



ORANGE COUNTY STORMWATER PROGRAM

Progress in 2002-2003



MESSAGE FROM THE WATERSHED AND COASTAL RESOURCES DIVISION



Orange County combines world-class residential communities, a prosperous economy and exceptional recreational opportunities on a landscape that transitions from the rugged mountains of the Cleveland National Forest in the east to the scenic bays, harbors and ocean in the west.

The high quality of life that this environment offers residents is intimately linked to the quality of Orange County's water resources. That is why the County of Orange, the Orange County Flood Control District and all 34 cities, working together as the Orange County Stormwater Program, are cooperatively developing and implementing innovative programs to encourage businesses, residents and our own governmental institutions to take the steps necessary to prevent pollution from urban runoff.

I am pleased to present this progress report detailing the accomplishments of the Orange County Stormwater Program during 2002-2003, the first year of a significantly expanded effort. Although proud of the progress on the program to date, we recognize that much more still needs to be done. On behalf of the Orange County Stormwater Program, thank you for your interest and support in protecting and enhancing the water resources of Orange County.

*Larry McKenney
Manager
Watershed & Coastal Resources Division
County of Orange*



We can not solve the problems that we have created
with the same thinking that created them.

—Albert Einstein

Orange County Stormwater Program

Orange County Stormwater Program Progress in 2002-2003

Introduction

The land within Orange County has undergone a profound transformation over the past 200 years. Wilderness was replaced with ranch and cropland upon arrival of the first European settlers. The population explosion beginning in the 1950s replaced much of these farmlands with homes and businesses. Orange County is now predominantly an urban county encompassing 34 cities and a total population of 3 million people.

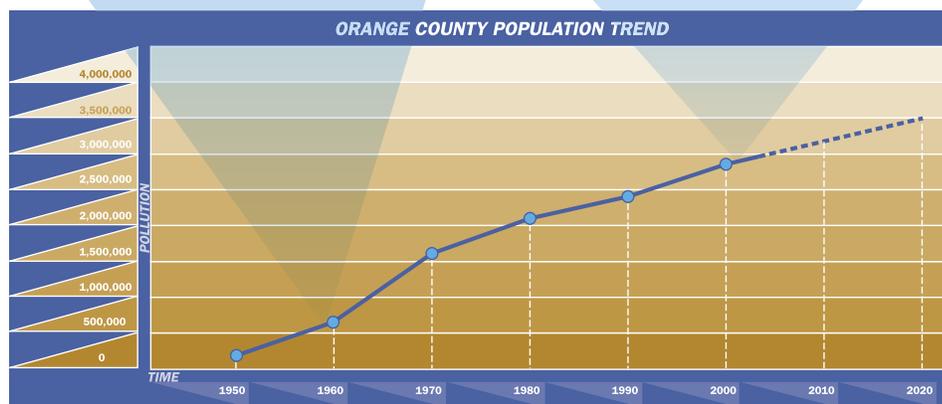
Orange County's rapid urbanization has placed considerable stress on the quality of its water resources. With the addition of channel systems—initially for crop irrigation purposes and later for flood control protection—the paving of earthen surfaces and the building of roads and parking lots, surface water runoff has significantly increased in quantity and decreased in quality. Urban runoff, which includes stormwater pollution, results from rain coming into contact with urban pollutants and from human activities that release water, like car washing and irrigation. Both result in pollutants such as bacteria, heavy metals, pesticides, oils, and trash being picked up and transported to our creeks, bays and ocean. The drainage path that water takes and its surrounding area is called a watershed. In Orange County, urban runoff from multiple watersheds flows into three recreational bays/harbors (Huntington Harbour, Newport Bay and Dana Point Harbor) and the Pacific Ocean with its 42 miles of Orange County coastline.



