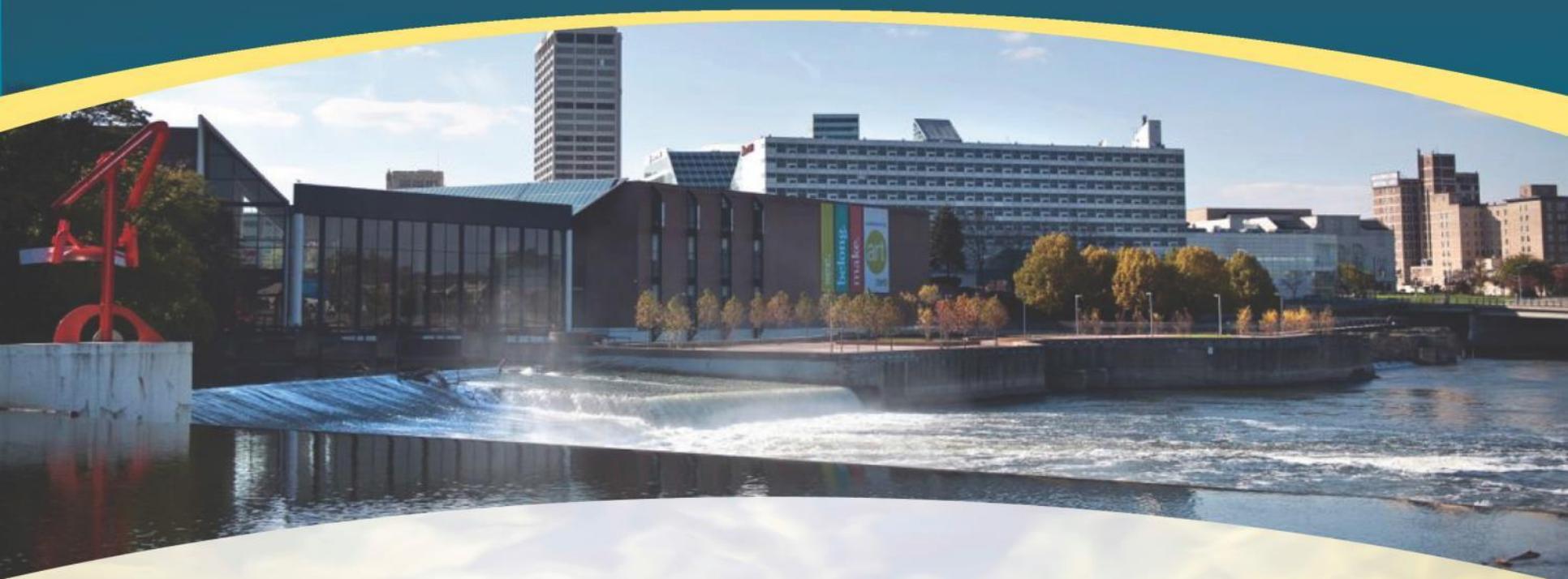


CITY OF SOUTH BEND

CSO LONG TERM CONTROL PLAN REASSESSMENT

December 2014



MWH[®]

BUILDING A BETTER WORLD

PROJECT GOALS

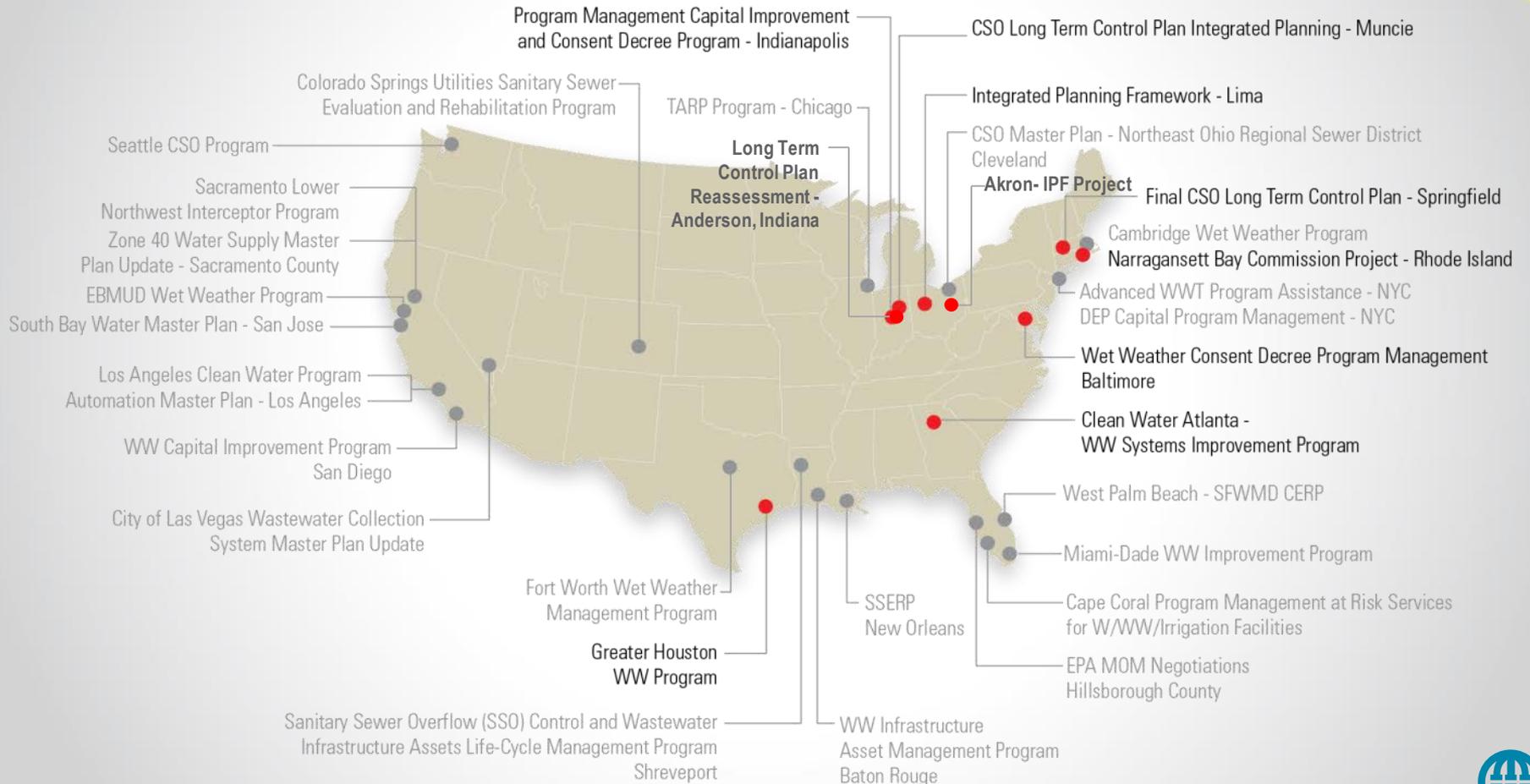
Save money,
Enhance the environment
With an **Experienced** team
That has **Proven** success



