



Chicago Metropolitan
Agency for Planning

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Grant Number: 995200080

NORRIS WOODS CREEK STABILIZATION AND WATER QUALITY IMPROVEMENT PROJECT

Norris Woods Creek

A tributary of the Fox River located in the Lower Fox River minor watershed as designated by the IEPA. The watershed covers 53 acres.

A small, flashy ephemeral stream that receives predominantly urban runoff. A spring located in an old pond along with tiled drainage from an adjacent golf course provide the base flow.

Runoff was generating storm flows that exceeded the channel capacity causing the stream to adjust laterally and vertically. The stream bed was scoured up to four feet in depth and numerous headcuts and bank stresses indicated substantial erosion.

Norris Woods Creek

The purpose of the project was to protect the Fox River from non-point source pollutants that resulted from the channel erosion as well as golf course and urban runoff.

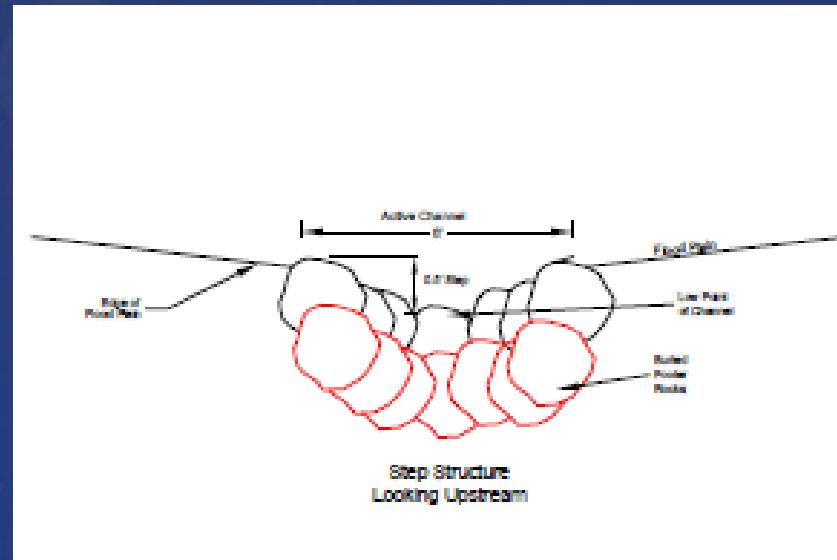
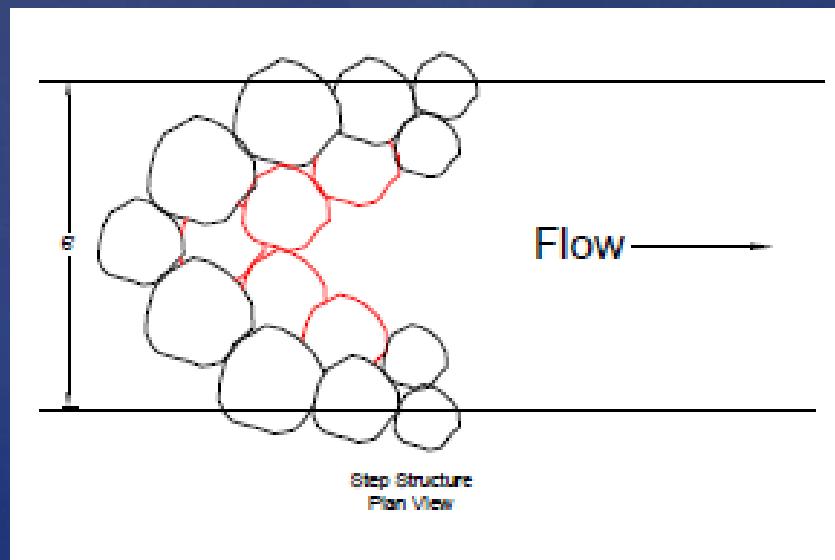
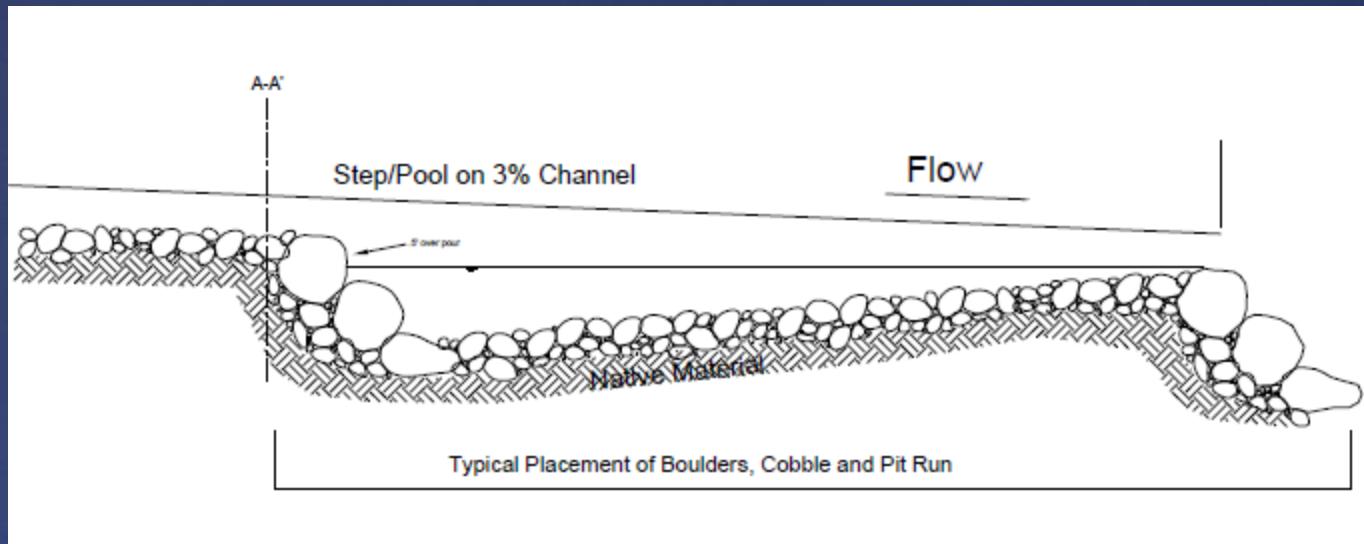
Natural materials were selected so that the end product would blend with the nature preserve surroundings.