Dana Point Harbor: 1959



Dana Point Harbor: 2001



source: CSUF Center for Demographic Research

In 1990, local governments became responsible for the quality of the urban runoff from their jurisdictions as part of the National Pollutant Discharge Elimination System permit process of the Clean Water Act. Since that time, the County of Orange, the cities of Orange County and the Orange County Flood Control District (collectively the Orange County Stormwater Program) have cooperatively developed and implemented a comprehensive Drainage Area Management Plan that seeks to educate businesses and the public, reduce pollutants from currently developed areas, include enhanced water quality design features into new development projects, and monitor progress in improving water quality. This effort produced a three tiered approach to protecting and enhancing Orange County's water resources:

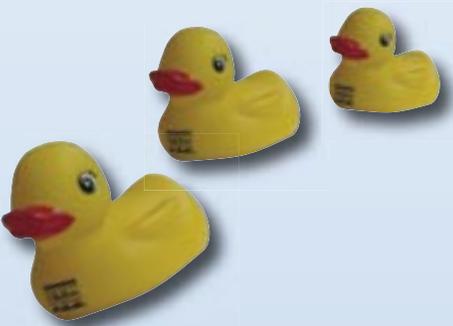
Orange County

Stormwater Program

Introduction



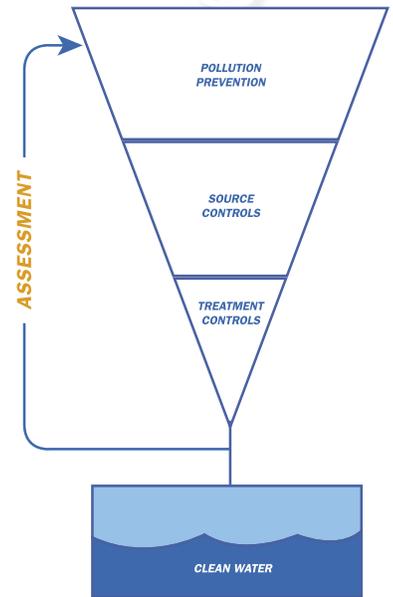
Did you know that the storm drain system is NOT the same as the sanitary sewer system? When asked as part of a public awareness survey, 41% of the County population did NOT know that the systems are different! Unlike substances that enter the sanitary sewers (from sinks and toilets), substances that enter the storm drains do not receive treatment before entering our waterways.



Pollution Prevention education and training are emphasized and used as the first line of defense to prevent polluting practices.

Source Controls are the second line of defense to prevent pollutants from entering the storm drain system. Examples of source controls are oil/water separators and street sweeping efforts.

Treatment Controls, such as devices to collect trash and debris and water quality treatment basins, remove pollutants from waterways creating the third line of defense. The development and implementation of these controls require a more detailed assessment of environmental conditions and water quality monitoring data.



Pollution Prevention

Education is the foundation of the Orange County Stormwater Program. Changing perspectives and behaviors is not easy, especially in an area as diverse as Orange County. The challenge is to provide the right balance of information that motivates change through multiple campaigns.

A public awareness survey was conducted to help understand the current level of knowledge of the public and the messages that would be most effective. This information helped shape a strategic campaign during 2002-2003, called Project Pollution Prevention, and produced messages that were seen 37 million times by the public.

Advertising Media Campaign

- 24 movie theaters with 245 screens throughout Orange County ran a 30-second public service announcement featuring rubber ducks to link activities at home to ocean pollution. The announcement was shown on movie screens prior to show times and on a continual loop in lobbies for two months during the key summer movie-going season.
- 31 newspapers carried full-page ads that showed people engaging in common everyday activities that can be harmful to the ocean. These activities include walking dogs, washing and maintaining cars, and applying fertilizer.

Orange County Stormwater Program

Pollution Prevention

You wouldn't let your dog use the ocean for a bathroom...



...so why would you let its waste enter the storm drains?

If you don't pick up after your pet, rainwater and water from runoff can carry the waste into the oceans, streams, harbors and the coast. Help protect the environment by picking up after your pet and throwing it away in the garbage or the toilet.

Brought to you by the Orange County Stormwater Program
For more information, visit www.ocwatersheds.com



You wouldn't dump fertilizer in the ocean...



...so why would you let garden chemicals enter the storm drains?

When you use fertilizers or pesticides, you might be helping your lawn, but hurting the environment. Water from rain, streams, or runoffs can carry chemicals from your lawn and lawns into drains. This water then flows untreated into the oceans, streams, harbors and the coast. Help protect the environment by avoiding fertilizers and not using more fertilizers or pesticides than you need. Don't use the products after rain is predicted within 48 hours. Make sure you're using the products in a way that prevents them from getting into storm drains or other waterways. If any water flows off your lawn, please water the lawn.

