



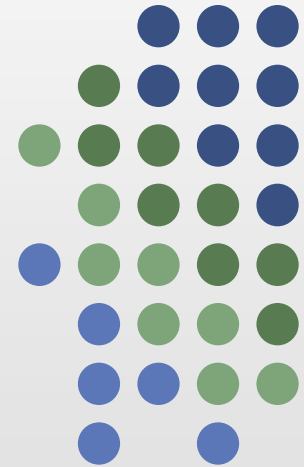
Thinking Outside The Pipe

How to Bring 319 Funds to Your Backyard

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Seeing Is Believing



“RESPECTING OUR ENVIRONMENT, GROWING OUR FUTURE”

2 Demonstration Projects: “Kick The Tires”



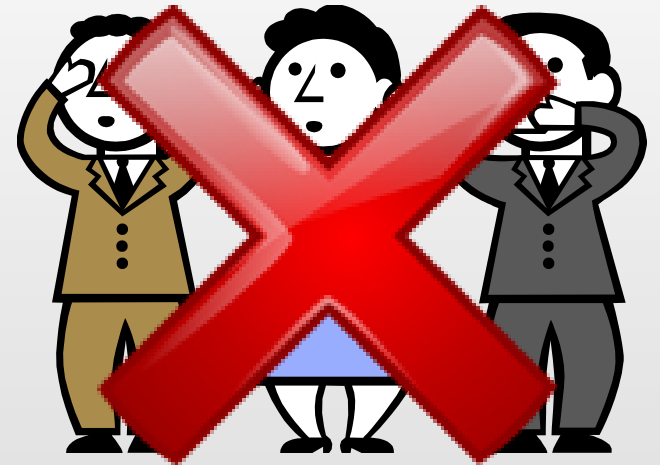
- Rock Hill Trails Conservation Subdivision
 - 10 different BMPs
 - Education & Outreach
- Arlington Wetlands
 - Restoration
 - BMPs
 - Education & Outreach
- Animal Waste – Clinton County





3 Main Elements

- Visual
 - Actually see what this “new-fangled” thing is all about
- Local Connection
 - Actually talk to the developer/engineer/mayor
- Economics
 - What did this cost in “our” dollars
 - Can this really work in “our” economy?

