COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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January 26, 2006

IN REPLY PLEASE
REFER TO FILE: WM-7
A1785-F

TO: Each Supervisor

FROM: Donald L. Wolfe DLW
Director of Public Works

Stan Wisniewski, Director Stan Wisniewski
Department of Beaches and Harbors

HEAL THE BAY BEACH REPORT CARD
BOARD MOTION OF NOVEMBER 1, 2005
GREEN SHEET ITEM 64A

On November 1, 2005, your Board passed a Motion instructing the Director of Beaches and Harbors to review the results reported by Heal the Bay in its Summer Beach Report Card and to report back with an assessment of this report within 60 days.

Subsequent to this Motion and in light of Public Works' knowledge and expertise in the area of water quality, Beaches and Harbors requested that Public Works lead the assessment efforts. In view of the fact that this assessment would require coordination between the two Departments and extensive research into technical documents associated with beach water quality, Public Works requested a time extension and agreed to provide you with a final report by January 30, 2006.

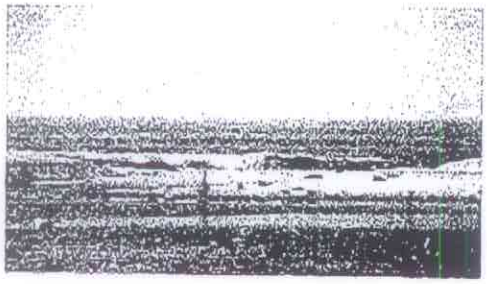
Attached is the report of our assessment. If you have any questions, please contact Donald L. Wolfe at (626) 458-4002.

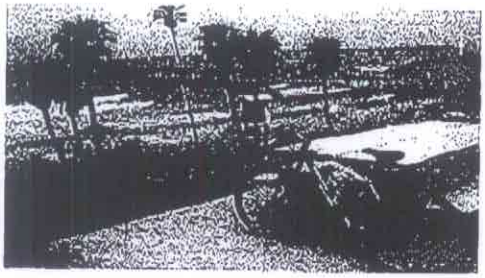
JH:jc
P:\wmpub\NSME Watershed\Division Business\A-Memo (BRC)\Cover Letter jc.doc\C06041

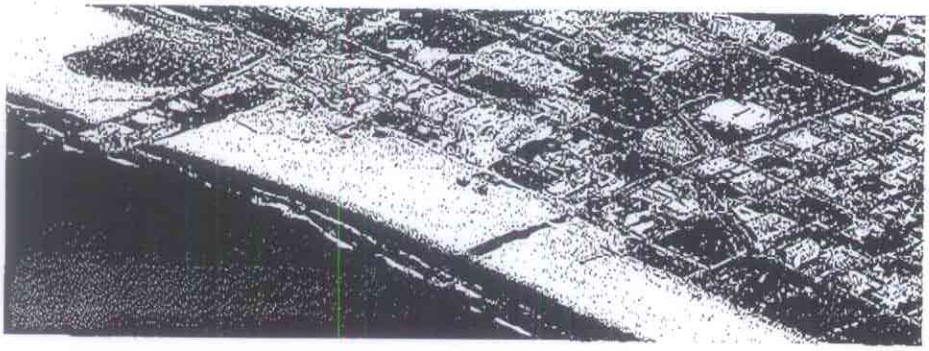
Attach.

cc: Chief Administrative Office
Executive Office

Assessment of Heal the Bay's 2005 California Summer Beach Report Card®







Los Angeles County Department of Beaches & Harbors

PUBLIC WORKS

Los Angeles County Watershed Management

Executive Summary

County beaches are visited by tens of millions of people each year making them one of the most valuable natural resources in the County of Los Angeles. Heal the Bay has been issuing grades for these beaches since 1990 based on bacteria levels at the shoreline. There has been a general improvement in beach water quality since the start of the grading system; however, County beaches did receive more poor grades this summer than in any other summer in the past five years. Analyzing the cause and impact of fluctuations in grades is very difficult due to the dynamic nature of the beach environment.

Poor beach grades during the summer months are often attributed to the pollutants carried in dry-weather urban runoff. This runoff originates from a multitude of sources throughout a watershed and it is easily transported to the beach through the storm drain system, which is designed to convey floodwaters to the ocean as quickly as possible. Urban runoff can pickup bacteria and pathogens on its way to the beach from a number of sources, including pet waste, decaying vegetation, illegal discharges, birds and other wildlife, and various other sources.

