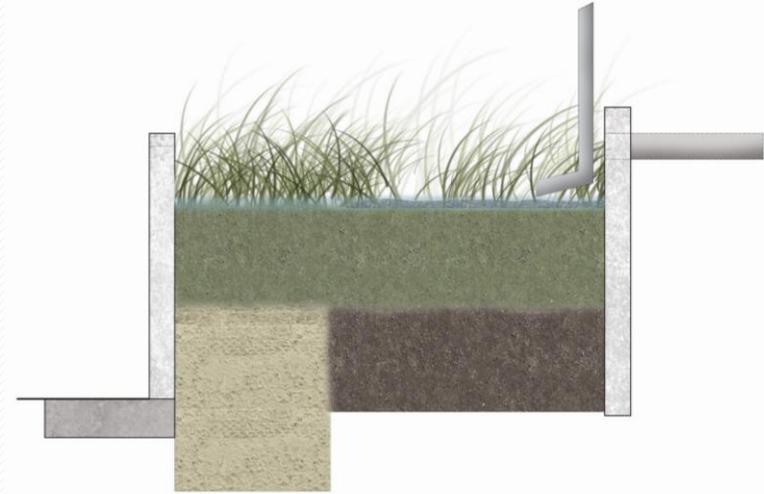
WOMANS' HOSPITAL

- 1 11 ACRES OF PARKING RUNOFF COLLECTED
- 2 NATIVE PLANTS & GRASSES
- 3 WETLAND FOREBAY FILTERING
- 4 BIORETENTION POND