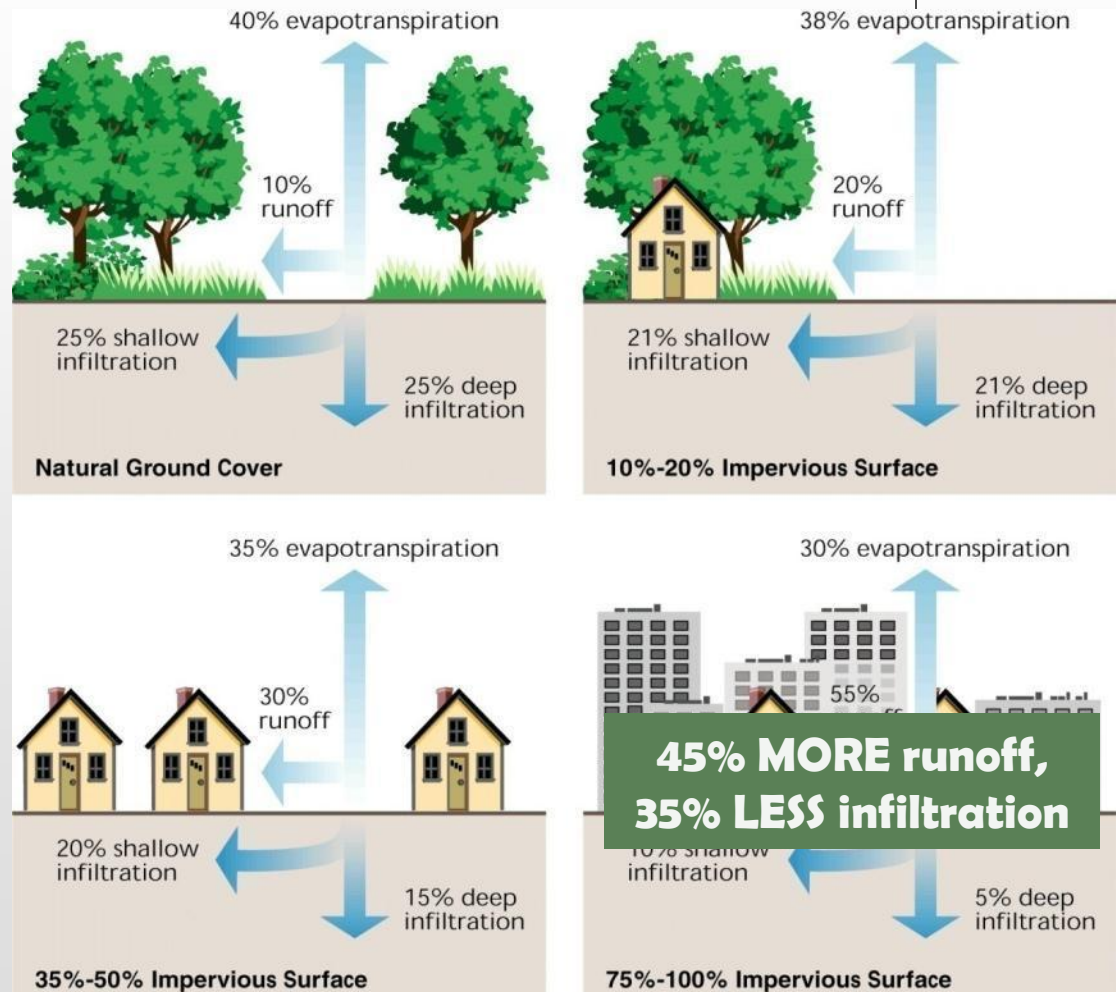


Why Is This Important?

The Challenges of Stormwater



- Understanding The Impact
 - Direct relationship between % impervious surface and stormwater/groundwater problems



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The Challenges of Stormwater



