RESULTS

Stage IV analysis provides options to improve water quality and prevent flooding

Papillion Creek Watershed Partnership

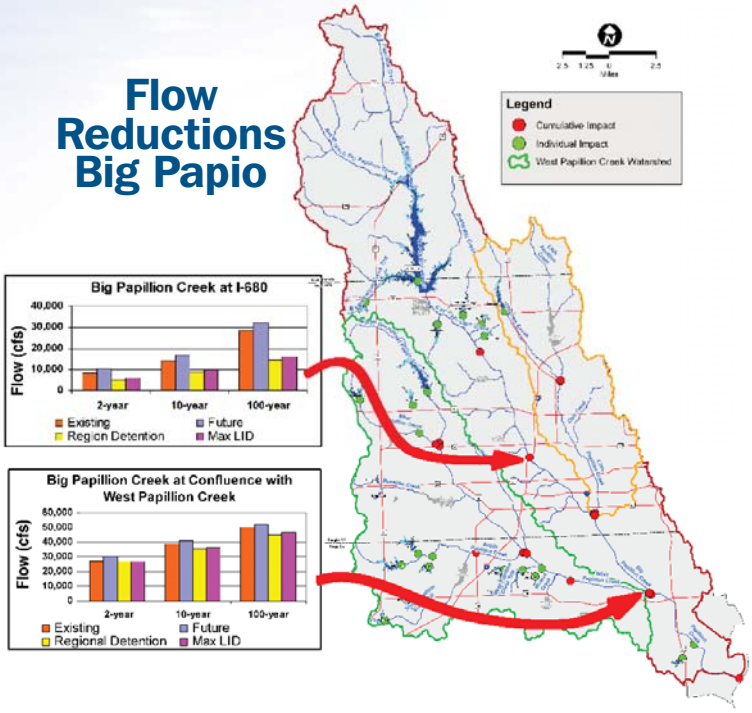
Stage IV is a study that measured different options for their ability to meet water quality and flood control objectives along with their cost impacts. The options studied include:

- Existing land use
- Future land use with no new stormwater management improvements
- Regional detention only
- Low Impact Development (LID) with on-site detention (Maximum LID)
- Combination of stormwater management improvements

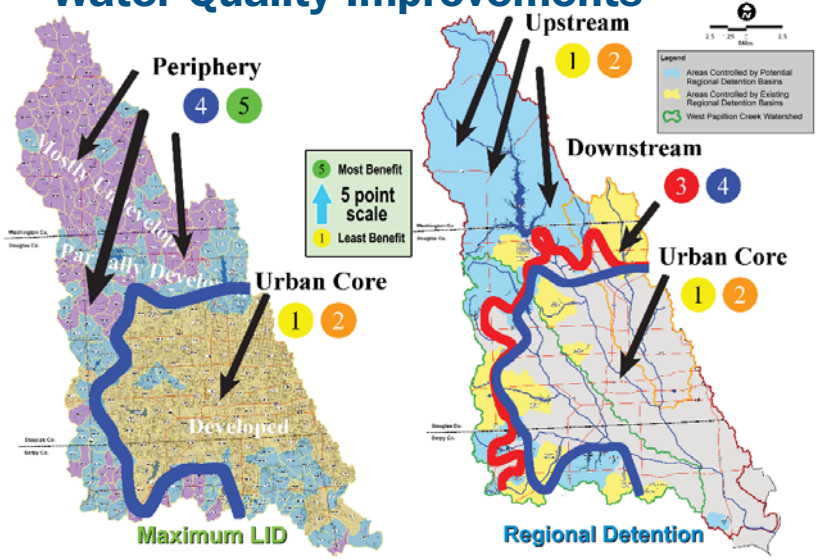
Reducing potential flooding will save lives and protect property.

- Flood reduction benefits of regional detention and maximum LID are similar overall.
- Benefits depend on the chosen combination of strategies and how soon they are implemented.

Flow Reductions Big Papio



Water Quality Improvements



A minimum level of water quality LID is needed everywhere.

Water quality improvements are needed for our watershed.

- LID provides greater, more consistent water quality benefits.
- Regional detention provides localized water quality benefits.

Cost Factors:

- Capital costs are comparable for maximum LID and regional detention.
- Estimated operations and maintenance (O&M) costs are higher for maximum LID than regional detention because of the greater number of on-site detention sites.

Cost Element	Max LID Differential Costs*	Regional Detention
Estimated Capital Cost	$443 Million	$445 Million
Estimated Annual O&M	$5.8 Million	$2.8 Million
Average Annual Equivalent Cost**	$28.5 Million	$25.6 Million
Present Value**	$530 Million	$477 Million

*Cost based on LID land use templates and represent differential cost between LID and conventional designs.

** Cost based on 50-year life cycle and interest rate of 4.875%

LID Cost Components:

- 124,000 LID eligible acres
- 60,000 acres in Douglas and Sarpy counties
- 64,000 acres in Washington County
- Residential LID (bioretention and on-site detention)
- Commercial LID (permeable paving, bioretention, on-site detention)

Regional Detention Cost Components:

- Includes regional detention and water quality basins
- Costs updated to 2007 dollars
- Land acquisition - $50,000/acre
- O&M costs – 0.75% of dam structure cost (Source: Nebraska Department of Natural Resources)

You play an important role in determining the future of our watershed.

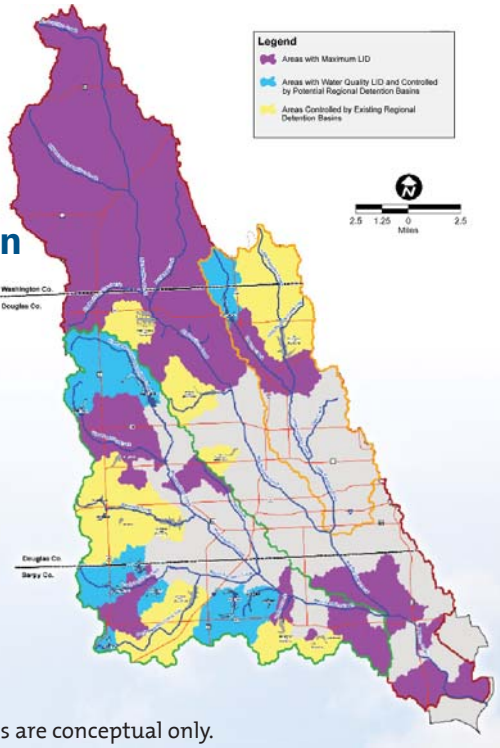
Public feedback and technical recommendations on the Stage IV results will be provided to elected officials in each jurisdiction in the watershed. Your input is needed to reach a consistent, comprehensive watershed plan. The example plan (right) is a combination of regional detention and LID strategies for flood reduction and improved water quality. A combination approach maximizes the benefits of both options.

Implementing a comprehensive watershed plan will require our communities to develop and adopt stormwater ordinances and resolutions. Next steps may include:

- Update stormwater policies
- Determine financing methods
- Create design standards
- Modify comprehensive plans and zoning

Potential Elements of a Watershed Plan

- Water Quality LID Required
- Regional Detention Basins
- Water Quality Basins
- Max. LID in Areas w/o Regional Detention



Visual representations are conceptual only.

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Photos: (Front) Low Impact Development; (Back) Water Quality basin