Team includes 3 firms located in South Bend



MWH Experience -Long Term Control Plan Reassessment Projects





LIMA

Project Experience

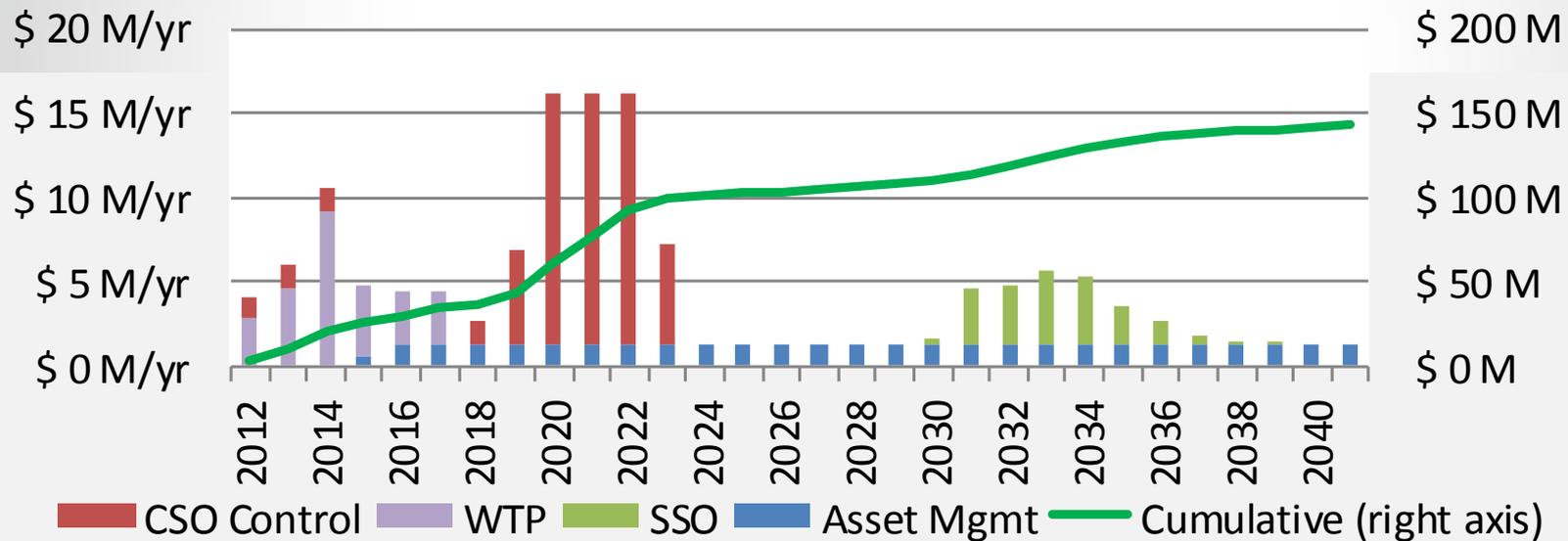
RESULTS

New plan addressed 97% of the wet weather overflows

Region 5 approved EPA's first-ever 28-year compliance schedule and accepted a re-opener clause

Lima Integrated LTCP

- Total cost \$143.5 million over **28 years**
- Buy off on **integration**: asset management, CSO, SSO, SW, WTP
- Prioritized projects based on environmental benefit
- **Re-opener** clause



A photograph of the Indianapolis skyline under a clear blue sky. The image features several prominent skyscrapers, including the Bankers Building and the Indiana State Capitol building with its green dome. A large, semi-transparent teal shape is overlaid on the lower half of the image, containing text.

INDIANAPOLIS

Project Experience

RESULTS

In 2010, became *the first City in US to successfully modify an EPA agreement* using IPF strategies

Eliminated **6.2BG** of CSO earlier and saved approximately **\$740M**

IP Provides Platform to Develop a Better Environmental Plan at an Affordable Cost

IP DEVELOPMENT 



**LTCP
Optimization**



**Affordability
Analysis**



**Stakeholder
Engagement**



So, why take an Integrated Planning (IP) approach?