Step/pool structures were installed to stabilize the creek bed as well as its banks allowing sediments and associated pollutants to settle out and slow the flow of water moving through the system.

All areas of disturbance were stabilized through seeding with locally collected native species and a cover crop, plant plugs, trees and shrubs.

Where further stability was needed natural fiber erosion control matting was used.

Typical Step/Pool Stabilization Structures



PLANT SPECIES LIST FOR REVEGETATION

Trees and Shrubs

Carpinus caroliniana (Blue Beech)	20	pieces
Cornus alternifolia (Pagoda Dogwood)	30	pieces
Corylus americana (Hazelnut)	35	pieces
Ribes missouriense (Wild Gooseberry)	50	pieces
Rosa setigera (Illinois Rose)	25	pieces
Sambucus canadensis (Elderberry)	26	pieces
Viburnum acerifolium (Maple-leaved Arrow-wood)	25	pieces
Viburnum lentago (Nannyberry)	30	pieces
Viburnum prunifolium (Black Haw)	25	pieces
TOTAL	266	pieces

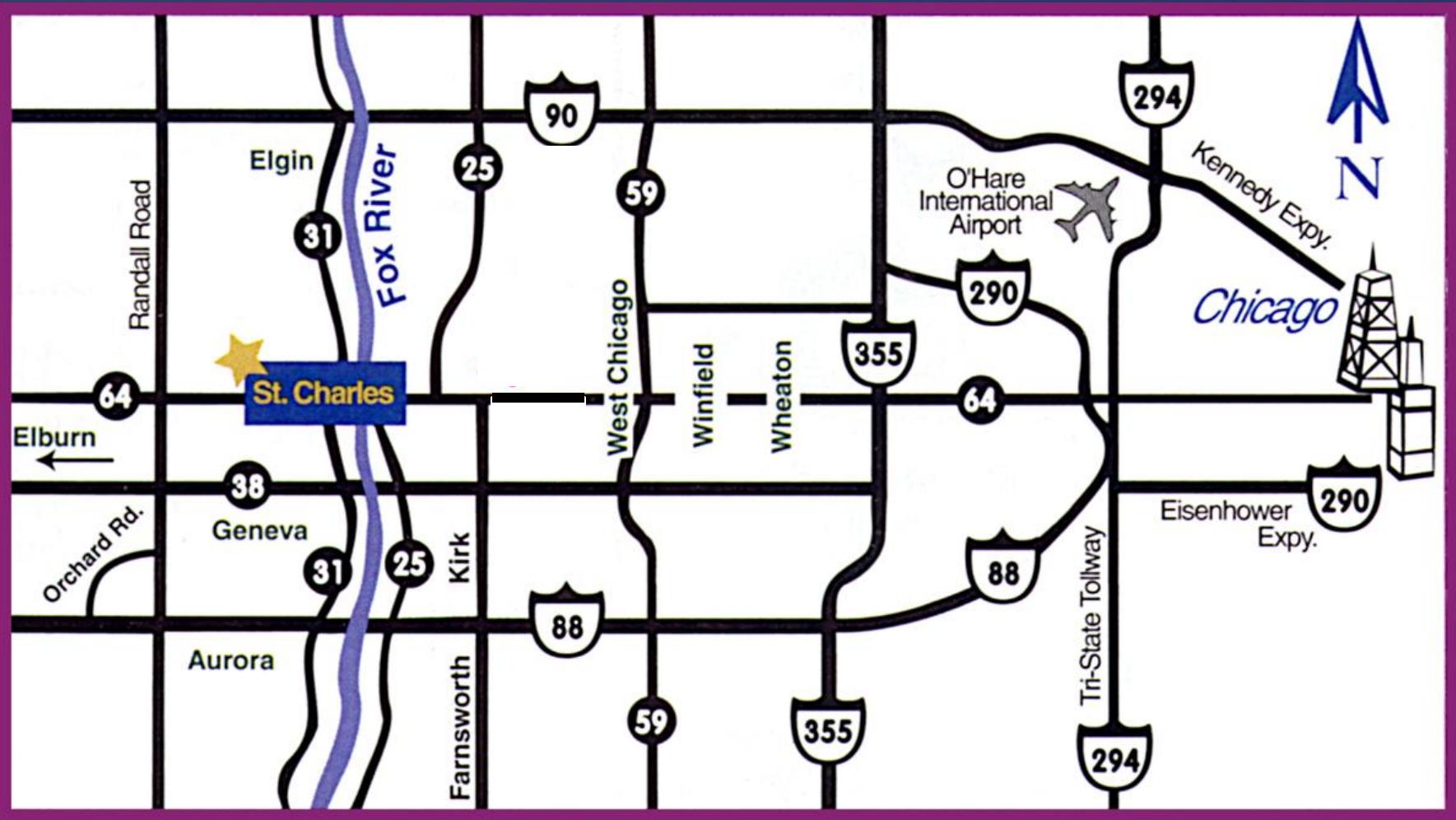
Plugs for in-channel and off-channel basins and bank stabilization

