

June 2014 Village Council Briefing

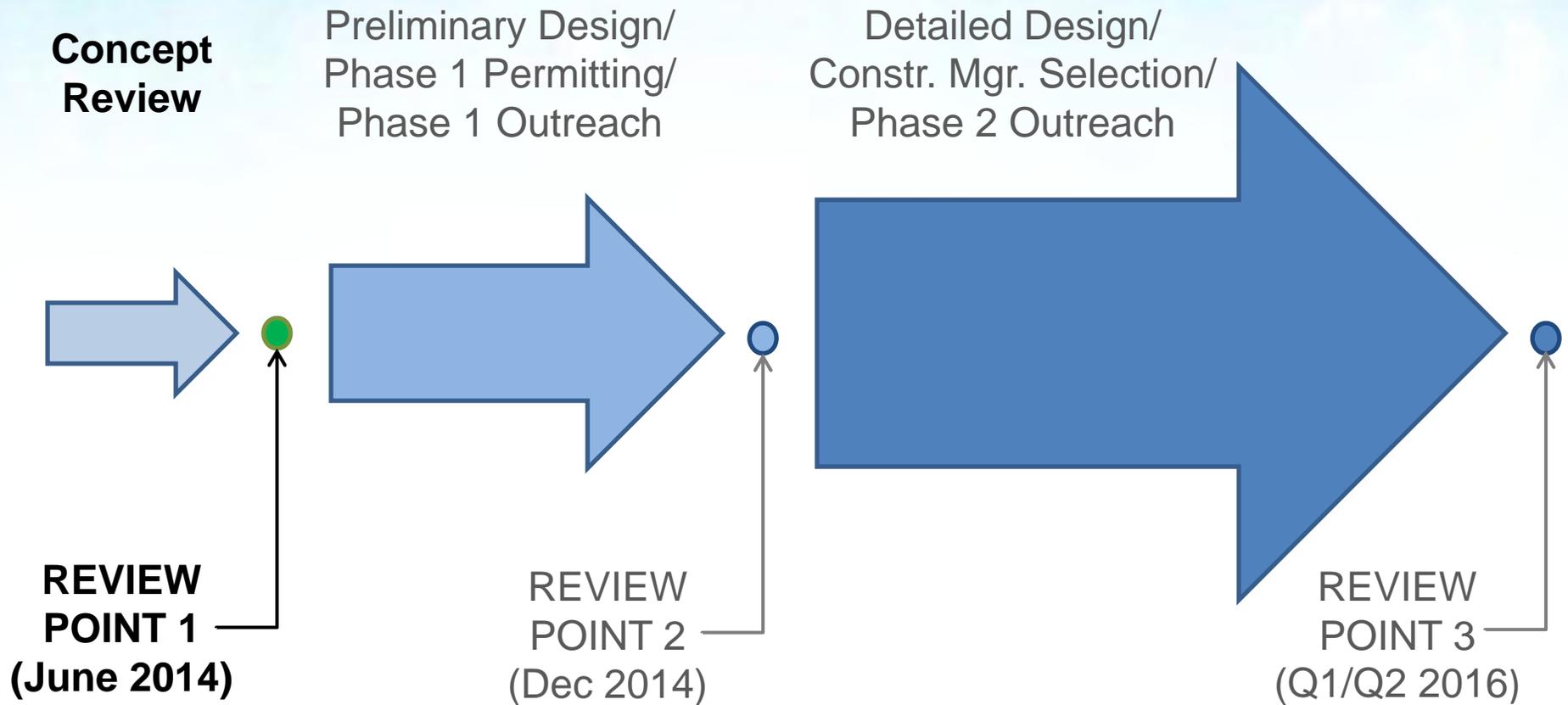
# Willow Road Stormwater Tunnel and Area Drainage Improvements



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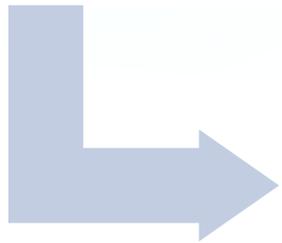
# Project Plan