In the last ten years, the County has been committed to water quality improvement projects and conducted extensive public education to limit the impact of human-related bacteria sources at the beaches. It is currently estimated that these projects and programs, including activities associated with the Municipal Stormwater Permit, cost the County of Los Angeles in excess of $65 million per year. Within this effort is the planning and construction of 20 low-flow diversion projects, which collect dry-weather urban runoff and pump it to the sanitary sewer system for treatment. The County continues to explore the causes of high bacteria levels at our beaches and supports the development of technologies that enable rapid and accurate assessments of pollutants that pose a risk to human and marine life.

This report will introduce and analyze the results of the 2005 California Summer Beach Report Card® published by Heal the Bay. This report will also include: 1) a discussion of the uncertainties associated with the causes and effects of elevated bacteria levels at the beach; 2) an overview of the County's efforts to ensure that beach goers are protected from the impacts of dry-weather urban runoff; and 3) an outline of measures necessary to guarantee that water quality continues to improve not only at beaches, but throughout every watershed in the County of Los Angeles.

TABLE OF CONTENTS

INTRODUCTION 1

HEAL THE BAY BEACH REPORT CARD® 1

ANALYSIS OF BEACH GRADES AND REPORT CARD 4

EFFORTS IN IMPROVING BEACH WATER QUALITY 8

CONCLUSION 15

INTRODUCTION

On October 26, Heal the Bay released the 2005 California Summer Beach Report Card® (Appendix A). It revealed that the vast majority (85%) of the failing grades in Southern California were given to County of Los Angeles beaches. The following day, Mark Gold, Executive Director of Heal the Bay, held a press conference at the mouth of the Santa Monica Canyon channel wherein he stated that summer 2005 was, by far, the most polluted year in the past five years. He also commented that all counties in Southern California experienced record rainfall last winter, but only the County of Los Angeles beaches showed a decline in their grades. Mr. Gold also suggested that the low-flow diversions, built by public agencies to improve dry-weather water quality by pumping urban runoff to sanitary sewer systems, were improperly designed and maintained.

This report provides an assessment of the information within the 2005 California Summer Beach Report Card®, a discussion of the uncertainties associated with the causes and effects of beach water quality, and a summary of the County's efforts to improve overall beach water quality.

HEAL THE BAY BEACH REPORT CARD®

Background

The Beach Report Card® was created by Heal the Bay to provide the public with information about the water quality at recreational beaches in an easy-to-understand format. Heal the Bay publishes weekly, summer, and annual Beach Report Cards®. The Summer Beach Report Card® summarizes beach water quality between Memorial Day and the end of September. The Annual Beach Report Card® is released each May to present overall beach conditions for the year.

The Beach Report Card® evaluates 448 beaches Statewide based on bacteria concentrations. Water quality monitoring used in the Beach Report Card® is conducted at the shoreline by local health agencies and sewage treatment plant dischargers. Grades are based on the concentrations of three different indicator bacteria: total coliform, a group of bacteria that can originate from soil, plants, and human and animal waste; fecal coliform, a group of bacteria found in the intestinal tracts of humans, mammals, and birds; and enterococcus, a bacterium found in human and animal waste. The presence of these bacteria is used to indirectly measure human health risks by assuming a link between these indicators and viruses.

When the first Beach Report Card® was released in 1990, it evaluated 60 locations all within the County of Los Angeles. The passage of Assembly Bill 411 (AB 411) in 1996 mandated weekly bacteria monitoring during the summer months at recreational beaches impacted by storm drains throughout California. Heal the Bay has used this extensive monitoring program to refine their grading system and expand the Beach Report Card® Statewide. Of the 448 current Statewide monitoring locations, 357 are located in Southern California with the breakdown by County as follows:

Orange County	104
San Diego County	95
Los Angeles County	82
Ventura County	56
Santa Barbara County	20

The shoreline monitoring used in the generation of the Beach Report Card® is generally performed on a weekly basis in accordance with AB 411 requirements. However, there are 26 beaches in the County of Los Angeles and 17 beaches in Orange County where sewage treatment plant dischargers collect bacteria water quality samples several times per week to comply with discharge permits.

