



# NONPOINT SOURCE SUCCESS STORY

## Illinois

### Dissolved Oxygen Removed as an Impairment from the Des Plaines River due in part to Extensive Work Performed on the Tributary Silver Creek

#### Waterbody Protected

A portion of the Des Plaines River flows through the Bensenville Ditch-Des Plaines River watershed and was listed as impaired for dissolved oxygen on the Integrated Water Quality Report and Section 303(d) List for Illinois as recently as 2018. Two Clean Water Act (CWA) Section 319(h) funded streambank stabilization and restoration projects in 2017 and 2019 on the adjacent tributary within the watershed, Silver Creek, implemented many Best Management Practices (BMPs) with positive effects on dissolved oxygen and nonpoint source pollution resulting from erosion. These projects were phases four and five of a multi-stage project to improve water quality of Silver Creek. These efforts on Silver Creek helped to improve dissolved oxygen levels in a 5.19-mile section of the Des Plaines River, and the stretch was subsequently removed from the 2020/2022 303(d) list.

#### Water Quality Challenge

Data collected as early as 2006 revealed that the Des Plaines River was not supporting designated uses for aquatic life due in part to a dissolved oxygen impairment. The IL\_G-30 segment of the Des Plaines River was placed on the 303(d) list of impaired waters in 2006 for multiple aquatic life use impairments. Silver Creek and the Des Plaines River have a confluence in the lower half of the Bensenville Ditch-Des Plaines River watershed (HUC 071200040506), with Silver Creek covering approximately 25% of the watershed drainage. There are several monitoring stations along both waterbodies relaying data on water quality with several downstream of the confluence (Figure 1).

Land uses for the watershed are primarily urban and residential with some forested land along the Des Plaines River corridor. The dissolved oxygen impairments are believed to be due to combined sewer overflow and other urban runoff increasing nutrient loads to the waterbody. 5.0 mg/L is the minimum concentration of dissolved oxygen required to achieve delisting for this impairment.

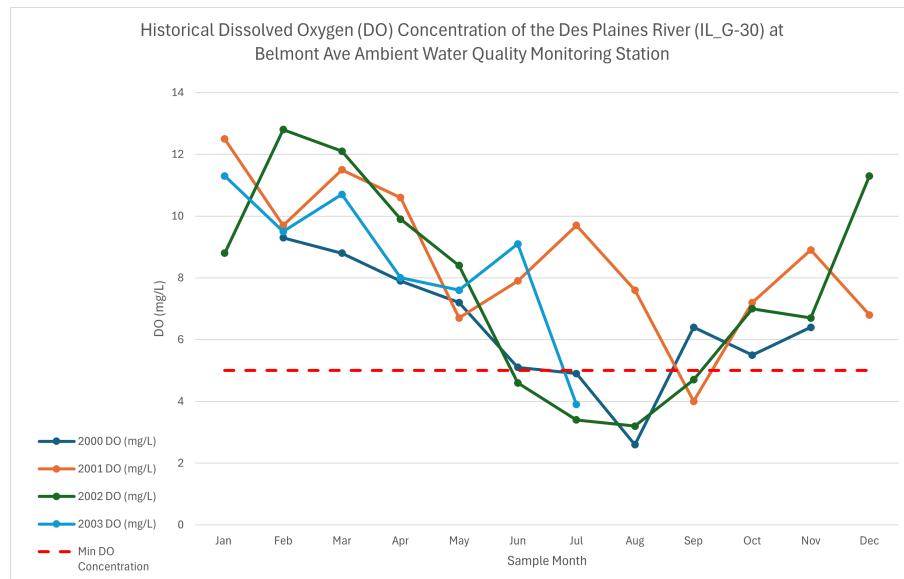


Figure 1. Historic MWRDGC Ambient Water Quality Monitoring Station data at Belmont Ave for the Des Plaines River.

#### Project Highlights

Illinois EPA used CWA Section 319 funds to implement two projects on Silver Creek in 2017 and 2019. These projects were phases four and five in a series of projects by the Village of Melrose Park to stabilize and restore the eroding banks and channel of Silver Creek. The surrounding urban and residential land use contributed to flashy high-volume flows degrading the condition of banks. Channelization with concrete embankments did little to slow the flow of the creek and contribute to dissolved oxygen content. The combined projects resulted in 5,768 linear feet of streambank stabilization, utilizing best management practices including: rock toe, removal of concrete channel lining, and incorporation of 26 rock points, invasive species removal accompanied by native seeding and plant plugs to restore 1.6 acres of riparian buffer, seven rock riffles for 88 feet of channel stabilization, and a 0.5-acre wetland.

Though primarily focused on reducing nutrient loading and erosion, many of the chosen BMPs have an added benefit of increasing aeration and incorporation of dissolved oxygen. The primary objectives of the Silver Creek Corridor Restoration Project (2017) and the Silver Creek Concrete Removal & Stabilization Project (2019) were to improve water quality, to reduce nonpoint source pollution in the project area, and to reduce the sediment loading into Silver Creek and downstream into the Des Plaines River. These goals were in line with the 2016 Silver Creek Watershed-Based Plan which covers the portion of the watershed served by Silver Creek, a project which also received CWA Section 319(h) funds in 2014.

