

2015 DuPage Environmental Summit
Presented By
The Conservation Foundation and
DuPage County Stormwater Management



Stormwater and the Health of Our Local Streams

11:00-1:00 Exhibits Open

1:00-1:10 Welcome/Introduction

Brook McDonald, The Conservation Foundation
Dan Cronin, DuPage County Board Chairman

1:15-1:30 History of the Rivers in DuPage County

Brook McDonald, President and Chief Executive Officer, The Conservation Foundation

Brook McDonald has been the President and Chief Executive Officer for The Conservation Foundation, a private not-for-profit land and watershed conservation group based in Naperville, Illinois since 1996. The Conservation Foundation has focused since 1972 on land preservation and watershed protection in the outlying Chicago counties of DuPage, Kane, Kendall and Will. Mr. McDonald has also been involved in protecting the DuPage River since 1989.

1:30-2:00 Current River Conditions and Challenges We Face

Larry Cox, founding member of the DuPage River Salt Creek Workgroup

Larry Cox is a founding member of the DuPage River Salt Creek Workgroup (DRSCW), serving as its first President and still a member of the Executive Board. Employed at the Downers Grove Sanitary District for over forty years, including twenty-eight as General Manager and the last seven years as Senior Advisor. Mr. Cox's presentation will summarize the monitoring and analysis of three local streams-the East and West Branches of the DuPage River and Salt Creek.

2:00-2:30 DuPage County Stormwater Projects and Initiatives

Sarah Hunn, Chief Engineer for DuPage County Stormwater Management.

Sarah started her career at the Illinois Department of Transportation and has worked for DuPage County Stormwater Management for the past nine years and currently manages the Flood Operations & Stormwater Management Groups. She holds a B.S. degree in Civil Engineering from Michigan Technological University. In order to remove the constraint of municipal boundaries, DuPage County studies watersheds on a regional basis to identify potential flood control and water quality projects

2:30-3:00 Break- Exhibit Area

3:00-3:30 Forest Preserve District of DuPage County Projects

John "Ole" Oldenburg, is the past Director of the Office of Natural Resources for the Forest Preserve District of DuPage County.

Ole has been engaged in ecological restoration of diverse landscapes for nearly 30 years, the last 23 years at the Forest Preserve District of DuPage County. Preserving and protecting our river corridors with land acquisition and management by the Forest Preserve District of DuPage County is a vision long revered within our 100 year history. However, with DuPage County now a highly urbanized landscape approaching nearly a million residents; we now clearly understand that land use and subsequent water discharge from this use largely determines the extent of our water quality, aquatic habitat complexity and the resultant biological life found within our streams.

3:30-4:00 Residential and Business Outreach

Jim Kleinwachter, Conservation@Home Mgr., The Conservation Foundation

Jim began his relationship with The Conservation Foundation over twenty years ago. The Conservation@Home program promotes sustainable landscaping practices. Jim will be discussing the infiltration of stormwater that is essential to reducing run off into our rivers. Permeable pavement, native landscaping, rain gardens, rain barrels and rainwater harvesting are ways we will discuss in the effort to reduce the negative effects of stormwater runoff.

4:00-4:25 DuPage County Outreach Programs and Grant Opportunities

Tara Neff - Water Resource Assistant, The Conservation Foundation

As the Water Resource Assistant for The Conservation Foundation, Tara provides administrative oversight and support for: environmental education programs at McDonald Farm, the DuPage County Stormwater Management water quality education contract, DuPage River Salt Creek Workgroup, Lower DuPage River Watershed Coalition, Blackberry Creek and Ferson-Otter Creek Watershed groups and other education and outreach program initiatives throughout The Conservation Foundation's service area. Tara's presentation will provide information to residents on how to get involved in community programs that help improve water resource quality.

Mary Mitros, Stormwater Outreach Coordinator, DuPage County Stormwater Management -

Mary oversees the DuPage County Adopt-a-Stream program. Recently, she has been expanding the program to promote citizen stewardship among residents to improve the health of local waterways. In addition, Mary oversees countywide education and outreach activities relating to stormwater runoff.

Mary is going to discuss the County's grant programs and opportunities communities have to obtain financial assistance for stormwater related projects.

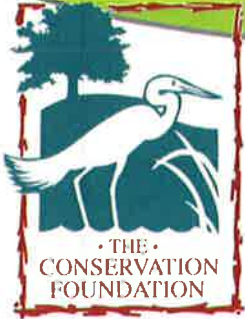
4:25 -4:30 Closing

4:30-5:00 Exhibits Open

Thank you to our sponsors!



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Local Streams
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Engineering Resource Associates 3S701 West Avenue, Suite 150 Warrenville, Illinois 60555-3256 (630) 393-3060 www.eraconsultants.com	V3 Companies 7325 Janes Avenue Woodridge, IL 60517 (630) 724-9200 www.v3co.com
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THE CONSERVATION FOUNDATION

History of Our Rivers

Brook McDonald
President/CEO

We Save Land. We Save Rivers.

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Watershed

The area of land that catches rain and snow and drains into a stream, river, lake or into the ground.

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DuPage River Watershed

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DuPage County Watersheds

Watershed	Area (mi²)
West Branch	127.6
Salt Creek	65.2
East Branch	81.3

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What can you find in the DuPage Rivers?

Pocketbook

Heel Splitter

Mucket

Fluted Shell

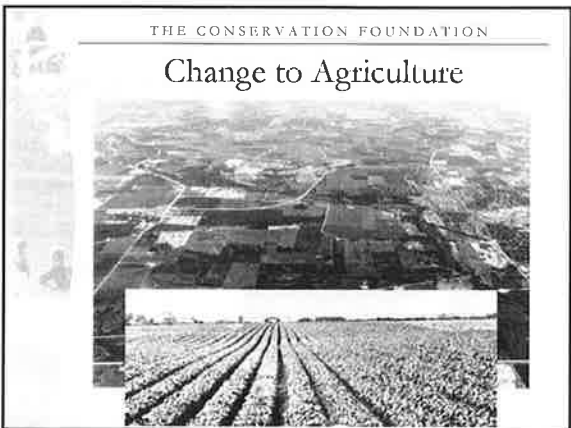
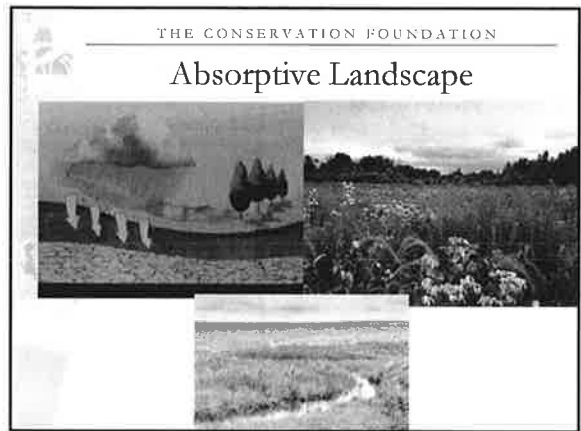
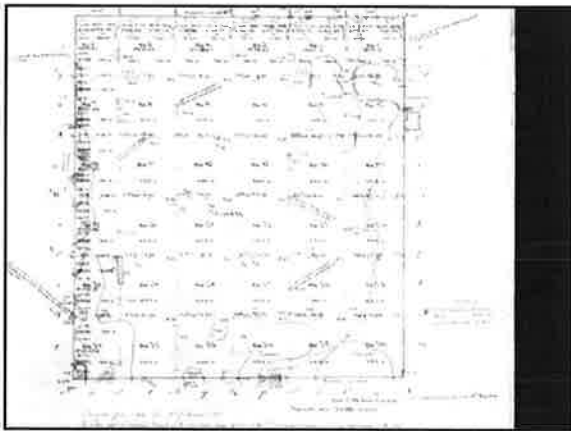
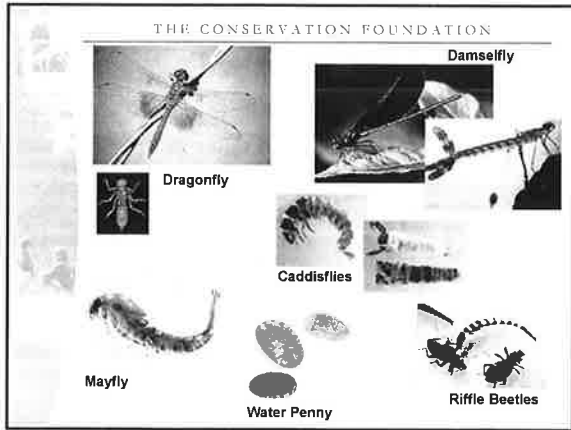
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Smallmouth Bass

Bluegill

Long-eared Sunfish

White Crappie







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Change to Suburbia


- Flooding
- Runoff pollution- pavement
- Channel erosion/down-cutting
- Altered hydrology






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Channel Modification

I. Stable Condition



II. Incision


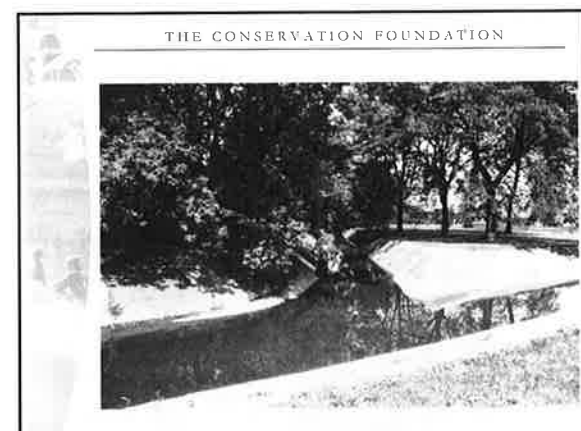
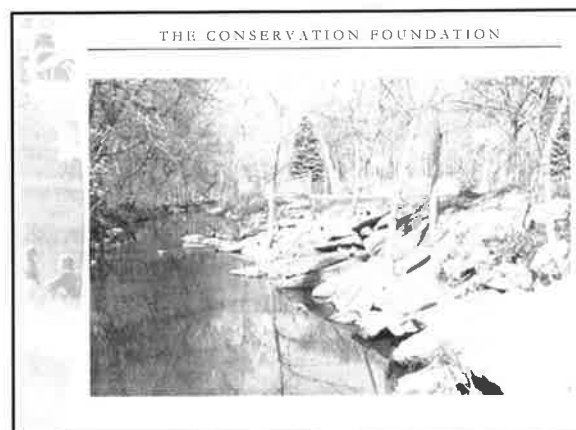
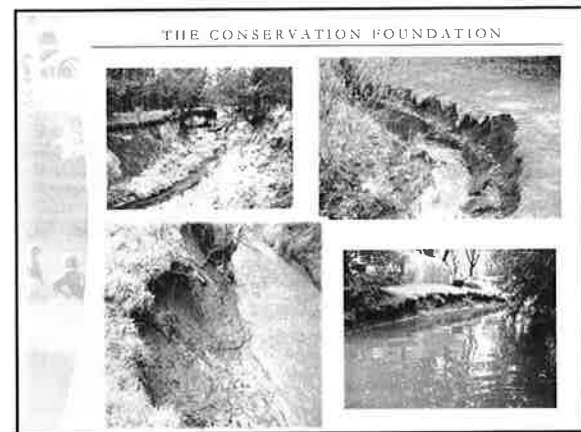
III. Widening


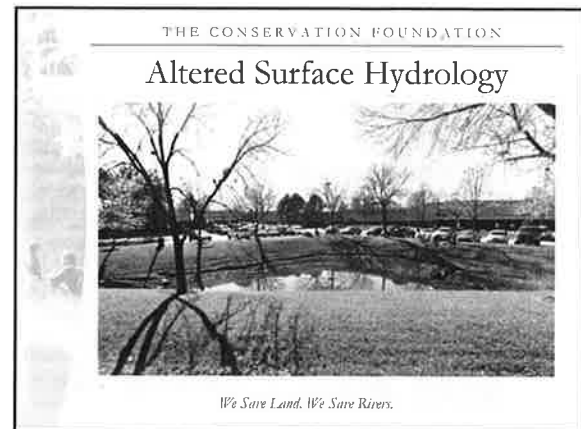
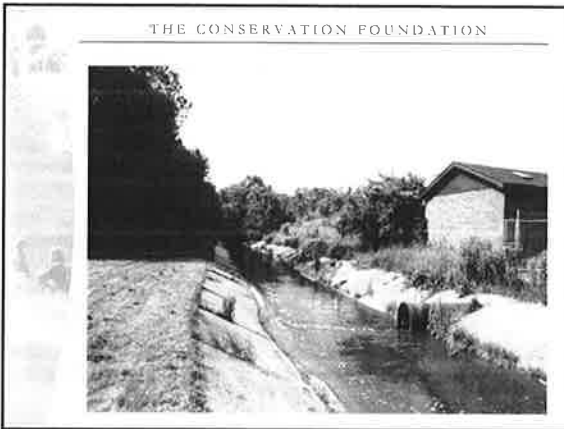
(Bank Failure)

IV. Stabilizing


(Soil Erosion)

V. Stable






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Suburban Water Pollution

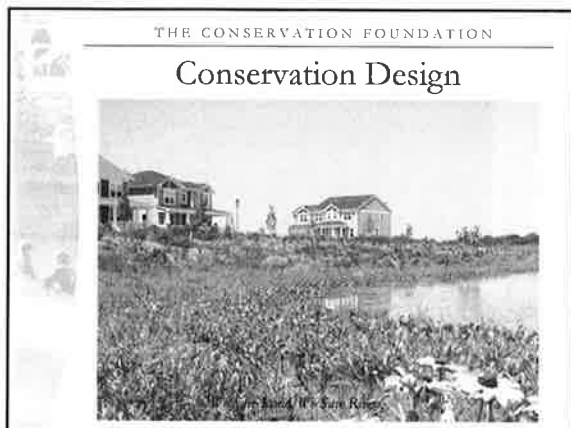
- **Point Sources** (direct discharge like from sewage treatment plants)
- **Non Point Sources** (non direct discharge like stormwater runoff)

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We Are Making Progress!

- Research
- Restoration
- Education
- Community

We Save Land. We Save Rivers.

