

City of Santa Monica Urban Watershed Management Program

Low Impact Development Strategies:

Bicknell Avenue Green Street

100 block Bicknell Avenue



← [Permeable Concrete Parking Lane]



← [Sub-surface Infiltration Basin]

[Depressed Parkway Bioswale and Drip Irrigation] →



[Climate-appropriate Landscape] →



The Bicknell Avenue Green Street project goal was to enhance the beauty of Bicknell Avenue for local residents while introducing innovative methods to clean and harvest urban runoff: a model for all streets in Southern California. This block of Bicknell Avenue has been designed to direct water runoff from the street into depressed planted areas (bioswales) and underground infiltration basins in order to protect the water quality of Santa Monica Bay. The redevelopment project incorporated Low Impact Development (LID) strategies with Best Management Practices (BMPs) to harvest urban runoff for treatment via infiltration (soil ecology does a wonderful job in neutralizing low-level or background concentrations of pollutants).

Reopened in May 2009, Bicknell Avenue incorporated many watershed innovations. **Permeable Concrete** (PHOTO top left) is used for the parking lanes on the street. This special mix allows water to pass through the six-inch concrete layer and infiltrate into the soil below. **Infiltration Basins** (PHOTO top right) provide a void under the parking lanes in order to store runoff during a storm event or even when there is dry weather runoff. This runoff is collected in the gutters by catch basins with filters and then is stored in the infiltration basins until the water percolates into the surrounding soil. Infiltrating runoff can help replenish groundwater supplies and keep pollutants from entering Santa Monica Bay. Runoff that does not enter the infiltration basins flows into the **Bioswales** (PHOTO bottom left) where it is allowed to percolate into the soil. Overflow from the bioswales enters the infiltration basins.

Climate-appropriate Plants (PHOTO bottom right) are located in the bioswales, which serve as the parkways. These plants are able to thrive with little water and maintenance. Plants are irrigated by a **Drip Irrigation System** (PHOTO bottom left), reducing the amount of water used and preventing irrigation runoff. The next best sustainable strategy for this design is to utilize infiltration basins as cisterns and use the collected runoff for landscape irrigation. Taken together, the innovations featured in this project are effective and attractive, and represent an important new milestone in street design.

The city received a Proposition 50 Santa Monica Bay Restoration grant from the State Water Resources Control Board for implementation of this project. Additional support came from the city's Department of Public Works and the Office of Sustainability and the Environment.



Planning for a Cleaner Bay

Urban runoff flowing through storm drains is the single greatest source of pollution to the beaches and near shore waters of the Santa Monica Bay. Unlike sewage and discharges from industrial sources, urban runoff is not generally adequately treated before it reaches the bay and our beaches.

The City of Santa Monica passed an ordinance that is designed to reduce the amount of urban runoff pollution that reaches our storm drain system and the Santa Monica Bay. The ordinance requires a reduction in urban runoff flowing off of all impermeable surfaces from newly developed or retrofitted parcels within the city.

Reducing the amounts of urban runoff and of pollutants contained in the runoff is essential for the health and safety of our community. A cleaner bay means a healthier marine ecosystem and improved quality of life for residents, and increases Santa Monica's appeal to visitors and businesses.

By implementing post-construction Best Management Practices (BMPs) and making these strategies part of our daily lives, we can make a genuine difference - and clean the bay!



Putting the LID on Urban Runoff, the Santa Monica Way

In the city's efforts to reduce runoff pollution through the use of BMPs, we can manage, use and redevelop our lands in a more sustainable manner through the use of Low Impact Development (LID) and smart growth design strategies, and BMPs. LID is an economically and environmentally responsible strategy to site development which still allows land development, but in a long-term cost-saving manner that also mitigates potential environmental impacts. Whether employed at a single-family home or large commercial or public project, LID integrates land planning, and site design practices and techniques to mitigate development impacts to land, water and air, to conserve and protect natural resources and ecosystems, and to reduce infrastructure costs, e.g., storm drain systems.

This strategy views each development project as a small micro-watershed, part of the greater watershed or drainage basin of a particular area. The strategy promotes the concept of "start at the source," that is, to keep as much precipitation on each parcel to minimize the amount of runoff or waste water leaving a site. In the end, watershed management must include the individual and each parcel, and LID approaches should be used in planning and designing phases. The results of these strategies will be to maximize onsite rainwater and runoff harvesting, retention and use, and to minimize runoff pollution in reaching the bay.

For more information contact **310-458-8223** or visit **sustainable-sm.org**



Urban Runoff & Watershed Management Program

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