# Concept Review Memo

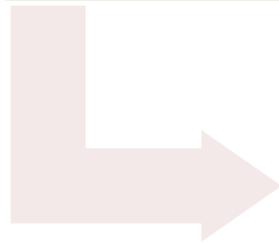
Goal

- Confirm Basic Project Parameters



Approach

- Data Review
- Staff Workshop



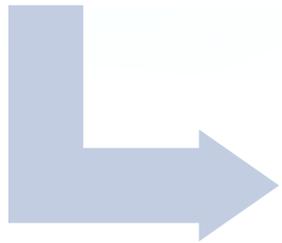
Output

- Concept Review Memo

# Alternative Sizing Memo

Goal

- Review/Refine H&H Analysis



Approach

- Modeling Review
- Concept Refinements



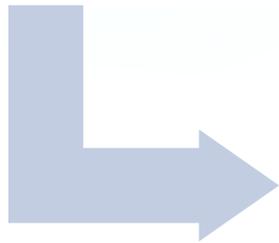
Output

- Alternative Sizing Memo

# Permitting Action Plan

Goal

- Define Permitting Requirements



Approach

- Permit Research
- Agency Coordination



Output

- Permitting Action Plan

# Key Questions

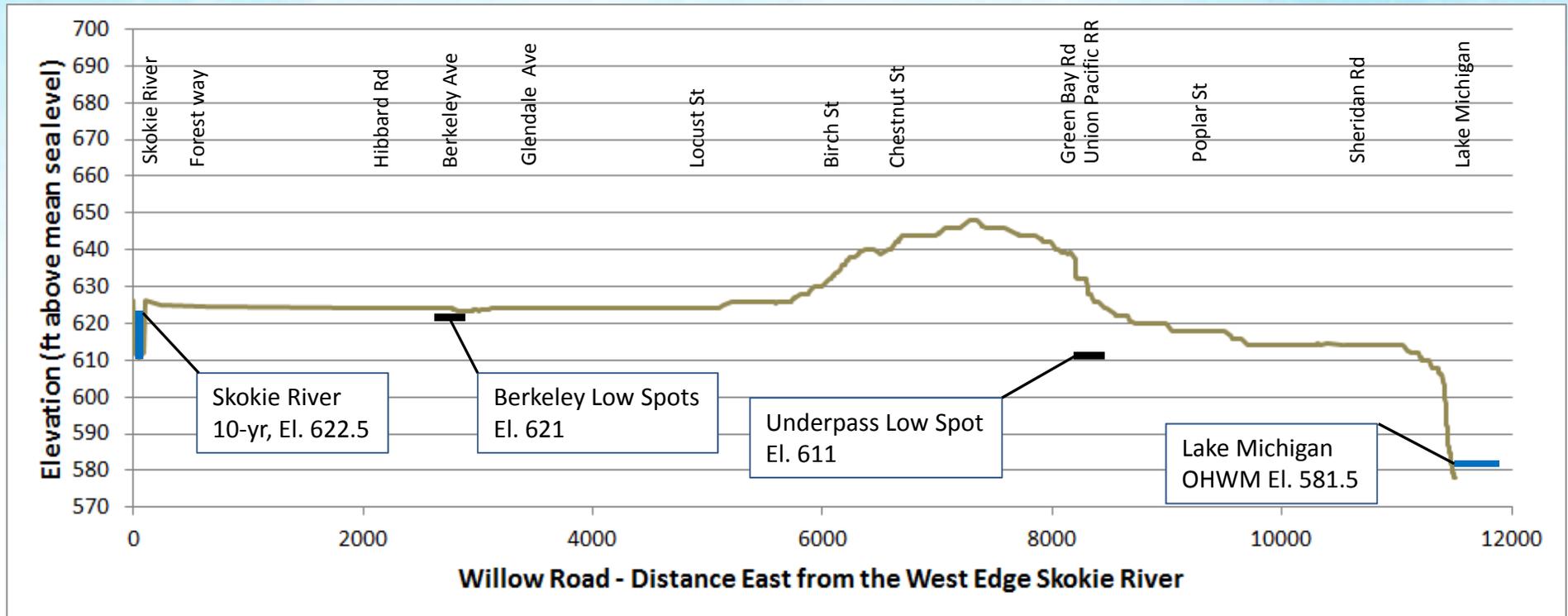
- Will the project work?
- Are there other options?
- Can the project be implemented while protecting water quality and beach conditions?
- What are the next steps required?

# Will the project work?



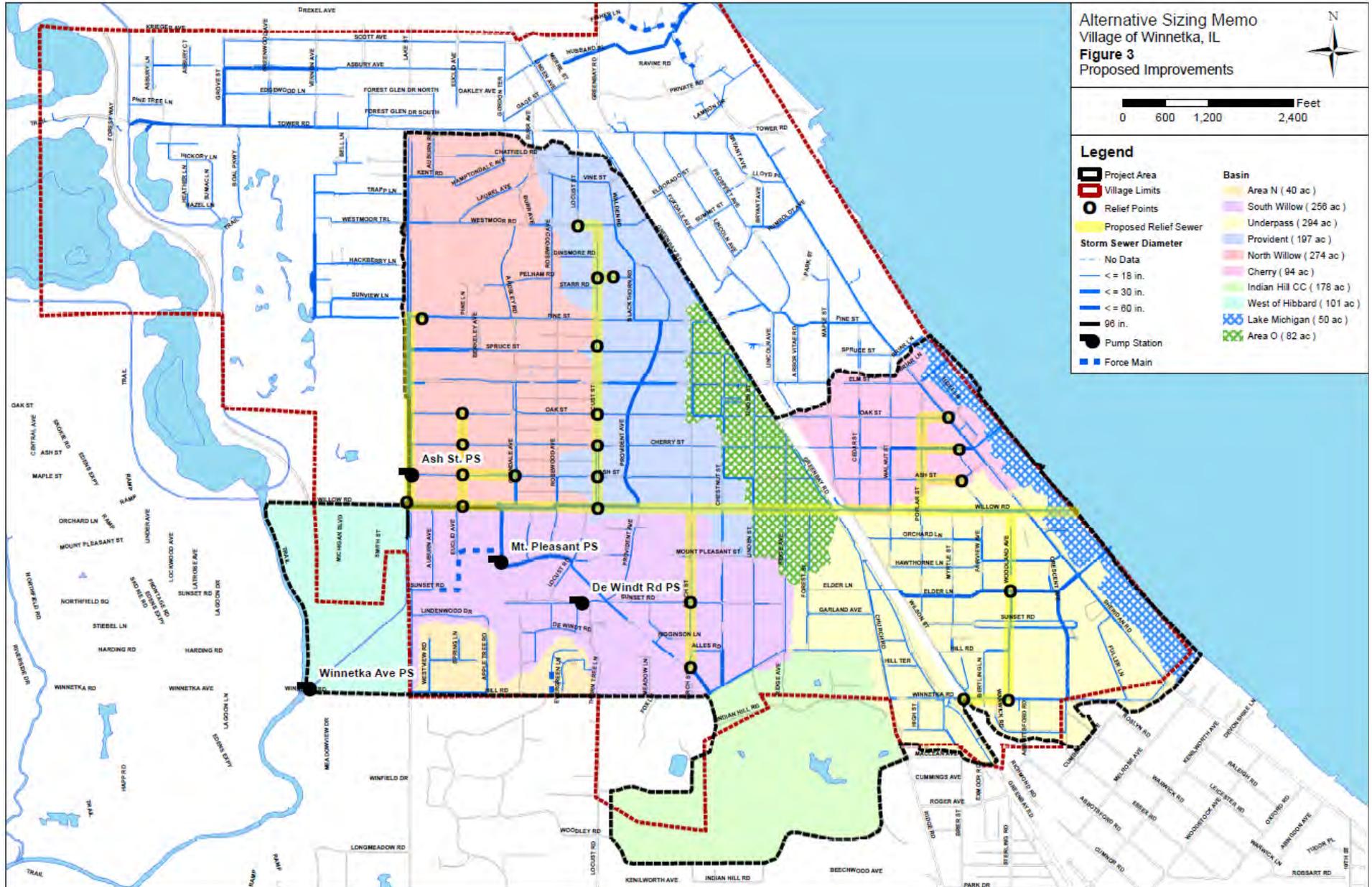
- Reliable outlet for low-lying areas
- Modeling approach appropriate, reasonable, and accurate
- Opportunities exist for refinement of plan as design proceeds
- Only option to meet project performance goal