Aster shortii (Short's Aster)	8	flats
Carex grayii	18	flats
Carex muskingumensis	11	flats
Carex rosea	12	flats
Carex squarrosa	18	flats
Carex tribuloides	11	flats
Lobelia siphilitica (Great Blue Lobelia)	21	flats
Solidago flexicaulis (Zigzag Goldenrod)	8	flats
Solidago ulmifolia (Elm-leaved Goldenrod)	8	flats
TOTAL	115	flats

Norris Woods Seeds 2010-2011					
<i>Actaea pachypoda</i>	White baneberry		<i>Hystrix patula</i>	Bottlebrush grass	
<i>Actinomeris alternifolia</i>	Wingstem		<i>Jeffersonia diphylla</i>	Twinleaf	
<i>Agrimonia gryposepala</i>	Tall agrimony		<i>Lithospermum latifolium</i>	Broad-leaved pucooon	
<i>Amphicarpa bracteata</i>	Hog peanut		<i>Monarda fistulosa</i>	Wild bergamot	
<i>Anemone virginiana</i>	Tall thimbleweed		<i>Osmorhiza longistylis</i>	Smooth sweet cicely	
<i>Arisaema atrorubens</i>	Jack-in-the-Pulpit		<i>Podophyllum peltatum</i>	May apple	
<i>Aster drummondii</i>	Arrow-leaved aster		<i>Polygonatum canaliculatum</i>	Solomon's seal	
<i>Aster lateriflorus</i>	Side-flowering aster		<i>Rosa setigera</i>	Illinois rose	
<i>Aster shortii</i>	Short's aster		<i>Sanguinaria canadensis</i>	Bloodroot	
<i>Blephilia ciliata</i>	Downy wood mint		<i>Sanicula gregaria</i>	Clustered black snakeroot	
<i>Campanula americana</i>	Tall bellflower		<i>Sanicula marilandica</i>	Common black snakeroot	
<i>Caulophyllum thalictroides</i>	Blue cohosh		<i>Scrophularia lanceolata</i>	Early figwort	
<i>Cryptotaenia canadensis</i>	Honewort		<i>Smilacina racemosa</i>	Feathery false solomon's seal	
<i>Elymus riparis</i>	Riverbank wild rye		<i>Smilax lasioneura</i>	Carrion flower	
<i>Elymus villosus</i>	Silky wild rye		<i>Solidago altissima</i>	Tall goldenrod	
<i>Elymus virginicus</i>	Virginia wild rye		<i>Solidago speciosa</i>	Showy goldenrod	
<i>Eupatorium purpureum</i>	Joe Pye weed		<i>Solidago ulmifolia</i>	Elm-leaved goldenrod	
<i>Eupatorium rugosum</i>	White snakeroot		<i>Teucrium canadense</i>	Germander	
<i>Helianthus divaricatus</i>	Woodland sunflower		<i>Tovaria virginiana</i>	Woodland knotweed	
<i>Heracleum maximum</i>	Cow parsnip		<i>Viburnum acerifolium</i>	Maple-leaved arrow-wood	