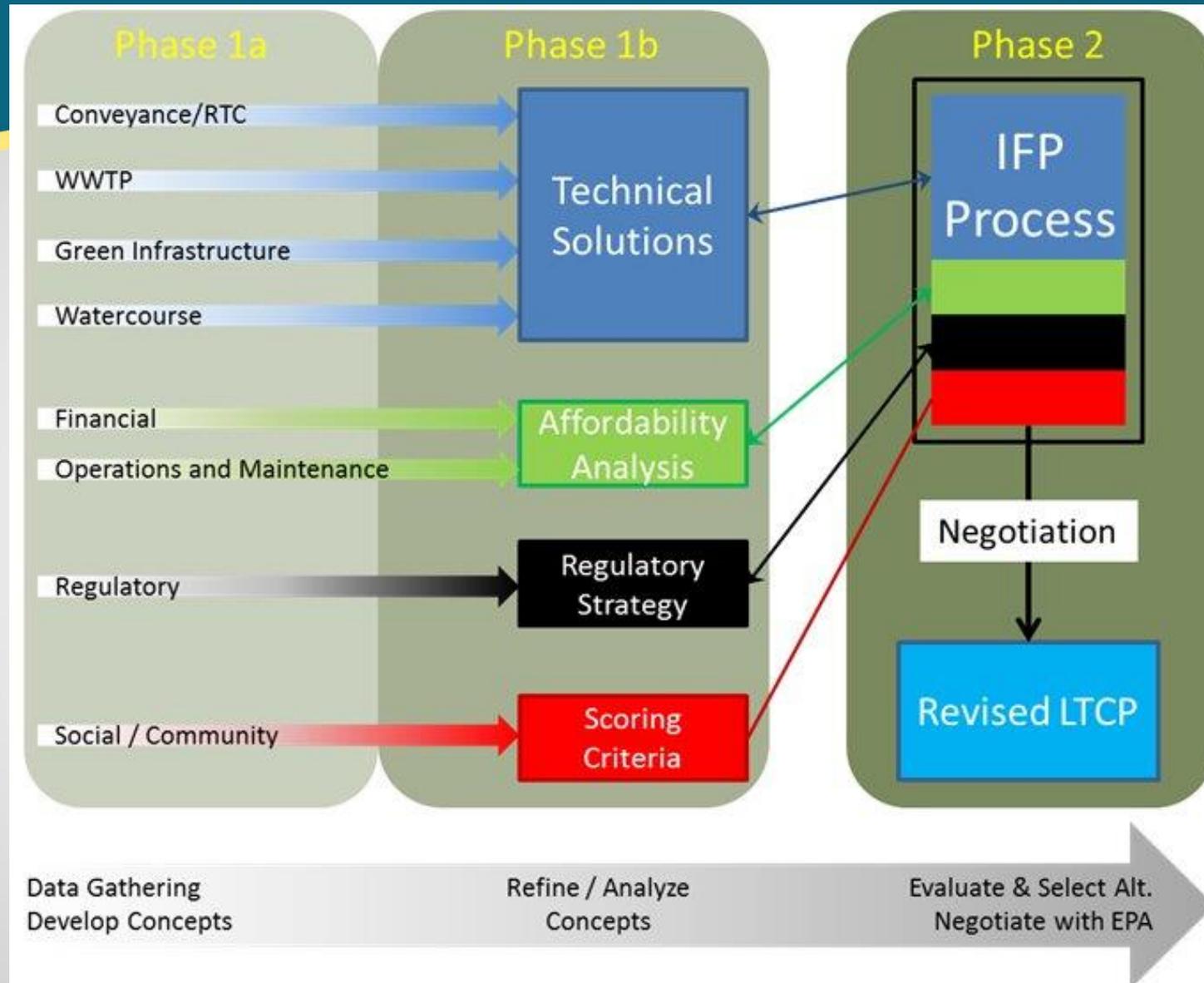
Addresses most serious water quality issues sooner

More cost effective, may lower overall cost of compliance

Allows innovative approaches, such as green infrastructure, that are more sustainable



South Bend LTCP Reassessment – Project Phasing



Activities in Phase 1

(Get the tools, fill the toolbox)

- Assess and quantify technical, economic and social impact of current LTCP
- Establish financial and water quality baseline for City
- Develop tools for IFP process:
 - Conveyance, WWTP and Watercourse Models
 - EPA 1997 Phase 1 and Phase 2 Affordability Analyses
 - Financial Rate & Affordability Models
 - Green Infrastructure opportunities
- Develop City-specific evaluation criteria
- Develop City-specific regulatory negotiation strategy



Activities in Phase 2

(Build a better plan)

- Utilize tools from Phase 1 to conduct IPF process
 - Achieve water quality goals in a manner that is affordable to the City and its residents
- Evaluate alternatives to find best solution for City
- Take preferred alternative to negotiate with EPA
- Develop new LTCP and modify Consent Decree
 - Project phasing and schedule
 - Identify milestone dates for EPA compliance
 - Cash flow & rate projections