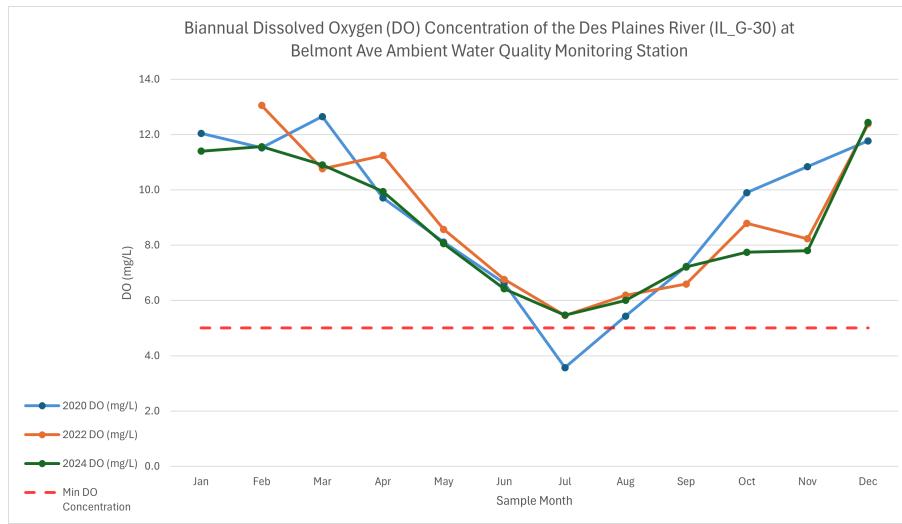


Figure 2. Most recent available MWRDGC Ambient Water Quality Monitoring Station data at Belmont Ave for the Des Plaines River.

Best Management Practice	Number Installed	Units	Comments
Vegetative Buffer Strips	1.6	AC	
Watershed Management Plan	1	INDIVIDUAL UNITS	
Streambank & Shoreline Protection	2624	FT	
Streambank & Shoreline Protection	3144	FT	
Wetland Restoration	.5	AC	
Stream Channel Stabilization	88	FT	

## Results

As of the 2020/2022 Illinois Integrated Water Quality Report and Section 303(d) List, dissolved oxygen has been removed as an impairment for this section of the Des Plaines River (IL\_G-30). The use of rock point deflectors and rock riffles increased aeration as water was delivered from Silver Creek (IL\_GM-01) to the De Plaines River and likely contributed to improvements in dissolved oxygen levels. Additional improvement resulting from a significant decrease in nonpoint source pollutant loading and establishment of native vegetation along the riparian corridor also likely served to improve the dissolved oxygen content of the Des Plaines River.

The combined pollutant load reductions of the projects on Silver Creek were estimated to be 5,400 pounds of nitrogen, 1,265 pounds of phosphorus, and 743 tons of sediment through the STEP-L model, which likely had some indirect effect on improving the dissolved oxygen impairment of the adjacent Des Plaines River. As of 2022, dissolved oxygen concentration of Silver Creek has remained above the 5.0 mg/L minimum concentration according to data collected by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) at their Ambient Water Quality Monitoring Station on Belmont Ave (Figure 2). Compared to historical data from 2000-2003 at the same site (Figure 1), there has been significant improvement to the dissolved oxygen concentration for Silver Creek to support the delisting for this impairment in the 2020/2022 Integrated Water Quality Report and Section 303(d) List for Illinois.



Figure 3. Example of site conditions at Silver Creek prior to implementation of streambank stabilization and restoration BMPs.

## Partners and Funding

Partner Type	Agency	Funding	Notes
Federal	CLEAN WATER ACT SECTION 319	\$367,809	2019 319(h) Award - Silver Creek Concrete Removal & Stabilization Project, Phase 5
Federal	CLEAN WATER ACT SECTION 319	\$336,152	2017 319(h) Award - Silver Creek Corridor Restoration Project, Phase 4
City	VILLAGE OF MELROSE PARK	\$271,668	2019 319(h) Match - Silver Creek Concrete Removal & Stabilization Project, Phase 5
City	VILLAGE OF MELROSE PARK	\$224,101	2017 319(h) Match - Silver Creek Corridor Restoration Project, Phase 4
Private Sector	HANCOCK ENGINEERING	-	Project oversite
Private Sector	ENCAP, INC.	-	Construction - 3191710
Private Sector	LIVING WATERS CONSULTANTS, INC	-	Project Management
Private Sector	RES, INC.	-	Construction - 3191916



Figure 4. Post-construction photos of the same pre-construction site showing BMPs representative of the projects.



Figure 5. Post-construction photograph of streambank stabilization for Silver Creek after vegetation has begun to establish



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