Ravinia and Indian Creek Parks

Job Number: 04-0547
Client: Fremont Township Highway Commission
Project Value: $260,000 (AES' design-build portion: Approximately $200,000)
Project Type: Streambank restoration and floodplain/woodland restoration
Project Location: Unincorporated Lake County, IL
Project Initiation Date: November 2004
Project Completion Date: June 2007
Project Size: 660 linear feet of stream; 1.5 acres of floodplain/woodland restoration

AES was the prime design-build firm for the streambank restoration portion of the project. Additional structural and civil engineering for a spillway on site was designed by Bleck Engineering. We worked closely with the Sylvan Lake Improvement Association, which is the homeowners association that fronted cash and in-kind services as a match for the EPA 319 grant used to fund 60% of the project costs.

Native plant installation by volunteers.

Project Goals
Utilize best management practices to reduce sediment and nutrient loading into Sylvan Lake and downstream waters tributary to Indian Creek watershed.

Project Results
•Drain tiles in Ravinia Park were disabled to eliminate blow-outs and promote/maintain wetland establishment.
•Debris obstructions were removed from the stream channel in Ravinia Park.
•Cross vanes, j-hooks, and scour pools were constructed along the stream in Ravinia Park to control grade and prevent down-cutting; additional cobble was placed at the bottom the channel along its entire length to protect and reestablish a stream bottom important for erosion control and wildlife habitat.
•Bottomland floodplain and upland woodland communities were removed of invasive herbaceous and woody species.
•Two wetland biofiltration ponds were constructed within the floodplain of Ravinia Park to store and filter stormwater when it exceeds the bankfull elevation of the stream.
• Native herbaceous vegetation was seeded and planted in biofiltration ponds, along the stream, within bottomland floodplain at Ravinia Park, and in woodlands at both parks.

Project Statement
Sylvan Lake in Fremont Township, Lake County, Illinois, is in the Indian Creek watershed, a subwatershed of the Des Plaines River. Two natural areas owned and operated by the Sylvan Lake Improvement Association (SLIA, a homeowner's association), one upstream of Sylvan Lake and one downstream of the lake's spillway, were the focus of an Illinois Environmental Protection Agency (IEPA) funded restoration project known as the Ravinia and Indian Creek Parks project.

The Northeastern Illinois Planning Commission/CMAP (NIPC/CMAP) applied for and was awarded the IEPA Nonpoint Source Pollution Control Program Best Management Practice grant in August of 2004 (Grant No. C9995200-04) on behalf of Fremont Township Highway Commission and entered into an agreement with the township to execute the grant.

The objective of the project was to install best management practices (BMPs) to reduce sediment and nutrient loading into Sylvan Lake and downstream waters tributary to Indian Creek. The scope of work and process for the project included 4 phases: concept design, preliminary design, final design, and implementation. In 2004, Applied Ecological Services, Inc. (AES) was hired by Fremont Township to perform design-build services for the project with the exception of spillway design and repair. Bleck Engineering was hired to design and permit the spillway. The project began in late 2004 and was implemented in May and June of 2007.

Streambanks in Ravinia Park were re-graded along selected locations to establish the proper width and depth of the stream channel to carry anticipated flows and to reconnect the channel to its floodplain. Grade controls (cross vanes and j-hooks) constructed of natural rock and placed just below the normal water level elevation of the stream were used to gently step down the grade and to reduce nearbank shear velocity responsible for much of the documented streambank erosion. A total of thirteen cross vanes and j-hooks were installed. As grade controls, these structures control the velocity of flows and prevent the deepening and widening effect of bank erosion; as erosion control measures, these structures direct erosive flows to the center of the stream channel and away from the banks. Scour pools will typically form behind (downstream) these structures to further dissipate energy from stormwater flows and provide habitat for fish and aquatic insects.

Biofiltration ponds protected with erosion mat facing west.

The stream and floodplain in Ravinia Park have been restored to improve flow through the channel, reduce bank erosion and sediment loading into Sylvan Lake, control invasive species, and improve wildlife habitat by replacing invasive species with native species. Invasive species have been removed from the slopes at Indian Creek Park, which should improve conditions for understory native vegetation there. The volunteer effort to install plugs along the stream channel and in biofiltration ponds at Ravinia Park was a huge success – 43 volunteers from the community gathered on a rainy day to install nearly 1,500 plugs. These volunteers undoubtedly have a greater appreciation for future maintenance and stewardship of Ravinia Park.

Current Status
BMPs designed for Ravinia Park are installed. Seeded and plugged native herbaceous vegetation is already establishing there. Applied Ecological Services developed a 10-year operation and maintenance plan for Sylvan Lake Improvement Association to implement at the parks. They anticipate continuing to perform some activities, such as herbicide application, brushing and burning, with resident volunteers, and some with hired professionals.

For more information, please visit www.appliedeco.com

Applied Ecological Services, Inc.