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AFFORDABILITY ANALYSIS



Team Brings A 2-Phase Approach To Determine Affordability

Phase 1 Affordability
based on
USEPA 1997
Guidance

Phase 2 Real costs based on zip codes
and income groups

Review of community's financial
capacity based
on 6 criteria

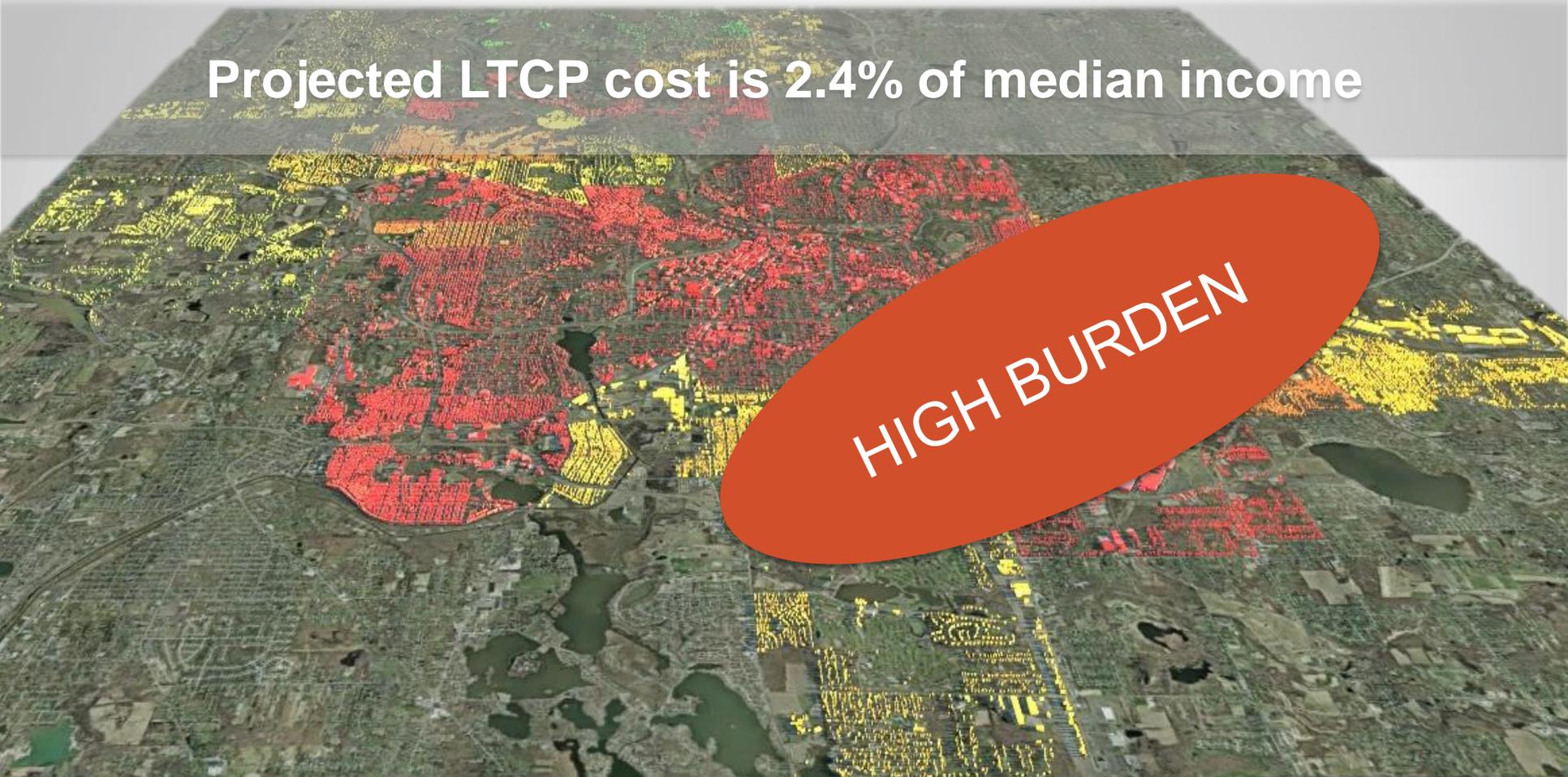
**MWH methodology promoted by USCM and recommended to
EPA as better methodology**



Fact: Financial burden on South Bend is high

Projected LTCP cost is 2.4% of median income

HIGH BURDEN

An aerial photograph of South Bend, Indiana, showing a dense urban area. The map is overlaid with a color-coded grid representing property parcels. A large portion of the central and northern parts of the city are highlighted in red, while other areas are highlighted in yellow. A prominent red oval is overlaid on the lower right side of the map, containing the text 'HIGH BURDEN' in white, bold, capital letters. The background of the slide is a dark teal color with a yellow curved line separating the header from the map area.