# Willow Road Profile

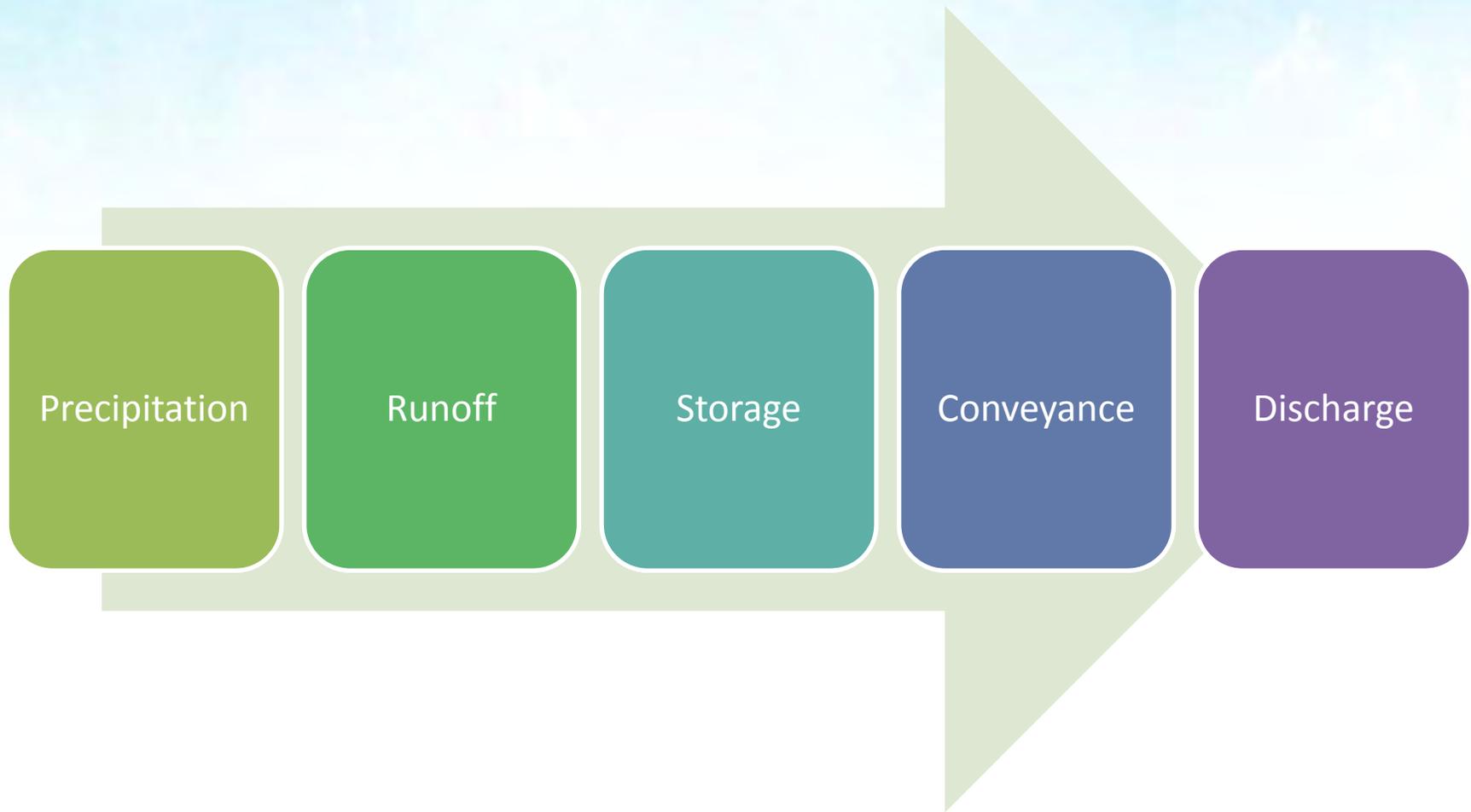


- Flooding factors:
  - Limited outlet capacity
  - Lack of overland drainage paths
- Project objectives:
  - Reduce flooding risk
  - Provide relief outlet capacity
  - Maintain existing infrastructure

