



GREEN STORMWATER INFRASTRUCTURE

Protecting Our Waters through Nature-Based Design

WHAT IS GSI?

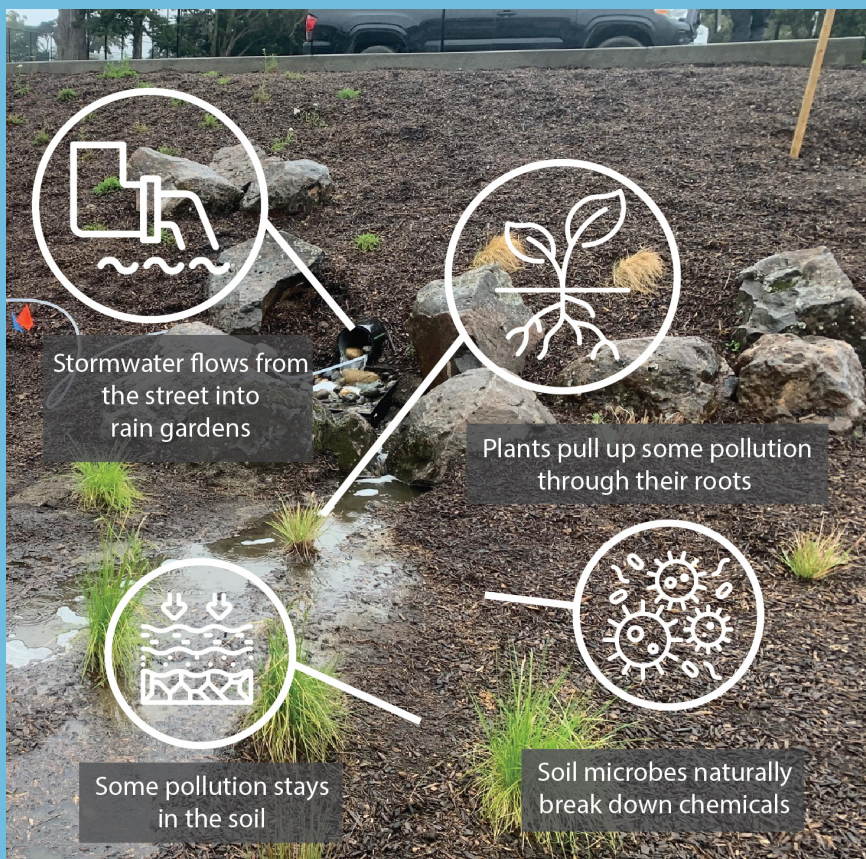
Before San Francisco was a city, the landscape absorbed a lot of rainfall. Today, rain produces stormwater that runs off buildings and streets and collects in our city's sewer system.

Green stormwater infrastructure (GSI) is part engineered structure and part natural landscaping that combined act as a natural sponge and filter for water runoff and pollution. It uses a specific mix of plants and fast-draining soils to capture pollution from stormwater.

On the surface, green stormwater infrastructure often looks similar to other planted areas along a city street. One main difference is that they are designed so stormwater runoff easily flows into the feature.

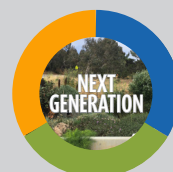
Any water not soaked up in green stormwater infrastructure flows into the sewer system. In new and redevelopment areas near San Francisco Bay, a separate stormwater system collects pollutants from industry, vehicles, and everyday products as it flows to storm drains and eventually the Bay. However, in most areas of our city, stormwater is collected and treated* at one of our wastewater treatment plants.

*San Francisco is one of the few places on the west coast that treats stormwater along with wastewater at our wastewater treatment plants. This combined sewer system removes stormwater pollutants before going to the Bay and Pacific Ocean. It also has a greater risk of overflowing, which makes green stormwater infrastructure an important feature in San Francisco



HOW DO WE TEST IT?