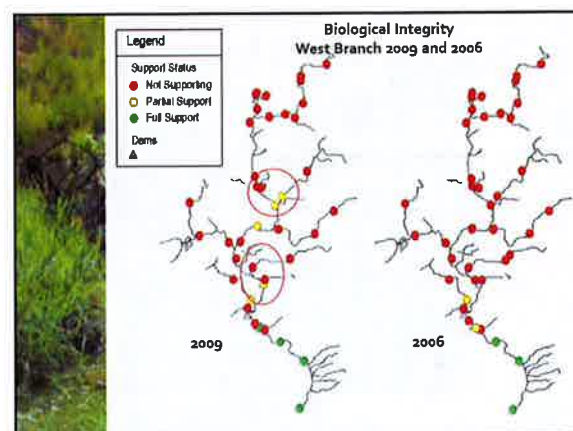
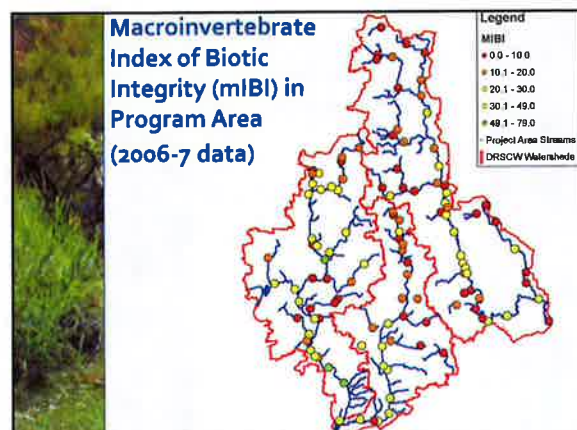
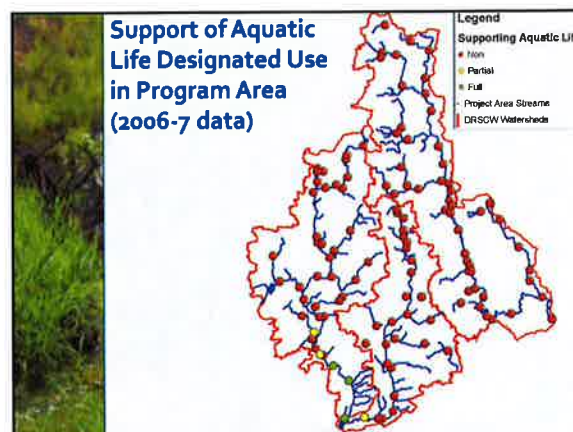
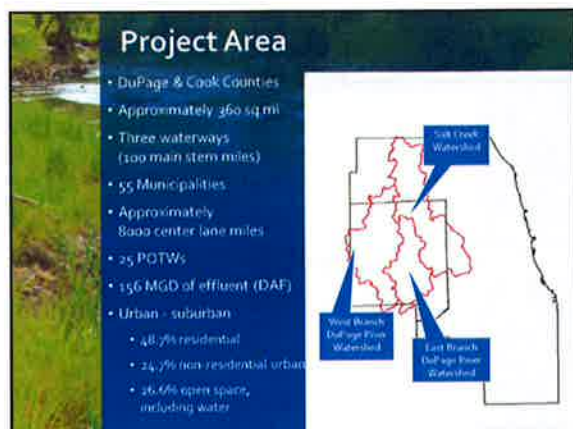


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Goal

- Clean Water and Healthy Streams!
- Biology (aquatic inhabitants) & Function
- Recreational Use

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Macroinvertebrates

What are they?

- Animals without backbones
- Macro - visible to the naked eye
- Mayflies, dragonflies, damselflies, crayfish, snails, water beetles

Why are they important?

- Part of aquatic food chain – fish, birds, frogs, turtles, snakes
- Widely used as indicators for stream health because they are sensitive to chemical and physical conditions

DuPage River Salt Creek Workgroup

Qualitative Habitat Evaluation Index (QHEI)

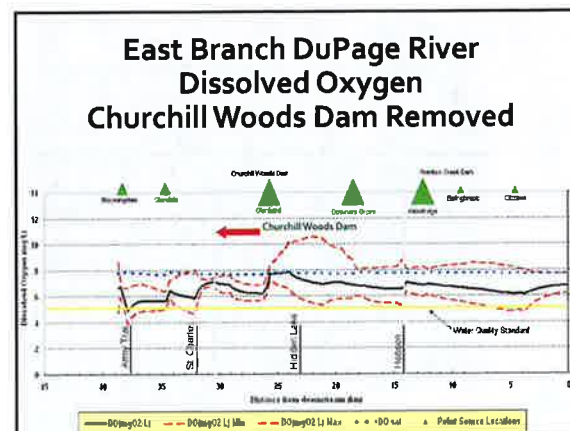
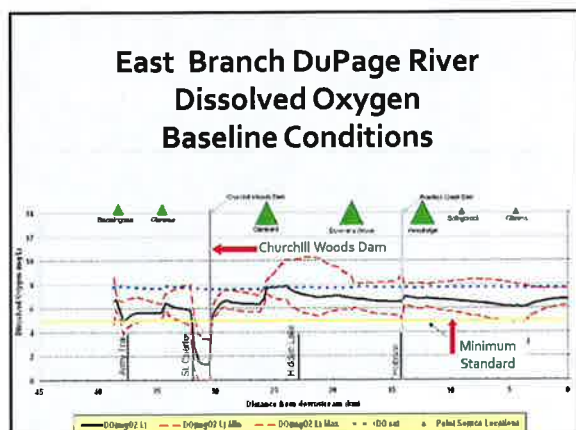
Six Major Categories of Macrohabitat

1. Substrate – types, origin, quality, embeddedness
2. Instream Cover – types and quantity
3. Channel Quality – sinuosity, development, stability
4. Riparian – width, quality, bank stability, quality
5. Pool/Run/Riffle – depth, current types, embeddedness, morphology
6. Gradient – local gradient (fall per unit distance)

Source: The Qualitative Habitat Evaluation Index (Rankin 1989)

Continuous Dissolved Oxygen Monitoring


DO Salt Creek Subfield Road 2004



Statistically Demonstrated Stressor Indicators

Environmental

Parameter	mIBI	fIBI
• Riparian Score	5	Continuous
• Riffle Score	4	3
• Channel Score	Continuous	10
• Substrate Score	9	Continuous
• Pool Score	7	7
• Chloride	143 mg/l	112 mg/l
• TKN	Continuous	1.0 mg/l
• BOD	Continuous	Continuous
• NH ₃ N	Continuous	0.15 mg/l

 DuPage River Salt Creek Workgroup

Control the salt, save the fish!



 DuPage River Salt Creek Workgroup

Anti-icing (liquids applications)



"Anti-icing is the application of a de-icer to the roadway before a frost or snowfall to prevent melted snow and ice from forming a bond with the road surface."

 DuPage River Salt Creek Workgroup

Pre-treated vs. untreated road


Photo provided by the Village of Hanover Park



 DuPage River Salt Creek Workgroup

Funding for Recommended Actions

- Limited grant funding for this type of work in the past and available grant funding has been decreasing significantly at both the federal and state levels
- Recently, member agencies, such as DuPage County Stormwater Management and the Forest Preserve District of DuPage County, have provided funding for numerous dam removal projects on the EBDR and WBDR
- Can we develop a sustaining funding source?

 DuPage River Salt Creek Workgroup

How these actions "fit" into the current regulatory system

- DRSCW proposed a local funding plan to be incorporated into NPDES permits of wastewater treatment plants which allows local investment in stream restoration projects in lieu of wastewater facility improvements over an eight year period.
- Proposed plan could provide \$26M of local funding for these projects over that period.

 DuPage River Salt Creek Workgroup

Expectations

- It took nearly 200 years to arrive at this point; we will not fix these streams quickly or cheaply.
- The goal is to improve our streams so that they are fishable and swimmable. Is that a realistic expectation for an urban stream?



DuPage River Salt Creek Workgroup

Resource Allocation

- Existing regulatory system is no longer producing results and seriously misdirects resources.
- We can't afford everything all at once.
- Problems in our streams require new approaches, most importantly the use of adaptive management, which recognizes there is not one clear path forward.
- The DRSCW represents a commitment by DuPage County, FPDDC, local wastewater treatment agencies and municipalities to work together to provide adaptive management for our local streams.



DuPage River Salt Creek Workgroup

Behavior Changes

- Stream restoration will take decades and requires a very long-term perspective.
- This restoration will require changes in how we view everything that impacts our watersheds, from land use decisions, to the products and materials that we put into the watershed, to how we make our roads safe in the winter and to how we manage our lawns and gardens.



DuPage River Salt Creek Workgroup

Questions?

Larry Cox
Downers Grove Sanitary District Senior Advisor
DRSCW Executive Board Member

larry@dupage.org

For more information about the DRSCW contact
Stephen McCracken

www.du.org/natureconservation/information.org



DuPage River Salt Creek Workgroup

Watershed Planning & Management

Sarah Hunn, P.E., Chief Engineer
DuPage County Stormwater Management



Stormwater Plan (1989)

- Objectives in DuPage County's Stormwater Management Plan:
 - Reducing the existing potential for stormwater damage to public health, safety, life and property;
 - Controlling future increases in stormwater damage;
 - Protecting and enhancing the quality, quantity and availability of water resources;
 - Preserving and restoring existing aquatic and riparian environments;
 - Controlling sediment and erosion near drainage ways, developments and construction sites; and
 - Promoting equitable, acceptable and legal measures for stormwater management.

Stormwater Management Department

- Program Components
 - Watershed Planning
 - Water Quality
 - Floodplain Mapping
 - Regulatory
 - Flood Facility Operation & Maintenance

Watershed Management

- Regional Programs
 - Watershed Planning
 - Identifies flood control and water quality projects on a watershed basis not constrained by municipal boundaries
 - Helps County and municipalities to secure federal and state grants
 - County has secured ~\$48.6 million in grants for stormwater projects since 1996
 - Water Quality
 - NPDES Permit Compliance
 - Conducting several measures of the NPDES permit on a regional level saves taxpayers an estimated \$4.5 million
 - Water Quality Improvement Grant Program
 - Provides 25% of cost of regional water quality projects
 - Has awarded 52 projects since In 2003
 - Water Quality Projects
 - Secured over \$12.5 million grant-funding (State or Federal Grants) for projects in past 10 years

Watershed Management

- Regional Programs
 - Regional Project Criteria
 - Definition: Meaning the source and solution to of the stormwater issue involves multiple jurisdictions
 - Utilize stakeholder groups to develop comprehensive plans
 - Forest Preserve District of DuPage County
 - Park District(s)
 - Municipalities
 - Other relevant agencies
 - Property owners/major land owners/residents
 - Non-profit groups

Plans, Projects & Partnerships

- DuPage County Stormwater Management has facilitated many successful projects
 - Last 5 years
 - Brewster Creek Flood Mitigation Project
 - Awards
 - ASCE Project of the Year (under \$5 Million)
 - ACEC- Illinois Engineering Excellence
 - West Branch River Restoration
 - Awards
 - Chicago Wilderness-Excellence in Ecological Restoration
 - APWA-Suburban Chapter
 - West Branch Habitat Restoration (NOAA Projects)
 - West Branch Wetland Mitigation
 - Approved Watershed Plan
 - Partnership with Forest Preserve District & Local Agency

Brewster Creek



West Branch River Restoration



West Branch Habitat Restoration



West Branch Wetland Mitigation



Churchill Woods Dam Removal & River Restoration



Springbrook Prairie Wetland Mitigation



Watershed Plans (before 2014)

Complete

- *Whimsyway Brook*
- *Downer Creek*
- *Lower Salt Creek*
- *Wilmer Creek*
- *Trick 101*
- *Black Partridge Creek*
- *Washford Creek*
- *Westwood Creek*
- *Klean Creek*
- *Seawall Creek*
- *Trick 82*
- *Valley View*
- *Peggy Creek*
- *Shingle Run*
- *Seawall Creek*
- *Lower Salt Creek*
- *West Branch Trick #1*
- *Addicks Creek*
- *Upper Dots Plowmen Lower Trick*
- *River-Chatouneau*
- *Route 58 North*
- *Springbrook*
- *West Branch DuPage River*
- *Seawall Creek*



Incomplete

- West Branch Macintosh
- WB Trk #1
- WB Trk #2
- WB Trk #3
- WB Trk #4
- Spring Branch #1
- Crest Creek
- WB Trk #6
- WB Trk #7
- Winding Creek
- Four Fork
- WB Trk #8
- Spring Branch #2
- Heaton Creek
- Indigo Creek
- Wendover Creek
- Ward's Creek
- Ward's Creek
- Darwin Amphibian Litch
- Sugar Creek
- Oakbrook Trk
- Ironwood Creek
- East Branch Adamstown
- North Adamstown
- Acety Trk
- Acety Trk
- Acety Trk
- EB Trk #1
- Glen Crest
- EB Trk #9
- 32" Silver
- 32" Silver
- Laney Creek
- Sal Creek
- Macintosh Creek
- Preston Creek
- BB Trk #6
- EB Trk #7
- Cas Creek

New Perspective on Watersheds (and the planning process)

Question: How do we take a "watershed" and make an amenity for everyone to enjoy?

- Developing a watershed plan is the first step in the process to create more resilient communities.
- Plans will address issues in the watershed by including:
 - Big Ideas/Infrastructure to Protect
 - Flood Mitigation/Water Quality Projects, etc.
 - Institutional Changes
 - Government, Organizations, Policy, etc.
 - Behavioral Changes
 - Residents, Business Owners, etc.

