The Nature Conservancy
Michigan

CITIES

Imagine a city that is not ***apart*** from nature, but ***a part*** of nature. Tree-shaded walkways instead of overheated pavement; birdsong mingling with the sounds of traffic.

Today, people in cities must contend with increased heat and surface flooding and reduced air quality that is compounded by the absence of nature. By bringing the benefits of nature to urban landscapes, we can change the way we think about and shape our cities. A thriving future for people and nature depends on it.

BIG CHALLENGES, BIG OPPORTUNITIES

Every year, hundreds of millions of gallons of sewage spill into Detroit's rivers. This is a challenge shared by many cities around the world: aging stormwater infrastructure that continues to be overwhelmed by runoff from pavement and other impervious surfaces.

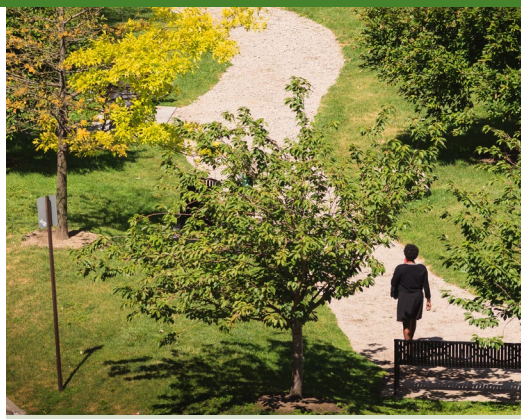
As the global population grows and the climate shifts, this threat to nature and human health is expected to increase as well. But nature can also be a part of the solution.

DETROIT: A CITY OF RESILIENCE

Detroit, Michigan's oldest and largest city, is a resilient community with a rich tradition of innovation. As economic investment and redevelopment in Detroit increase, The Nature Conservancy (TNC) is seizing this unique opportunity to help the city's infrastructure reflect the creativity and regenerative spirit of its residents.

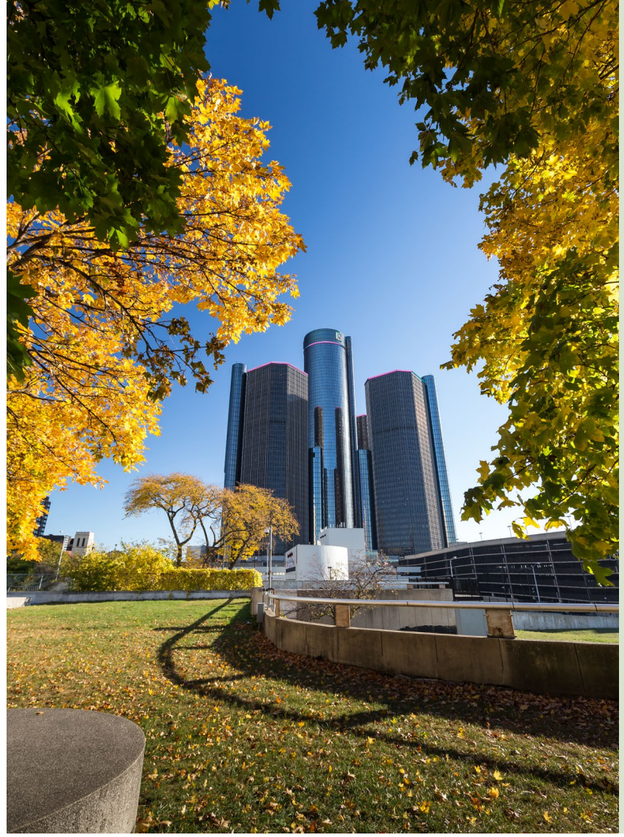
TNC is advancing green stormwater infrastructure (GSI) solutions—nature-based, engineered features like rain gardens—to manage stormwater runoff, protect clean air and water and increase access to greenspace. By tapping into the power of nature, here at the heart of the Great Lakes, Detroit can help lead the way to a brighter future for our cities and the freshwater resources we all depend on.