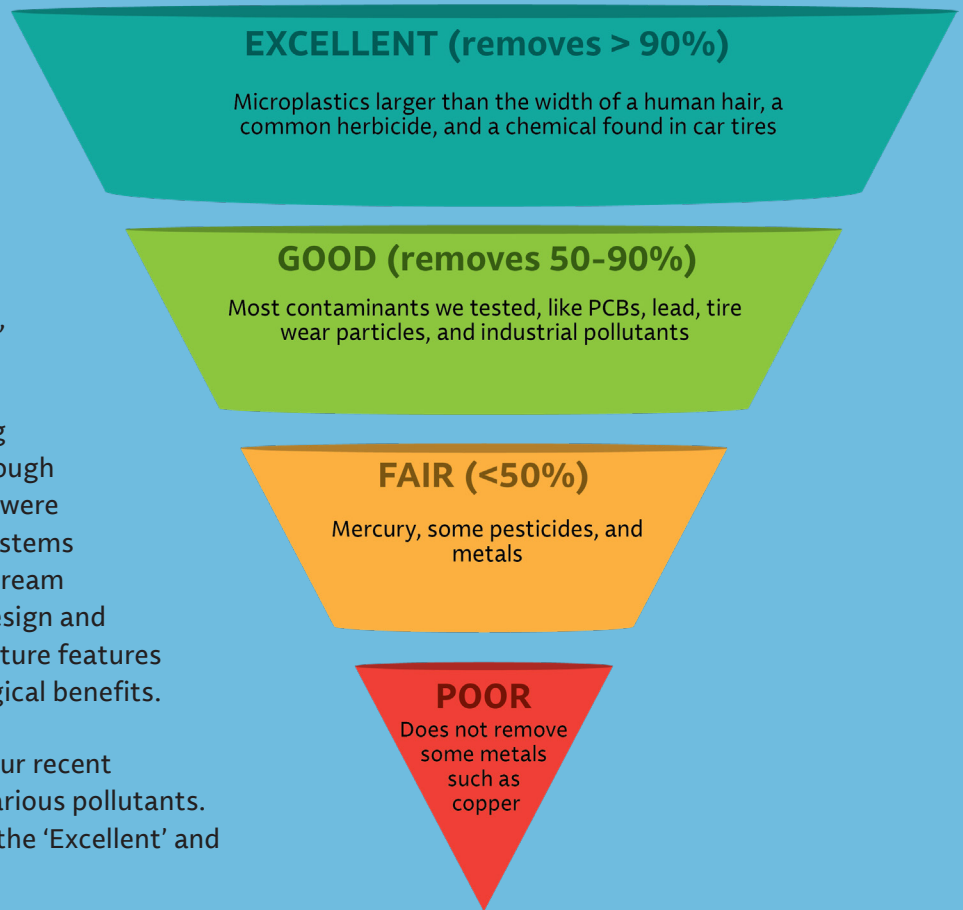
Scientists sample how much pollution is in stormwater before it flows into green stormwater infrastructure and after it flows out. If you see a crew in rain gear sampling during a storm in your neighborhood, come say hello! We also collect soil to measure how much pollution it traps. Monitoring helps make sure green stormwater infrastructure is maintained properly and functioning as intended.



HOW WELL DOES GSI REDUCE POLLUTION?

The San Francisco Estuary Institute (SFEI) measured how well green stormwater infrastructure in San Francisco removed more than two dozen pollutants that can impact the health of San Francisco Bay. These included metals, pesticides, industrial pollutants, and more. We also looked at microplastics, including microplastic particles from car tires, which are the most common kind of plastic pollution in the Bay. By analyzing stormwater before and after it passed through green stormwater infrastructure sites, we were able to determine how effectively these systems capture contaminants and protect downstream habitats. The results help inform future design and placement of green stormwater infrastructure features to maximize both water quality and ecological benefits.

The diagram to the right shows how well our recent monitoring found GSI to be at removing various pollutants. The majority of pollutants tested fell into the 'Excellent' and 'Good' categories.



WHY USE GSI?

Green stormwater infrastructure helps keep the Bay cleaner for wildlife and for people who swim in, fish from, and enjoy the Bay. It also mitigates flooding by absorbing more water than paved city surfaces. Even when it's not raining, well-designed and maintained green stormwater infrastructure can bring neighborhoods many other benefits from urban greening. These benefits include human wellbeing, heat reduction, and wildlife support.



Community Garden (Photo courtesy of SFPUC)

A PRODUCT OF
NEXT GENERATION
URBAN GREENING

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SFEI | San Francisco
Estuary Institute

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