Watershed Plans (Currently Underway)

Updates:

- **Spring brook #1**
 - Include New Projects
 - Collect Stakeholder Input
 - Update Water Quality Needs
 - Address EITF Council Members
 - Identify
- **Windfall Creek**
 - Include New Projects
 - Continue Monitoring
 - Collect Stakeholder Input
 - Identify Open Spec Opportunities
 - Update Water Quality Needs
- **Sugar Creek**
 - Include New Project
 - Collect Stakeholder Input
 - Monthly Project Opportunities
 - Update Water Quality Needs

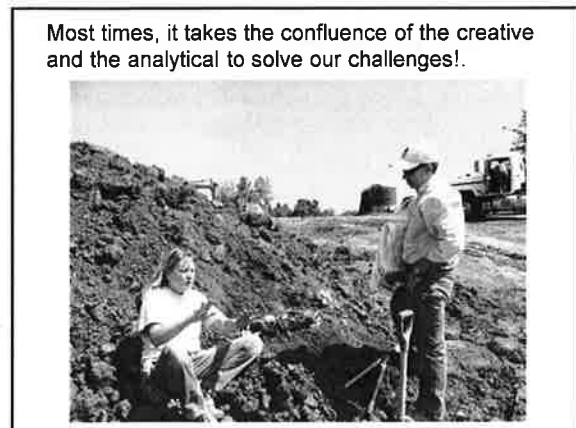
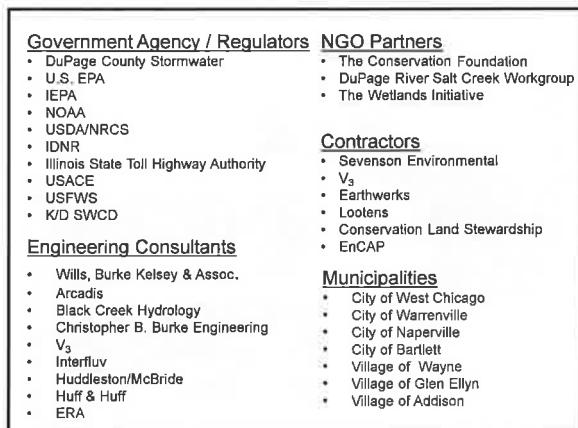
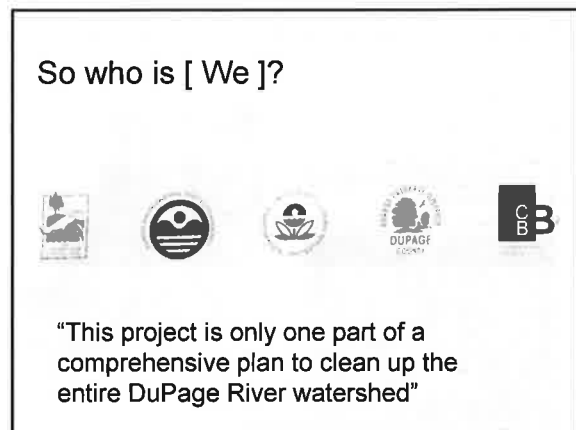
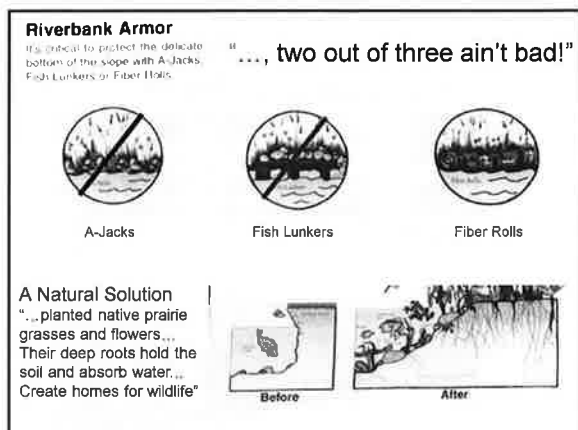
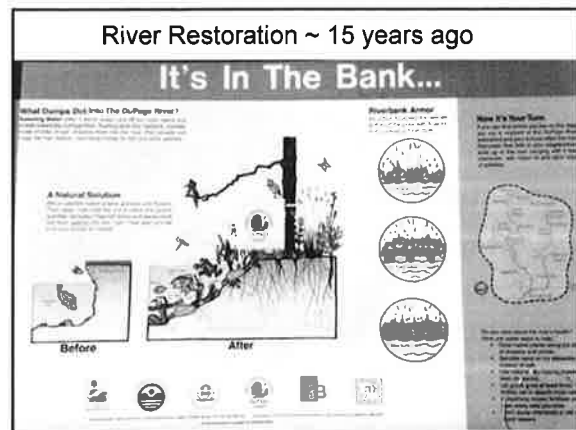
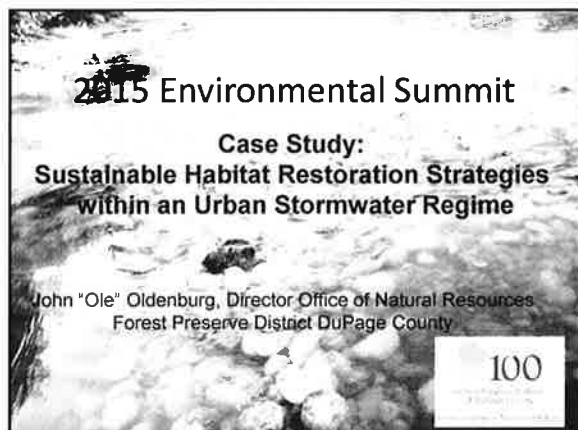


Comprehensive Plan:

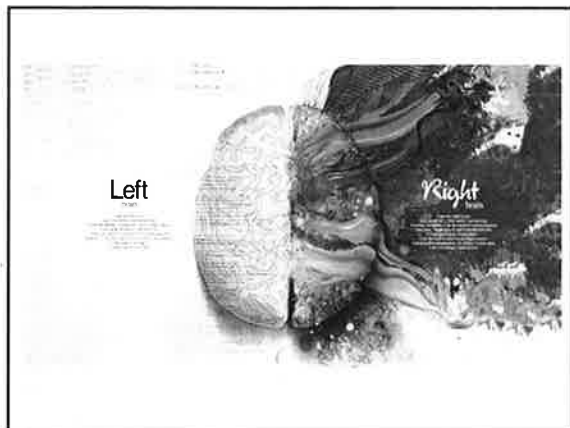
- East Branch DuPage River
 - Improve New Projects
 - Collect Stakeholder Input
 - Stakeholder Survey
 - Survey
 - Stakeholder Meeting/Workshop
 - Update Address Water Quality Needs
 - Duplication of Benefits
 - North
 - Accessability
 - Environment
 - Safety
 - etc.

Contact

Sarah Hunn, P.E., Chief Engineer
DuPage County Stormwater Management
630.407.6676
Sarah.hunn@dupageco.org

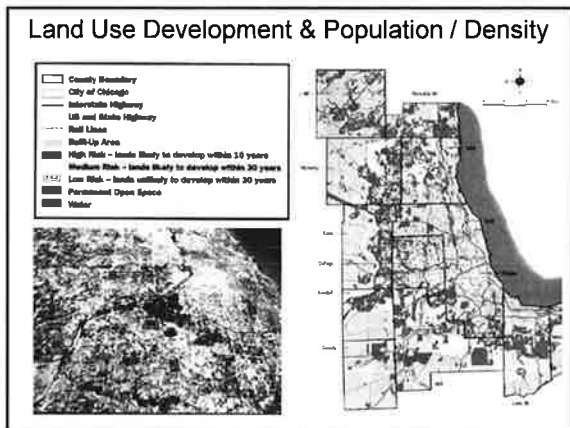


Most times, it takes the confluence of the creative and the analytical to solve our challenges!.



A Review of Top Challenges Facing Our Urban Streams

...that Result in Physical, Chemical and Biological Impairment.



Loss of wetlands and permeable surfaces



Peak Stormwater Discharge Events



Erosion and Bank Mass Wasting



Contaminants, Chemical, Nutrient
and Sediment Loading



Incising of the Stream Channel



Over-widened, Degraded and Lost Aquatic
Functional Habitat



Disconnected Floodplains



Dams and Structural Barriers to Fish



41 fish species known to
occur below Fawell dam



- ❖ 18 fish species found
above the dams
- ❖ 12 + fish species
can't get up the dams



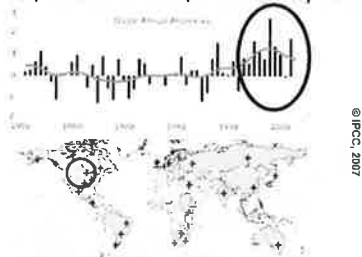
...a Barrier to Mussel Diversity as Well



- ❖ Historically, 16 mussel species were known to occur in
the West Branch watershed.

- ❖ Only 7 live mussel species are documented above the
dams on the West Branch.

**Climate Change:
Heavy Precipitation Trend (% from very wet days)**



Regions where disproportionate changes in heavy and very heavy precipitation during the past decades were documented as either an increase (+) or decrease (-) compared to the change in the annual and/or seasonal precipitation

Courtesy of Virginia Burkett



20th Century



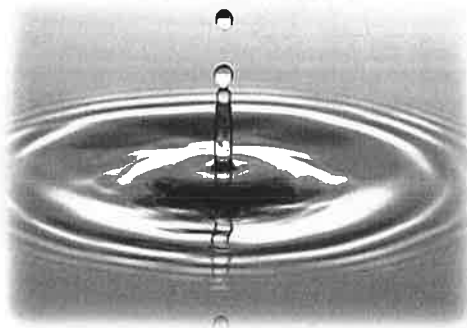
21st Century

Courtesy of Virginia Burkett



Source: (Milly, Dunne, and Vecchia, *Nature*, 2005)

OPPORTUNITY

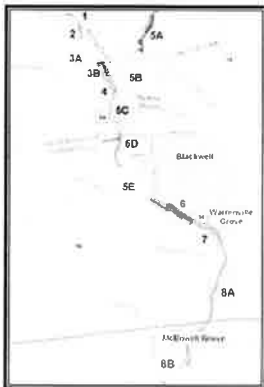


"...well thank goodness for a Superfund clean-up project!"



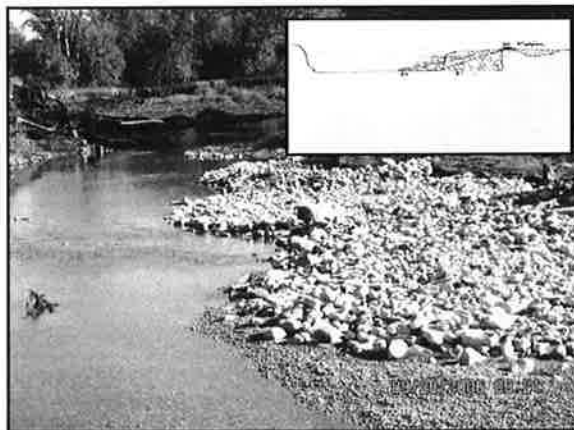
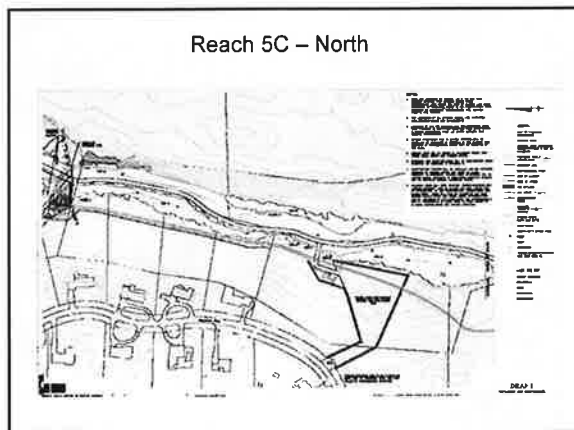
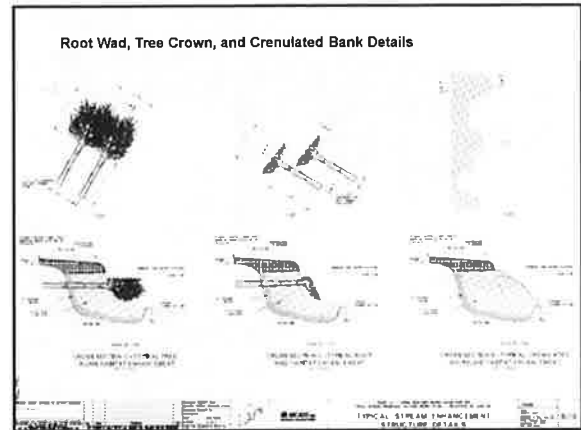
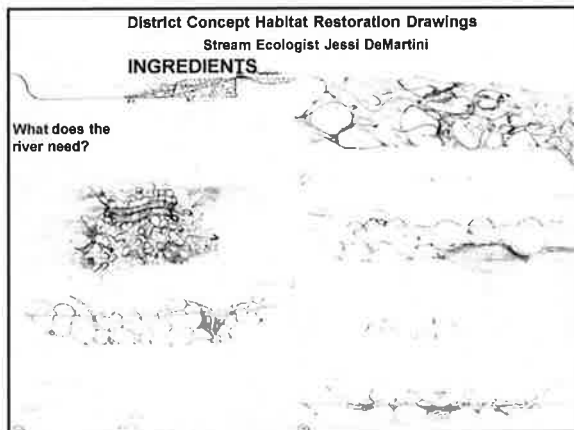
**USEPA CERCLA
Superfund Clean-up**

- ❖ 8.5 miles of :
 - Kress Creek and
 - West Branch DuPage River
- ❖ Remediation of low level radioactive Thorium
- ❖ Restoration / Naturalization of the Stream Bed, Bank and Floodplain
- ❖ Three Forest Preserves
 - Blackwell,
 - Warrenville Grove
 - McDowell Grove

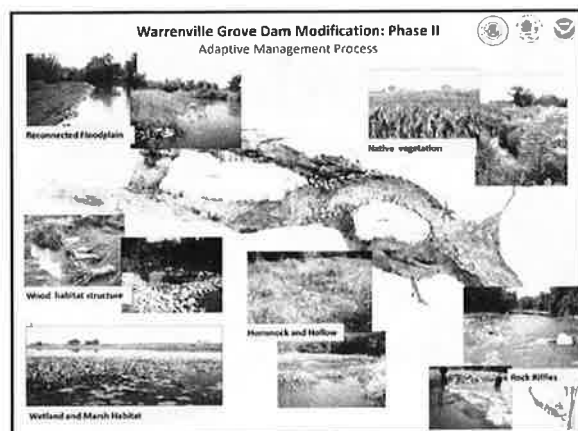
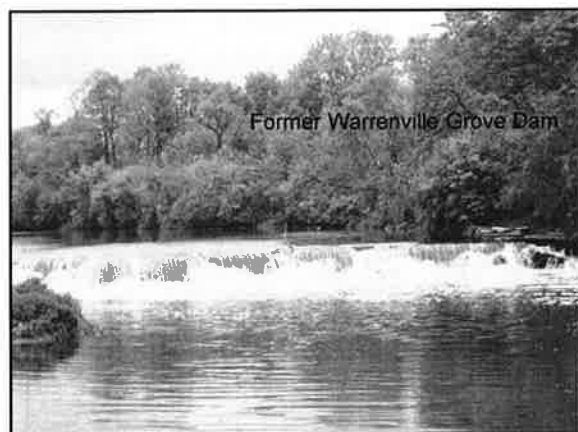
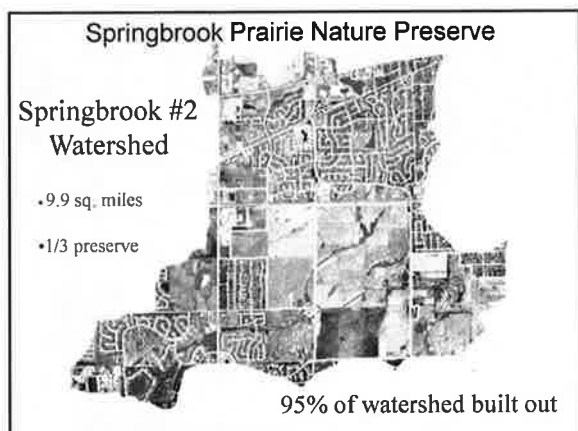