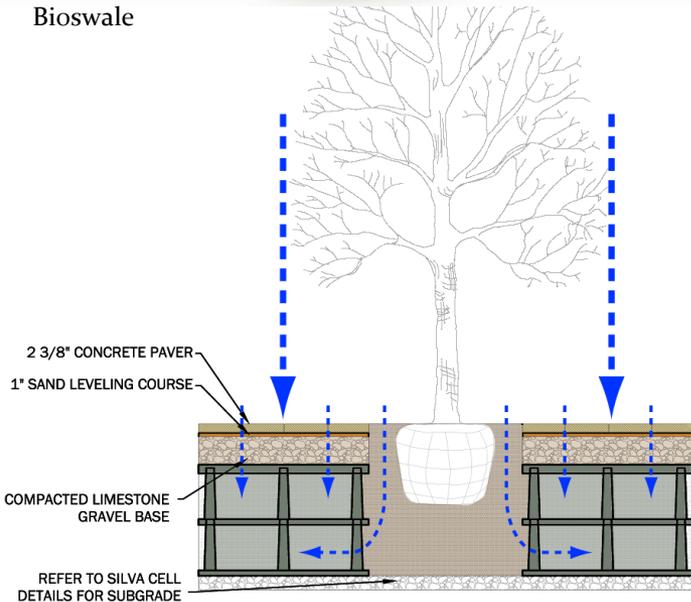
Manage Water



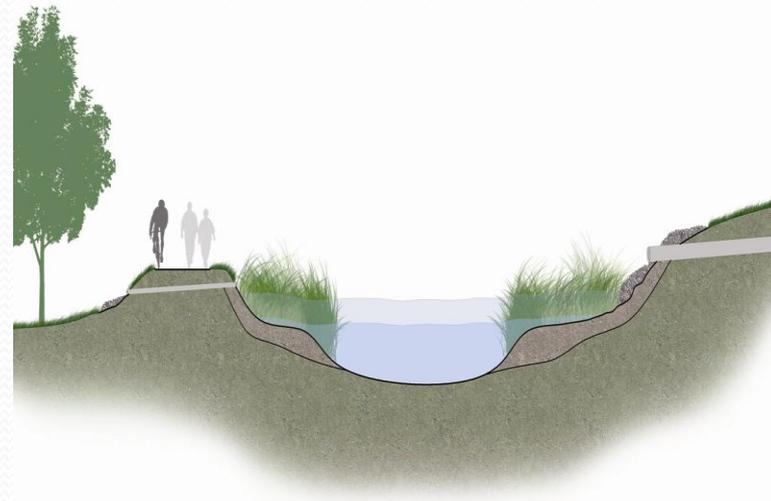
Bioswale



Permeable stormwater planter



Silva cells



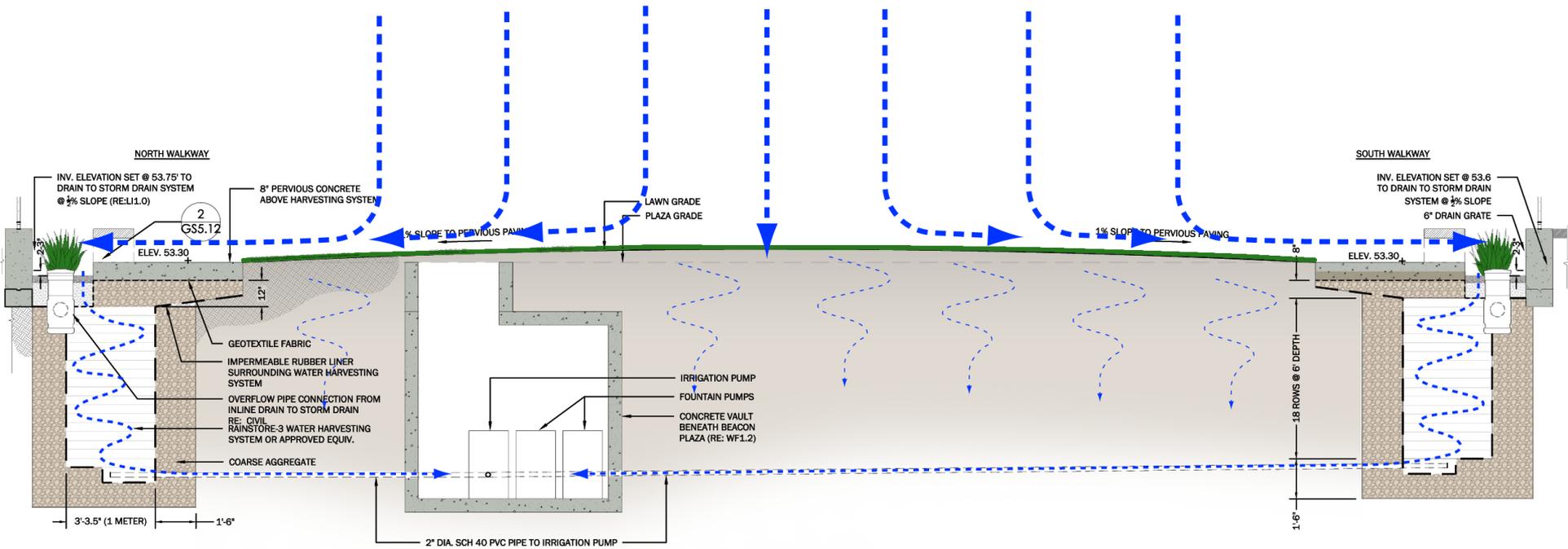
Wet pond