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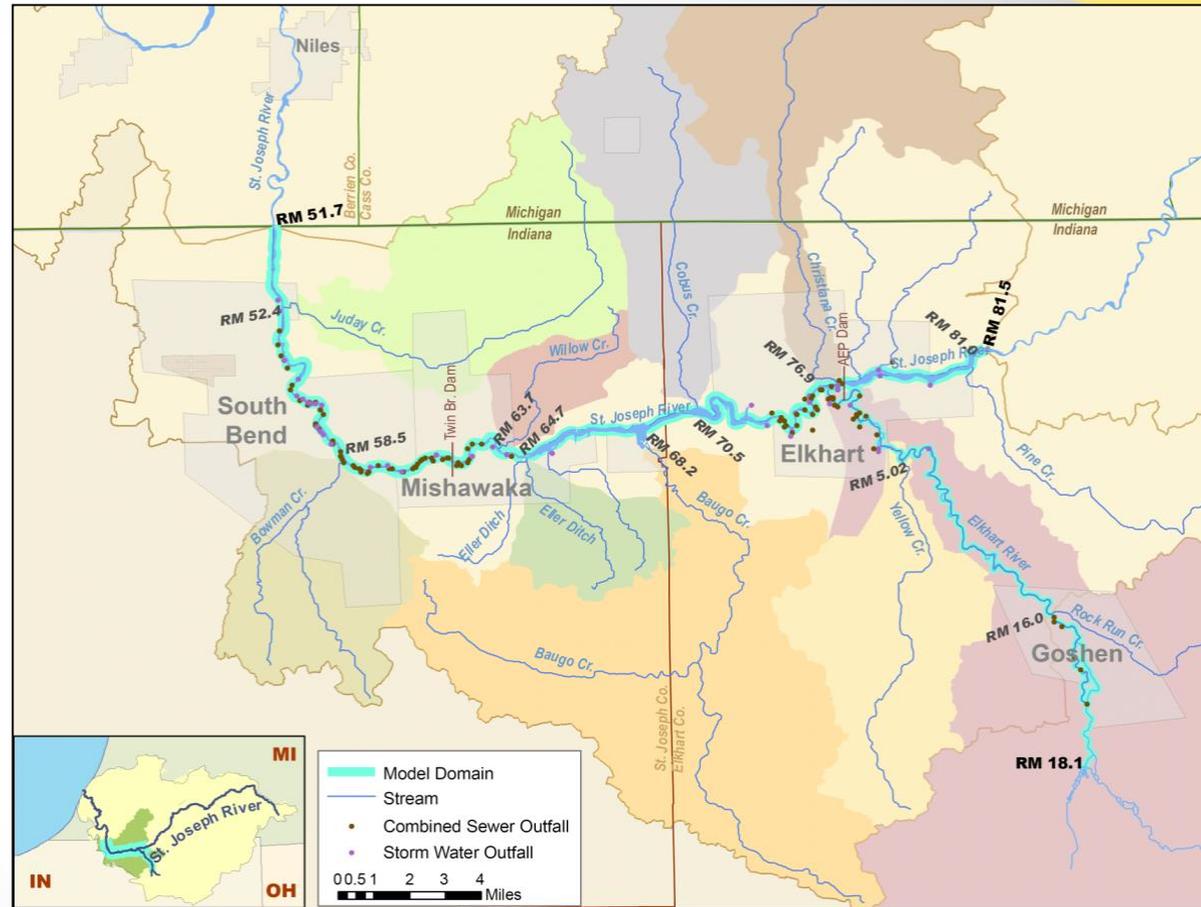
Discussion

TECHNICAL APPROACH

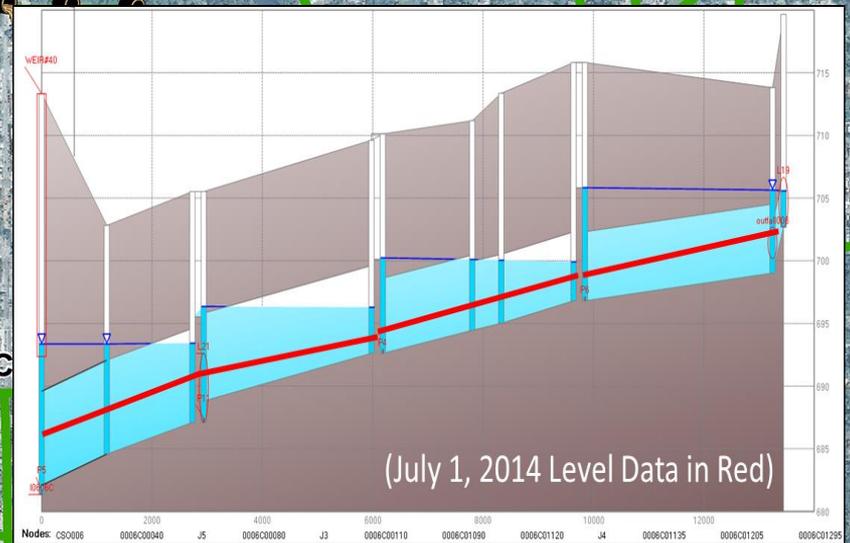
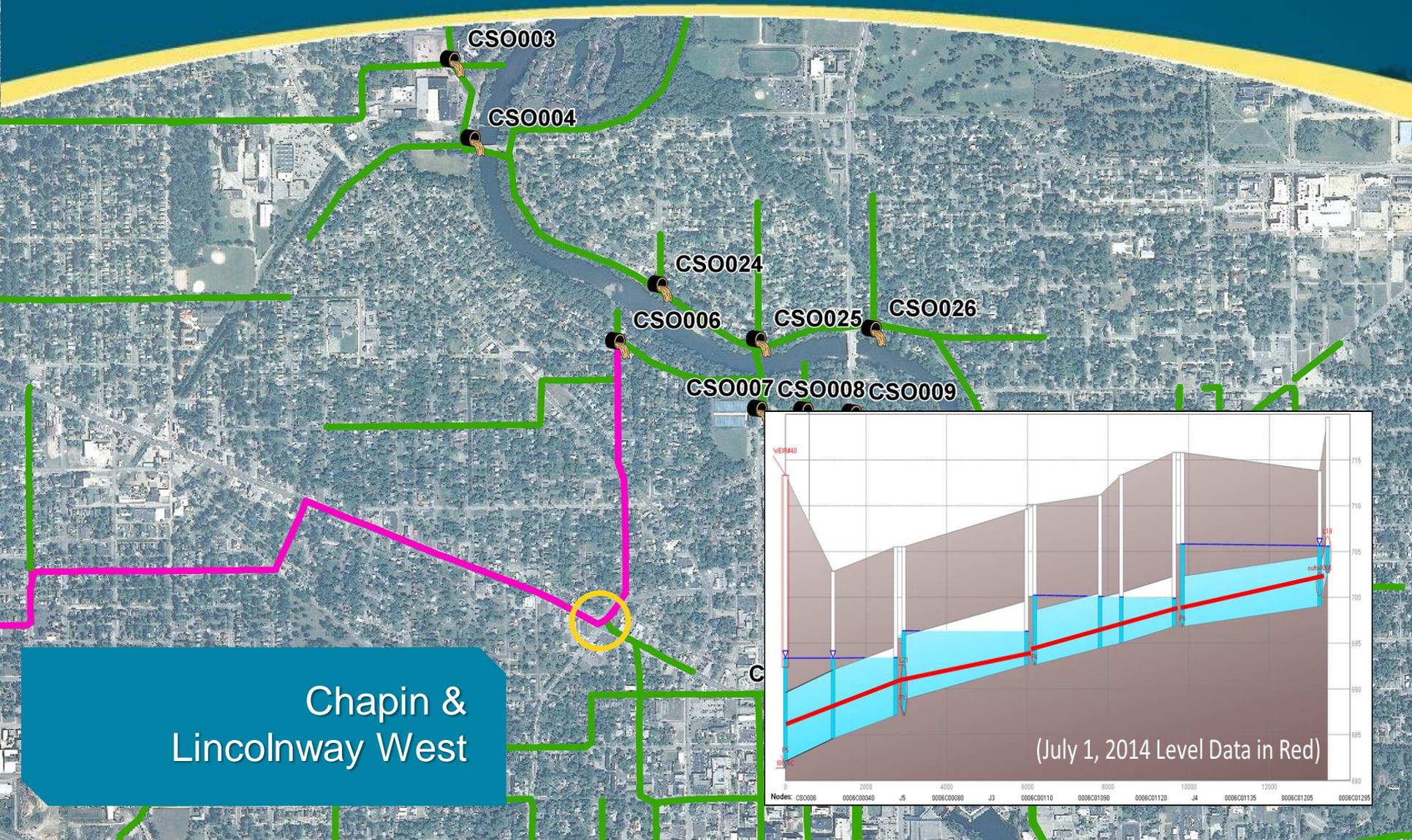