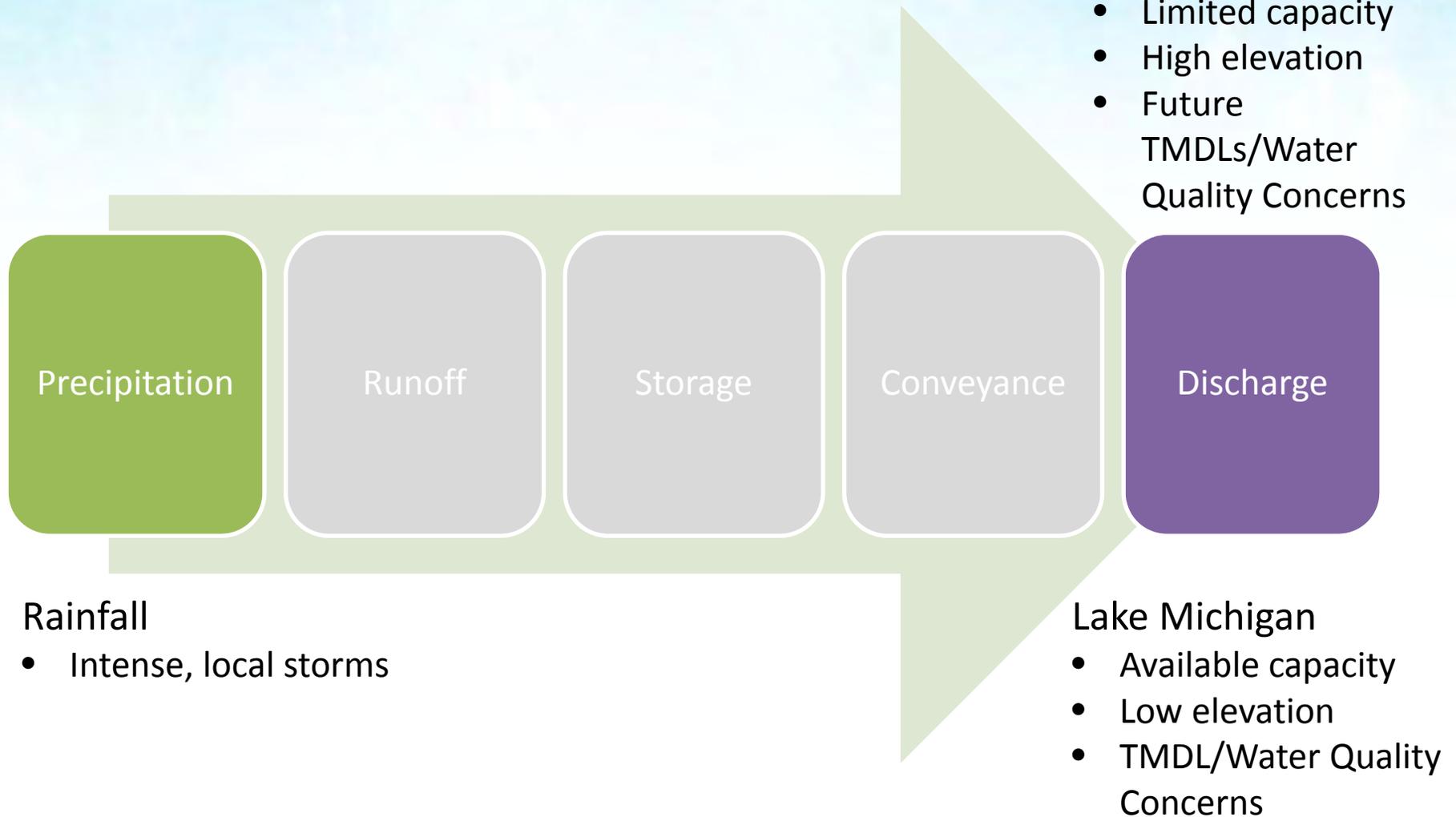
# Refined Project Concept



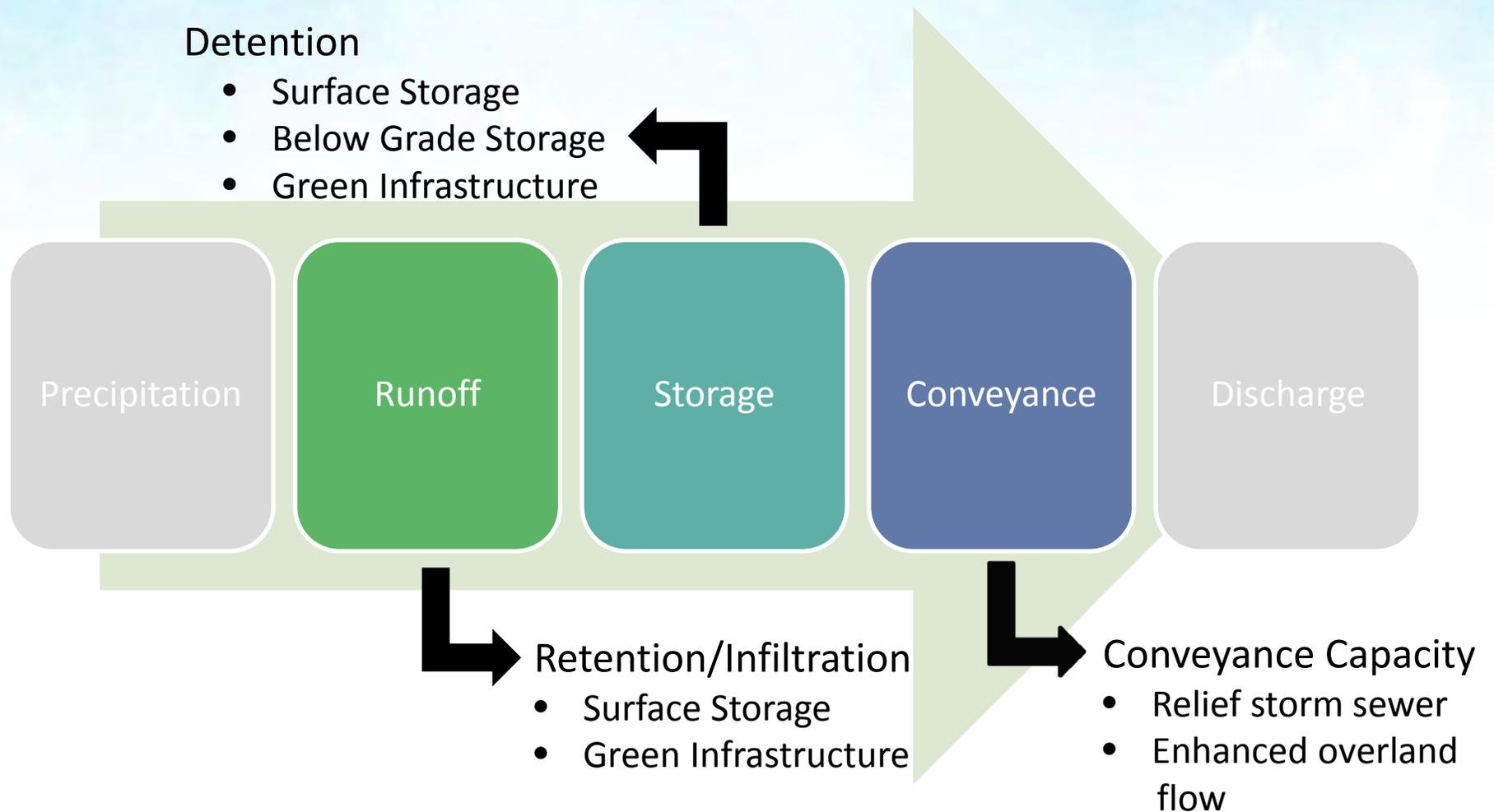
# Are there options?