Alternative retention strategies



North Boulevard Town Square

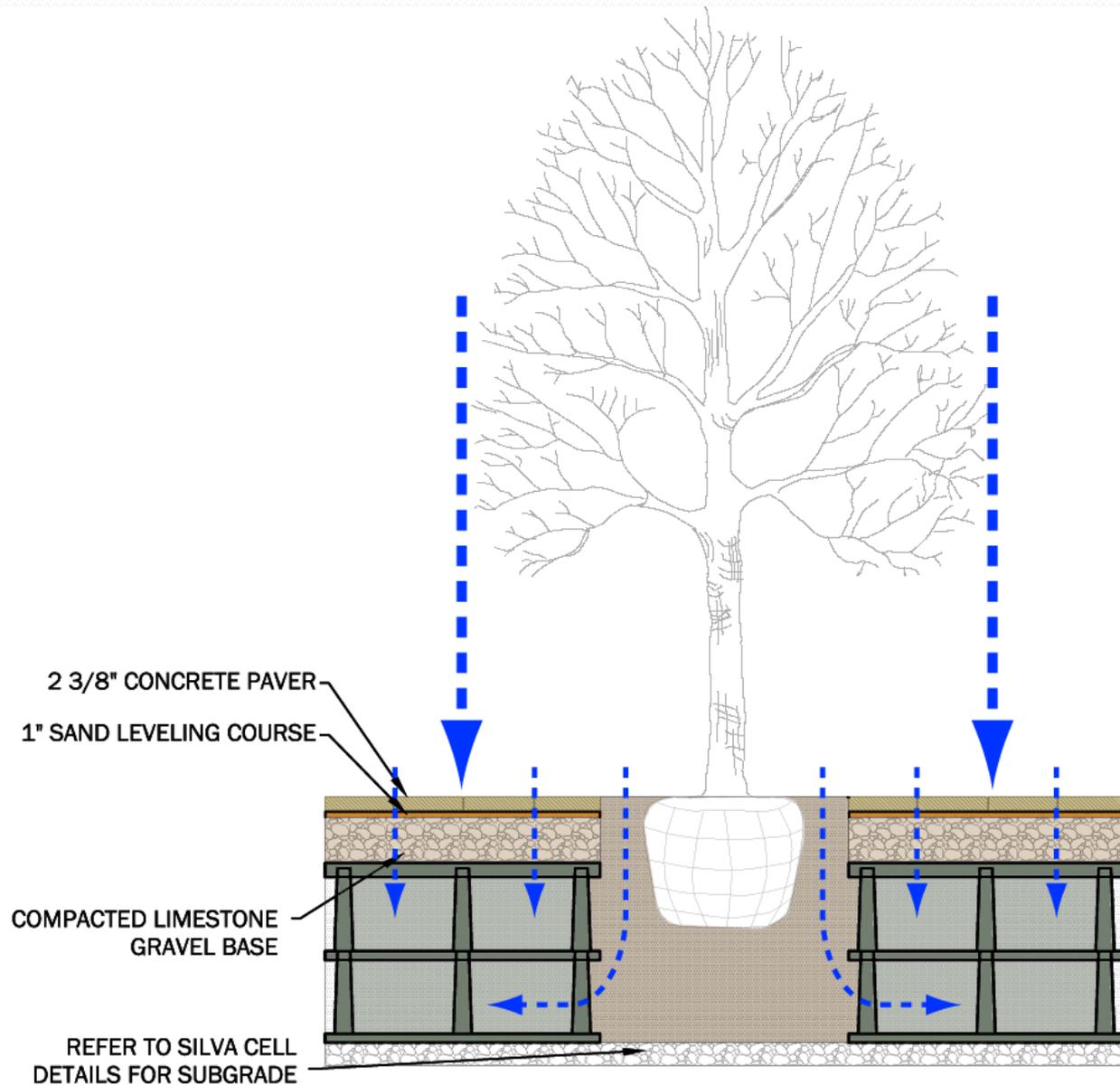
Alternative retention strategies



1 **LAWN WATER HARVESTING SYSTEM**
3/8" = 1'-0"