Water Quality - Key Element to Acceptable Revised Plan

- Role of Water Quality
 - Evaluate localized impacts and effects
 - Perform alternatives analysis
 - Optimize water quality benefits of Integrated Planning
 - Support re-openers in CD



Technical Design Alternatives: In-Line Storage Along CSO 6 Trunkline



Green Solutions - Kennedy Park Infiltration Basins



Underground
Infiltration Basin



There are many green infrastructure solutions available to the community

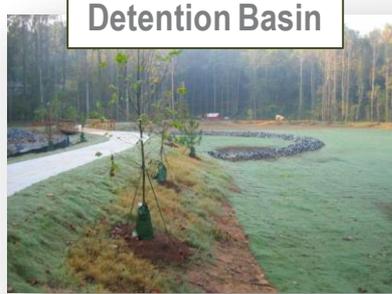
Ecoroof



Constructed Wetlands



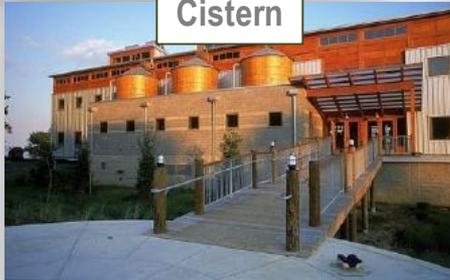
Detention Basin



Bioswale



Cistern



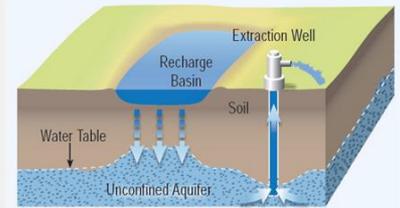
Permeable Pavement



Infiltration Trench



Groundwater recharge



Rooftop Disconnection



Bioretention