NORRIS WOODS CREEK PROJECT MATERIALS AND EQUIPMENT			
Pit run gravel	tons	150	
Cobble and boulder 6" to 24"	tons	915	
Erosion control matting	rolls	4	
Timbers (raw)	piece	120	
Seed	lbs.	26	
Trees and shrubs	piece	266	
Plugs	flats	115	
Erosion control waddles	ft.	700	
Dewatering hoses	ft.	600	
Mid-size excavator with hydraulic thumb			
Track steer Bobcat T250			
Back hoe Case			
Dump S450			
Dewatering pump			

Project Cost Summary			
	Assistance Amount	Recipient Match	Totals
Direct Labor	\$13,355.83	\$48,425.78	\$61,781.61
Volunteer Labor		\$4,201.89	\$4,201.89
Structural Materials	\$50,414.17	\$24,324.50	\$74,738.67
Revegetation Materials	\$8,241.26	\$660.00	\$8,901.26
Equipment	\$11,775.13	\$8,004.65	\$19,779.78
Dewatering Materials	\$355.67		\$355.67
Interpretive Signage	\$4,930.00		\$4,930.00
Fees	\$3,941.65		\$3,941.65
Design and Oversite	\$25,000.00		\$25,000.00
Misc. Materials	\$219.05		\$219.05
Totals	\$118,232.76	\$85,616.82	\$230,849.58





City of St. Charles, Illinois

Two East Main Street, St. Charles, IL 60174-1984
Phone: 630-577-4400 Fax: 630-377-4440 - www.stcharlesil.gov

Norris Woods Creek Restoration Project

DONALD P. DEWITTE Mayor
BRIAN TOWNSEND City Administrator



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Publication Date:
February 25, 2007
Data Source:
Topographic Map, Illinois
Kane County, Illinois
Projection:
Transverse Mercator
Coordinate System:
North American StatePlane East
North American Datum 1983



N
S
E
W

0 100 200 400
Feet

T40N-R8E-S22 of Kane County, Illinois

Watershed Basin Statistics
47% Natural Area
53% Developed
Square Feet: 2,289,252
Acres: 53
Square Miles: 0.08

Work Area Statistics
Square Feet: 84,131
Acres: 1.93

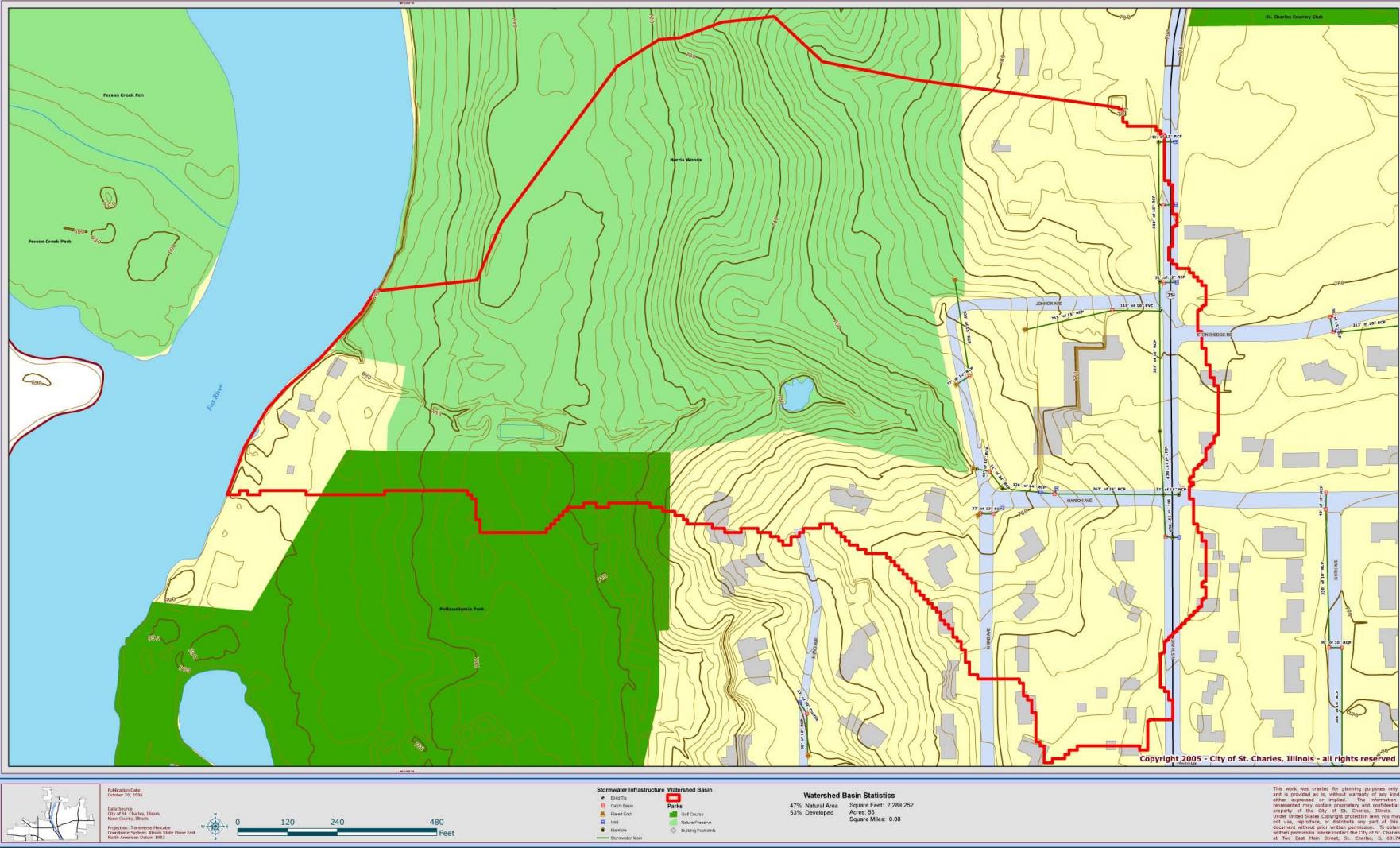
Watershed Basin
Work Area
Basin and Sediment Pond Area