- New Players:
 - Water Quality
 - Erosion
 - Flooding
 - Water Supply

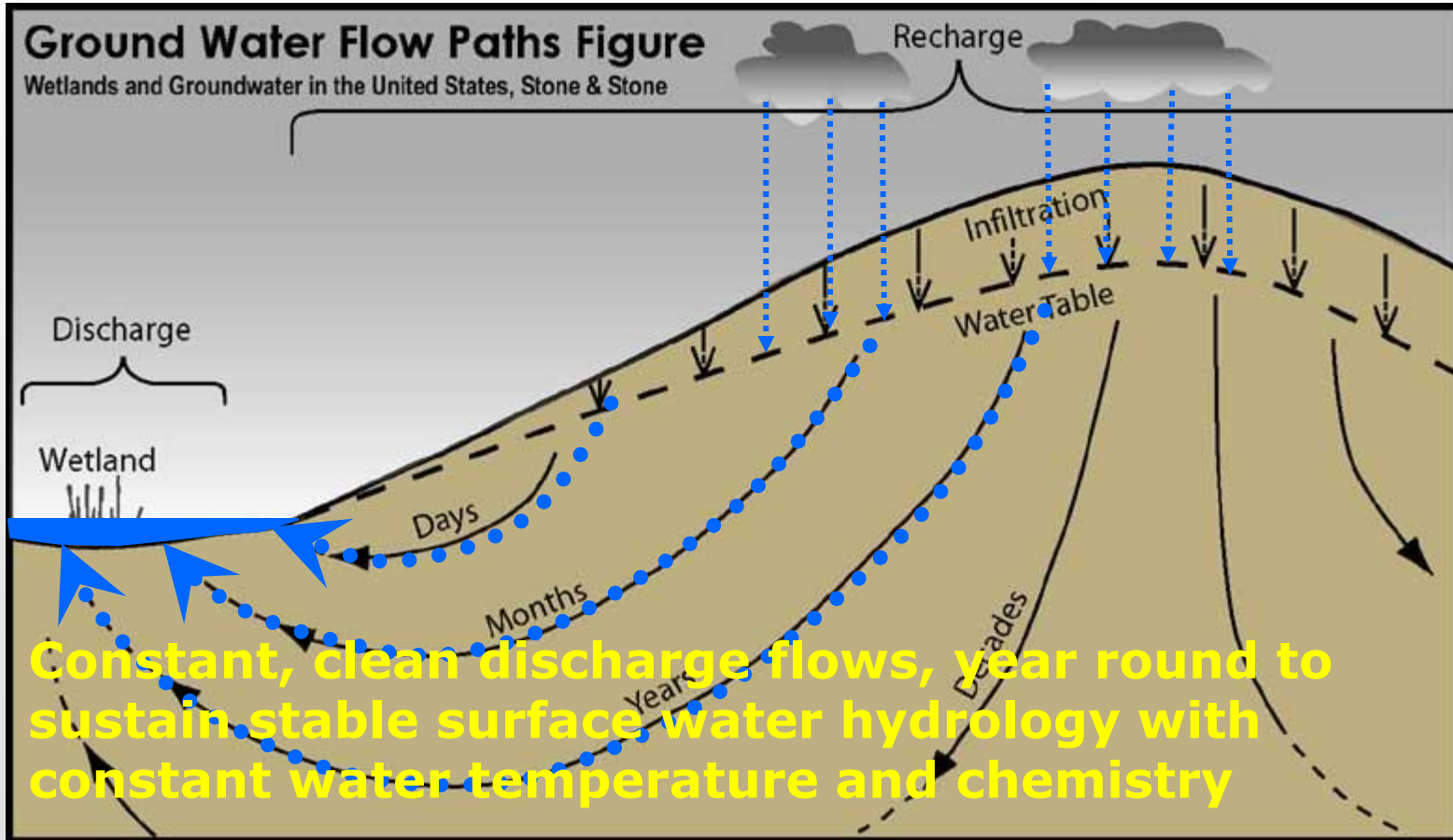


Historical Patterns of Hydrology



Recharge Zone: Uplands