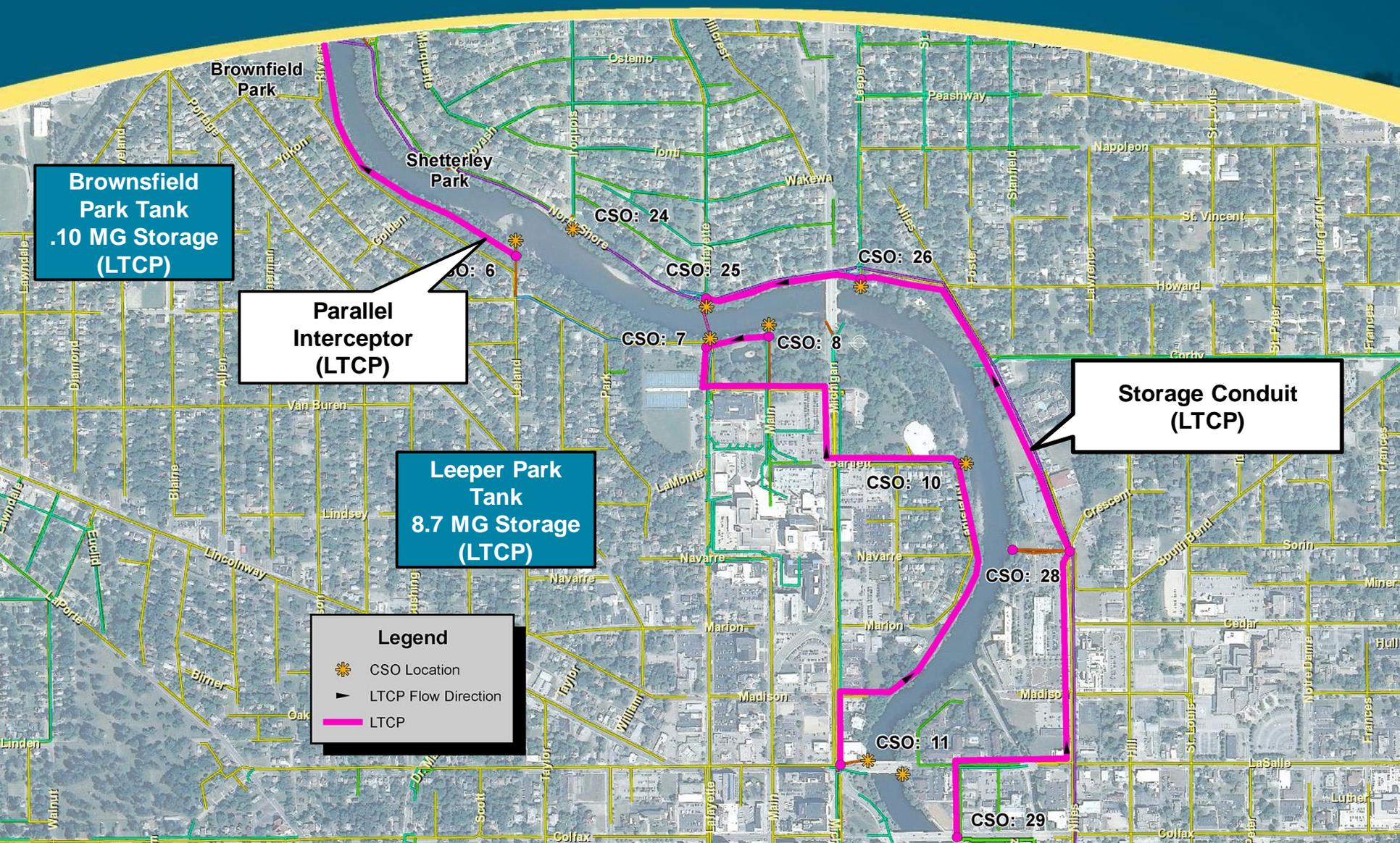
Stream Daylighting



Infiltration



Existing LTCP Downstream of East Race



Brownsfield Park Tank
10 MG Storage
(LTCP)

Parallel Interceptor
(LTCP)

Leeper Park Tank
8.7 MG Storage
(LTCP)

Storage Conduit
(LTCP)

Legend

- CSO Location
- LTCP Flow Direction
- LTCP

Brownsfield Park

Shetterley Park

CSO: 24

CSO: 25

CSO: 26

CSO: 6

CSO: 7

CSO: 8

CSO: 10

CSO: 28

CSO: 11

CSO: 29

Riviera

Marquette

Ostemo

Tom

Wakawa

Golden

North Shore

Wakawa

Leeper

Peashway

Stamfield

Stamfield

Portage

Golden

North Shore

Golden

Wakawa

Golden

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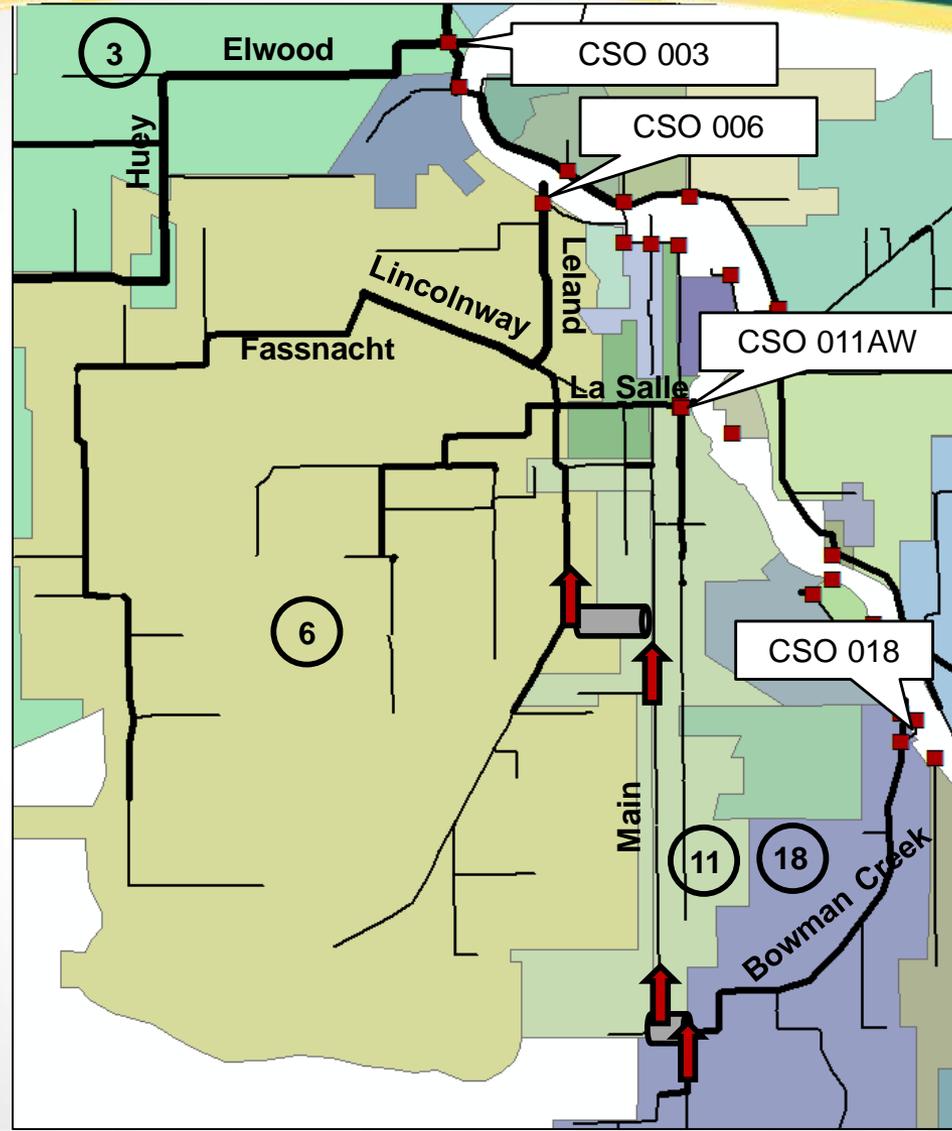
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Real Time Control Optimizes Infrastructure