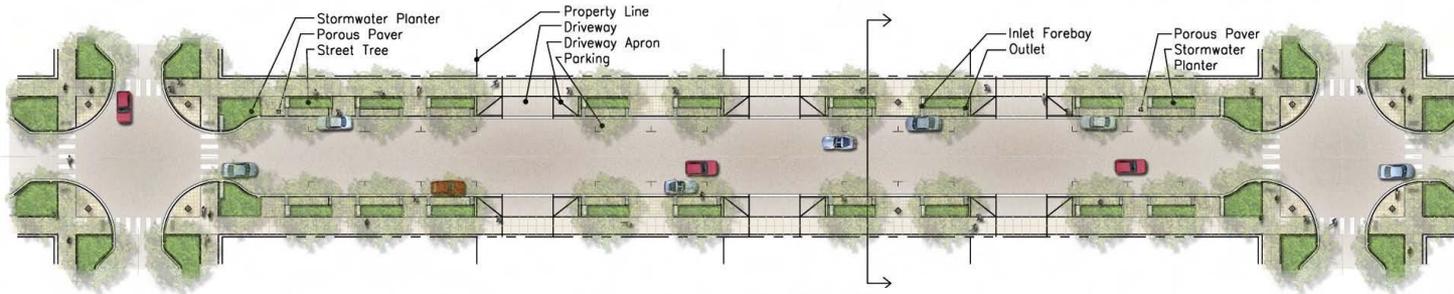
ADD ALTERNATE #???
334923-06

Manage Water

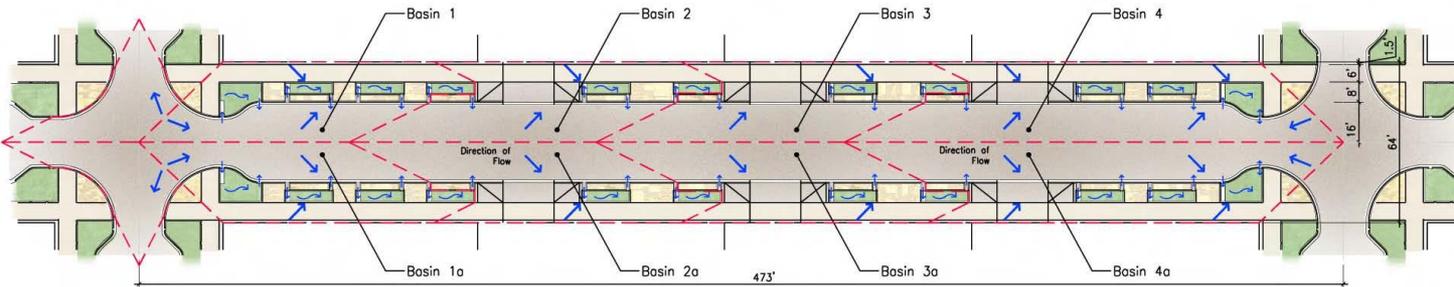


Manage Our Water

Stormwater Planters



Illustrative Street Plan



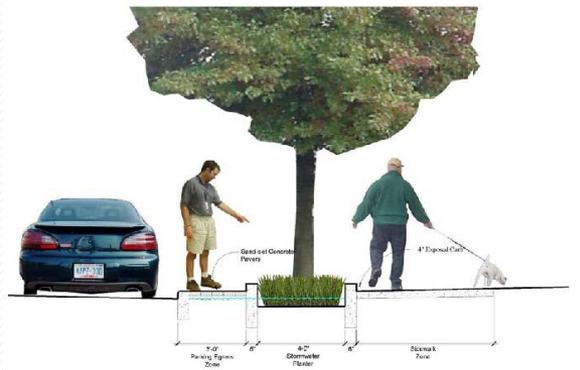
Basin Area/Flow

