

Transforming Forester Creek

Revitalizing a natural asset through teamwork.

By Joseph S. Smith and Gary Yagade

Santee, CA, located roughly 17 miles northeast of San Diego, recently completed an award-winning environmental project—the city's largest capital improvement ever undertaken. Forester Creek was an undersized flood channel that had become an eyesore to the community. Worse, it flooded with nearly every major storm, and even caused flood-related evacuations from nearby neighborhoods in the 1990s. After a stunning transformation, Forester Creek can now contain a 100-year flood, and has become an attractive open space near the city center that generations of visitors can enjoy.

The complex project owes a large part of its success to a responsible and collaborative team of designers, engineers, contractors, and subcontractors who

were organized via a construction manager to deliver a completed job on time and within budget.

Forester Creek flows east/west, bisecting Santee. The neighboring city of El Cajon contains Forester Creek in a concrete-lined channel, which compounded the flooding problem in Santee. Because stormwater travels faster through concrete-lined conduits, high-velocity flows—up to 20 fps—were inundating the narrow and overgrown creek where the concretized channel ended at the El Cajon/Santee border.

Forester Creek's poor water quality was also a problem. In naturally functioning streams, rocks and vegetation help to filter pollutants. Water conveyed through concretized channels, however, is more contaminated because nature's cycle is missing. Since Forester Creek

drains into the San Diego River, which in turn flows to the Pacific Ocean, water contaminants were being carried downstream where they contributed to degraded fish and wildlife habitat.

Santee had considered many alternatives to re-design the channel during years of planning. The city had initially intended to concretize a portion of the Forester Creek channel through Santee, which would have been a less-expensive alternative. Ultimately, the decision was made to restore the creek in keeping with the city's general plan guidelines, which emphasized adoption of alternative flood-control designs. Natural restoration was also compatible with California State Proposition 13—a major source of funding for the project.

Santee is positioned between two major California highways—State Route (SR)-52 on the city's western border and SR-67 to the east of Santee. Mission Gorge Road, a major east/west arterial running through Santee, lies nearly parallel to Forester Creek, and links SR-52 and SR-67. The road carries about 50,000 vehicles daily, and is especially congested during commuter hours.

The California Department of Transportation (Caltrans) intended to build a highway extension in Santee to connect the gap between the two state routes, but could not begin construction until Forester Creek's flooding problem was resolved. The northwest edge of the extension was positioned near the creek and would be vulnerable during winter storms. Flooding had to be contained to a 100-year event.

In 2006, construction began on the 40-acre, \$40-million Forester Creek Improvement Project. The project goals were to widen and realign the Forester



Before the Forester Creek Improvement Project began, the creek was strewn with debris, overgrown with invasive vegetation, and attracted transients. Photo credit: PBS&J



At left, to contain a 100-year flood event, Forester Creek was widened by up to 200 ft in some areas, roughly three times its original size. On the right, to accommodate the widening of Forester Creek, the Mission Gorge Road Bridge had to be doubled in length. Mission Gorge Road, a major arterial, is used by 50,000 vehicles daily. Photo credit: PBS&J

Creek channel for increased stormwater capacity to meet Caltrans' needs; double the length of the six-lane bridge on Mission Gorge Road, which crossed the creek near SR-52; and build a new four-lane bridge at Olive Lane to connect commercial and residential neighborhoods on opposite sides of the creek.

Santee hired consulting and engineering firm PBS&J (www.pbsj.com) to provide construction management and inspection services for the project. The construction manager protects the owner's interests and investment by providing foresight into planning and

scheduling, as well as construction guidance and budget oversight throughout the project. Usually a fee-based service negotiated at the job outset, construction management allows the project owner to benefit from experienced and transparent management without unexpected costs for service.

During the Forester Creek project, the major construction management tasks included: coordinating and keeping communication channels open between the prime contractor—Archer Western Contractors—and municipal, state, and federal agencies and utility providers; ensuring that the project contract followed the design plans; guaranteeing that state and local permits required for the project were complied with; and making sure that the project was executed safely and within budget, without excessive change orders. In addition, PBS&J promised the city an award-winning project.

While plenty of challenges were encountered during proj-

ect construction, two were particularly difficult to manage: work on the Mission Gorge Road Bridge, and relocating wet and dry utilities.

Widening Forester Creek required doubling the length of Mission Gorge Road Bridge, which carries a daily amount of traffic excessive for a city of Santee's size—50,000 commuters being almost equal to Santee's population of nearly 57,000. The road also serves as a major safety route in case of evacuation.

Construction of the Mission Gorge Road Bridge had to be undertaken in multiple phases over a one-year period, while keeping two lanes open at all times. Traffic planning, detours, and signage required extensive coordination with Caltrans, the contractors, and the city so that the public could use a safe road and businesses could stay open.

The Forester Creek project area contained many miles of wet and dry utility lines. Excavation and relocation of these utility lines took nine months, and required continuous sequence planning with municipal agencies and providers to keep services up and running. About 7,300 linear ft of water and sewer lines were relocated and upgraded. An additional 3,000 linear ft of pipeline were installed. One major water line that had to be excavated was buried close to 20 ft beneath high-pressure gas lines, sewer lines, and other utility lines.

Also, 17 storm drainage systems emptied into Forester Creek. These systems had to be re-routed, which required



Wet and dry utility excavation and relocation—while keeping services running—was a construction management challenge requiring months of 24/7 planning, permitting, sequencing, monitoring, and communication. Photo credit: PBS&J