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Norris Woods Swale Restoration Project

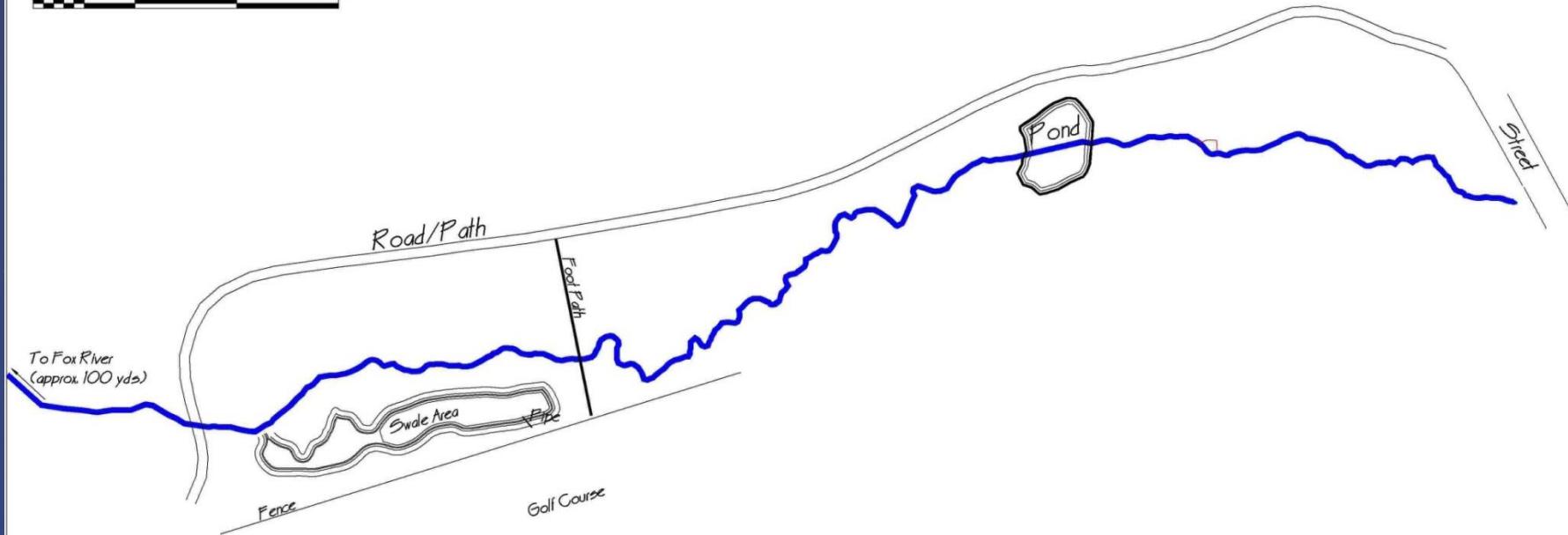
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Scale (ft)

0 50 100 200 300



Norris Woods Creek
St. Charles Park District
March 2007



- Symbols indicate approximate locations of proposed rock steps. Steps will be field-fit during construction.