63' ROW



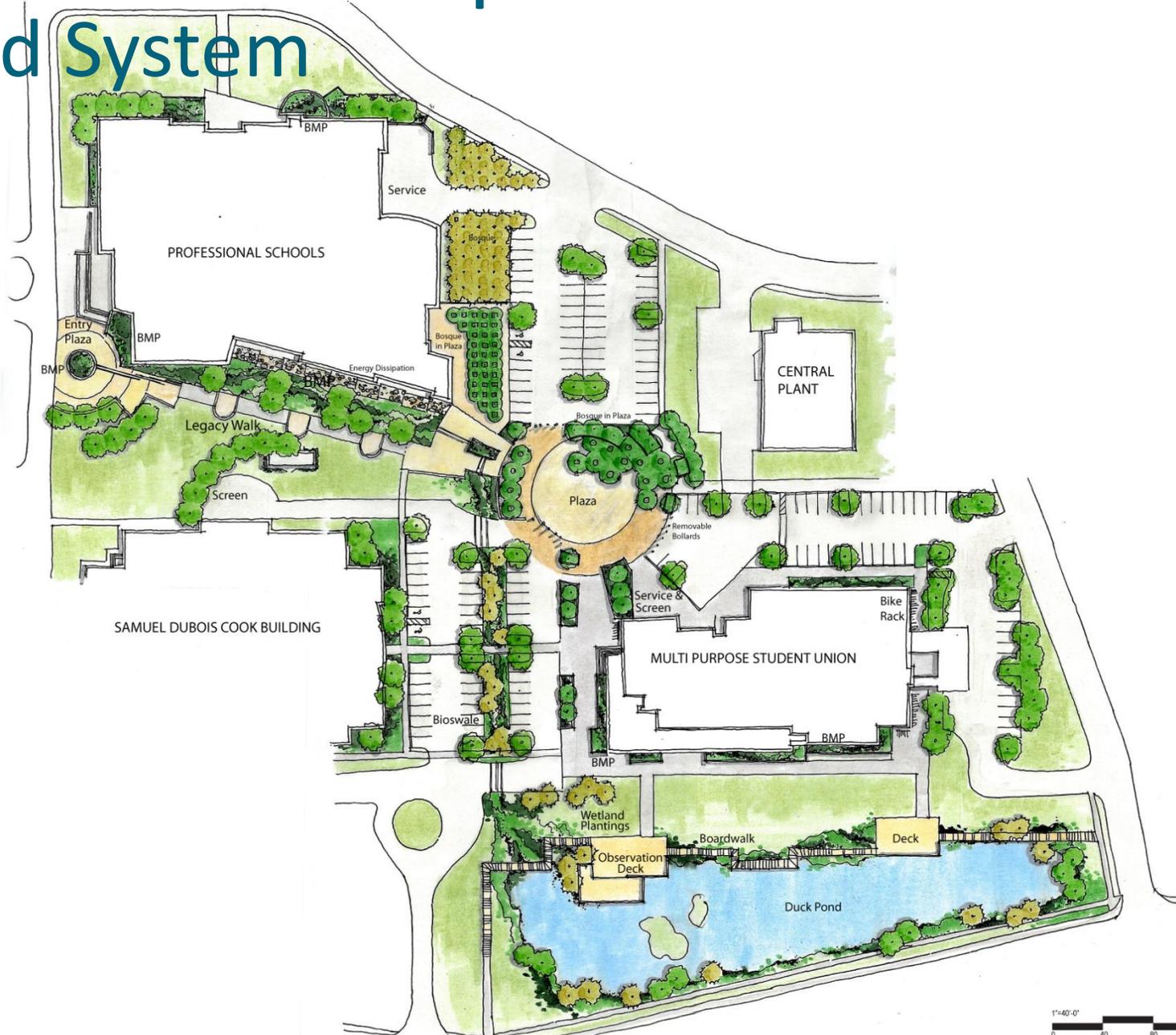
Before

After





Sustainable Landscapes Integrated System



Manage Our Water Integrated System





Dillard University New Orleans

Sustainable Landscapes

Parking Lot Green Space