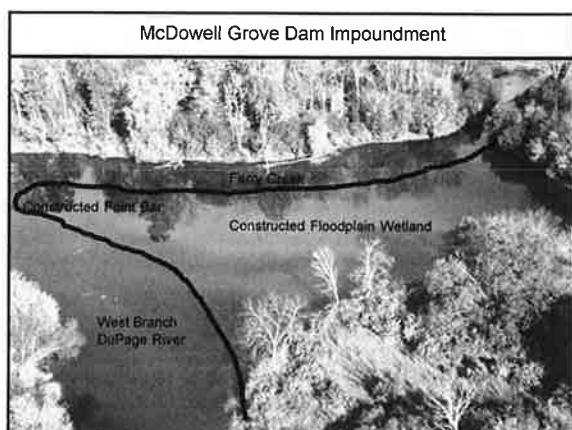
Cut-Depth Verification (Reach 4)













Creek, River and
Wetland Point Bar



IEPA Section 319 Grant Funded:
East Branch DuPage River
Churchill Woods Dam Removal and Wetland Restoration

West Branch
Preserve
Mega Project



IEPA Section 319 Grant Funded:
West Branch Forest Preserve - MEGA Project



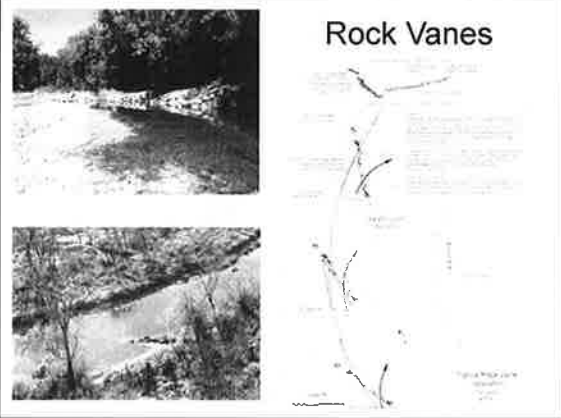
Root Wad Revetment



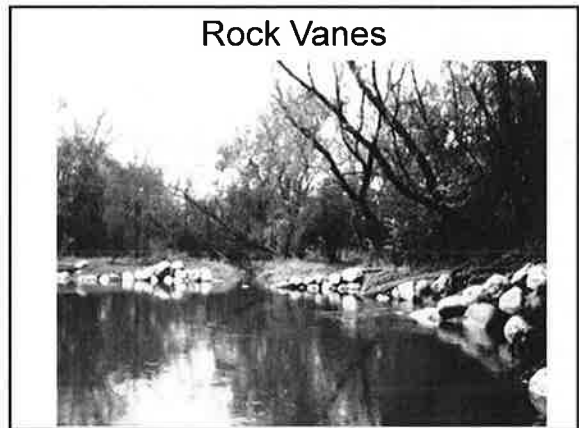
Rock Cross Vane



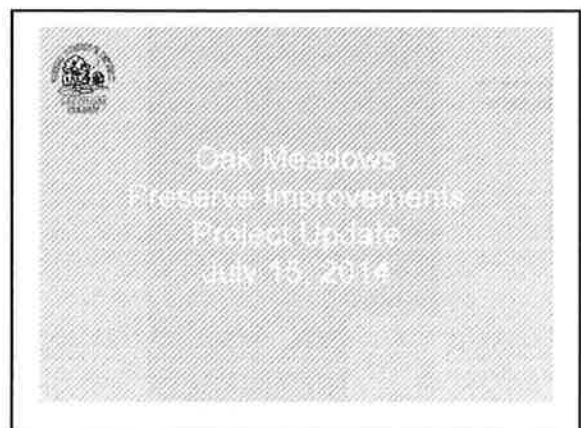
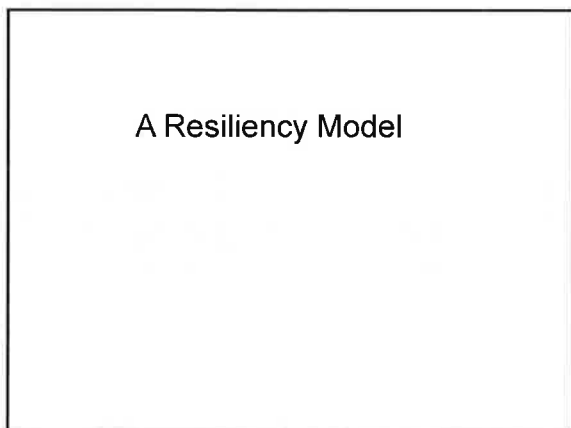
Rock Vanes

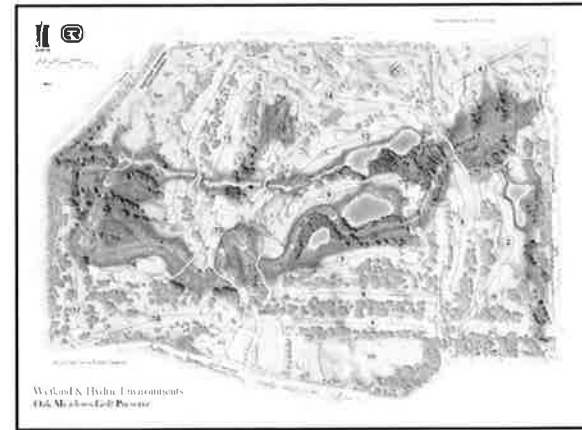
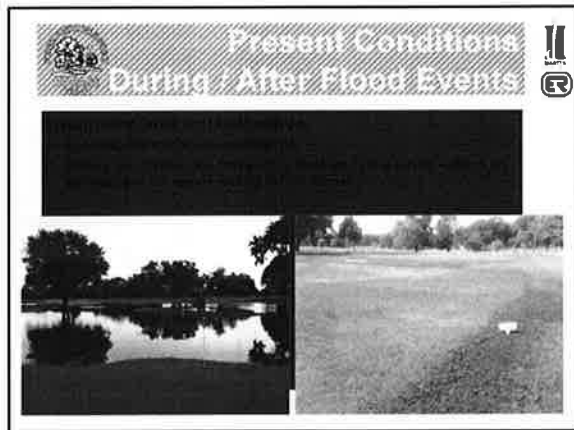
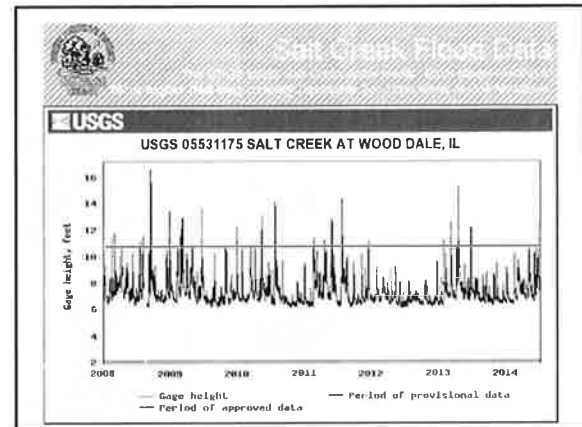


Rock Vanes



A Resiliency Model

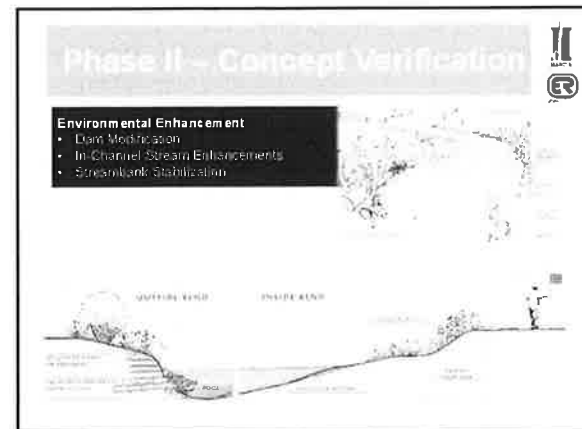




Cost Summary by Category	
Cost Estimate – General Overview :	
Preserve Improvements and Golf Improvements	
Earthwork / Site Preparation	\$ 2,303,750
Preserve Enhancement (stream restoration, habitat, trail, etc.)	\$ 4,440,357
FUTURE Preserve Area Maintenance and Monitoring (5 Years)	\$ 1,331,000
Professional Fees (Site Civil, Golf, Environmental)	\$ 272,663
Other Potential Fees (Structural Architecture, Archeological Survey, ComEd, etc.)	\$ 90,000
Golf Course Construction	\$ 5,464,400
Contingency	\$ 1,336,044
TOTAL	\$ 15,238,214

categories above.

The total above has been updated since the end of Phase II to include future expenses that are not yet under contract. Professional Fees funds already committed to the current phase contract have been deducted.




Restoration

Dam Removal

**Stream Bank
Habitat Continuity**

**Channel Habitat
Complexity**

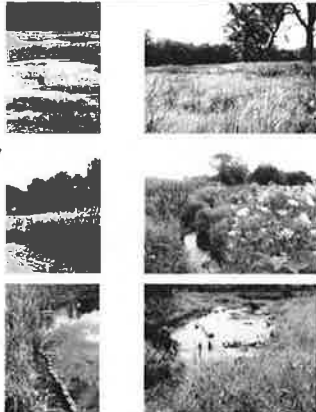


Restoration

**Wetland Creation (24.7 Ac –
Sustained nutrient assimilation,
recharge,
BMP filtering protection, hydrology
connectivity,**

**Native Species
Diversity
(biodiversity and food webs,
aesthetic phenology)**

**Stormwater Best
Management Practices (24 –
Treatment train systems, chemical
& sediment loading protection,
bio-swale & detention)**

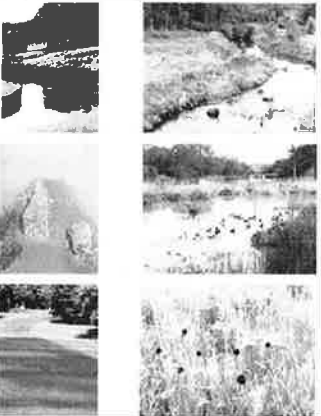


Restoration

**Stream Sinuosity &
Functional Hydraulics
(sustained water and sediment
transport dissolved oxygen,
flooding frequency)**

**Functional Wildlife
Habitat
(Invertebrates, Fish, Birds,
Mammals)**

**Native Wet Prairie
(pollination, soil development,
carbon sink)**

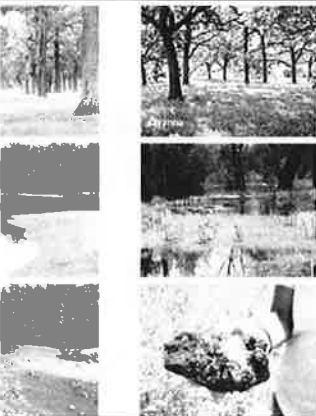


Restoration

**Restored Savanna
(65.3 Ac Globally Rare
Community)**

**Functional Riparian Habitat
And Flood Storage
(44.3 Ac / 42 Ac-Ft Volume)**

**Improved Water Quality
and Aquatic Life
(13.3 Ac)**



Ecosystem Services Valuations


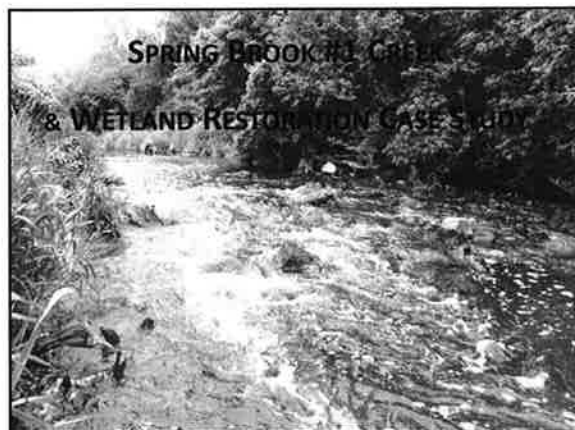
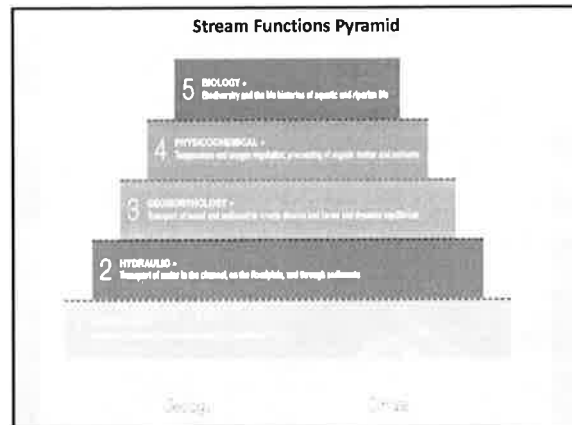
Area Type	Acres	Mean Valuation \$/Ac / Yr	Projected Valuation per Year
Aquatic (River & Ponds)	13.3	\$17,714	\$235,596
Wetlands creation	24.7	\$9,714	\$239,935
Riparian	44.3	\$5,799	\$256,895
Upland savanna & prairie	65.3	\$9,044	\$590,573
Restored Ecosystem Services Delivered			\$1,322,999 / Year

Kocian, M., Traugher, B., Baker, D. 2012. Valuing Nature's Benefits: An Ecological Economic Assessment of Iowa's Middle Cedar Watershed. Earth Economics, Tacoma, WA

A Case Study Project For Stream Mechanics:

Framework to Increase the Stream Functions

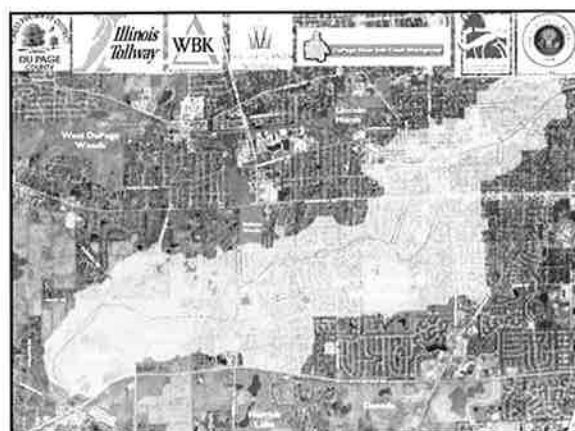
- Set project goals and objectives
- Develop restoration elements
- Develop Function-based Stream Assessment Methods
- Develop Performance Standards based on a functional lift at each stream functions level.

