

trash, readily apparent sources, and adjacent land uses. SMCWPPP then applied the URTA protocol twice (during the fall and spring seasons) at each of a subset of the trash-impacted sites identified during the USA creek walks. A total of 46 urban creek trash accumulation sites were identified during the creek walks and 19 of these sites were further evaluated using the URTA (Figure 1). The majority of the trash accumulation sites were located in downstream areas near major transportation corridors (e.g., El Camino Real) and commercial land uses. The trash impacts in the upper reaches of a creek typically consisted of yard waste dumped behind private residences or illegal dumping sites near roadways. The creek walk and URTA data established a baseline against which to track future trends and will assist future efforts to identify trash sources and transport pathways.

Future Direction

SMCWPPP's activities, including trash assessment and control, are closely tied to its municipal stormwater permit. In December 2007, Regional Water Board staff released a draft stormwater permit for the San Francisco Bay Area referred to as the Municipal Regional Permit (MRP). Upon adoption, the MRP will replace existing stormwater permits held by SMCWPPP and other major countywide stormwater programs in the Bay Area.

The draft MRP has specific trash-related provisions, including a requirement that each Permittee identify high trash and litter catchments totaling at least 10 percent of the urbanized area within its jurisdiction and implement two types of controls: 1) install "full trash capture devices" in at least half of the identified catchment areas and 2) apply "enhanced trash management control measures" at the remainder of the identified areas. SMCWPPP believes that this approach is overly prescriptive and fails to recognize the need for a flexible strategy that can be tailored to address the various types of trash problems found in urban creeks. SMCWPPP therefore recommends an alternate approach that focuses on identifying and addressing accumulation areas in urban creeks (Figure 2). SMCWPPP has made significant progress in the initial steps of this strategy through the previously-described USA creek walks and trash assessments. SMCWPPP believes that this overall approach would allow local governments to identify and implement optimal solutions for the various types of trash and litter problems typically encountered in Bay Area urban waterways and to gain experience with a variety of appropriate trash control BMPs. Consistent with this approach, during FY 2008/09 SMCWPPP will conduct pilot studies at urban creek trash accumulation sites. Potential trash sources, transport pathways, and control measures will be evaluated. This will include additional pilot work in San Mateo Creek and potentially other urban creek locations in San Mateo County.

SMCWPPP also supports development of a more comprehensive public policy to address trash and litter. In March 2007 the Regional Water Board heard a status report on the MRP that elicited many comments on the need to improve trash and litter control. It was noted that a variety of societal problems such as homeless encampments along creeks contribute significantly to trash and litter problems in creeks. The Board members suggested that a multi-agency team be formed to improve trash and litter control efforts. Subsequently, some California legislators have also identified a need for a "more comprehensive public policy and regulation to protect the Bay from trash and marine debris." SMCWPPP supports multi-agency team development as part of a comprehensive public policy addressing trash and litter.

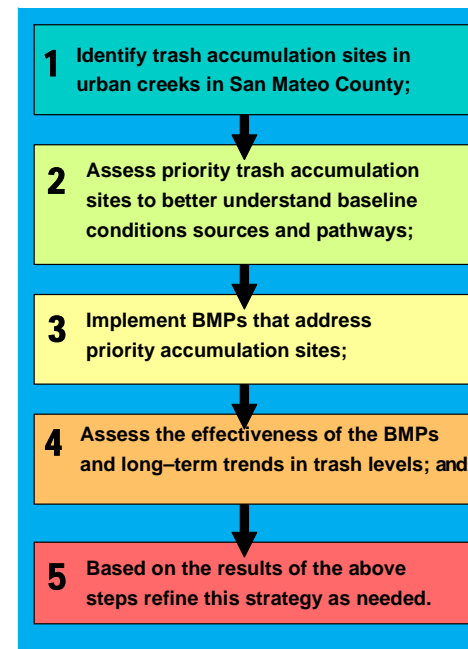


Figure 2. Summary of SMCWPPP's recommended strategy to address trash in urban creeks.

Tackling Trash in San Mateo County's Urban Waterways

Trash and litter accumulate in San Francisco Bay Area waterways, including creeks, wetlands, beaches, and the Bay itself, threatening aquatic habitat and recreational "Beneficial Uses" designated by the State of California. For example, wildlife may be harmed by becoming entangled in or ingesting trash, and human health concerns include discarded medical waste, broken glass, and animal and human wastes. At the recommendation of the San Francisco Bay Regional Water Quality Control Board (Region Water Board), all Bay Area urban creeks, lakes and shorelines were placed on the State Water Resources Control Board 2002 "Monitoring List" due to the potential for trash to impair water quality. In response, the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP) initiated a multifaceted program to begin identifying and cleaning up trash in urban waterways in San Mateo County.

