



Urban Stormwater / Water Quality, San Timoteo Watershed Management Authority

Background

The San Timoteo Watershed Management Authority (STWMA) was formed by the City of Beaumont, Beaumont-Cherry Valley Water District, South Mesa Water Company, and Yucaipa Valley Water District in 2001.

The San Timoteo Creek Watershed, a sub-watershed of the Santa Ana River Watershed, is largely undeveloped and there is significant pressure to convert undeveloped and agricultural land uses to urban uses. Increased runoff and related water quality problems are a result of the transition from undeveloped and agricultural land uses to urban land uses. These problems are a concern to watershed stakeholders and to the Santa Ana Regional Water Quality Control Board (RWQCB). Runoff produced in the watershed is currently of very good quality. The changes in water quality that could occur due to urbanization include increases in minerals, nutrients, heavy metals, organics, pathogens, and sediment. At the present, San Timoteo Creek

and its tributaries are dry except during and immediately following rainfall events, and immediately downstream of recycled water discharges from publicly owned wastewater treatment facilities (POTWs). A successful regional strategy to manage urban runoff includes controlling stormwater flow discharges such that they do not increase above pre-development levels, controlling stormwater quality such that the water quality in the STWMA area will be maintained and enhanced, and reducing recycled water discharge to San Timoteo Creek. Unmanaged, future urban return flows could cause year round discharge in San Timoteo Creek and its tributaries. Left unmanaged, the changes in discharge regime and associated water quality could negatively impact current and future beneficial uses within the San Timoteo Creek watershed, and could contribute to non-attainment

of beneficial uses in surface water and groundwater bodies of the Santa Ana River Watershed. Current surface water beneficial uses in the STWMA area include groundwater recharge, water contact recreation, non-water contact recreation, warm water habitat and wildlife habitat.

Conducted an Investigation

Wildermuth Environmental Inc. (WEI) conducted an investigation which included a two-year field program; development and application of modeling tools to characterize future surface water quality and quantity problems, and to analyze solutions; and the development of a two-prong stormwater and dry-weather discharge management strategy. The two-prong approach included the development of both a regional stormwater management program and a localized treatment



Recharge basin in the San Timoteo Watershed



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and stormwater management program. The regional stormwater management program included a master plan of channel works, wetlands, and stormwater extended detention/infiltration facilities. The localized treatment and stormwater management program was developed with and adopted by local agencies with jurisdiction over land use planning. It included the development of best management practices (BMPs) that would be used by the local agencies in the STWMA area.

Components of the Investigation

A surface water monitoring program was undertaken to assess storm and dry weather flow quality for the period of late 2003 through 2004. A literature review and an inventory of existing and planned surface water management projects and facilities were completed in 2004. Current land use was developed by overlaying 1993 Southern California Association of Governments (SCAG) information obtained from the Santa Ana Watershed Project Authority

(SAWPA) onto 2002 aerial photos to update the 1993 information. Future land use was determined by reviewing general plans and specific plans for the STWMA area. In addition to hydrologic and soil data, information from regulatory permits, urban water management plans, sewer master plans and master plans of drainage, and local ordinances were also used to develop appropriate model parameters and input data sets to the extent they were available. The purpose of these activities was to identify the current dry-weather and stormwater runoff management regulations, practices and policies, and to obtain information to use with modeling tools to characterize the current and projected

future water quality and quantity due to projected changes in land use.

After the data had been gathered and prepared, the United States Environmental Protection Agency's (EPA) Stormwater Management Model (SWMM) was used to estimate the changes that could occur in water quantity and quality when land uses change from undeveloped to urban uses area in the future. The Wasteload Allocation Model (WLAM), developed by WEI, was then used to evaluate the recharge opportunities that would result from the increased runoff due to projected changes in land use.

Urban Runoff Management

An urban runoff management strategy with recommended projects and facilities such as these meets the NPDES MS4

requirements for regional and/or watershed-wide urban runoff management plans. To provide equivalent treatment control, the strategy includes extended detention/infiltration BMP facilities sized such that their collective capacity treats more than the cumulative volume of runoff



Stormwater runoff



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from all tributary existing and new development projects. These facilities capture and recharge all runoff from frequent rainfall events and temporarily store runoff from large rainfall events while recharging what is practical. The cost of implementing the recommended stormwater management strategy will be shared by the developers and local entities charged with managing the area's resources and they will be operated and maintained by public entities. They will supplement or replace site specific, structural treatment or source control BMPs, which will reduce the potential for BMP failure and assure that the facilities will provide multiple

benefits to meet the goals and objectives of the Integrated Regional Water Management Program (IRWMP).

This management strategy is flexible and adaptive. Facilities that were not included in the investigation, but that could also provide regional benefits, can be readily included in the regional program. This strategy supplements the required site design BMPs by creating equivalent water quality capture volume capacity at key locations in the watershed and provides the ability to reduce post-development flow rates and volumes to pre-development levels for the lower frequency design storm events—a reduction that

may not be feasible at individual sites. Lastly, this strategy preserves recharge areas in the event that facilities are required in these areas to manage urban runoff in

the future.

The urban runoff management strategy accomplishes the IRWMP goals by integrating stormwater management, water quality protection and enhancement, supplemental water recharge, water supply reliability, and groundwater management strategies with flood control, public access, and recreation management strategies. Integrating these strategies facilitates the equitable distribution of the benefits and costs of the IRWMP.

Successful Components

Other components of the San Timoteo Watershed Management Program include: protection and enhancement of groundwater quality; direct use and recharge of recycled water; stormwater recharge; minimization of the use of State Project Water in general and potentially eliminating the use of State Project Water during drought periods; conjunctive use and creation/restoration of wetland and riparian habitat.



Stormwater runoff in channel