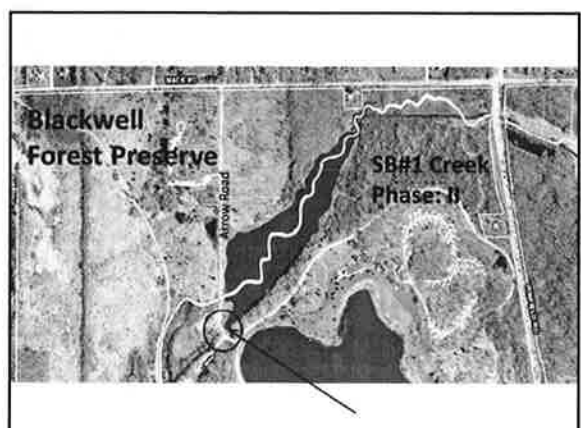
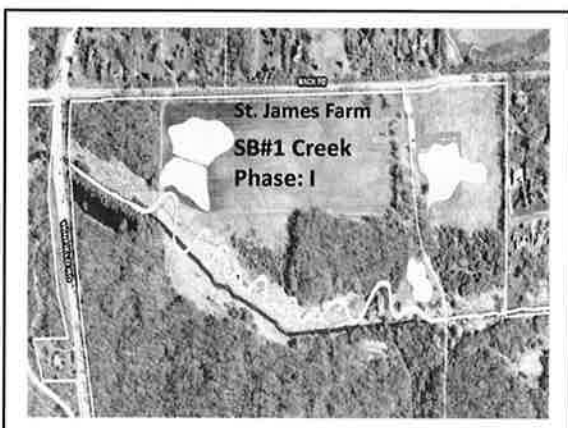
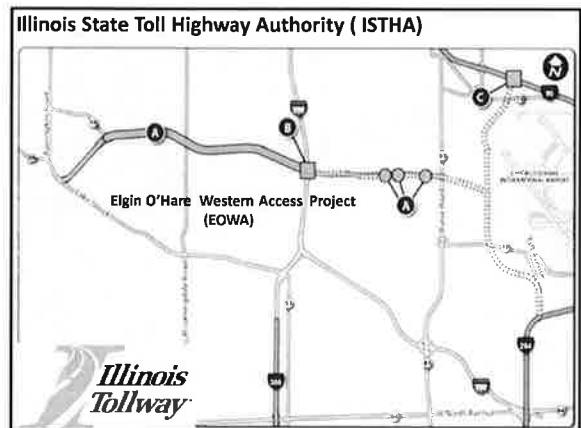
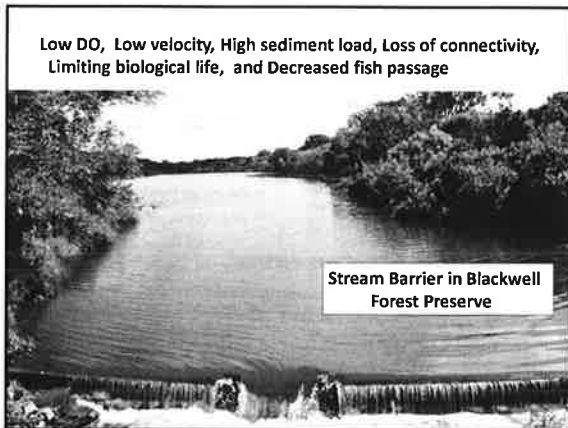
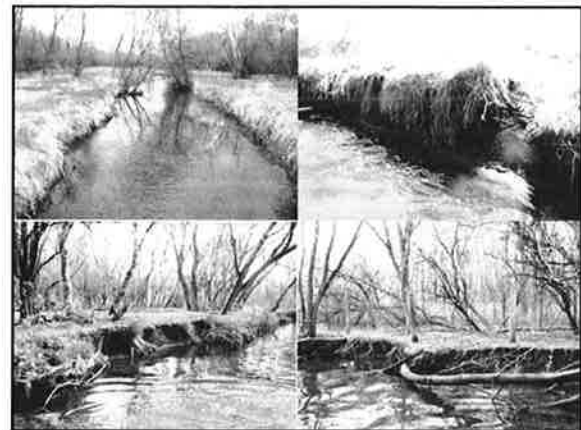
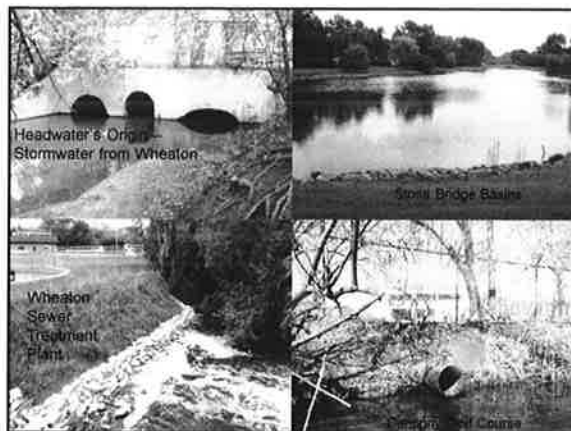



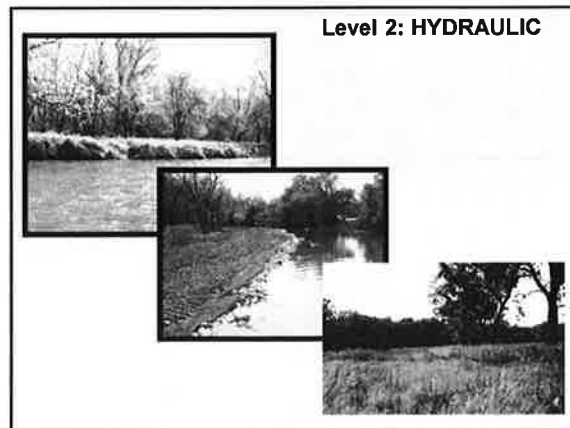
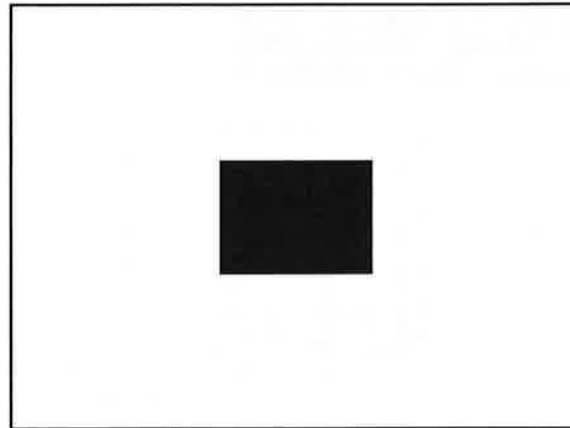
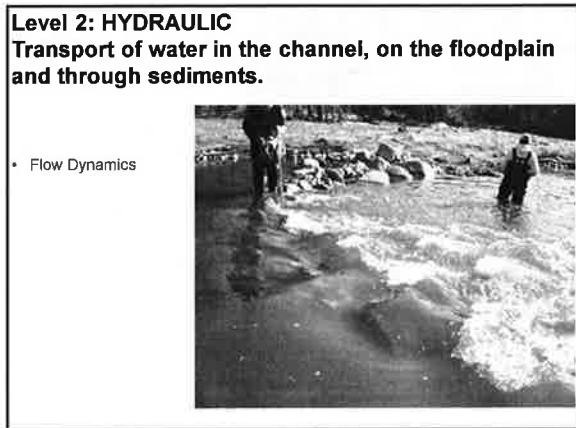
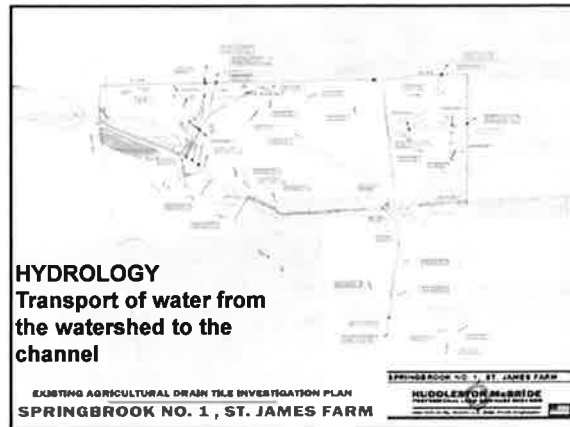
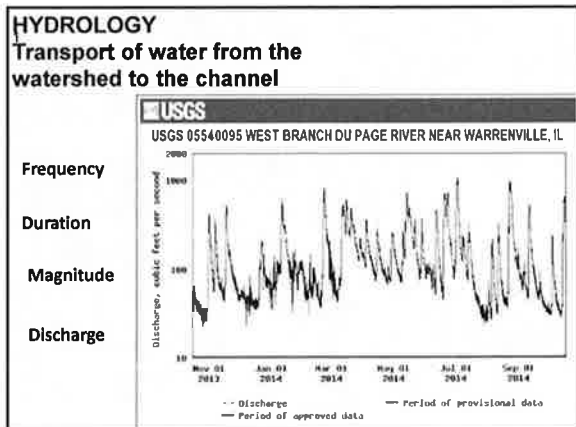
Function-Based Design

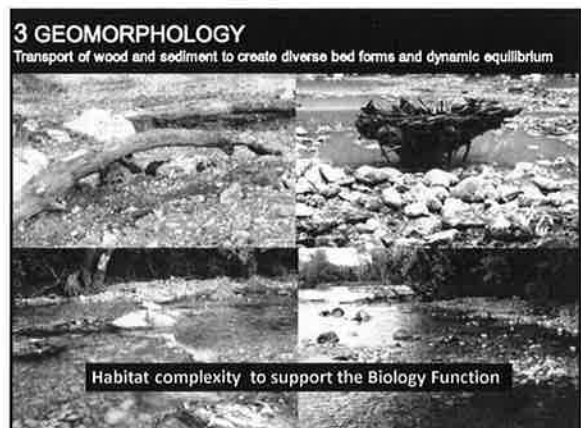
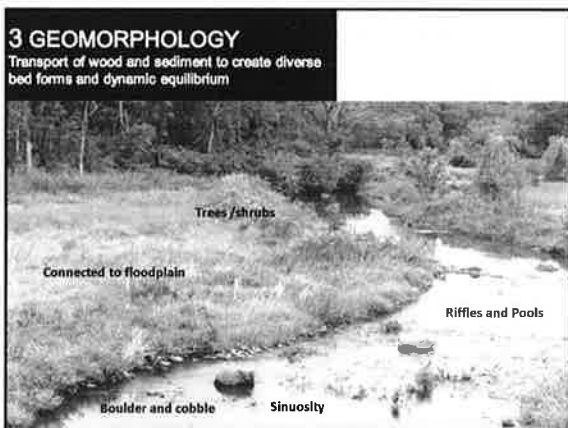
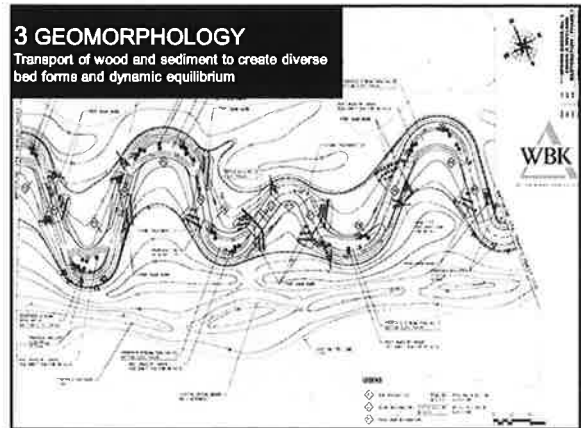
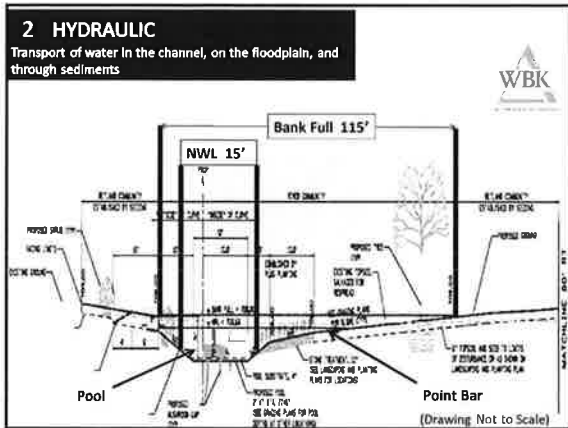
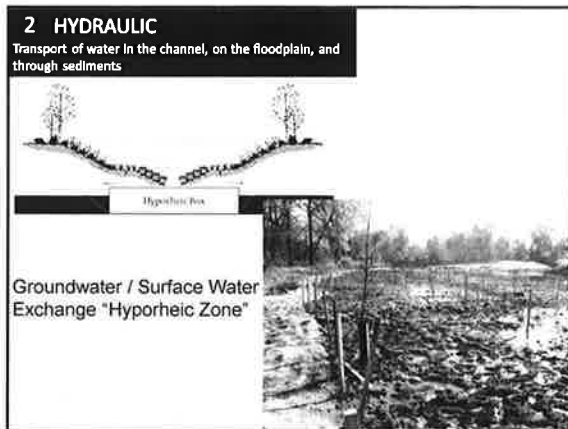
- Landscape scale design
- Create in-stream habitat
- Create riparian habitat
- Natural Elements Used In Restoration

- > Bed- Bank- Floodplain
- > Riffle-pool sequences
- > Vegetative nutrient uptake
- > Vegetation buffer
- > Wetland habitat
- > Vegetative nutrient uptake
- > Boulders / Cobble
- > Unsorted aggregates
- > Wood / Mushroom caps
- > Native vegetation









PHYSICOCHEMICAL
Temperature and oxygen regulation; processing of organic matter and nutrients

Vegetated cut bank
Wood/ root wads
Shade
Prevent erosion

Vegetated point bar
Cobble/ gravel/ sand
Nutrient uptake
Hyporheic zone

PHYSICOCHEMICAL
Temperature and oxygen regulation; processing of organic matter and nutrients

Riffles
Vegetative nutrient uptake and Shade
Pool

5 BIOLOGY
Biodiversity and the life histories of aquatic and riparian life

Macroinvertebrate assemblages

Biological Functional Lift: Create diverse habitat that will support a higher diversity of species.