Municipal Trash Management

In 2003 SMCWPPP kicked off its trash control program by convening a trash control work group that included maintenance, parks and recreation, code enforcement and recycling program municipal staff. Later that year SMCWPPP surveyed San Mateo County municipalities regarding their existing trash management efforts. The survey revealed that the municipalities typically implement a wide variety of trash management practices that fall under three general categories:

1. Trash collection and cleanup - includes routine trash collection, street sweeping, stormwater conveyance facility maintenance, leaf and litter removal, recycling programs, trash cleanup services by municipal staff or contractors, and facilitation of volunteer creek/shoreline cleanup events;
2. Enforcement of municipal ordinances that prohibit littering, dumping, and discharge of trash - includes the use of code enforcement staff to enforce anti-littering and illegal trash disposal ordinances and the inspection of construction sites to ensure the use of good housekeeping practices; and
3. Incentive, education and pollution prevention programs - includes anti-littering campaigns, community recognition programs, outreach at community events regarding litter control, and requiring trash and recycling facilities at new developments and redevelopment projects.

The survey also queried municipal staff for information on known trash accumulation areas, including the location of each site, the suspected origin of the trash, and the source of information.

One example of a municipal program to inspect a stormwater conveyance and address trash-related issues is San Mateo County Public Work's quarterly walks of Colma Creek with City of South San Francisco staff. Trash accumulation areas identified in Colma Creek were addressed via outreach to residents, enforcement actions and cleanups using laborers from the San Mateo County Sheriff's work program.



SMCWPPP's municipalities sweep their streets to help control trash and litter.

SMCWPPP's municipalities keep records of the volume and/or mass of materials (e.g., trash/debris, leaves, and sediment) removed during street sweeping, maintenance of stormwater conveyance facilities such as catch basins, pump stations and hardened channels, and removal of leaf and litter. This information is documented annually in SMCWPPP's Annual Report. During FY 2007/08, maintenance crews removed about 26,000 cubic yards (cy) and 836 tons of material during street sweeping and about 5,600 cy and 138 tons during storm drain cleaning that otherwise would potentially have been discharged to local creeks and the Bay or ocean. Trash and litter collection yielded about 14,800 cy and 77 tons of litter and about 5,800 cy and 212 tons of leaves.

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Community Outreach and Trash Cleanups



California Coastal Cleanup Day volunteers.

SMCWPPP coordinated and publicized creek and beach cleanups in San Mateo County as a partner with the California Coastal Commission during the annual California Coastal Cleanup Day in September 2006 and 2007. This project, which was entitled "Eliminating Trash in our Waterways," included implementing focused outreach to address disposable plastic items, the component of litter that is most abundant and harmful to wildlife. A survey was undertaken to help understand and promote behavior change, and SMCWPPP distributed 5,000 reusable shopping bags at supermarkets, farmers markets, community colleges and the County Fair. Residents were educated on the source and type of trash found in waterways and encouraged to participate in a California Coastal Cleanup effort at one of the organized locations along a creek, the Bay, or a beach.

SMCWPPP's efforts to publicize the Coastal Cleanup Day included distributing posters, brochures, and postcards and creating a page on SMCWPPP's website (www.flowstobay.org) with information on all aspects of the cleanup. The success of the publicity is reflected by an increase in participation from 971 volunteers in 2005 to 1,644 volunteers in 2006 (a 69% increase). Participation increased an additional 33% the following year, with 2,183 volunteers taking part in 2007. The volunteers picked up and potentially diverted from waterways 21,162 pounds of trash and recyclables in 2006 and an additional 24,633 pounds in 2007. The California Stormwater Quality Association (CASQA) presented its Outstanding Stormwater News, Information, Outreach and Media Award to SMCWPPP in recognition of the 2006 California Coastal Cleanup Day effort.

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SMCWPPP is again partnering with the California Coastal Commission to facilitate September 2008 California Coastal Cleanup Day activities in San Mateo County.

Monitoring and Assessment

In 2001, Regional Water Board staff developed a Rapid Trash Assessment (RTA) protocol as a tool to monitor the amount and types of trash in creeks and inform efforts to identify sources. The protocol enumerates and classifies each piece of trash found on the banks and within the channel of a selected 100-foot section of creek. During September 2002, SMCWPPP performed a field study in collaboration with the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) to pilot-test this protocol. The pilot study concluded that the RTA was a useful tool for measuring baseline levels of trash, identifying trash sources and transport pathways, and identifying and evaluating Best Management Practices (BMPs) to control trash. The study also found that implementing the RTA in all urban creeks in jurisdictions the size of San Mateo and Santa Clara Counties would be infeasible; rather, priority should be given to evaluating known accumulation areas. Finally, the study recommended modifications to the RTA that would make it more useful to municipal trash control programs. The SCVURPPP subsequently revised the protocol in accordance with these recommendations; the revised procedure is referred to as the Urban RTA (URTA). The URTA is similar to the RTA in that it provides a detailed inventory of the trash items found in a selected 100-foot section of creek, but is better suited to assessing trash conditions in highly urban areas.