- Each storm is different
- RTC adjusts the system in response to the storm
- Like traffic lights for the sewers
- Coordinate all assets



Model Indicates Old Fire Station Tank May Be Eliminated Though 2 New Interconnections Resulting In \$ Savings

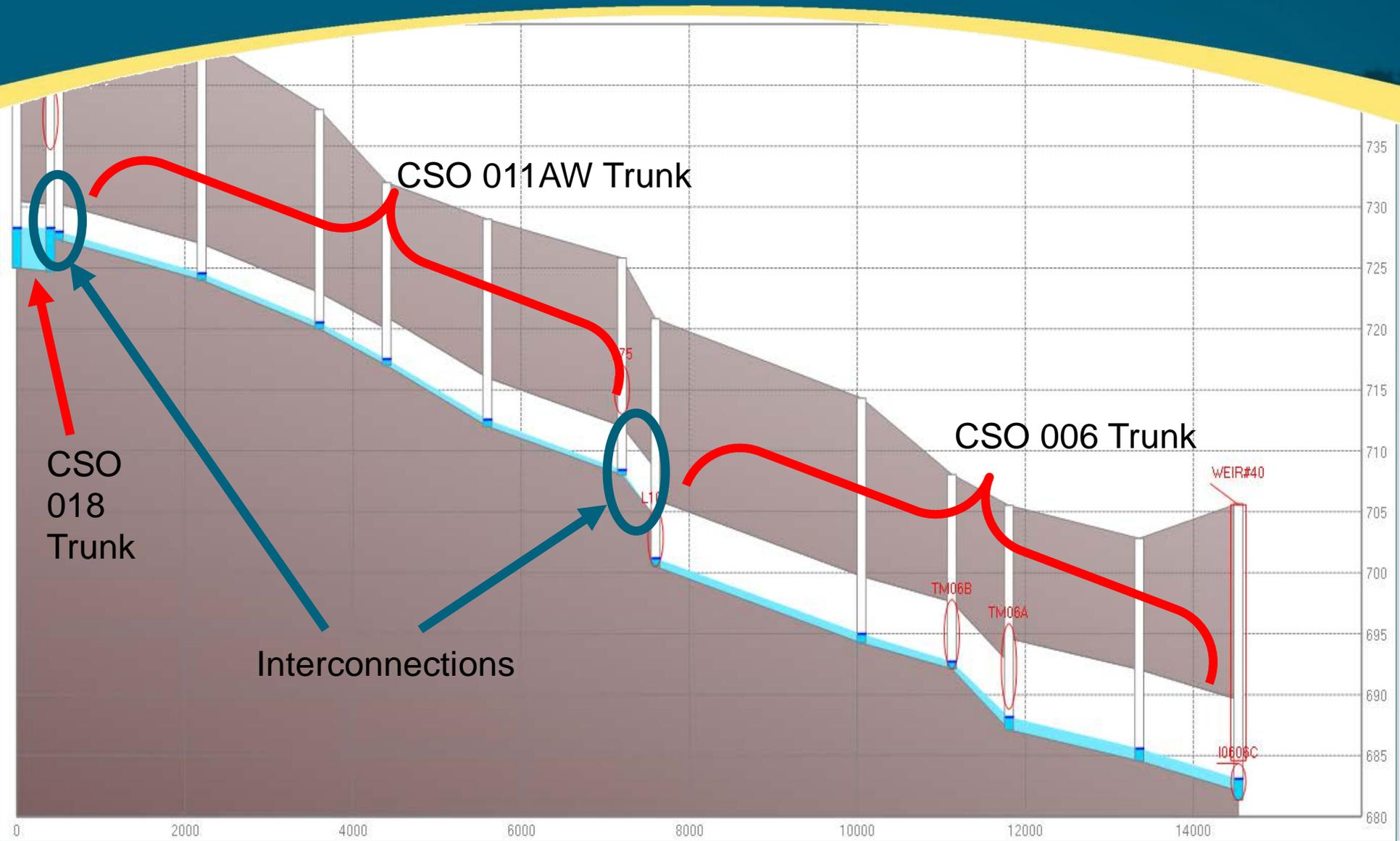


Legend

-  Interconnection
-  Flow Direction
-  CSO Area



Trunkline Interconnections



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CLOSING



What do we get? – After Phase 1

- Conceptual solutions that will save \$\$
- Range of potential savings
- Better-defined cost of existing LTCP and whether it is affordable by EPA standards
- Computer models to assess environmental improvements and affordability of alternative solutions
- Engaged stakeholder group



What do we get? – After Phase 2

- New LTCP to meet consent decree – Less costly!
- LTCP implementation schedule and budget
- Tools to track progress, performance
- Stakeholder and community understanding



GOAL: DEVELOP COMBINED SEWER
OVERFLOW PLAN THAT:

Saves money and

Enhances the environment

With an **Experienced** team

That has **Proven** success



QUESTIONS?