Grading Methodology

Heal the Bay's report card grading methodology uses a complex scoring system designed to characterize beach water quality with letter grades. The system is based on a comparison of the bacteria concentrations found at each monitoring location to the recreational beach water quality standards set by the California Department of Health Services for swimming.

The California Department of Health Services' standards are based on the same three indicator bacteria referenced in the Beach Report Card®: total coliform, fecal coliform, and enterococcus. These bacteria do not necessarily cause illness in humans themselves, but are used as indicators of human pathogens. The single-sample water quality standards for bacteria established by the State are:

- 10,000 or fewer total coliforms per 100 ml
- 400 or fewer fecal coliforms per 100 ml
- 104 or fewer enterococci per 100 ml
- 1,000 total coliforms per 100 ml if the ratio of fecal to total coliform exceeds 0.1

Heal the Bay has set a series of health risk thresholds for the three indicator bacteria and for the ratio of total coliform to fecal coliform. The thresholds are set according to epidemiological studies as standard deviations above or below the water quality standards.

Exceedence Thresholds

Group	1 T - 1 s.d.	2 T + 1 s.d.	3 >T + 1 s.d.	4 Very High Risk
Total Coliform	6,711-9,999	10,000[2], 14,900	>14,900	N/A
Fecal Coliform	268-399	400-596	>596	N/A
Enterococcus	70-103	104-155	>155	N/A
Total to Fecal Ratio (when: Total >= 1,000)	10.1-13	7.1-10	2.1-7	<2.1
(1) s.d. - standard deviation				
(2) Bold red numbers are the State's standards for a single sample.				
T – State water quality standards for swimming				

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For each health risk threshold there is a designated number of point deductions. Points are deducted from the beach's score when bacteria concentrations in a monitoring sample falls within a health risk threshold.

Threshold Points

Group	1 T - 1 s.d.	2 T + 1 s.d.	3 >T + 1 s.d.	4 Very High Risk
Total Coliform: Fecal Coliform Enterococcus	6	18	24	N/A
Total to Fecal Ratio (when: Total >= 1,000)	7	21	35	42
s.d. - standard deviation				

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Each weekly beach score is calculated by subtracting, from 100, all the point deductions accrued in the previous four weeks. Letter grades are then assigned on a ten-point scale. The weekly grades are then averaged to produce the cumulative grade for the reporting period (i.e., summer or annual). For sites monitored more than once per week, point deductions are divided by the weekly monitoring frequency.

Heal the Bay adjusted the scoring system for the 2005 Beach Report Card® in an effort to better reflect present water quality. Weekly score point deductions for the most recent week are now multiplied by 1.5. Also, a factor for the geometric mean of the data has been included. A sample weekly grade calculation can be found in Appendix B.

$$\textit{Weekly Score} = 100 - \textit{three week total} - 1.5 * \textit{present week}$$

Score	Grade
90-100	A
80-89	B
70-79	C
60-69	D
<60	F

Beach closures and postings are mentioned in the Beach Report Card®, but not used for the grading system. Since the scoring system deducts points for samples with bacteria counts well below the State standards, a beach considered safe for swimming could receive an F grade on the Beach Report Card®.

ANALYSIS OF BEACH GRADES AND REPORT CARD

Review of the 2005 Summer Beach Report Card® reveals that the beaches in the County of Los Angeles did receive more poor grades this summer than in any other summer in the past five years. Yet, over 20 percent of the beaches in the County of Los Angeles received a higher summer grade in 2005 than 2004. Fifty percent received the same grade, and 30 percent received a lower grade. The cause of these variations is not easy to determine given the dynamic nature of the beach and dry-weather runoff throughout each watershed. The following six sections discuss factors that could affect beach grades as well as the significance of these grades.

Fluctuation of the Beach Grades

Grades for a portion of the County of Los Angeles beaches typically fluctuate from one summer to the next. This summer some beaches showed an unanticipated improvement while others showed an equally unanticipated decline. For instance, grades for Manhattan Beach at 28th Street (D to A), Hermosa Beach at Herondo Street (D to B), and Santa Monica Beach at Montana Avenue (F to A) all significantly improved even though low-flow diversions were under construction and did not operate at these locations this summer. On the other hand, some beaches in the North Santa Monica Bay, where watersheds are almost entirely natural, received unusually low grades for the summer.

