

# ANALYSIS

## STORM DRAIN POLLUTION: POTENTIAL HEALTH IMPACTS

By Mark Gold, Staff Scientist, Heal the Bay

For years, local swimmers and surfers have complained of becoming ill after swimming in Santa Monica Bay. Because of this anecdotal evidence, one of the highest priorities for the SMBRP

has been to answer the question, "Are there health risks associated with swimming in Santa Monica Bay?"

Researchers from the Los Angeles Bureau of Sanitation Environmental Monitoring Division, Los Angeles County Sanitation Districts/Orange County Sanitation Districts and Heal the Bay have teamed up to provide answers to that question.

**Viruses and Bacteria from Pico-Kenter Storm Drain** Two studies have shed some light on storm drain and surfzone pollution. Among the findings:

1) Human gastrointestinal viruses were found in the Pico-Kenter storm drain two years in a row. These viruses can cause a number of illnesses — most frequently stomach flu. Until this discovery, nearly everyone was convinced that no human sewage was entering the storm drain system, since the sewage and storm drain systems are designed to be entirely separate.

The SMBRP has expanded its investigations to include storm drains throughout the Bay. No viruses were found at the Ashland Avenue and Santa Monica Canyon storm drains. Study results for three other sites are forthcoming, along with a second study on Pico-Kenter.

2) High indicator bacteria counts (above California Ocean Plan and State Health Code levels) were found more than 100 yards from the Pico-Kenter outfall. These findings confirmed suspicions aroused by earlier results. The good news is that bacteria counts in chest-depth water are much lower than at ankle depth.

**What's the Next Step?** Several factors have yet to be examined, and the SMBRP is already at work to provide answers. The UCLA Department of Epidemiology is currently investigating whether a large-scale health-effects study can be conducted on people who swim in the

Bay, and whether the study will be able to answer the decade-old question, "Is it safe to swim in Santa Monica Bay?"

## TREATING STORM DRAIN RUNOFF WITH OZONE

By Gerald E. Greene, Office of the City Engineer, City of Santa Monica

Adapting a technology for treating drinking water, the SMBRP and EPA sponsored a pilot program which treated the dry weather urban runoff from the Pico-Kenter storm drain with ozone. The program was conducted by the City of Santa Monica and the UCLA Laboratory of Biomedical and Environmental Sciences.

**The Results — Outstanding** The results proved that ozone was an excellent disinfectant, killing 99.9 to 99.999 percent of water-borne bacteria and viruses. The remaining contaminants were generally at levels so low that no environmental harm would be expected, although levels of lead (recently banned from gasoline) were about six times higher than drinking water standards. Compounds called PAHs also exceeded drinking water standards. While tests showed that ozone oxidized many chemicals, the treatment costs are high, and heavy metals remained untreated.

Although the treated water was unsuitable for drinking, most microorganisms were destroyed without forming carcinogens, as often occurs with chlorine treatment. Furthermore, much of the treated water was reclaimable for projects such as irrigation along freeways.

Santa Monica is currently considering construction of a full-scale ozone facility for the Pico-Kenter runoff. The future looks positive for a process that will significantly reduce contaminated runoff from the Bay's most problematic storm drain.



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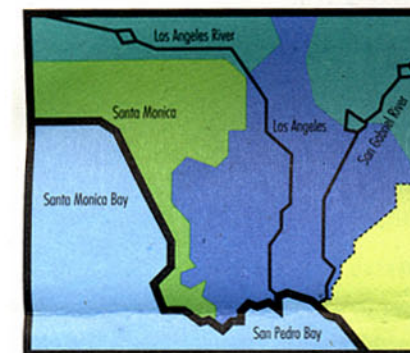
# ACTION

## LOS ANGELES COUNTY STORMWATER NPDES PERMIT

Los Angeles County and the cities around Santa Monica Bay have taken an innovative approach to reducing stormwater pollution. On June 18, 1990, the Los Angeles Regional Water Quality Control Board issued a stormwater NPDES permit to the County of Los Angeles Department of Public Works (as the principal permittee), with 89 cities and other agencies (as co-permittees). This followed many months of negotiations between several key local agencies of the Santa Monica Bay Restoration Project.