# Stormwater Management Constraints



# Options Considered

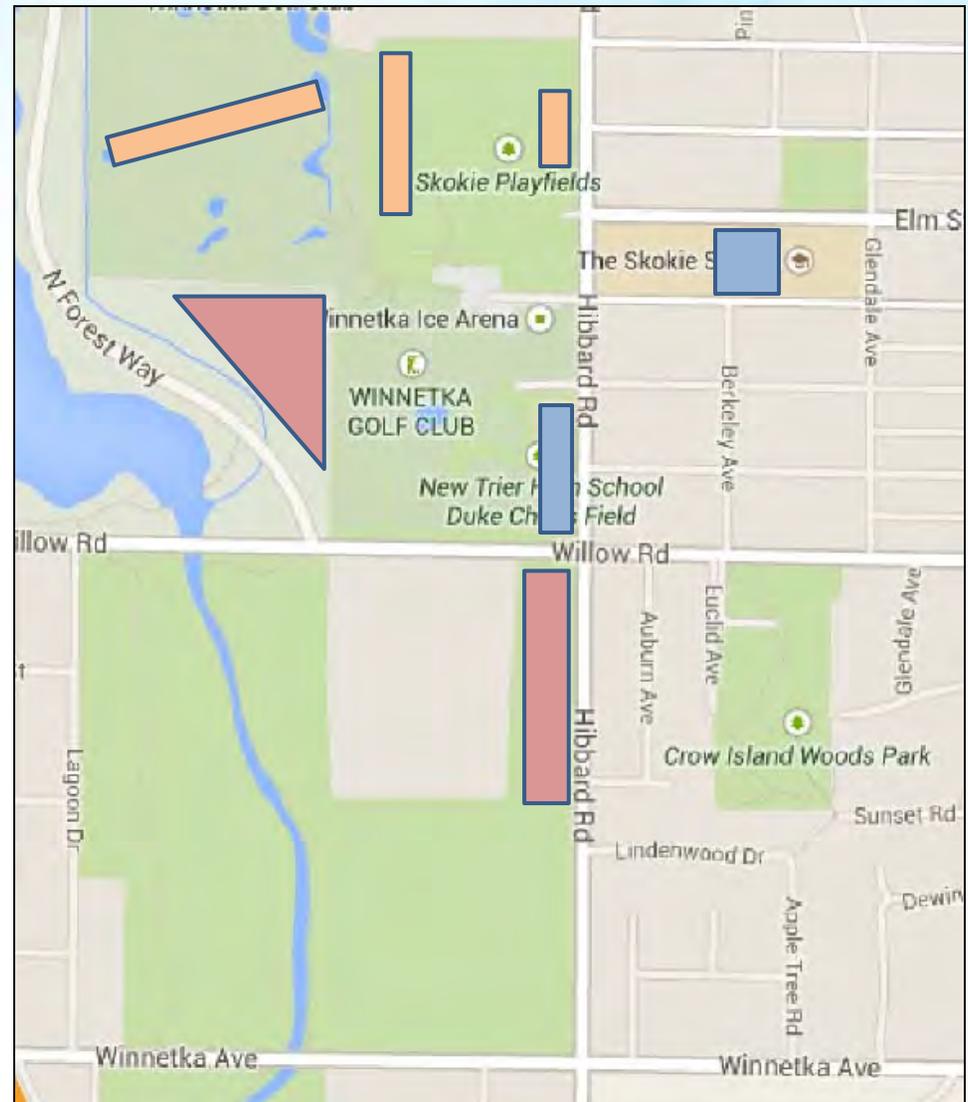




# Storage Constraints

- Elevations limit potential for storage
- Available land is limited
- CCFPD – “off limits”
- CBBEL Estimates:

- School Areas – 19 ac-ft
- Park District Plans – 25 ac-ft
- CCFPD – 113.5 ac-ft



Source: Google Maps with annotation by MWH

# Potential Storage Capacity

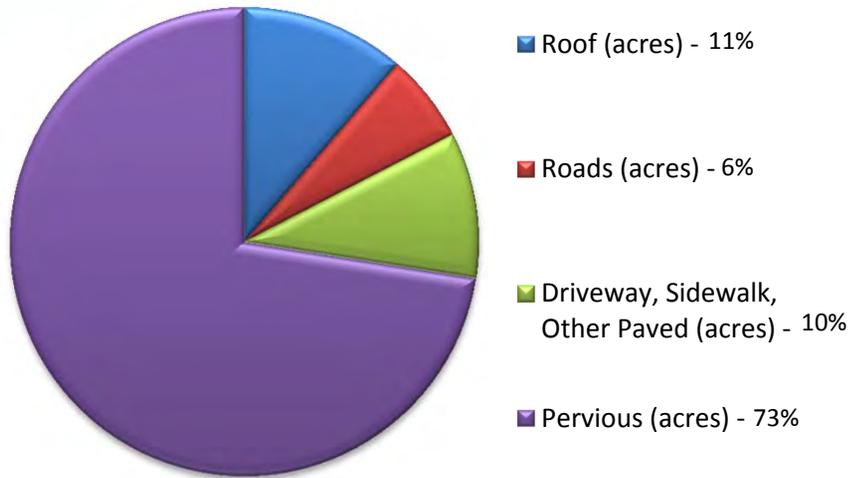
Level of Protection	Estimate of Req'd Storage (acre-feet)	Potential Storage Locations	Estimated Available Storage (acre-feet)
10-year	37.4	School Fields	19.0
25-year	69.2	Duke Child's Field (13.4 ac-ft)	
50-year	115.2	Skokie/Washburne Field (5.6 ac-ft)	
<b>100-year</b>	<b>167.5</b>	Park District	25.0
		<b>Total</b>	<b>44.0</b>

Sources: Village of Winnetka Flood Risk Reduction Assessment. Prepared by Christopher B. Burke Engineering, Ltd. , September 2009  
 Village of Winnetka Supplemental Flood Risk Reduction Assessment. Prepared by Christopher B. Burke Engineering, Ltd., June 2011

# Green Infrastructure Potential – Public ROW

## Green Infrastructure – West Project Area

West Side Land Cover



	Area (acres)	Green Infrastructure Storage (ac-ft)
Roads	61	0.0
Sidewalk, Driveways, Other Paved	101	22.5
Roofs	114	0.0
Pervious	730	0.0
<b>Total</b>	<b>1006</b>	<b>22.5</b>

# Green Infrastructure Storage Impacts

Level of Protection	Estimate of Req'd Storage (acre-feet)		Estimated Available Storage (acre-feet)
10-year	37.4	School Fields	19.0
25-year	69.2	Duke Child's Field (13.4 ac-ft)	
50-year	115.2	Skokie/Washburne Field (5.6 ac-ft)	
<b>100-year</b>	<b>167.5</b>	Park District	25.0
		Public Green Infra. <sup>1</sup>	22.5
		<b>Total</b>	<b>66.5</b>

<sup>1</sup> Storage based on provision of 3 feet of aggregate storage beneath 25% of driveways, sidewalks and parking areas.