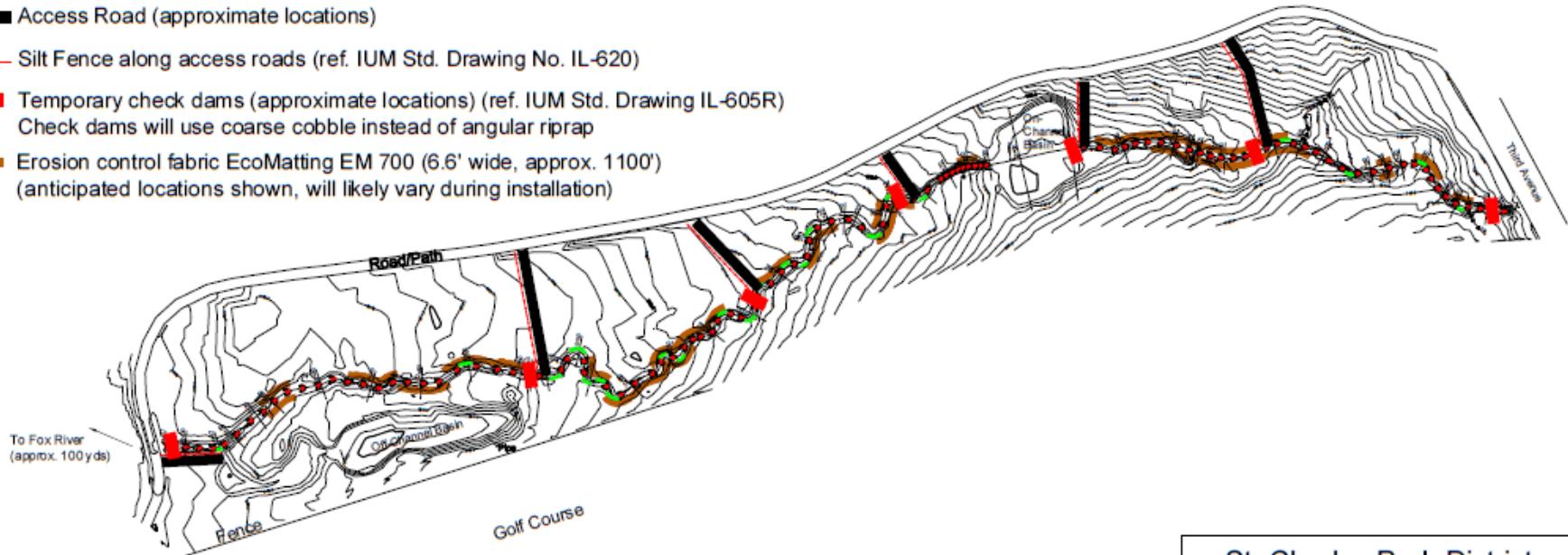
- Symbols indicate areas that may need additional bank protection on outside bends. To be determined during construction.

Access Road (approximate locations)

Silt Fence along access roads (ref. IUM Std. Drawing No. IL-620)

Temporary check dams (approximate locations) (ref. IUM Std. Drawing IL-605R)
Check dams will use coarse cobble instead of angular riprap

Erosion control fabric EcoMatting EM 700 (6.6' wide, approx. 1100')
(anticipated locations shown, will likely vary during installation)



Cross Station	Bed Grade TOB Elevation (ft)	Reach Length (ft)	Vertical Fall (ft)	Channel Segments		Step Spacing (ft)		
				No. of Steps in Reach	Step Width (%)			
Inlet	0	708.8	702.0	4.0%	256	10.1	20	12
	328	697.2	695.4	4.0%	78	3.82	7	11
	358	695.8	693.9	4.0%	170	0.39	1	12
	398	694.2	693.4	4.0%	15	0.81	1	12
	408	694.2	693.4	4.0%	58	2.02	6	12
	448	692.7	693.9	3.67%	48	5.47	3	14
	468	692.7	693.9	3.67%	16	0	0	12
	508	692.7	693.9	0.0%	66	0	0	58
	538	693.0	694.2	-1.0%	38	0.3	0	38
	578	693.2	679.4	18.67%	48	4.8	10	5
	723	694.0	679.4	2.84%	147	4.2	5	17
	903	695.5	670.7	2.84%	121	4.5	9	15
	915	695.8	687.0	3.0%	122	3.7	7	18
	1043	695.0	686.2	2.54%	268	6.8	16	28
	1487	692.1	683.3	3.08%	244	8.8	18	18
Total	1518	694.8	682.0	2.66%	51	1.35	9	18
				101	10.1			

Topography shown was drawn from a topographic survey data obtained in March 2007.
Arbitrary elevation datum.



St. Charles Park District

Norris Woods Creek Stabilization
and
Water Quality Improvement Project

EPA FAA# 3190806

Soil Erosion and Sediment Control Plan



An example of serious bank and bed erosion.