COVER: Sacred Heart Church's John Thorne waters the new green stormwater infrastructure in the church's parking lot. © Jason Whalen/Fauna Creative; RIGHT: A woman walks through a greenspace in the heart of Detroit. © Michael DL Jordan/dlp



GOAL

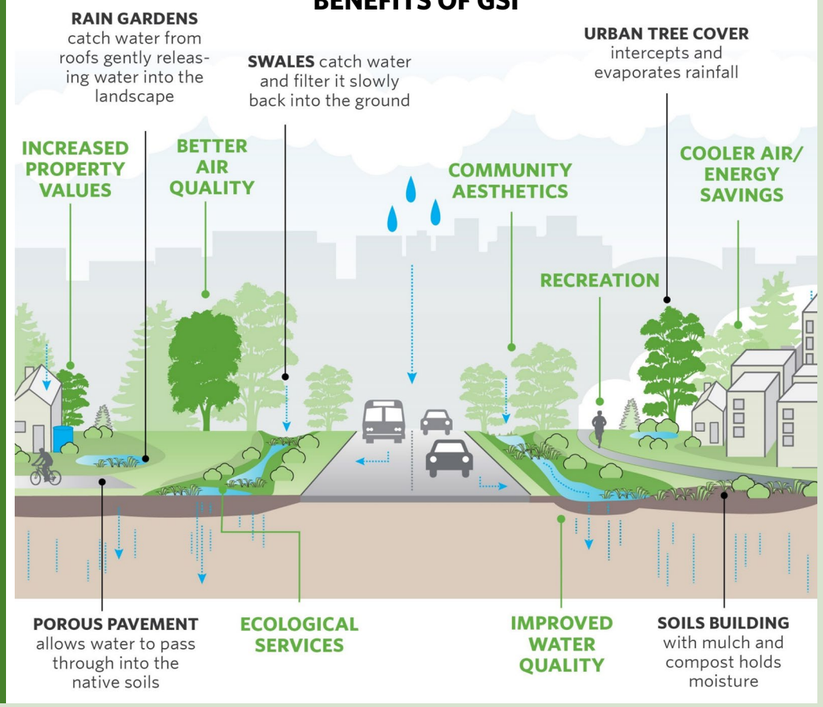
We aim to establish green stormwater infrastructure as a standard practice for managing stormwater in Detroit to support healthy waterways and healthy communities.



GSI PRACTICES:

- **Bioretention**: An area designed to collect runoff into a pond or other shallow depression, with native plants and soil that retain and filter water.
- **Rain Garden:** A bioretention area on a smaller, usually residential scale (as opposed to commercial or multi-property).
- **Water Harvesting:** Collecting and storing stormwater runoff for later use (e.g. rain barrels or cisterns).
- **Permeable Pavement:** Unlike traditional pavement, which is impervious to rain, this porous pavement allows rainwater to pass through and be absorbed into the ground.
- **Bioswale:** A channel planted with native vegetation designed to carry runoff, as an alternative to a drainage ditch. These are commonly used along sidewalks and roads.
- **Green Roof:** A layer of vegetation on the roof of a building that soaks up rainfall—also known as a "living roof"!

BENEFITS OF GSI



OUR STRATEGIES

RESEARCH

TNC provides answers that inform the success of GSI across the city. This includes determining the optimal locations for future GSI projects; exploring the true costs and benefits of GSI practices; developing impactful, data-driven tools like the Detroit Stormwater Hub (see sidebar) and more. We have also supported the City of Detroit and the Detroit Water and Sewerage Department (DWSD) as they establish new policies and programs requiring stormwater management, while working to incentivize GSI-based approaches.

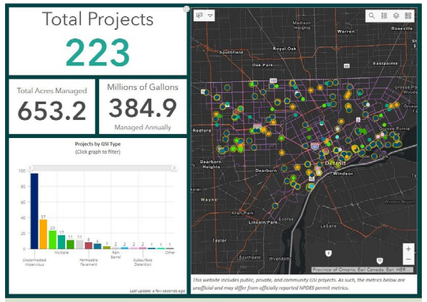
CONNECTION

TNC removes barriers to GSI in Detroit by connecting stakeholders with the results of our research and other information that will help equip and inspire them to implement successful GSI projects. We also share our technical expertise with City of Detroit partners and work with community organizations and partners on projects that advance common goals.

DEMONSTRATION

Through tangible, on-the-ground projects, TNC is demonstrating the relevance and replicability of GSI, so that local leaders can see for themselves the benefits of nature-based practices. We hope to drive recognition of the need for and benefits of green stormwater management—even beyond overflow reduction—and inspire targeted investment in climate-resilient, publicly accessible GSI features.