Discharge Zones: Lowlands- rivers, streams, ponds, wetlands



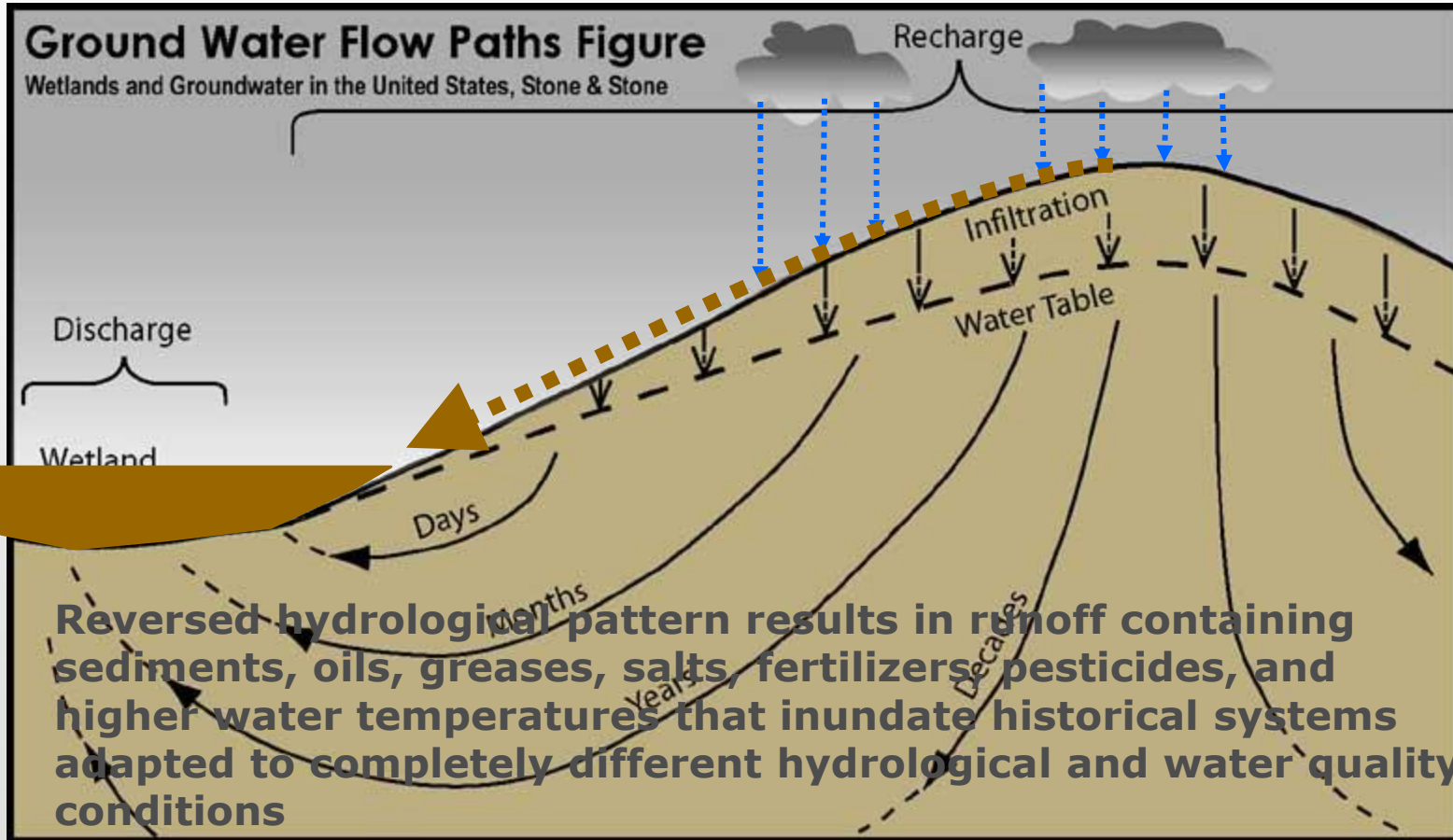
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Contemporary Hydrology