Manager Water



Rain cistern

- Cisterns

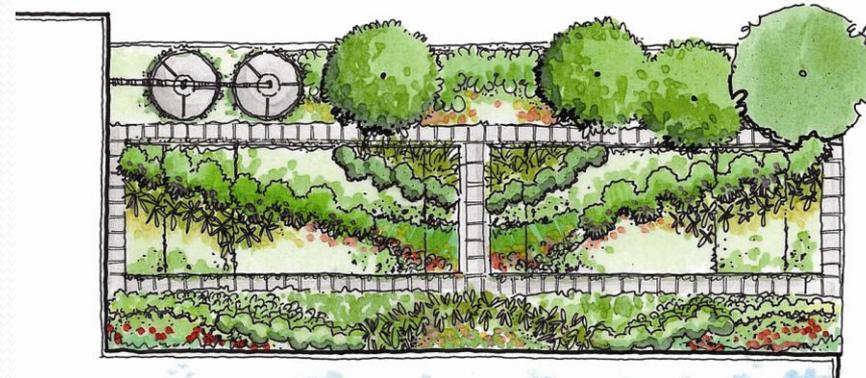


Mary Bird Perkins Oncology Center rain cisterns



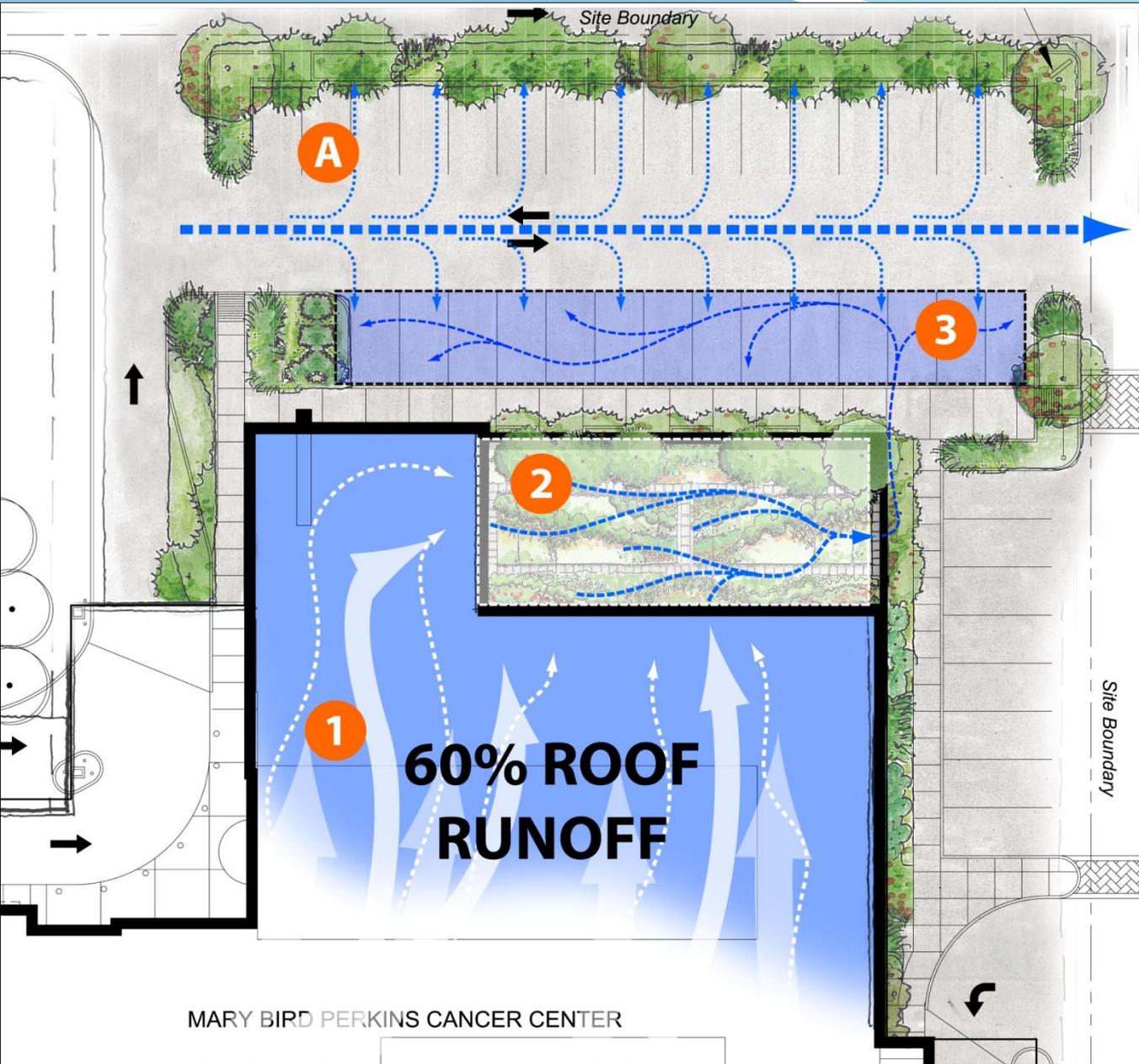
Green roof

- Green Roof



Mary Bird Perkins Oncology Center green roof