One unique element of this county-wide permit is its emphasis on pollution control through

**Best Management Practices (BMPs)** as opposed to technology-driven water quality standards. Developed through a cooperative process, the flexible and cost-effective permit program is adapted to the distinct structure of the Los Angeles County stormwater drainage system: its large size, the proximity of con-



The stormwater NPDES permit divides Los Angeles County into five drainage basins. Tasks required by the permit are phased in, by area, over a three-year period.

■ **Phase One:** Santa Monica Bay Watershed — Begins July 1990

■ **Phase Two:** Upper Los Angeles and San Gabriel River Watersheds — Begins July 1992

■ **Phase Three:** Lower Los Angeles and San Gabriel River Watersheds — Begins July 1993

stituent cities, the networking of the storm drain systems, and overlapping city/county jurisdiction over drainage facilities.

The permit calls for the completion of various tasks over a five-year period. Los Angeles County has been divided into five drainage basins (see map) with implementation phased in between 1990 and 1993. The Santa Monica Bay watershed was the first area to begin implementation.

**Completed and Future Action** The first-year tasks have been completed by permittees in the Santa Monica Bay watershed. The tasks include watershed characterization, compilation of existing data, development of a monitoring plan, optimization of existing stormwater quality management practices, and proposals for early action BMPs. Second-year tasks currently underway include implementation of a comprehensive stormwater quality monitoring pro-

gram, submission of plans and schedules for the implementation of additional BMPs, actions to address illegal discharges and illegal practices, and demonstration of legal authority to enforce regulations and prosecute violators.

In the third year, permittees must show progress in implementing the plans developed. By the end of the fifth year, the County and cities will evaluate and report on the results of monitoring, BMP implementation and source control activities, and propose a comprehensive stormwater/urban runoff quality management plan that will be undertaken during the term of the next permit.

**What is an NPDES Permit?** The National Pollution Discharge Elimination System (NPDES) permit program regulates pollutant discharges to surface waters from all point sources and municipal and industrial stormwater discharges. Permits are issued under the provisions of the Federal Clean Water Act and the California Porter-Cologne Water Quality Control Act.

## MAKING PICO-KENTER STORM DRAIN SAFE

SMBRP studies have found human pathogens contaminating the dry-weather flow of the Pico-Kenter storm drain for two consecutive years. This has resulted in the only year-round closure of a public beach in Santa Monica Bay and has given Pico-Kenter its reputation as one of the most problematic drains in the Bay.

While beach closure is a necessary response to ensure public health, it is by no means the ultimate solution. More proactive approaches are needed to combat the problems.

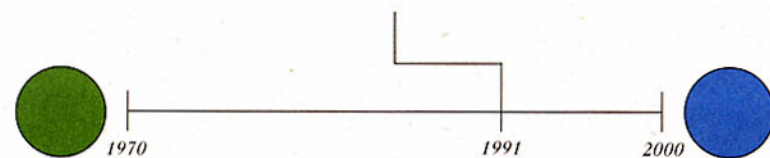
**Managing Pico-Kenter Runoff** Meanwhile, agencies are exploring several ways to better manage the water that flows through Pico-Kenter during dry weather. In 1991, as a first step, a pipe was extended into the ocean to divert contaminated water from areas of potential human

(continued)



The Los Angeles County stormwater NPDES permit is one of the most important accomplishments in Bay restoration to date.

In 1991, the Los Angeles County Board of Supervisors approved a new procedure calling for the closure of public beaches when public health may be at risk from contact with ocean water.



In 1994, the SMBRP will release its comprehensive Bay Restoration Plan, detailing programs, responsibilities, and sources of funding to restore and protect Santa Monica Bay.