Warrenville Grove Dam Removal
Macroinvertebrate IBI data

Metric	Standard (Best Value)	2008		2009	
		Value	Score	Value	Score
Streambank Erosion	5.0	5	100%	5	100%
Streambank Stability	10.0	5	50%	5	50%
Streambank Vegetation	10.0	5	50%	5	50%
Streambank Erosion	5.0	5	100%	5	100%
Streambank Stability	10.0	5	50%	5	50%
Streambank Vegetation	10.0	5	50%	5	50%
Streambank Erosion	5.0	5	100%	5	100%
Streambank Stability	10.0	5	50%	5	50%
Streambank Vegetation	10.0	5	50%	5	50%
IBI Score		38.8		38.8	
SD Score		38.8		38.8	

Adrian old dam / new riffle
KC #10.12

Metric	Standard (Best Value)	2008		2009	
		Value	Score	Value	Score
Streambank Erosion	5.0	5	100%	5	100%
Streambank Stability	10.0	5	50%	5	50%
Streambank Vegetation	10.0	5	50%	5	50%
Streambank Erosion	5.0	5	100%	5	100%
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Streambank Stability	10.0	5	50%	5	50%
Streambank Vegetation	10.0	5	50%	5	50%
IBI Score		38.8		38.8	
SD Score		38.8		38.8	

IEPA - Fully supporting aquatic life use

5 BIOLOGY
Biodiversity and the life histories of aquatic and riparian life

Phase I St. James Farm

9 native species
2 invasive (45%)

Phase II and III- Downstream of Barrier

14 native species
2 invasive 16%

Fish assemblage

Biological Functional Lift: Increase fish diversity by 3 native fish species by fish re-locations and stream re-connectivity

5 BIOLOGY
Biodiversity and the life histories of aquatic and riparian life

Phase I- St. James Farm

1 individual

Phase II and III- Downstream of barrier

146 individuals two species

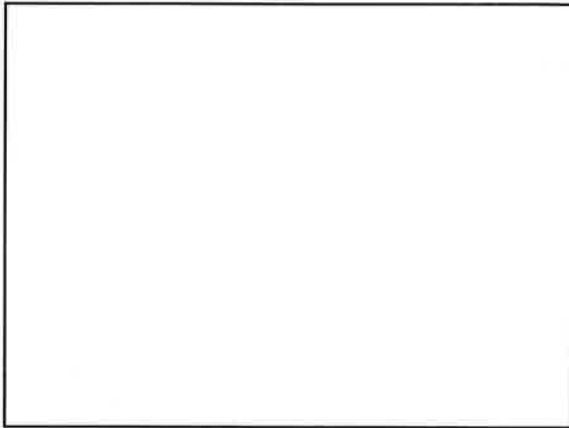
Freshwater mussels assemblage

Biological Functional Lift: Relocate 60 individuals to Phase I

5 BIOLOGY

Biodiversity and the life histories of aquatic and riparian life

Performance Standards of each of the biological communities (inverts, fish, mussels and vegetation) can be achieved by the naturalization of the bed, bank, and floodplain through the support and design of all the foundational Levels.



Do you view this as an opportunity ?



Do something wonderful, people may imitate it. - Albert Schweitzer ...



“Biophilia” = Love of Life

Edward O. Wilson

- Describes an instinctive bond between humans and other life forms...
- Explains our desire for pets, houseplants, trees, birds, animal channel.....
- Helps explain why we live and vacation along lakes, seashore and mountains...
- Understanding this and embracing nature will make us happier and healthier than suppression of this biological **need**.



The Conservation Foundation: The Love of Life, The Love of Nature

Thinking Eco- Friendly

- Water Conservation
- Getting our property functioning naturally
- Wildlife attraction
- Less chemical/ fertilizer use
- Less grass?
- Soil rebuilding – healthy soil
- More Oak trees !



The Conservation Foundation: The Love of Life, The Love of Nature



Over 11,000 sold so far...
Is your community – engaged?



Pave paradise – Put up a parking lot....



Our Showplace ! Next openhouse- March 22



The Conservation Foundation "We Save Land" "We Save Rivers"

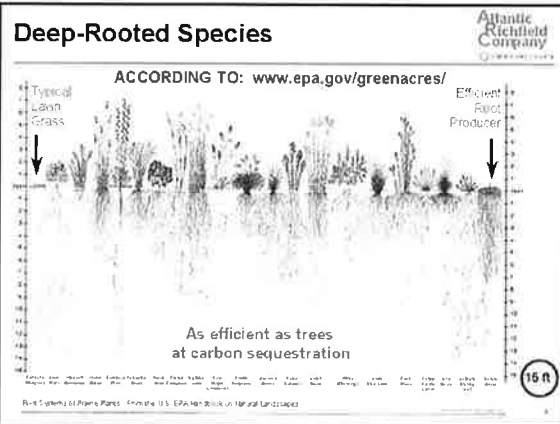
Illinois

- 36 million acres total
- 95 % privately owned !
- That's 19 of every 20 acres in private ownership!
- We work with homeowners
- Park Districts, Businesses
- Any property can be eco-friendly !

The Conservation Foundation "We Save Land" "We Save Rivers"

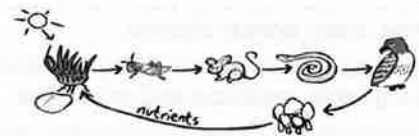


Deep-Rooted Species



The plants are the MAGIC !

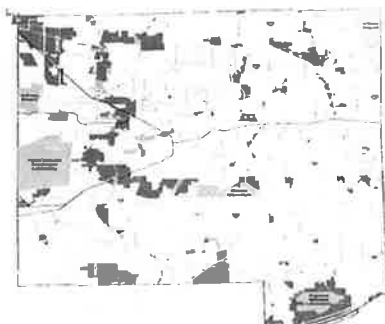
- The energy that flows through our ecosystems is obtained from the sun.



ONLY plants can convert sun to usable energy...

The Conservation Foundation "We Save Land" "We Save Rivers"

DuPage Co. 80/20



Connections are the key!



Residential focus
– Over 1000 served



Hard earned !



Changing the attitude about
native....

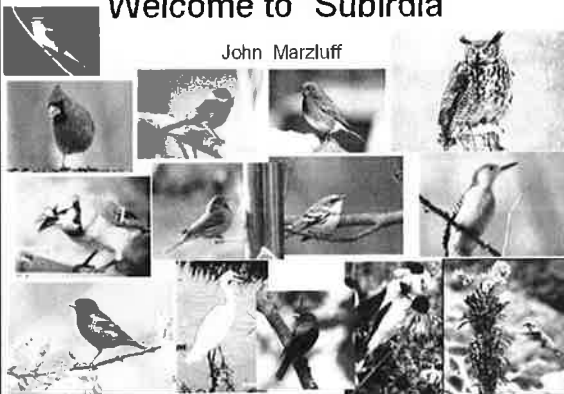


Four Lakes, Lisle



Welcome to "Subirdia"

John Marzluff





Covers all other properties



Wheaton Bible Church



C@Work

- Morton Arboretum
- Navistar Corp.
- Cantigny
- Shedd Aquarium
- 4 sites w Naperville Park Dist
- Naperville Post Office (above)
- Good Sam and Copley Hospitals
- DuPage County 421 Building
- Lewis University



Next up:

- Brookfield Zoo
- Naper Settlement
- Sherman Hospital – Elgin
- Field Museum
- Cosley Zoo – Wheaton
- Nicor

Trend setting !



Conservation in Community



What issue do you face?

- 1) Drainage issues, water levels...
- 2) Geese and invasive plants thrive
- 3) Erosion (slopes should be 5/1 or 8/1)
- 4) Trees and plantings fail
- 5) Turf hard to maintain/ mow (costly)
- 6) Pond choked with weeds
- 7) Flooding and Odor
- 8) Unsightly look – not functioning system



Cost saving, habitat, water improvements and beauty too!



The Dollars and Sense?

- Americans spend 40 Billion dollars yearly on grass care - 20 Million Acres!
- **Largest crop – covering USA**
- Lawnmowers account for over 5% of the total air pollution.
- Watering of lawns account for 30% of the total water use.

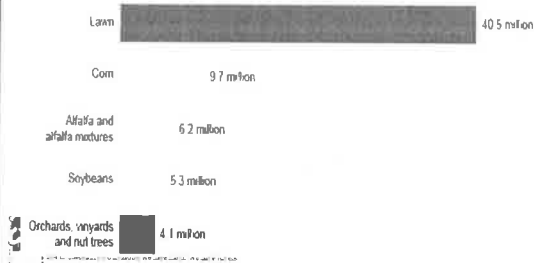


LAWN is the largest crop in 39 States!..... (non- productive crop)



Did you ever stop to look at the beauty of the grass?

Acres of irrigated land



Turf Grass Alternative

- Partnership with:
 - Cardno
 - Pizzo Companies
 - Applied Ecological Service (AES)
- Replace traditional turf grass with a less costly, short, pretty, sustainable surface that absorbs water and creates habitat for pollinators and other creatures...**
- The Conservation Foundation "We Save Land, We Save Rivers"

Introducing The Conservation Foundation's Pollinator Meadow Concept



Native plants are **Working!**

- Filtering and absorbing water
- Breaking up clay soil allowing percolation
- Feeding wildlife
- Sustainable long lived
- Cost saving over grass
- Improving soil



Solving Homeowner Association Problems.....

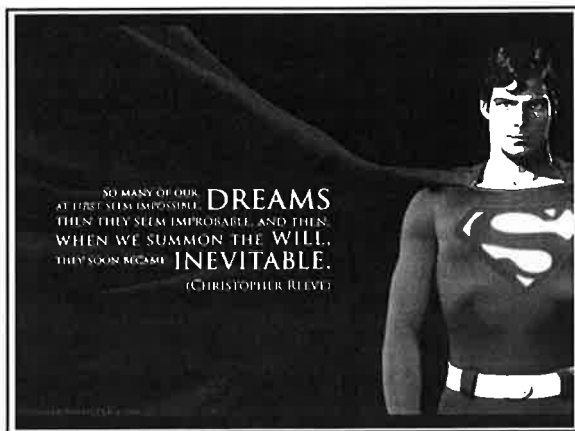
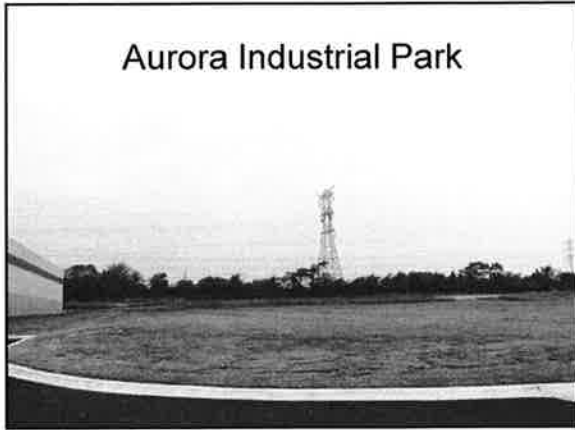




Professional Management of
our natural areas is essential !

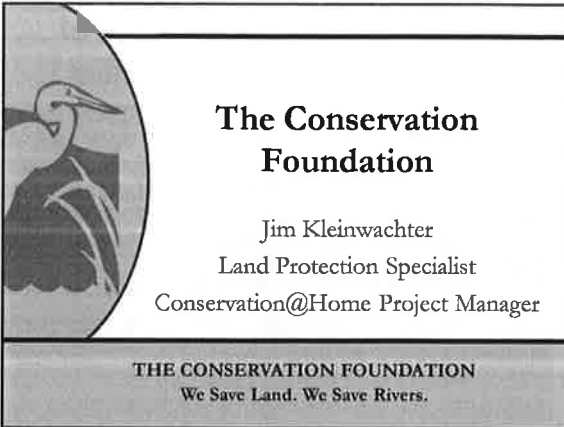


Aurora Industrial Park



As Partners we can do more!





THE CONSERVATION FOUNDATION

Stormwater Education & Outreach Programs

Tara Neff, Water Resource Assistant
The Conservation Foundation

THE CONSERVATION FOUNDATION

Partnering with DuPage County Stormwater Management for the past 12 years!



THE CONSERVATION FOUNDATION

Become a water resource do-gooder!

- Do it because you think water is important.
- Do it because you like fish and bugs.
- Do it because you like water recreation.
- Do it because you like beautiful landscapes.
- Do it to connect to your community.
- Do it because you value good quality of life.
- Do it because it's just plain FUN!

THE CONSERVATION FOUNDATION

DuPage River Sweep

- Yes! Your DuPage County school, church, business, service group and association are all eligible to participate.
- Last year 700 volunteers swept 60 miles of the East and West Branch DuPage Rivers clean of **9.28 TONS** of litter!



THE CONSERVATION FOUNDATION

24th Annual DuPage River Sweep



- Join us **May 16, 2015** for a day of good, clean fun!
- Call for opportunities to participate in other river clean up events outside DuPage County.

THE CONSERVATION FOUNDATION

But wait! There's more...

- The DuPage River Sweep offers additional opportunities for you to get involved!
- Consider participating in restoration activities. Last year we restored 2.5 acres of open space.



Community Liaison
Al Zubenko, Hitchcock Woods F.P.



Boy Scout Troop 80 in
Blackwell F.P.