MARY BIRD PERKINS ONCOLOGY CENTER



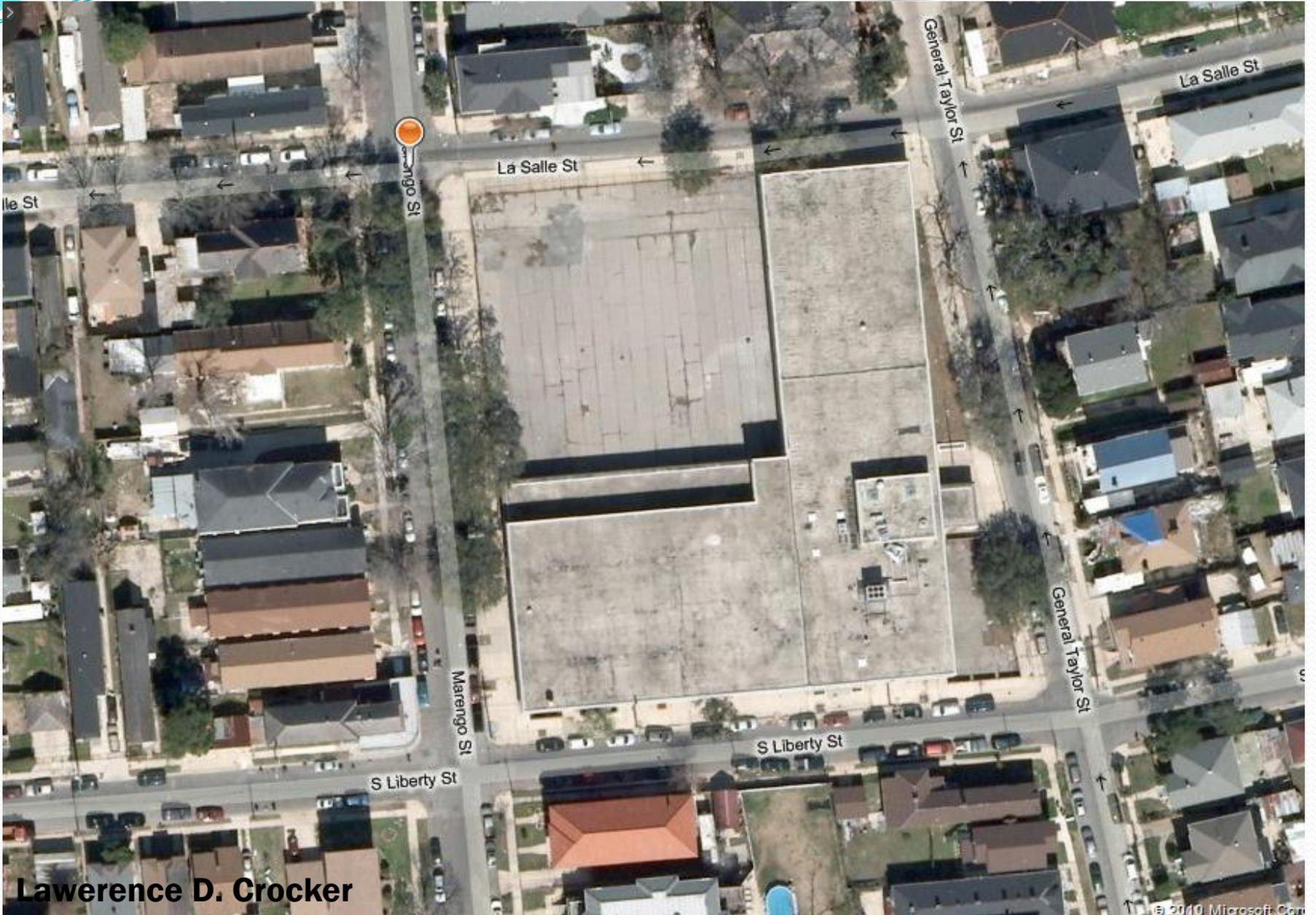
- 1 60% ROOF RUNOFF COLLECTED
- 2 ROOF GARDEN INFILTRATION
- 3 UNDER GROUND WATER STORAGE
- 4 IRRIGATES 100% OF NEW LANDSCAPE
- A PARKING RUNOFF INTO BIOSWALES