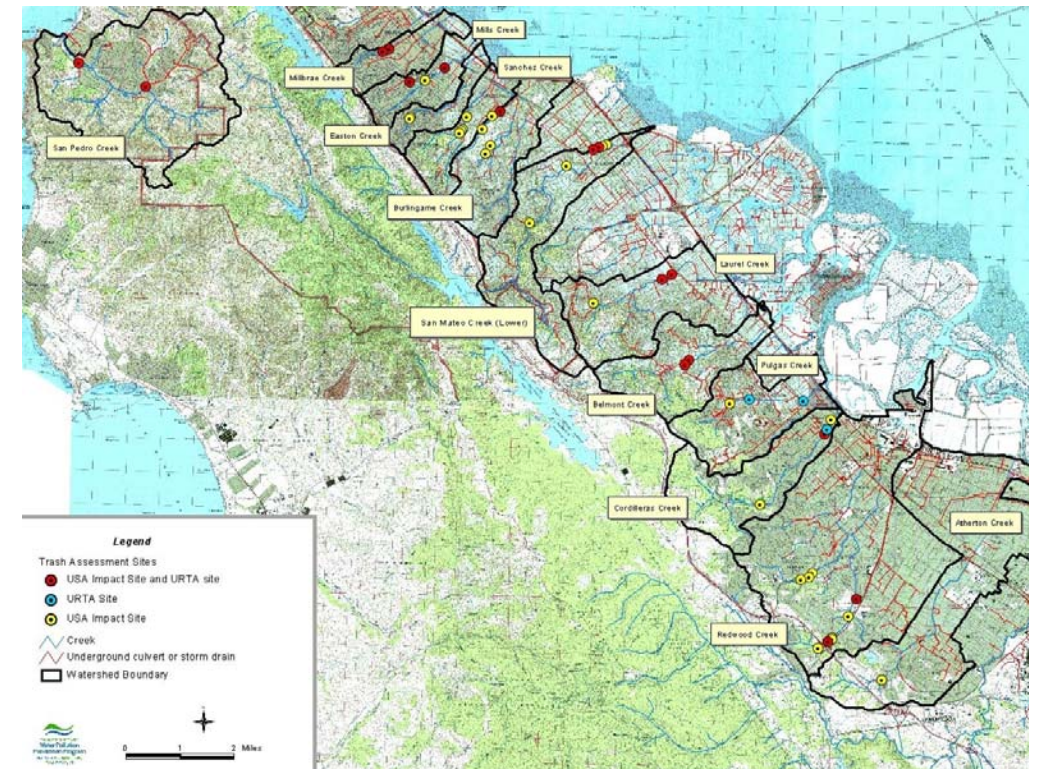


Figure 1. Trash accumulation sites identified during the USA and sites assessed using the URTA in 2006 and 2007.

During fall 2004 through spring 2005, SMCWPPP performed an initial pilot study to begin identifying trash sources, transport pathways, and potential BMPs at an urban trash accumulation site in San Mateo Creek. URTAs were conducted at the study site during three different hydrologic periods – the dry season, wet season, and in the spring. In addition, City of San Mateo staff was interviewed regarding potential sources and pathways and current municipal trash management activities. Littering and illegal dumping at the site and accumulation from upstream sources (e.g., nearby bridges) were identified as likely trash sources impacting the site.¹

During fall 2006 and 2007, SMCWPPP conducted creek walks in all of the accessible urban creek reaches in San Mateo County using the Unified Stream Assessment (USA) protocol. One component of the USA is to document creek sites where trash accumulates.² General characteristics were recorded for each trash accumulation site, including types of

¹Trash is periodically removed from the Gateway Park site through the City of San Mateo's sponsorship of an annual "Bayfront Cleanup Day." This event is part of the previously discussed annual California Coastal Cleanup Day. Lower San Mateo Creek, including Gateway Park, is included whenever low flow in the creek permits it. In 2006 deep pools prohibited cleanup at Gateway Park but in 2007 the creek was dry and the site was cleaned up.

²Other creek impacts recorded during the USA include erosion, creek crossings, utilities, and channel modifications.