The Beach Report Card® utilizes a conservative scoring system. By including four weeks of point deductions in each weekly grade, a single occurrence of high bacteria will result in four weeks of poor grades even if the water quality is very good for three of those four weeks. For example, threshold occurrences in May caused Westward Beach to receive F grades and D grades during the first four weeks of summer before improving to A grades for the remainder of the summer.

Bacteria Indicators Uncertainty

Water quality standards for swimming at the beach are based on the levels of three types of bacteria used to indirectly measure the levels of harmful pathogens. These indicator bacteria are used because it is too difficult, time-consuming, and expensive to test for the huge array of potential pathogens themselves. Studies have shown various degrees of correlation between these bacteria indicators and illnesses, such as fever, chills, and diarrhea.

The most extensive study of the health risks of swimming in the beach waters of the County of Los Angeles was released by the Santa Monica Bay Restoration Project (now Commission) in 1996. The study found illness rates were generally one to two percentage points higher for those exposed to waters with bacteria levels exceeding the State standards. The study found a similar increase for those who swam in front of a flowing storm drain compared to those who swam 400 yards away.

In 2003, a similar epidemiological study was conducted for Mission Bay in San Diego by the Southern California Coastal Water Research Project (SCCWRP) and the University of California, Berkeley School of Public Health. This study found that those who swam in Mission Bay had an elevated risk for skin rash and diarrhea compared to nonswimmers. However, this increase in risk showed no correlation to the levels of indicator bacteria. This study illustrated how the State water quality thresholds could be poor predictors of swimming-related illness.

In addition to an uncertain relationship to human health, bacteria indicators fluctuate according to natural phenomenon. Studies in Huntington Beach showed that the beaches had their worst water quality during a tidal cycle known as spring tides. Spring tides occur when the gravitational pulls of the moon and the sun reinforce each other, resulting in the highest high tides and lowest low tides. During this tidal cycle, enterococci levels are twice as likely to be above State health standards. Bacteria levels have also been found to fluctuate similarly during a new and full moon. Water quality samples in the County of Los Angeles are collected without regard to high or low tides.

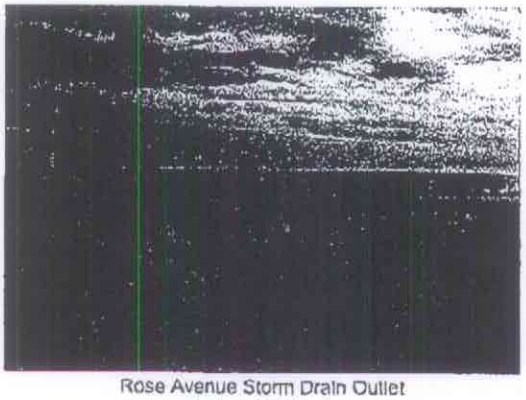
Shoreline Monitoring Frequency

Although weekly point deductions are divided by the weekly monitoring frequency, sites with greater monitoring frequency tend to receive lower grades. Eight of the 11 County of Los Angeles beaches that received a score of F were monitored several times per week. Greater monitoring frequency causes lower scores by increasing the probability of threshold bacteria occurrences and causing more consistent point deductions. The County of Los Angeles and Orange County are the only counties with sites subject to daily monitoring.