THE CONSERVATION FOUNDATION

Adopt-A-Stream

- DuPage County Stormwater Management initiated this program 1995.
- Commit to two years of two river clean ups per year (the Sweep counts!) on a half-mile stretch of your favorite river.



THE CONSERVATION FOUNDATION

Adopt-A-Stream

- Supplies are supplied and signs are awarded upon successful completion.
- Have a fear of commitments? You can join a clean up event singly.



THE CONSERVATION FOUNDATION

But wait! There's more...

- Consider getting in touch with your inner scientist and check out a water quality testing kit.
- The kit provides supplies to monitor water column chemistry for:
 - pH
 - Temperature
 - Free or Total Chlorine
 - Dissolved Oxygen
 - Nitrate
 - Orthophosphate
 - Ammonia Nitrogen



THE CONSERVATION FOUNDATION

Storm Drain Stenciling

- Storm sewer systems transport stormwater away from our homes, streets and businesses quickly and efficiently.
- This stormwater does not go to a sewage treatment facility before it is discharged into nearby ponds and streams.



THE CONSERVATION FOUNDATION

Storm Drain Stenciling

Help our aquatic buddies by raising awareness of where the water goes.

**DUMP NO WASTE
DRAINS TO RIVER**



Dan Emrie
Eagle Scout

Elmwood Elementary
Environmental Club

THE CONSERVATION FOUNDATION

But wait! There's more...

- Getting out and about in your community to do good stormwater deeds includes opportunities to share what you've learned.
- Consider hanging a smelly fish on your neighbors' doors.



THE CONSERVATION FOUNDATION

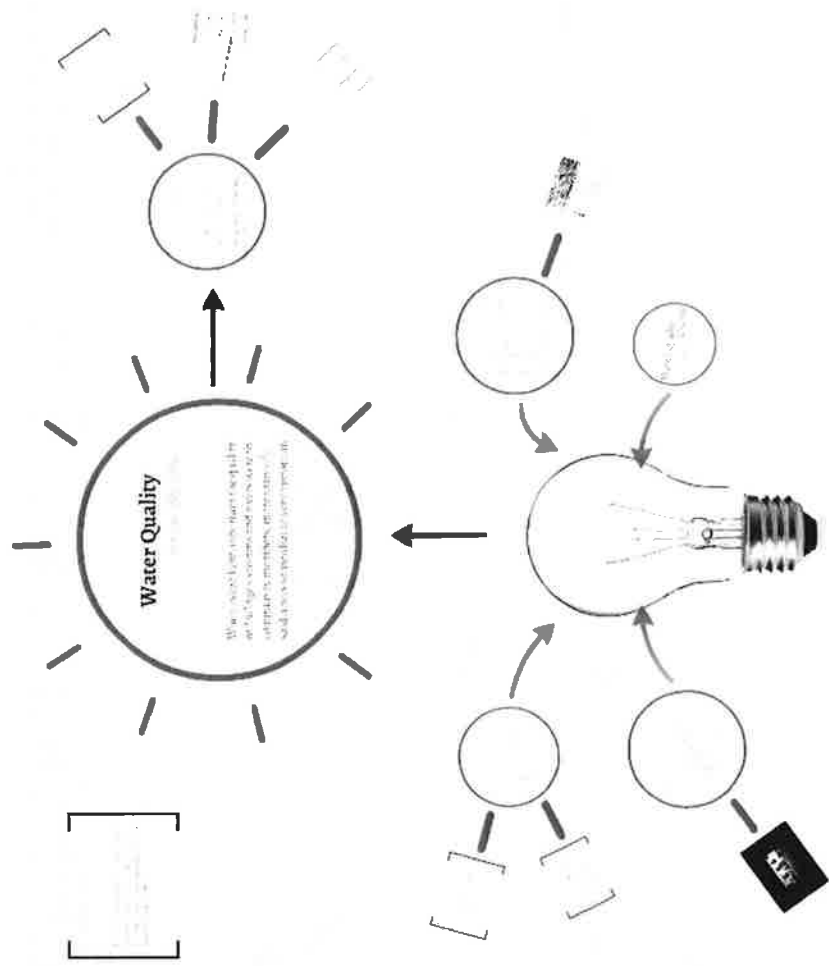
**Girl Scouts of
Northern Illinois
McDole Brownie Troop 1106**



THE CONSERVATION FOUNDATION

Ready to get started?

For more information contact:
Sue George
Watershed Assistant
sgeorge@theconservationfoundation.org
630.428.4500 X122



Turn Outreach Into Action



Water Quality

It's the "Big Idea."



Water Quality

It's the "Big Idea."

When asked how important the quality of DuPage's streams and rivers were to community members, more than 97% said it was somewhat to very important.

So, what's the problem?

For starters, when asked where water from storm sewers goes, only an approximate 45% of the people surveyed said it went into local streams and rivers.





Watch your language.

You may understand the dangers of "non-point source pollution" or the benefits of "best management practices," but, chances are, your neighbor doesn't.

Please select all terms for which you have a firm understanding.

- Watershed
- Best Management Practices (BMPs)
- Green Infrastructure
- Native Plants
- Stormwater Runoff
- Non-point Source Pollution



However...

Overall, 25% of the
Respondents
Answered "None
of the Above."



What motivates people?

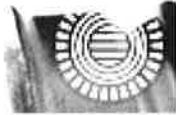
Water Quality Health

Money

Ordinances

Time

Social Norms



Where do we reach people?

- Mailers (i.e. inserts, newsletters)
- E-newsletters
- Facebook
- Local Events
- Television
- Newspaper
- Handouts at Government Offices



Timeline About Photos Likes Members

PEOPLE

>

Love Blue, Live Green.

169

DuPage County's draft East Branch DuPage River Watershed Resiliency Plan is online now. Learn more at a meeting on 2/23 http://dupageilc.org/stormwater_management_news/2015/4/23/

Like Comment Retweet



Sean McCarthy

Invite



Kate Ryan Lavel

Invite



Meghan Ybes

Invite

See All Friends

ABOUT

>

campaign to protect and enhance the quality of DuPage County waterways

<http://www.dupagemo.org/about>

Suggest Edit

Love Blue, Live Green.

2015 National Disaster Resilience Competition Questionnaire Survey

DuPage County is entering a competition for funding to help communities recover from prior disasters and improve their ability to withstand and recover more quickly from future disasters, hazards and shocks. Reducing current and future risk is essential to the long-term vitality, economic well-being

DuPage County's survey on flooding and quality of life is open through the end of the week. Complete it today!



What tools should we use?

- Public Service Announcements
- Web and Social Media Pages
- Newsletters (paper and email)
- Advertisements
- Brochures
- Promotional Giveaways



You Tube



Prezi



Turn Outreach Into Action



Water Quality

It's the "Big Idea."

When asked how important the quality



*What other resources
are out there?*

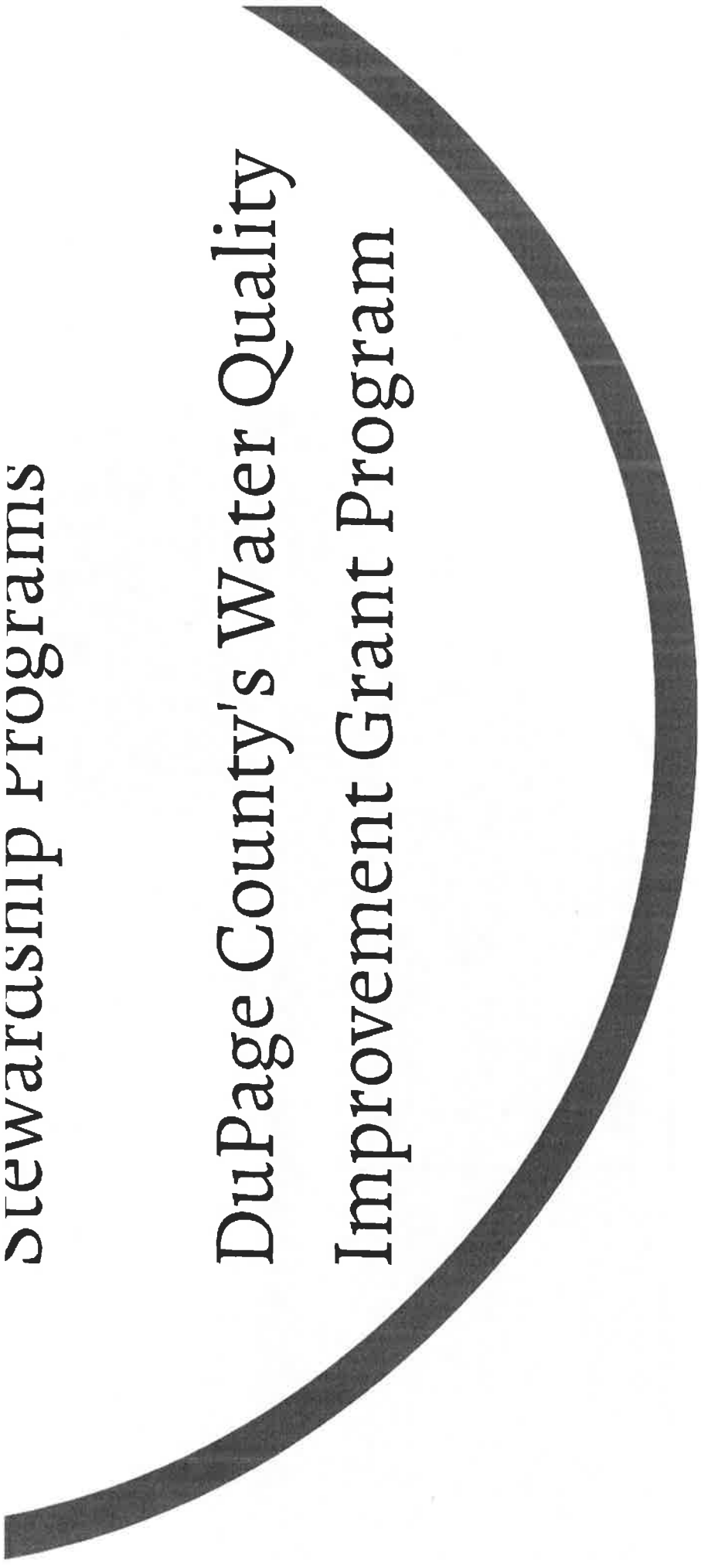
Conservation@Home/Work

Stewardship Programs

DuPage County's Water Quality
Improvement Grant Program

Stewardship Programs

DuPage County's Water Quality
Improvement Grant Program



Permeable Pavers

Bioswales

Detention Basin

Green Roof

Hubble Middle School



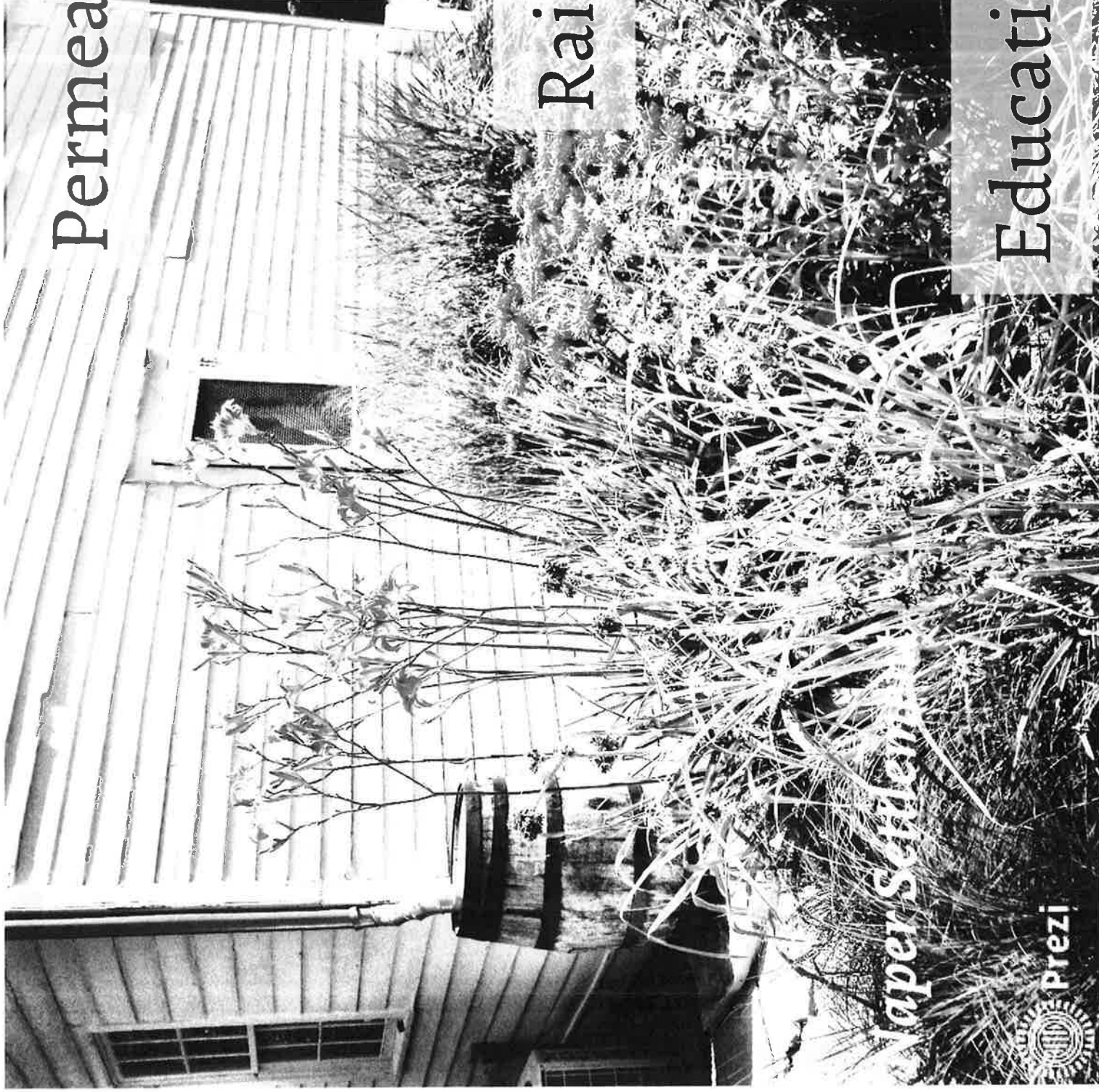
Permeable Pavers

Bioswale

Rain Gardens

Cistern

Educational Signs



Want more information?