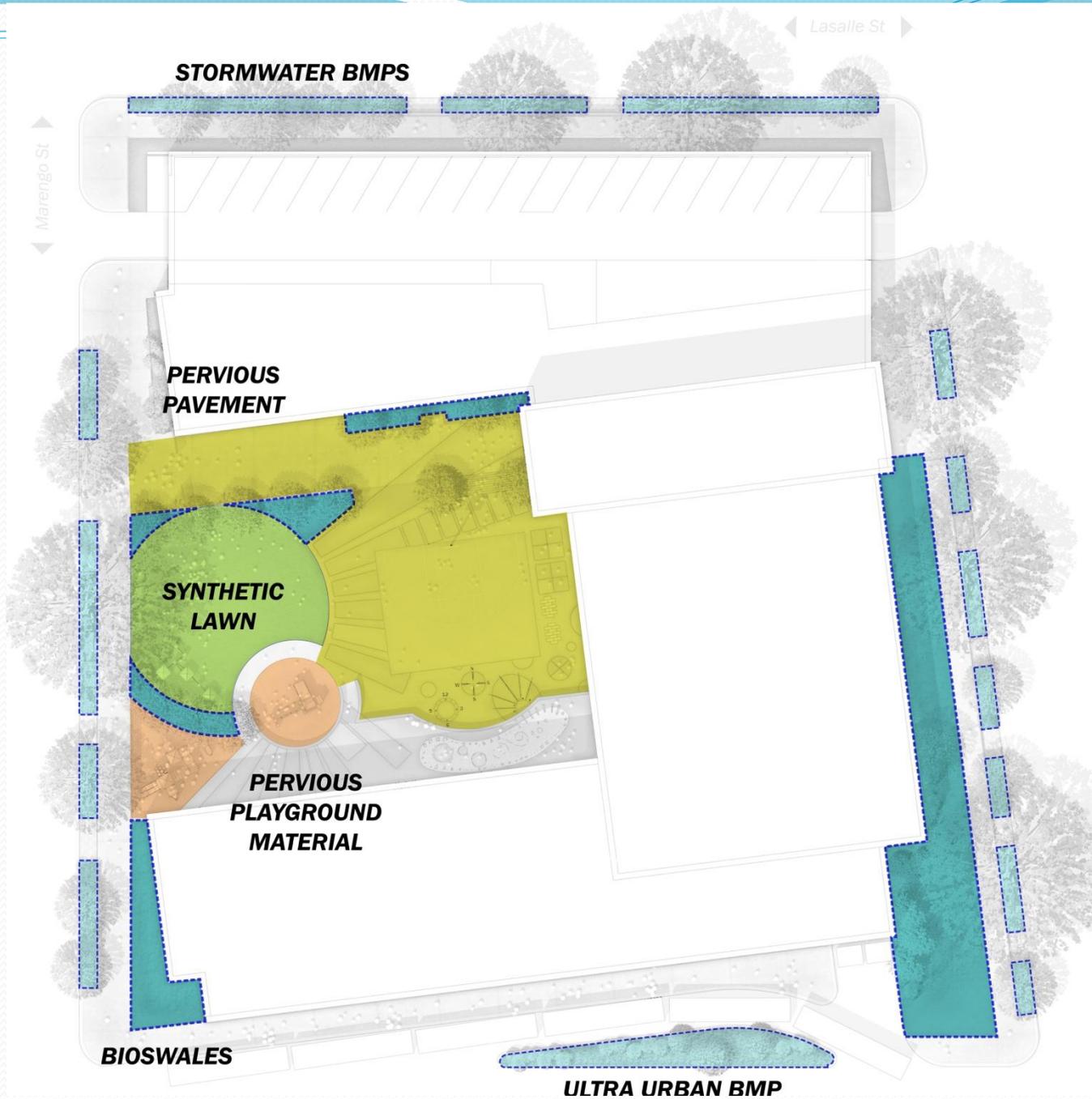




Lawrence D. Crocker

Lawerence D. Crocker







A Healthy Relationship with Water

- Planning & Designing for Resiliency
- Regenerative Communities
- Legible Water Infrastructure
- Protect, Conserve, Reuse Water as a Resource

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