Brought to you by the Orange County Stormwater Program
For more information, visit www.ocwatersheds.com



You wouldn't dump oil into the ocean...



...so why would you let your car drain oil near storm drains?

When your car leaks oil onto the street or your driveway, rainwater can carry the oil into the storm drains. The oil and polluted water then flow untreated into the oceans, streams, harbors and the coast. Help protect the environment by repairing your car to help. Always make a spill spill-proof. Use proper tools, oil pans or another absorbent material to soak up spills. Also bring an absorbent material to a local oil collection center. Call the Used Oil Recycling Program at 1-800-368-6868 or visit www.orec.org for locations.

Brought to you by the Orange County Stormwater Program
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You wouldn't wash your car in the ocean...



...so why would you let your soap, grease and dirty water enter the storm drains?

When you wash your car at home, the water you use can flow off your driveway, across the street, onto the lawn, streams and coast along the way. Then this water goes into storm drains, where it flows untreated to the oceans, streams, harbors and the coast. Help protect the environment by using commercial car washes. If you must wash your car at home, use a runoff kit to catch the water you're not using the hose. Use biodegradable soap, and wash your car on grass or gravel to help absorb the water.

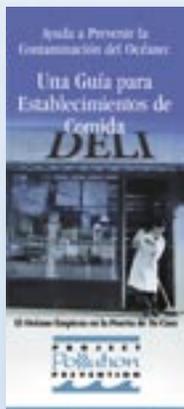
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- 67 Orange County Transportation Authority buses were posted with colorful advertisements taking up the entire back or side of buses linking ocean pollution to improper disposal of waste products. The buses ran routes throughout Orange County for an eight week period.

Materials Campaign

- 100,000 informational brochures and materials providing water quality tips for businesses and household activities were distributed to residents, businesses and municipalities in Orange County. Spanish language versions are being introduced as part of this campaign and all materials are available at www.ocwatersheds.com.
- 3 informational posters highlighting good operating practices for gas stations, food and restaurant facilities, and auto repair industries were widely distributed through facility inspectors.



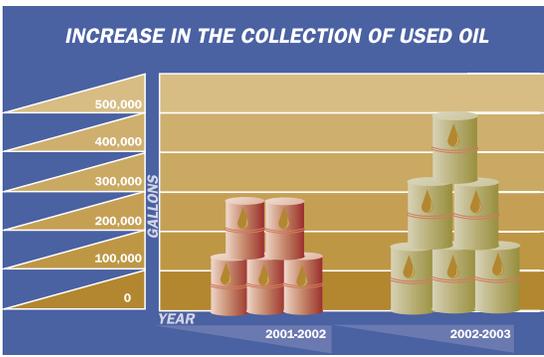


School Campaign

- Every public school in Orange County received a video called *Everyone's Connected* to be shown to all grade levels. The video presents the subject of urban runoff pollution prevention with an introduction by the Orange County Superintendent of Schools.
- The Orange County Stormwater Program sponsored a workshop from the nationally acclaimed Project WET (Water Education for Teachers) curriculum and training program. Project WET offered a "Train the Trainer" workshop highlighting lessons focused on urban runoff and stormwater pollution to 24 participating city and county representatives.
- The Municipal Water District of Orange County, a leader in water education for over 25 years, and the Orange County Stormwater Program combined resources to develop classroom activities aligned with California State Board of Education Content Standards for 5th grade. The activities provided urban runoff focused lessons for distribution to approximately 2,800 5th grade Orange County students. The program focused on 5th grade students in order for stormwater activities to complement existing curricula.
- The Orange County Stormwater Program supported the Ocean Institute's inaugural One Tier Back Program. This watershed-focused educational program was highlighted by a Kids Conference where students presented results of their watershed-based research projects.



Artwork developed by Mark Hillis, O'Neill Elementary School, Mission Viejo – winner of poster competition in Mission Viejo schools.



Behavioral Change.....