Upland becomes discharge zone

Natural wetlands are expected to function as recharge zones



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The Challenges of Stormwater



- Failed Remedies
- Local Example



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Learning New Techniques – Low Impact Development

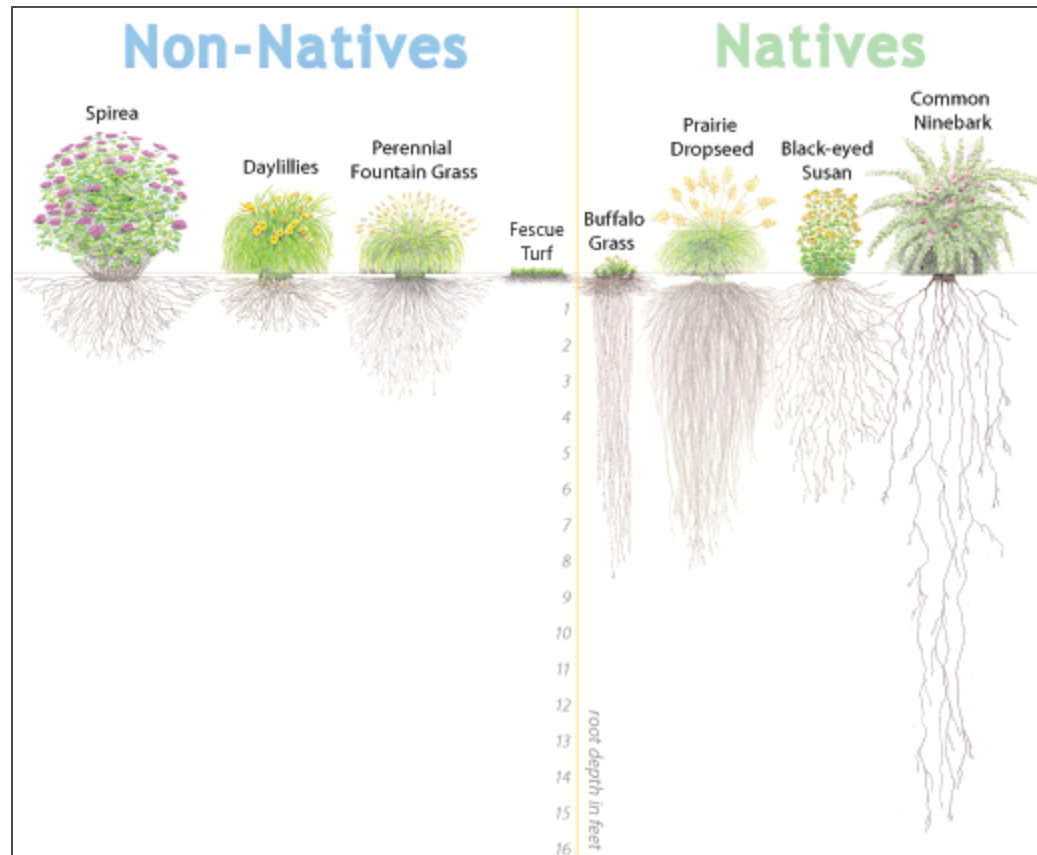


- Understanding hydrology
- Development with MINIMAL change to pre-development (natural) hydrology
- Reduced erosion – property values maintained
- Aesthetically pleasing – property values increased (subjective)
- Improved water quality – Phase II compliance
- Protecting natural resources for future generations



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Biology & Ecology of Stormwater



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Rock Hill Trails



Madison County, IL 303(d) Listed Stream Segments 2006

Potential Source = Urban Runoff/Storm Sewers

303d Listed Streams



Potential Cause	Potential Source
(JN 02)	
Manganese	Source Unknown
Nitrogen (Total)	Urban Runoff/Storm Sewers, Crop Production (or Dry Land)
Oxygen, Dissolved	Urban Runoff/Storm Sewers
Phosphorus (Total)	Crop Production (or Dry Land), Urban Runoff/Storm Sewers
Sedimentation/Siltation	Crop Production (or Dry Land), Urban Runoff/Storm Sewers, Site Clearance (Land Development or Redevelopment)
Canteen Cr. (JNA 01)	
Copper	Urban Runoff/Storm Sewers
Manganese	Urban Runoff/Storm Sewers
Nitrogen (Total)	Municipal Point Source Discharges, Crop Production (or Dry Land), Urban Runoff/Storm Sewers
Phosphorus (Total)	Crop Production (or Dry Land), Municipal Point Source Discharges, Urban Runoff/Storm Sewers
Sedimentation/Siltation	Urban Runoff/Storm Sewers, Crop Production (or Dry Land), Site Clearance (Land Development or Redevelopment)
Total Dissolved Solids	Urban Runoff/Storm Sewers
Total Suspended Solids	Crop Production (or Dry Land), Site Clearance (Land Development or Redevelopment), Urban Runoff/Storm Sewers
Troy Creek (ODMA TR C3)	
Nitrogen (Total)	Urban Runoff/Storm Sewers, Municipal Point Source Discharges
Phosphorus (Total)	Municipal Point Source Discharges, Urban Runoff/Storm Sewers
Total Dissolved Solids	Urban Runoff/Storm Sewers, Municipal Point Source Discharges
Wood R. (JR 02)	
Copper	Industrial Point Source Discharge, Urban Runoff/Storm Sewers
Manganese	Industrial Point Source Discharge, Urban Runoff/Storm Sewers
Phosphorus (Total)	Crop Production (or Dry Land), Municipal Point Source Discharges, Urban Runoff/Storm Sewers
Sedimentation/Siltation	Crop Production (or Dry Land), Urban Runoff/Storm Sewers
Total Dissolved Solids	Urban Runoff/Storm Sewers, Industrial Point Source Discharge
Total Suspended Solids	Urban Runoff/Storm Sewers, Crop Production (or Dry Land)
Fecal Coliform	Urban Runoff/Storm Sewers

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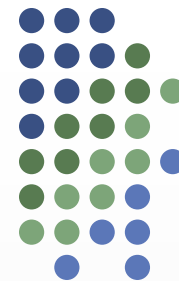
Rock Hill Trails



- 10 Low Impact Development Best Management Practices (BMPs)
- Small-scale techniques
 - Recharge groundwater
 - Filter (clean) stormwater – water quality
 - Slow down stormwater – reduce flooding & erosion
- Residential Conservation Subdivision Design (Commercial in future) – Wellspring Development
- Only 20% traditional curb and gutter – no retention pond necessary
- LID BMPs working together in “treatment train”



Data



- Pollutant Load Reduction Estimates

Averages:
Nitrogen Removed: 29%
Phosphorous Removed: 35%
Sediment Removed: 46%

These results are for each BMP operating individually – think what they are accomplishing working together!