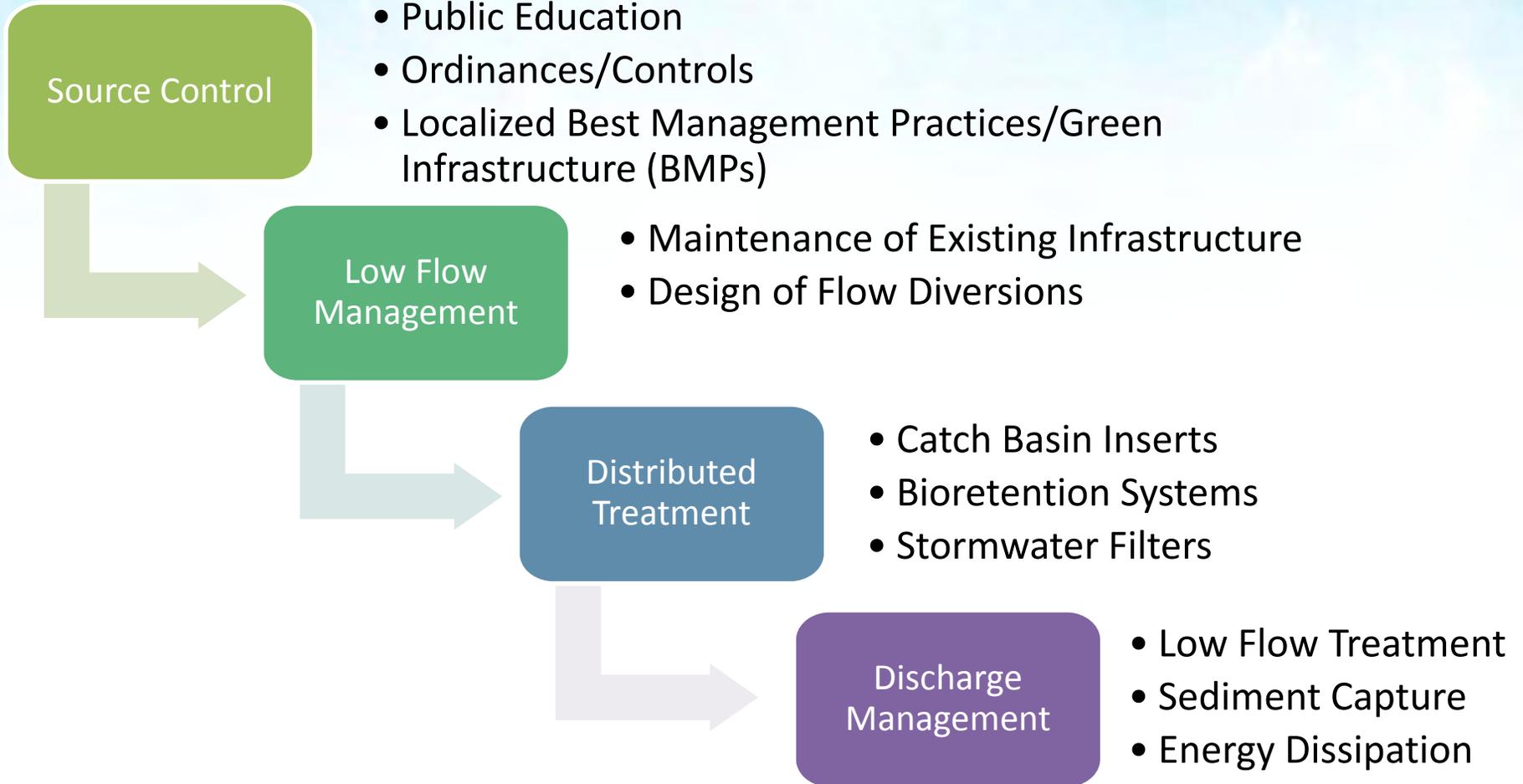
# How do we manage water quality at a new outfall?



## Water Quality Drivers

- **Stewardship of Natural Assets**
- Water Quality Standards
- Beach TMDL for *E. coli*
- Future Skokie River TMDLs
- Permits
  - MS4 NPDES Permit
  - 401 Water Quality Cert

# Water Quality Management



# Water Quality Management

## Source Control

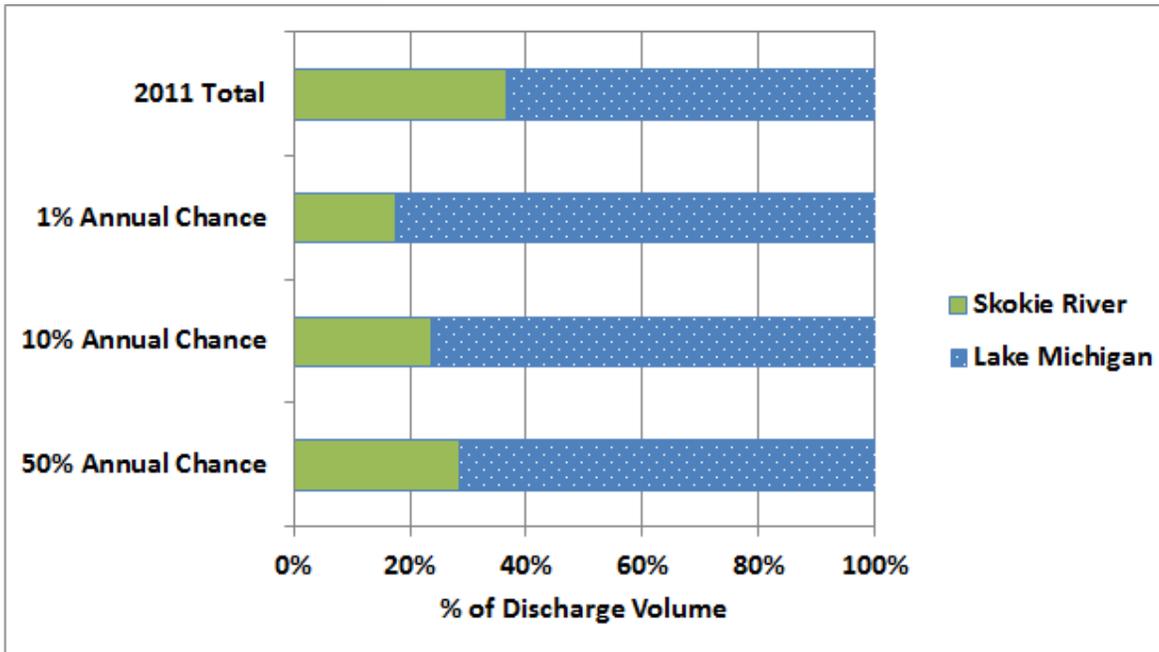
- Public Education
- Ordinances/Controls
- Localized BMPs