An example of serious channel cutting.



Flooding led to multiple channels head-cutting at this point.



An example of sediment deposition in the in-channel basin.



The off-channel basin filled with debris.



One of three water sources leading into the off-channel basin from the adjacent golf course.



This short reach demonstrates that over time the creek would find material that would stabilize the bed just as we planned to do with our structures.



This short reach exhibits a naturally armored bank which we hoped to replicate in our restoration efforts.



Considerable effort went into harvesting materials locally from construction sites within St. Charles.

Excavation for the refurbishing of Swanson Pool in Pottawatomie Park uncovered more pit run material than we could possibly need for the project.





Brush cutting was done to eliminate non-native invasives, open the canopy to encourage revegetation and to allow access to the creek itself.



Access lanes as well as creek edges were cleared of any plants that could be salvaged for later use in the revegetation effort.





Conditions in the spring were so wet that it made it nearly impossible to move equipment and materials.



After a week of battling the elements it was determined that the project needed to be delayed.



Everything is Relative



Victoria Falls in Zambia



Work resumed in August with conditions being almost the same as in the spring due to some heavy mid-summer downpours. The difference was that conditions could improve very quickly since the ground was not as saturated.



Dewatering the channel was still a daily requirement in order to work more effectively.



Transfers of materials were much easier than in the spring .



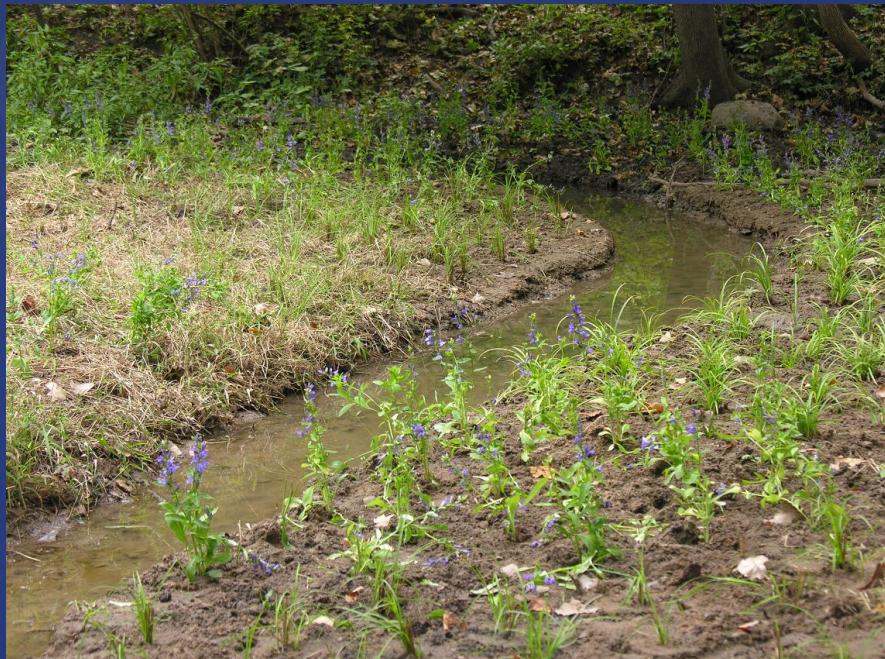
Some of the material that was collected locally was very large. Using this larger material saved time and actually decreased the material needed to build the structures.



Examples of step structures as well as bank armoring.

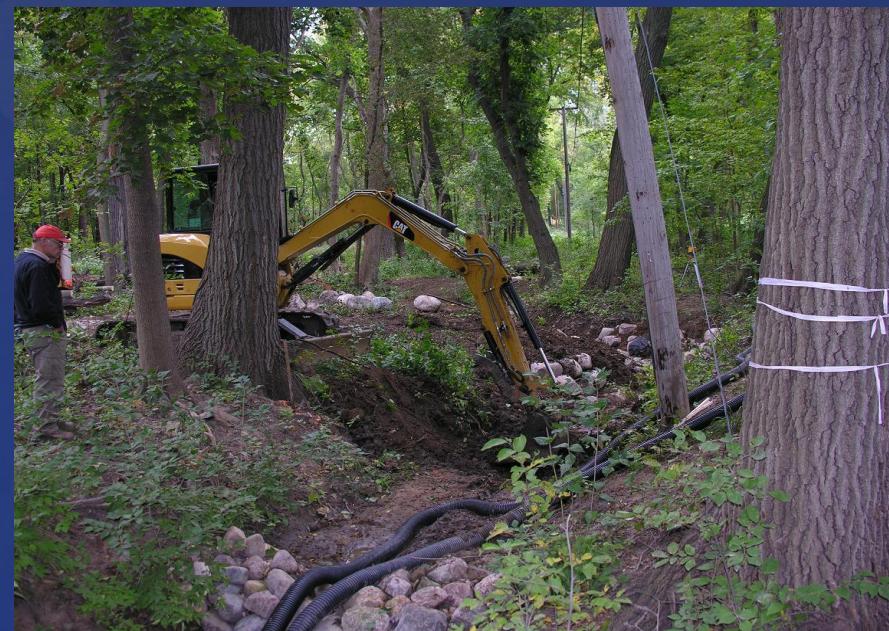


Volunteer revegetation of what was the in-channel basin which will now be a wet sedge meadow with a shallow channel running through it.