- From the beginning of the Orange County Stormwater Program, the proper disposal of used oil has been a pollution prevention priority. In 2002-2003, used oil collection efforts brought in 523,065 gallons of used oil for proper disposal compared to 269,444 gallons in 2001-2002.

Did you know an executive at an Orange County manufacturing company received 30 days in jail and \$70,000 in fines for illegally dumping hazardous materials into the storm drain system? **IT DOESN'T PAY TO POLLUTE!**



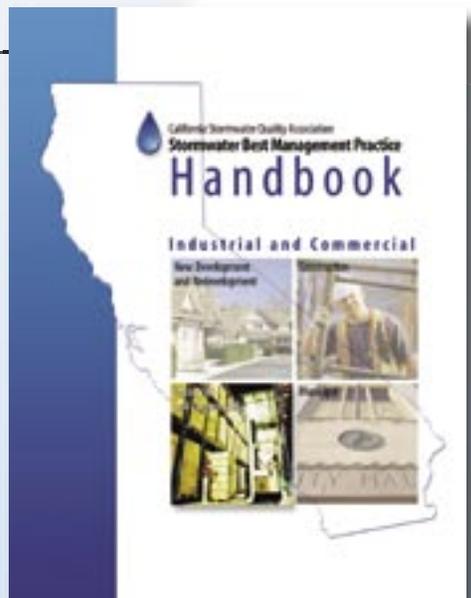
- The County of Orange Integrated Waste Management Department operates four sites (Anaheim, Huntington Beach, San Juan Capistrano, and Irvine) for the drop-off of household hazardous wastes. A total of 4,238,534 pounds of household hazardous waste was collected in 2002-2003 compared to 3,736,917 pounds in 2001-2002.

Source Controls

The Orange County Stormwater Program initiated municipal, commercial, industrial, and construction inspections to ensure the implementation of both Pollution Prevention and Source Control Best Management Practices (BMPs). The BMPs were specifically designed for categories of businesses, such as auto repair shops, restaurants and nurseries, and are provided as fact sheets of practices that will reduce pollutants entering local waterways. Enforcement action is taken when polluting practices are not corrected.

Municipal Facility Source Controls

Municipalities own much of the urban infrastructure including public buildings, roads and parks. These facilities, like their private-sector counterparts, have the potential to impact the quality of urban runoff. The Orange County Stormwater Program has stressed the need to lead others by example and a comprehensive program of BMPs have been developed and implemented for municipal facilities and field operations with the following progress reported:

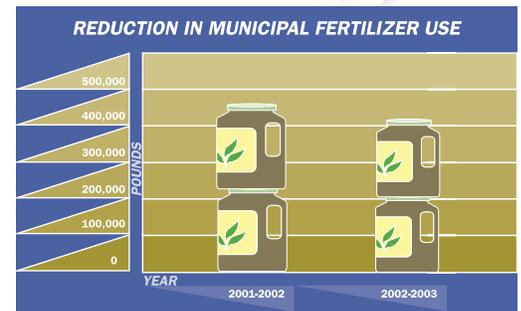


The Orange County Stormwater Program participated and provided funding for the development of standardized BMP handbooks. Available at www.cabmphandbooks.com.



Source Controls

- ♦ 790 municipal facilities were evaluated in 2002-2003 and 706 facilities were determined to have full BMP implementation.
- ♦ The improper or excessive use of fertilizers on landscaped areas can cause an increase in nutrient levels in urban runoff and resulting poor water quality in our creeks, bays and ocean. With oversight from the University of California Cooperative Extension, the Orange County Stormwater Program developed guidance and training for municipal landscape maintenance staff resulting in a decrease in the total municipal application of nitrogen fertilizer from 450,000 pounds in 2001-2002 to 413,000 pounds in 2002-2003.
- ♦ All municipalities maintain street sweeping programs in residential, commercial and industrial areas and these programs continue to be a principal source control practice for pollutants in the urban environment. In 2002-2003, street sweeping recovered 68,066 tons of dirt, debris and trash from streets and gutters, a reported increase of 58% compared to 2001-2002.