Data



- Runoff Volumes

**Average:
Approximately 1 cubic foot of water
processed for every square foot of
constructed BMP**

Economics



- The cost of rain
 - Water quality, erosion, flooding & water supply
- Developer incentives
 - Lower infrastructure costs
 - Marketability – environmental priorities
- Reduced demand for more public “green-space”
- Combined sewer overflow systems



Economics



Project Name		O'Fallon, IL			
		Conventional	Conservation		
Description		Cost	Cost	\$ Change	Change
GRADING SUBTOTAL		\$509,809	\$341,859	\$167,950	-33%
ROADWAY SUBTOTAL		\$940,554	\$814,535	\$126,018	-13%
STORM SEWER SUBTOTAL		\$591,772	\$271,669	\$320,102	-54%
SANITARY SUBTOTAL		\$711,099	\$638,806	\$72,293	-10%
WATERMAIN SUBTOTAL		\$815,393	\$738,312	\$77,081	-9%
EROSION CONTROL SUBTOTAL		\$21,805	\$21,805	\$0	0%
OFFSITE SANITARY SUBTOTAL		\$26,250	\$26,250	\$0	0%
LANDSCAPE/RESTORATION SUBTOTAL		\$104,397	\$242,803	-\$138,406	133%
AMENITIES SUBTOTAL		\$443,403	\$402,678	\$40,725	-9%
CONTINGENCIES/ENG/LEGAL (25%)		\$1,041,120	\$1,041,120	\$0	0%
		\$4,164,482	\$3,498,719		
Totals		\$5,205,602	\$4,539,839	\$665,763	-13%
Per Unit		\$46,479	\$36,030	\$10,448	-22%

Economics



- Operation & Maintenance
 - RHT - \$2,000 - \$3,500 annually for all BMPs
 - Paid for by homeowner's association
 - Less maintenance fees as they mature
- Flip Side
 - \$1,000 per linear foot to restore a degraded stream channel
 - \$400 - \$1,600 per acre for water quality restoration

Arlington Wetland

AMERICAN BOTTOM WETLAND INTERPRETIVE SITE & EDUCATIONAL CAMPAIGN

8' Wide Gravel Interpretive Trail



620' Boardwalk

Permeable Parking Lot & Future Site of Wetland Interpretive Center

Wet Prairie Restoration



“Cahokia Canal (JN-02), representative of other canals and stream corridors in the northern portion of the American Bottom, has been identified on the **partially-approved 2008 303(d) list** as impaired due to non-point source pollution. The **causes are**: Alteration in stream-side or littoral vegetative covers, Iron, Phosphorous (Total), Total Suspended Solids, Dissolved Oxygen, Sedimentation/Siltation, Changes in Stream Depth and Velocity Patterns, and Loss of Instream Cover. The **suspected sources of impairment are**: Channelization, Urban Runoff/Storm Sewers, Site Clearance (Land Development or Redevelopment), Crop Production (Crop Land or Dry Land), and Agriculture.

A TMDL is currently being prepared for the Cahokia Canal/Horseshoe Lake Watershed (Stage III, 2006). Its assessment of Cahokia Canal (JN-02) concludes that a lack of Dissolved Oxygen due to low flows in the summer months (exacerbated by hot temperatures) is the primary impairment. This is most likely caused by violations of municipal stormwater permits – having stormwater outfalls that contain high levels of crop fertilizers and lawn fertilizers. Streambank erosion is also a potential contributor. **Having a healthy, restored wetland within this watershed will** increase the amount of dissolved oxygen in any overflow waters, and help to filter out non-point source pollutants, improving water quality in the Cahokia Canal/Horseshoe Lake watershed. Additionally, other restoration and education activities constructed on-site as part of this project, such as the healthy streambank model and vernal pools, will serve as good demonstrative examples of improving water quality and stormwater management in an urbanizing watershed.”

