

CIVIL ENGINEERING NEWS

STORM WATER

Los Angeles County Pursues Integrated Watershed Management

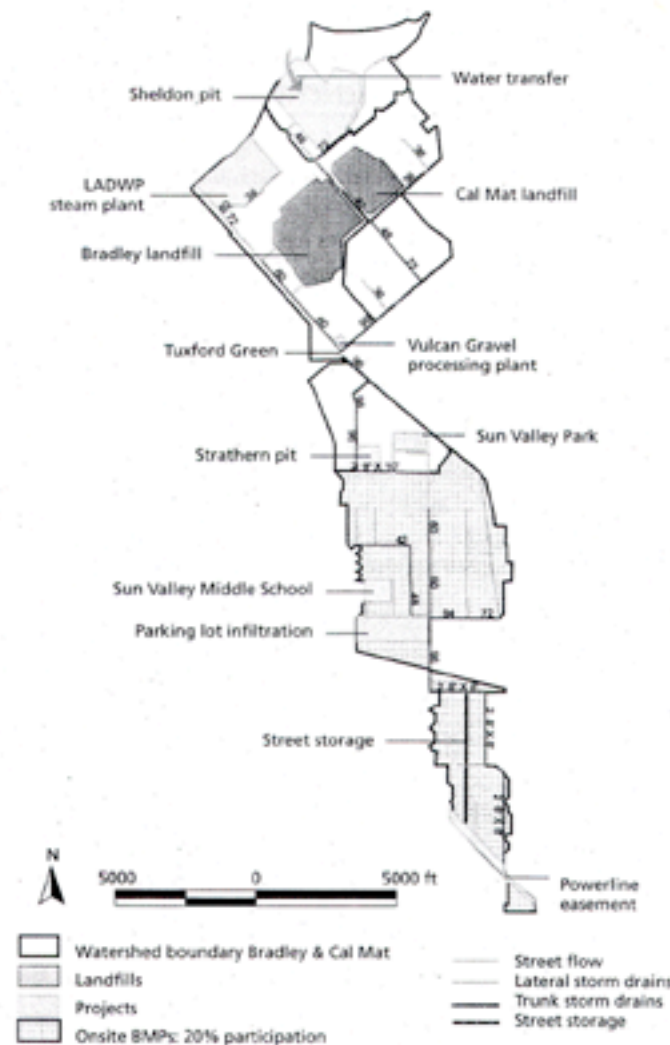
For years residents of the Los Angeles communities of Sun Valley and North Hollywood have had to endure flooded streets, sidewalks, and property on a fairly regular basis. Highly urbanized and relatively flat, the areas lack a comprehensive drainage system. As a result, floods result from even minor rainfalls, as storm water that is unable to infiltrate the many impervious surfaces rapidly inundates roads and other low-lying areas. Although the Department of Public Works (DPW) of Los Angeles County long ago made plans to install a flood drain that would rapidly convey storm-water runoff away from the watershed, funding problems prevented its construction. However, the DPW is now pursuing a radically different approach. Instead of simply building a drain to alleviate flooding in the watershed, it is developing a multifaceted plan to improve water conservation, reduce pollution from storm water, enhance wildlife habitat, and, of course, control flooding.

Located in the San Fernando Valley about 14 mi (23 km) north of downtown Los Angeles, the Sun Valley watershed comprises approximately 2,800 acres (1,130 ha) and extends roughly 6 mi (10 km) from north to south. In 1998 the DPW began holding community meetings to chart a course for solving the flooding problems, and initially it planned to install the storm drain. However, around the same time the Los Angeles-based environmental organization Tree People approached the DPW with the idea of applying a more holistic approach to storm-water management, says Andy Lipkis, the group's president. Rather than treating storm water as a waste product to be removed as quickly as possible, the group viewed it as a resource to be protected and conserved, Lipkis says.

Tree People developed a runoff model to evaluate the amount of flood protection that would be afforded by various efforts to retain storm water throughout the watershed. Instead of whisking water to the nearby Los Angeles River so that it would be sent out to the Pacific Ocean as quickly as possible, Lipkis says, the idea was to collect runoff and use it to recharge diminished groundwater supplies or irrigate landscaping, thereby addressing flood control and water supply needs simultaneously. Although they were initially skeptical, the DPW and other participating agencies warmed to the concept after analyzing the model in detail. Engineers in the agencies "went from disbelief, real resistance, and reluctance," Lipkis says, "to beginning to see more and more" how the approach could offer real solutions.

At the time Carl Blum was the DPW's deputy director. Although he retired in 2000, Blum says that he continues to closely follow the Sun Valley project. He notes that the department, which was attempting to reduce flooding along the heavily channelized Los Angeles River, was realizing that a "paradigm shift" was needed in the way it approached flood control.

Alternative Selected for the Sun Valley Watershed Management Plan



Acting on the input from Tree People and other stakeholders, the DPW opted to pursue a multipurpose approach to reduce flooding in the Sun Valley watershed. After more than two years of planning and analysis, in October the DPW released a draft of a plan for managing the Sun Valley watershed.

Of the four alternatives presented in the plan, the preferred option has 17 components, many of which involve treating storm water and using it to recharge groundwater supplies or irrigate landscaped areas. For example, a large cistern and a high-rate device for treating storm water would be installed beneath a notoriously flood-prone intersection to reduce flooding at the site and provide water for irrigation. Several gravel pits

in the watershed would be adapted to store water for reuse or groundwater recharge and would provide a significant amount of the storage volume to be generated by the project. Wetlands would be constructed at some of the sites to improve water quality and create habitat for wildlife.

Trunk and lateral storm drains would be installed to convey flows from streets to the various project features. In areas with limited space, certain streets would be outfitted with underground storage tanks and infiltration galleries to capture runoff. Such so-called best management practices as tree planting and mulching would be adopted on a large scale throughout the watershed.

Several properties—including a park and a school—would be modified to improve their ability to retain runoff and allow it to infiltrate the ground. One such effort—the Sun Valley Park pilot project—is designed to manage storm water and reduce street flooding in the vicinity of the park. A system of catch basins will direct runoff to the park, where it will pass through settling treatment units to remove pollutants. After being treated, the water will enter one of two infiltration basins designed to return storm water to the ground at a rate of up to 33 cfs (0.9 m³/s). Construction of the estimated \$5.7-million project is expected to begin in July 2004, says Vik Bapna, a senior civil engineer for the DPW.

According to the draft, the capital and operating and maintenance costs (present value) associated with the various project components total \$171 million, while the benefits amount to \$295 million (also present value). When complete, the project would solve the flooding problems, significantly increase the amount of water conserved in the watershed, improve water quality by significantly reducing pollution from storm water, and boost the amount of recreational space and wildlife habitat in the community.

At press time, the DPW was accepting public comments on its plan, which is expected to be finalized by February 2004.

—Jay Landers