CLOCKWISE FROM TOP LEFT: Detroit's iconic Eastern Market. © Jason Whalen/Fauna Creative; TNC's Valerie Strassberg at a community bazaar at Sacred Heart Church. © TNC; Detroit's Hart Plaza. © Michael DL Jordan/dlp



DETROIT STORMWATER HUB

In collaboration with DWSD and an Advisory Group of over a dozen local partners, TNC led the development of the Detroit Stormwater Hub (**DetroitStormwater.org**), an online data source and map that tracks existing projects and provides technical GSI resources. This is the first time such robust information on Detroit GSI projects has been made publicly available in one place. Now managed by DWSD, it is already proving to be a valuable asset.

ABOVE: Screenshot of the Detroit Stormwater Hub from May 2021.

KEY PROJECTS

Greater Eastern Market

TNC is helping to bring 12.5 acres of tree-lined greenways to Detroit's Greater Eastern Market neighborhood, as part of a master planning effort for this area in collaboration with the City of Detroit, Eastern Market Development Corporation and the Detroit Economic Growth Corporation—the city's first ever cross-departmental plan of this type and scale. These greenways will not only add natural landscaping, they will also manage stormwater runoff across multiple properties. TNC will continue to support local businesses as they develop the GSI projects that will connect into the greenways.

Making the Business Case

For GSI to be successful in Detroit, it must be cost-effective, and the property owners, designers and investors making decisions about stormwater management must see the evidence. TNC is analyzing existing GSI projects and comparing the impact and benefits to technically similar "gray" (conventional) infrastructure projects. The results of the study will help to either validate or disprove perceived barriers (e.g. high costs) that are often cited at the outset of a design process and seem to limit the implementation of GSI approaches. The study will also showcase local best-in-class examples of GSI projects.

ABOVE (GRAPHIC): Benefits of GSI infographic. © Erica Simek Sloniker/TNC

GREENING MICHIGAN'S CITIES

While TNC's work to build healthy cities in Michigan is focused on Detroit, our efforts extend to urban landscapes across the state. In Saginaw, for example, we worked with the Michigan Department of Natural Resources, Saginaw County Parks, the Saginaw Community Foundation and the RACER Trust to establish the Saginaw River Headwaters Recreation Area, a former industrial site that is now being restored to 334 acres of riverfront greenspace in the city of Saginaw. It will provide important benefits to the community, such as recreational opportunities and habitat protection for a freshwater system that also includes the nearby 10,000-acre Shiawassee National Wildlife Refuge.

ABOVE: Saginaw River Headwaters Recreation Area. © Michael DL Jordan/dlp

SUCCESS STORY: A Greener Future for Sacred Heart Church

At Detroit's historic Sacred Heart Church in the core of the Eastern Market district, TNC collaborated with the 3,000-parishioner community to transform the church parking lot. We peeled back thousands of square feet of asphalt and replaced it with an engineered garden, filled with native plants, that manages runoff while adding natural beauty. This bioretention system is designed to manage the runoff from nearly two acres of hard surface. It also offers a financial return by cutting the church's costly drainage charge in half through Detroit's Green Credit Program.

This GSI project, one of the largest (by volume of stormwater managed) in Detroit, has helped test the process for successfully implementing GSI in Detroit and will act as a model for future projects in Greater Eastern Market and throughout the City of Detroit. See a video about the project at: **nature.ly/2udti7D**.

ABOVE: **The Sacred Heart Church parking lot—before and after its "green transformation"!** TNC is helping to maintain the project for the first few years as the new plants get established and Sacred Heart Church Garden Club leaders are trained in native plant and bioretention maintenance. © Jason Whalen/Fauna Creative

GLOBAL CONNECTION

Cities are growing—fast. By 2050, two out of every three people on Earth will live in a city. This puts habitat, human health and our ability to source food and water sustainably at risk. It also means that fewer people have access to nature's benefits, including its benefits to our physical, spiritual and mental health. With smart planning, science-based solutions and strong partnerships, TNC is working to help make the green cities of tomorrow resilient, healthy and equitable.

LEFT: TNC is a founding partner in The Green Heart Project, a partnership led by the University of Louisville Medical School and supported by the National Institutes of Health, to study how urban greening affects cardiac health—specifically, how planting trees and other greenery can filter small particle air pollution that has been linked to heart disease. © Randy Olson

Follow us on social media **@TNCMichigan**.

Sign up for our e-newsletter at **nature.org/naturenews**.

Donate to our work at **nature.org/midonate**.

Speak up for nature at **nature.org/actnow**.

Visit our website to learn more at **nature.org/michigan**.

The Nature Conservancy in Michigan | 101 E. Cesar E. Chavez Ave., Lansing, MI 48906 | (517) 316-0300