Madison County Property





Arlington Wetland

- Project Expenses & Negotiations
 - Initial Feedback from IEPA
 - Partners



- In-Kind Donations (get it in writing!)



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Match

- 40%?!?
- Get Creative
- Think Through All Processes
- Barter Through Marketing



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SWI RC&D “Words of Wisdom”



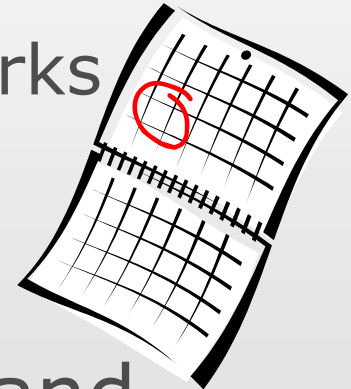
- Known Impairments
 - 303d List
 - TMDL Watersheds
- Matching Funds
 - Local – non-federal
 - Min. 40% local
 - Documentation
- Solutions
 - Understand the causes
 - Develop BMP’s that address the causes
 - Project Sites that Work



Difficulties & Advice



- Reporting and Accounting can be complex
- Quarterly Reports and Annual Reports
 - DON'T miss these dates or benchmarks
 - Communicate with IEPA staff
- Prepay Expenses
- Work with a third party for fiscal and reporting requirements





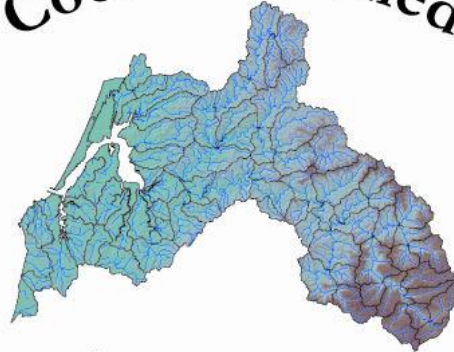
Future Opportunities

- Need to have more “ownership of the problem”
- Communities need to be more engaged
- Partners need to take on the issue
- Watershed groups need to be formed and cultivated
- Not enough money to correct problems
 - need to address the problem earlier

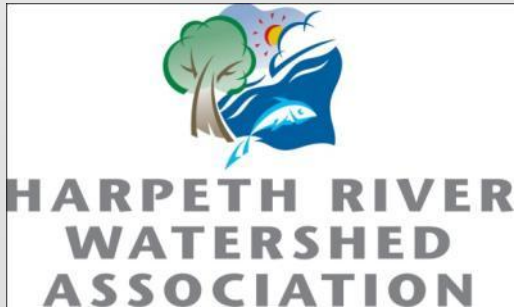
Future Opportunities



Coos Watershed



Association

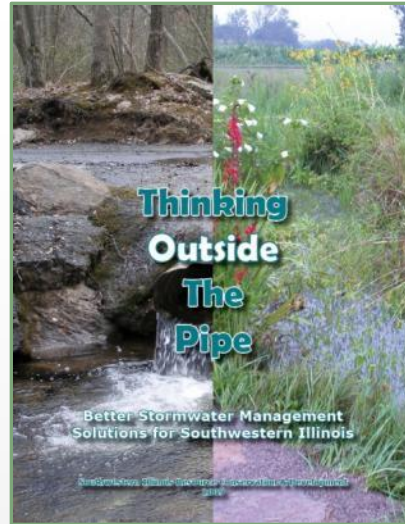


Your
Watershed
Here

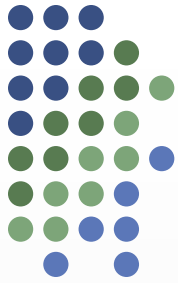
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Education

- Education
- Education!
- Education!!



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Questions?



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