Visit www.dupageco.org/swm

or

Mary Mitros

Outreach Coordinator

DuPage County Stormwater Management

mary.mitros@dupageco.org

630.407.6706



The Conservation Foundation

2015 Municipal and Group Rain Barrel Program

Has your group or municipality caught the rain barrel wave? Rain barrels are a low-tech way to save rainwater, reduce flooding, and make your members or residents feel that they are making a difference. And now you can buy them in bulk from The Conservation Foundation **Starting as low as \$60.00 each!**

We've simplified our program! Here's how it works:

- ♦ **We do the work – you get the benefits**
 - ~Web-based system manages your customer orders and payments
 - ~Helps fulfill your NPDES Phase II requirements
 - ~Reduces pressure on your stormwater systems
 - ~Helps keep our rivers and streams clean
 - ~Reduces the amount of drinking water used for landscaping
- ♦ **Exclusive marketing, education package**
 - ~One community-based educational seminar
 - ~Supply of rain barrel/rain garden brochures for your use
 - ~Community listing on TCF's website
 - ~Program participation only \$250 per year*
- ♦ **Residents can have their rain barrels delivered and installed**
 - ~Standard delivery is still available at no cost
(One group delivery to one location specified by municipality)
 - ~Residential delivery—additional \$5
 - ~Residential installation (with delivery) –additional \$30
- ♦ **High quality barrels starting at a new LOW price - 60.00**
 - ~55+ gallon size, food-grade plastic containers
 - ~Available in black, blue, gray and terra cotta
 - ~Screw-off lid with screen to keep mosquitoes and debris out
 - ~Overflow port and port to connect another barrel included
 - ~Valve and hose attachment makes using the water easy
 - Accessories also available
 - ~One-year warranty

We're here to assist with everything: marketing, education, and delivery.

Contact Jim Kleinwachter for more details or to set up your program!

**jkleinwachter@theconservationfoundation.org
or 630-428-4500 x 15**

Proud Partner -UpCycle Products



www.theconservationfoundation.org



We save land.

We save rivers.

We save land. We save rivers.



The Conservation Foundation's Pollinator Meadow Mix

A COLORFUL, FUNCTIONAL ALTERNATIVE
TO TURF LANDSCAPES



www.theconservationfoundation.org



TRADITIONAL TURF LANDSCAPE

The Conservation Foundation's Pollinator Meadow Mix is a pollinator-friendly and cost-saving alternative to mowed turf grass. We are partnering with The Pizzo Group, Applied Ecological Services and Cardno to develop and distribute this low profile meadow seed mix. Sites planted in The Conservation Foundation's Pollinator Meadow Mix will look beautiful and provide many functional benefits, such as rainwater infiltration and erosion control. The Pollinator Meadow Mix will help your organization or company save money while doing something good for nature!

Pollinator Meadow Mix -vs- Traditional Turf

**LANDSCAPE
MAINTENANCE
COST**

**1 YEAR
SAVE
\$7,000
PER ACRE***

**10 YEARS
SAVE
\$85,000
PER ACRE***

*Cost savings are based on typical maintenance costs required for Turf (e.g., mowing, watering, fertilizing, controlling grubs & pests, aerating) and those required for Pollinator Meadow Mix (e.g., seed, installation, herbicide, mowing, burn management). A detailed analysis is provided on the back page of this brochure.



The Conservat
Pollinator M
A COLORFUL, FUNCTIONAL ALT



THE CONSERVATION FOUNDATION'S POLLINATOR MEADOW MIX LANDSCAPE

Primary Benefits

- > Reduces maintenance cost compared to turf grass
- > Reduces mowing, water and fossil fuel consumption
- > Increases water absorption
- > Increases habitat for wildlife and pollinator insects
- > Increases carbon sequestration
- > Enhances curb and aesthetic appeal for enriched employee and customer experience

Key Features

- > Low-profile (12-30 inches)
- > Installation guidelines distributed to all seed purchasers
- > Professional installation and maintenance highly encouraged and available through one of our three partners or other qualified personnel
- > Maintenance requirements stipulated for first three years
- > Property eligible for Conservation@Work certification!

Locations & Applications

- Portions of Parks and Forest Preserves
- Corporate and Industrial Campuses
- Roads and Highway Departments
- Churches and Schools
- Grass Bottom Detention Areas
- Homeowners' Association Common Areas
- Any place with lots of mowed grass!

*This product is designed for areas of at least one acre.



The Conservation Foundation's Conservation@Work program advises and recognizes business and organizational property owners who practice environmental stewardship in the management of their land. Learn more at www.theconservationfoundation.org



Conservation Foundation's

Meadow Mix

ALTERNATIVE TO TURF LANDSCAPES



We save land. We save rivers.



TURF TO POLLINATOR MEADOW MIX COST/SAVINGS

Chart And Data By Rob Daggett, Sustainability Finance Specialist

Per Acre

TURF (0.5% annual cost increases)	YR. 1	2	3	4	5	6	7	8	9	10	11
Mowing (\$185/Acre * 26 weeks)	\$0	\$4,810	\$4,834	\$4,858	\$4,882	\$4,906	\$4,931	\$4,956	\$4,980	\$5,005	\$5,030
Watering (1 gallon / sq. ft * \$0.004*26 weeks)	\$0	\$4,530	\$4,552	\$4,575	\$4,598	\$4,621	\$4,644	\$4,667	\$4,691	\$4,714	\$4,738
Fertilizer/Herbicide	\$0	\$450	\$452	\$454	\$456	\$459	\$461	\$463	\$465	\$468	\$470
Grub Control	\$0	\$275	\$276	\$277	\$279	\$280	\$281	\$283	\$284	\$286	\$287
Turf Aeration	\$0	\$350	\$351	\$353	\$355	\$357	\$358	\$360	\$362	\$364	\$366
Miscellaneous Repairs and Tasks	\$0	\$1,000	\$1,005	\$1,010	\$1,015	\$1,020	\$1,025	\$1,030	\$1,035	\$1,040	\$1,045
Annual Turf Grass Expense	\$0	\$11,415	\$11,472	\$11,529	\$11,587	\$11,645	\$11,703	\$11,762	\$11,820	\$11,879	\$11,939
TOTAL Accrued Turf Expenses to Date	\$0	\$11,415	\$22,887	\$34,417	\$46,004	\$57,649	\$69,353	\$81,115	\$92,936	\$104,816	\$116,755

Meadow Mix (0.5% annual cost increases) Install

Meadow Mix Seed	\$2,800	\$1,407	\$1,414	\$1,421	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Installation (3% annual cost growth)	\$2,950	\$1,519	\$1,564	\$1,611	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Herbicide Treatment (Initial Lawn Kill - 1st App)	\$250	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Herbicide Treatment (Initial Lawn Kill - 2nd App)	\$250	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Herbicide Treatment (Annual Weed Control)	\$0	\$350	\$351	\$353	\$355	\$357	\$358	\$360	\$362	\$364	\$366
Mowing (\$185/Acre * Once in 2nd yr)	\$0	\$0	\$185	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Burn Management (3% annual cost growth)	\$0	\$0	\$0	\$700	\$0	\$0	\$764	\$0	\$0	\$0	\$860
Miscellaneous Repairs and Tasks	\$0	\$1,000	\$1,005	\$1,010	\$1,015	\$1,020	\$1,025	\$1,030	\$1,035	\$1,040	\$1,045
Annual Native Meadow Mix Expense	\$6,250	\$4,276	\$4,520	\$5,096	\$1,370	\$1,377	\$2,149	\$1,391	\$1,397	\$1,404	\$2,272
TOTAL Accrued Meadow Mix Expenses to Date	\$6,250	\$10,526	\$15,046	\$20,143	\$21,513	\$22,890	\$25,039	\$26,430	\$27,828	\$29,233	\$31,506
Total Yearly Savings	\$(6,250)	\$7,138	\$6,951	\$6,433	\$10,216	\$10,268	\$9,554	\$10,371	\$10,422	\$10,474	\$9,666
Net Accrued Savings	\$(6,250)	\$888	\$7,840	\$14,273	\$24,490	\$34,758	\$44,313	\$54,684	\$65,107	\$75,582	\$85,248

The Conservation Foundation's Pollinator Meadow Mix is being exclusively produced and marketed in partnership with the following three companies:



For additional information please contact:

JIM KLEINWACHTER

The Conservation Foundation
105404 Knoch Knolls Road, Naperville, IL 60565
630-428-4500 Ext. 115 | jkleinwachter@theconservationfoundation.org



www.theconservationfoundation.org



Portions of the proceeds of this product will go to The Conservation Foundation to help preserve and restore natural areas and improve rivers and streams.

Did you know....?

- Coal tar-based sealcoat contains chemicals called PAHs (polycyclic aromatic hydrocarbons) that may harm fish and, under some conditions, pose a risk of cancer to humans.
- Coal tar-based sealcoat is banned in several municipalities in the U.S., including Austin, Texas, and Washington, D.C. The first statewide ban in the U.S. recently occurred in Washington state.
- Dust with elevated levels of PAHs can get tracked into your home and may end up in your carpet.
- You can tell if a product contains coal tar by looking at the materials list. Words like "coal tar," "refined coal tar," "refined tar," "refined coal-tar pitch" or similar terms should appear on the product container.
- Got any leftover sealcoat in your garage or basement? You can dispose of old containers of sealcoat at your town's annual hazardous waste disposal day.



Find more information at:

www.unh.edu/unhsc/
<http://tx.usgs.gov/coning/althingssealcoat.html>



UNIVERSITY OF NEW HAMPSHIRE
N.H. Sea Grant
 Kingman Farm/UNH
 Durham, NH 03824



Thinking
 about
Sealcoating
 your
Driveway?

Get the
Facts!

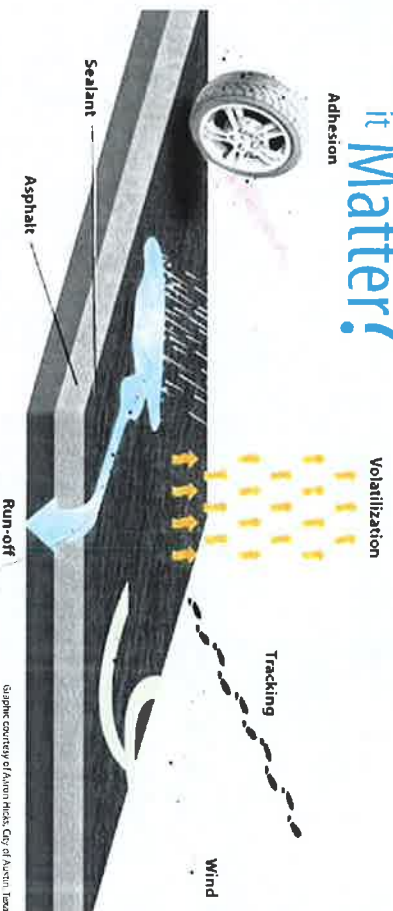


What is Sealcoat?

Sealcoat – also called sealant – is a thin layer of black material applied to pavement surfaces. It may improve the appearance of old asphalt, but it contains chemicals that are harmful to humans and the environment.

There are two common types of sealcoat: coal tar-based and asphalt-based. Both produce a deep black finish on driveways, but coal tar-based sealcoat contains much higher levels of chemicals called PAHs (polycyclic aromatic hydrocarbons) that harm fish and, under some conditions, pose a risk of cancer to humans.

Why does it Matter?



Graphic courtesy of Aaron Hicks, City of Austin, Texas

Manufacturers recommend applying sealcoat every few years to maintain an even coverage. Sealcoat wears off over time from vehicles driving on the surface, snow shoveling and plowing, wind and rain. The sealcoat ends up in lakes, streams and stormwater ponds, where PAHs may damage the health of aquatic species and could potentially enter the ecosystem.

Flakes of sealcoat may also be blown away by wind onto surrounding property and lawns. The air near sealcoated driveways contains PAHs that could be inhaled during activities on or near the driveway. Dust from sealcoated driveways can also get tracked into buildings, increasing PAH concentrations in the home.

Get the facts: A study at the University of New Hampshire Stormwater Center found that:

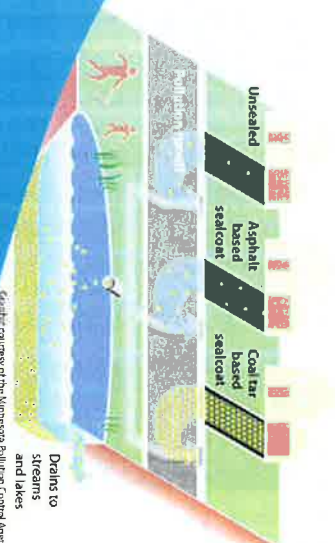
- **Water** running off a parking lot covered with coal tar-based sealcoat had **30 times more PAHs** than water from an unsealed parking lot.
- **Soil** near the parking lot had **highly elevated levels of PAHs**, and those levels remained high for three years after the sealcoat was applied to the lot.
- **Dust** with highly elevated levels of PAHs was **transported up to 20 yards** from the sealcoated surface by tire tracking and wind.

What can you Do?

Be informed: First ask yourself if you really need to use sealcoat. Driveways can be beautiful without the use of sealcoat. If you decide to use sealcoat, study the labels carefully and look for a product that does not have coal tar in the materials list.

Check the weather: If the sealcoat doesn't dry thoroughly it will wear more quickly, which wastes money and releases more PAHs. The Pavement Coatings Technology Council recommends that the outside temperature be at least 60 degrees F, with no rain forecasted for at least the next 48 hours after application.

Ask for asphalt: If you are hiring a contractor, discuss different types of sealcoat with him or her. Most sealcoat contractors can apply either type, and some businesses have already decided to apply only asphalt-based sealcoat.



Graphic courtesy of the Minnesota Pollution Control Agency



Photo credit: iStockphoto.com



SAVE *the* DATE

SAT. **MAY 16th**, 2015
9:00 AM - NOON

DuPage County



2015

CHANGE
Flows

Find out how you can make a positive change
by helping to clean-up and restore
our local waterways.

For details go to

www.theconservationfoundation.org/sweep

Sponsored by:



Boy Scout Troop 80 manages restoration.



Addison students at work.

Clean-up success in Lombard.