# Water Quality Management

Low Flow Management

- Maintenance of Existing Infrastructure
- Design of Flow Diversions

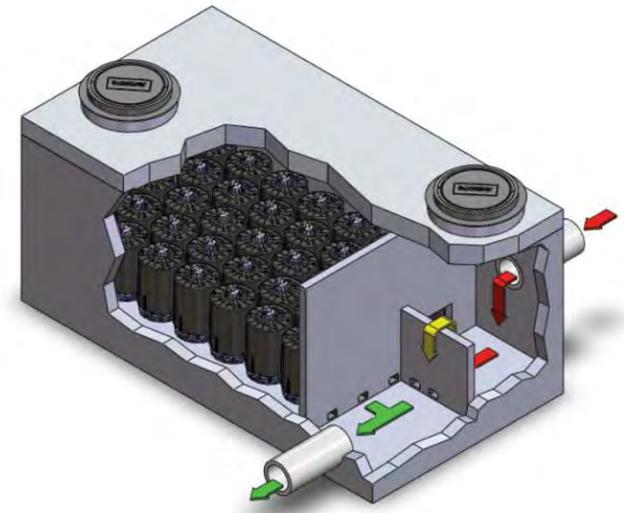
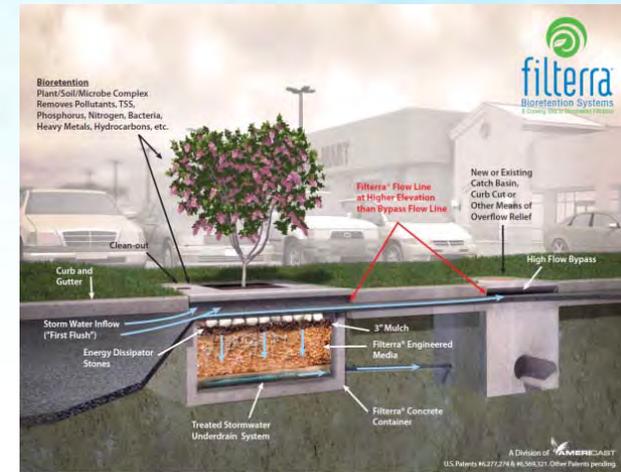


Storm Event	Total Discharge Volume (MG)
2011 Total	1478
1% Annual Chance	97
10% Annual Chance	42
50% Annual Chance	20

# Water Quality Management

## Distributed Treatment

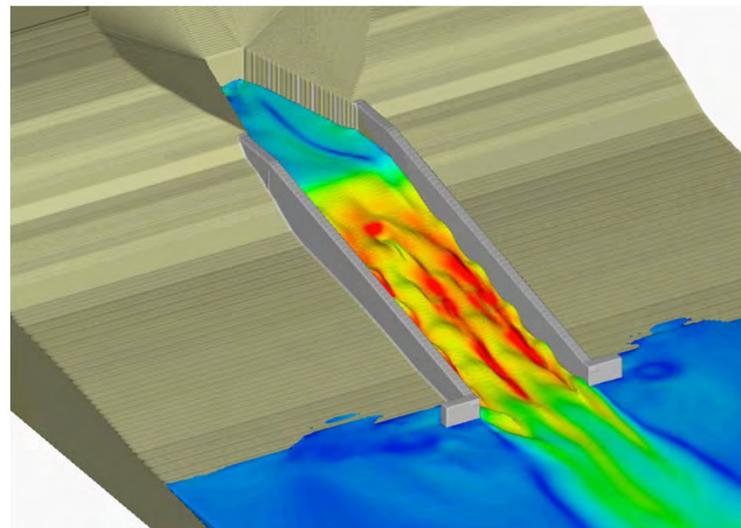
- Catch Basin Inserts
- Bioretention Systems
- Stormwater Filters



# Water Quality Management

## Discharge Management

- Low Flow Treatment
- Sediment Capture
- Energy Dissipation
- Beach Management



# Key Findings to Date

- Project can achieve target reduction in risk of structure flooding during severe storm events
- Most important challenge for the project will be meeting water quality management objectives
- Opportunities exist to continue to refine project details during preliminary design
- Stormwater Best Management Practices will be an essential complement to the project as originally conceived

# What next steps are required?

- Further develop water quality management plan
  - Water quality sampling and analysis
  - Analysis of loadings/design of management measures
- Advance the permitting process
  - Preliminary outfall design
  - Preliminary relief sewer design
  - Joint Permit Application
- Expand Agency/Stakeholder Coordination

# Water Quality Sampling

- Objectives
  - Characterize runoff
  - Evaluate variability
  - Basis for monitoring
- Approach
  - Selected sites
  - Sequencing samplers
  - Composite and Time-dependent samples



# Request for Authorization

## Existing Scope of Services

- Task 1.1B – Preliminary Engineering: Field Investigations/30% Design
- Task 1.1C – Preliminary Engineering: Permitting
- Task 1.2 – Continued Project Management
- Task 1.3 – Continued Stakeholder Coordination

## Supplemental Scope of Services

- Water Quality Sampling and Analysis

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