Construction, Industrial and Commercial Facility Source Controls

Construction sites can pose a particular threat to local waterways if BMPs are not correctly applied. For example, eroded soils in large quantities can create harmful conditions for aquatic habitat. Many building materials if improperly stored and used can result in pollutant releases.

- ♦ With help from the construction industry, the Orange County Stormwater Program produced and distributed 10,000 Construction Runoff Manuals in 2002-2003 to help educate site managers and encourage BMP implementation. In the same period, 926 formal enforcement actions were taken including the issuance of 281 Notices of Non-Compliance, 89 Administrative Compliance Orders and 19 Cease and Desist Orders.

The initial emphasis of the Orange County Stormwater Program was on notifying industrial and commercial facilities of Clean Water Act requirements. The emphasis has changed and the focus is now on performing inspections and obtaining compliance with local water quality ordinances.

- ♦ In 2002-2003, countywide inspection efforts showed that 1,420 commercial and industrial facilities had fully implemented pollution prevention and source control BMPs, 524 facilities had partially implemented BMP programs and 154 facilities had no BMPs. In the same period, 1,005 formal enforcement actions were taken including 346 Notices of Non-Compliance, 226 Administrative Compliance Orders and 9 Cease and Desist Orders.



Treatment Controls

In 2002-2003, treatment controls were required for all new development and significant redevelopment projects. These controls include BMPs, such as vegetated swales, detention basins, constructed wetlands, infiltration trenches, and media filters, designed to capture and treat urban runoff.

A number of treatment controls were implemented during 2002-2003 to address water quality problems through a retrofitting approach in the existing storm drain system:

- The City of Laguna Niguel constructed a wetland treatment and capture network to cleanse polluted runoff from one neighborhood before it enters Aliso Creek. The project diverts all non-storm urban runoff through a series of constructed wetlands before releasing the water back into the creek. This network builds an important cleansing step back into the flow process allowing the water quality to improve naturally before it flows farther downstream.
- Since 1999, the County and coastal cities have installed 16 diversion systems that pump approximately 2.9 million gallons of urban runoff per day to the sanitary sewer system for treatment. Diversions typically include a dam and a pumping system and are most commonly installed to prevent urban runoff impacts on recreational beaches.
- Since 2000, erosion controls have been installed at 13 sites along Serrano Creek, in the City of Lake Forest, which has been heavily impacted not only by urbanization but also by historically large storm flows. A combination of slope protection controls, flow redirection and grade stabilizers were used to reduce the amount of sediment being transported in the creek. Habitat creation and enhancements were also carried out in order to restore adjacent sensitive habitat areas.



PROBLEM

SOLUTION



Assessment of Progress

Did you know that excess nitrogen and phosphorus runoff (primarily from fertilizers) to Newport Bay has caused water quality problems? A multi-year effort to reduce and treat sources has resulted in a decline in the average yearly nitrate concentration from 11.5 mg/l in 1998 to 4.8 mg/l in 2003.



Assessment of Progress

Assessment is the key to characterizing environmental conditions and determining if the actions being taken—in this instance the implementation of BMPs—are protecting and enhancing Orange County's water resources.

To date, the monitoring and assessment program has produced information about several aspects of the Orange County environment including:

- Long-term trends of key pollutants
- The status of biological communities including high-valued habitats in creeks and streams, bays and estuaries, and along the coast
- Patterns of aquatic toxicity due to urban runoff
- The frequency and severity of bacterial contamination that may affect human health in recreation areas
- The incidence of spills, illegal discharges and poor housekeeping that contribute to pollution

This information also integrates with broader regional assessment and monitoring programs. During 2002-2003, the Orange County Stormwater Program participated in a number of regional programs to improve our understanding of urban runoff:

- The Orange County Stormwater Program participated with neighboring counties in a regional project to develop a model water quality monitoring program for Southern California that would increase comparability among data from different programs.
- Financial support was provided toward an assessment of a broad array of source control and treatment control BMPs for use in Orange County (report on BMP Effectiveness and Applicability for Orange County is available at www.ocwatersheds.com).



- A large multi-agency study of evapotranspiration (ET) controllers received funding support from the Orange County Stormwater Program to determine their effect on pesticide runoff. These ET controllers change the amount of water being used for irrigation on landscapes to reflect the current weather conditions and the needs of the plant life.