The lower reach benefitted from easier access but more material needed to be removed in this area due to many years of sediment deposition.





The off-channel basin required work to reconnect it to the main channel.



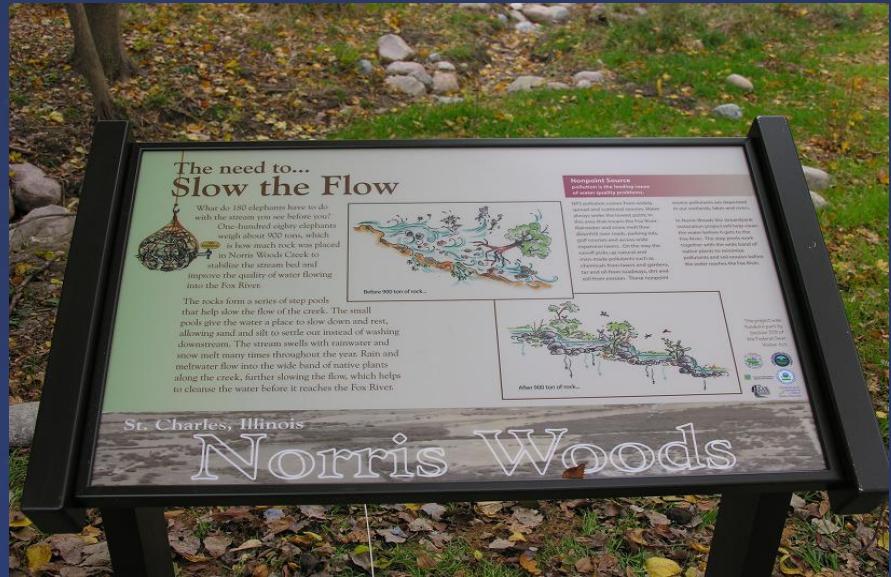
Unsung heroes, our volunteers.



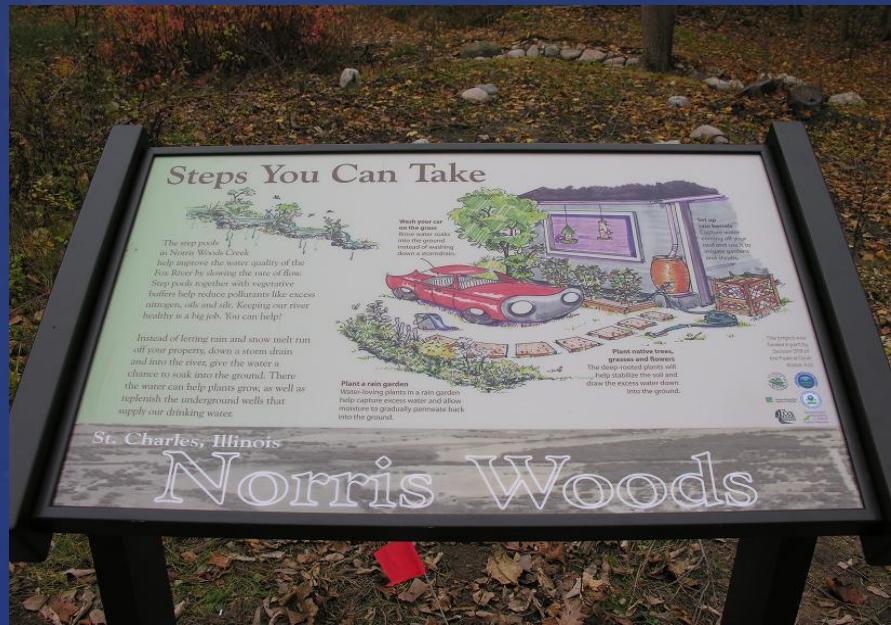
Seeding with locally collected native seed and a cover crop along with erosion control fabric was applied to all disturbed areas.



Clean up involved removing unused materials as well as repairs to staging areas and access roads.



Two interpretive signs were installed along the bike trail so that site users could understand the project as well as how they can contribute to the solution.





Tributary from the south



Step pool structures doing what they do



Tributary from the north



The weeping wall



All of the storm water energy is right where we want it.



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