12 Ways to Help Prevent Ocean Pollution...

H O U S E H O L D

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbant material, sweep and dispose of in trash.
- Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products, and cathode ray tubes, like TVs and computer monitors, to a household hazardous waste collection center. For a household hazardous waste collection center near you call (714) 834-6752 or visit www.oclandfills.com.
- Securely cover trash cans.
- Do not hose down driveways, sidewalks or patios. Sweep up debris and dispose in trash.
- Always pick up after your pet. Flush waste down the toilet or dispose in the trash.

G A R D E N I N G

- Follow directions on pesticides and fertilizers (measure, do not estimate amounts to be applied) and do not use if rain is predicted within 48 hours.
- Water your lawn and garden by hand to control amount of water you use or, for timed controllers, set irrigation systems to reflect seasonal water needs. If water flows off your yard and onto your driveway or sidewalk, your system is over-watering.

A U T O M O T I V E

- Take your car to a commercial car wash whenever possible. If you do wash your car at home, choose soaps, cleaners or detergents labeled non-toxic, phosphate free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewers (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor vehicles for leaks and place pans under leaks. Keep your car well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800CLEANUP.org.

- Report spills to the Orange County 24-Hour Water Pollution Problem Reporting Hotline at 714-567-6363 or visit the Watershed and Coastal Resources website at www.ocwatersheds.com and fill out an incident reporting form.

Future Challenges

Protecting and enhancing Orange County's water resources presents significant social, technological, regulatory, and financial challenges for the Orange County Stormwater Program:

- The prevention of pollution from urban runoff requires increased responsibility from businesses, residents and our governmental institutions yet only 60% of residents understand the fundamental difference between storm and sanitary sewer collection systems - urban runoff is not treated before reaching the ocean.
- Academia and industry are beginning to offer innovative solutions for urban runoff pollution. The challenge is to clearly identify those practices and technologies that will secure and ultimately sustain meaningful and cost effective water quality improvements.
- The regulatory framework is changing and growing more complex with an increasing number of pollutant issues identified in Orange County by the State of California. The Orange County Stormwater program often works on the cutting edge of knowledge in understanding these problems and finding appropriate solutions so as to remain in compliance with regulations.
- During 2002-2003, the Orange County Stormwater Program participants spent over \$60 million on water quality protection activities. At a time of budget shortfalls, it will be a significant challenge to maintain forward progress with scarce resources.

The Orange County Stormwater Program is determined to succeed despite the many challenges. In 2002-2003, the foundation was laid for long-term success but there is still a long road ahead.

Orange County Stormwater Program Participants

- ✦ City of Aliso Viejo
- ✦ City of Anaheim
- ✦ City of Brea
- ✦ City of Buena Park
- ✦ City of Costa Mesa
- ✦ City of Cypress
- ✦ City of Dana Point
- ✦ City of Fountain Valley
- ✦ City of Fullerton
- ✦ City of Garden Grove
- ✦ City of Huntington Beach
- ✦ City of Irvine
- ✦ City of La Habra
- ✦ City of La Palma
- ✦ City of Laguna Beach
- ✦ City of Laguna Hills
- ✦ City of Laguna Niguel
- ✦ City of Laguna Woods
- ✦ City of Lake Forest
- ✦ City of Los Alamitos
- ✦ City of Mission Viejo
- ✦ City of Newport Beach
- ✦ City of Orange
- ✦ City of Placentia
- ✦ City of Rancho Santa Margarita
- ✦ City of San Clemente
- ✦ City of San Juan Capistrano
- ✦ City of Santa Ana
- ✦ City of Seal Beach
- ✦ City of Stanton
- ✦ City of Tustin
- ✦ City of Villa Park
- ✦ City of Westminster
- ✦ City of Yorba Linda
- ✦ County of Orange
- ✦ Orange County Flood Control District

For more information on
the Orange County Stormwater Program
please call 714.567.6363
or visit www.ocwatersheds.com

Para mayor información,
por favor llama
al Orange County Stormwater Program
al 714.567.6363
o visita www.ocwatersheds.com

Acknowledgements

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