Typical Shoreline Sampling

Shoreline Monitoring Locations

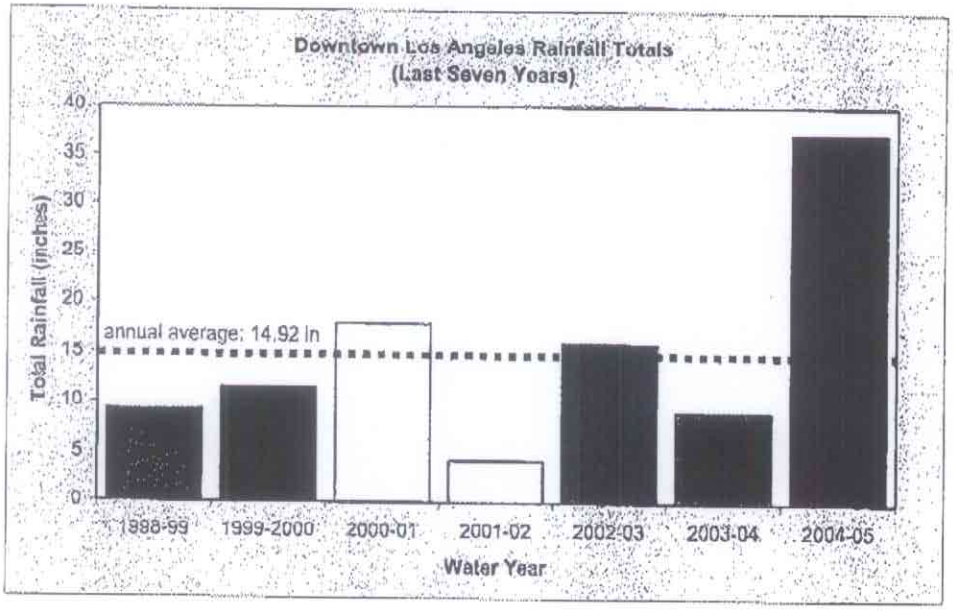
In 2004, the shoreline monitoring locations near storm drain outlets were relocated according to a requirement in the Santa Monica Bay Beaches Bacteria Total Maximum Daily Load (TMDL). Sampling locations were relocated from a point 50 yards away from the storm drain outlet to a point directly in front of the storm drain outlet. The effect of this change on beach grades has not been investigated. but the general thought is that it would have a lowering effect.



Rose Avenue Storm Drain Outlet
Venice, California

Record Rainfalls During 2004-05 Season

Southern California experienced extraordinary rainfalls during the 2004-05 season. The National Weather Service (NWS) declared it Los Angeles' wettest season on record since 1883-84 with a season total of 37.25 inches measured at the NWS official rain gauge located in downtown Los Angeles at the University of Southern California. It should also be noted that rainfall depths varied largely throughout the County. Some rain gauges recorded over 50 inches in mountainous areas.



Heavy rains not only cause more runoff to reach the ocean during the wet season, but also elevate groundwater levels and increase dry-weather flows for the following summer. With increased dry-weather flows, more urban runoff and natural creek water can breach the sand and directly enter the ocean instead of ponding in lagoons and filtering through the beach sand. The net result is increased bacterial loading at the shoreline.

Heal the Bay stated that all counties in Southern California experienced record rainfall last winter, but only County of Los Angeles beaches showed a decline in their grades. It is difficult to determine what influence rainfall may have had on individual watersheds, because each region is hydrogeologically unique and bound to experience different effects. Some groundwater aquifers may have been unaffected while others may have elevated significantly, overflowing into adjacent creeks and channels. Also, some outfalls may have been unchanged while others may have remained breached all summer long.

Beach Postings, Closures, and Advisories

The County of Los Angeles Department of Health Services is required by law to inform the public when bacteria levels are above the State health standards. They inform and protect the public by posting warning signs, closing beaches, and issuing rain advisories. Beaches are posted with warning signs when bacteria levels exceed the State ocean water quality standards. Beaches remain posted until tests indicate that bacteria levels meet the State standards. Beaches are closed when a suspected or real sewage discharge to ocean waters occurs or elevated bacteriological levels can be linked to a known sewage discharge. Samples are collected from the affected areas

and the beaches are kept closed until sampling data indicates that bacteria levels meet the standards. A rain advisory is issued anytime there is significant rainfall, and it stays in effect for 72 hours after rainfall has ended.

Beach Posting Sign

Beach Closure Sign

The impact of beach postings and closures can be measured by comparing the number of beach mile days affected by a posting or closure to the total number of beach mile days available for public use. A beach mile day is calculated by multiplying the length of public beach by a number of days. The County of Los Angeles has approximately 7,000 beach mile days available during the summer period (55 beach miles x 125 days). As shown in the following table, only 26 of these beach mile days were affected by postings during summer 2005. The table also shows that even though the number of postings was elevated, the impact of these postings was not. There was no significant impact on the number of beach mile days.

Breakdown of Beach Postings and Closures

Summer Period	Number of Events		Number of Days		Number of Beach Mile Days		
	Closures	Postings	Closures	Postings	Closures	Postings	Total
2000	0	109	0	374	0	54	54
2001	2	77	3	262	2	29	31
2002	0	74	0	200	0	19	20
2003	0	118	0	439	0	165	165
2004	3	80	4	250	2	16	18
2005	0	100	0	474	0	26	26

Data obtained from http://beachwatch.waterboards.gov

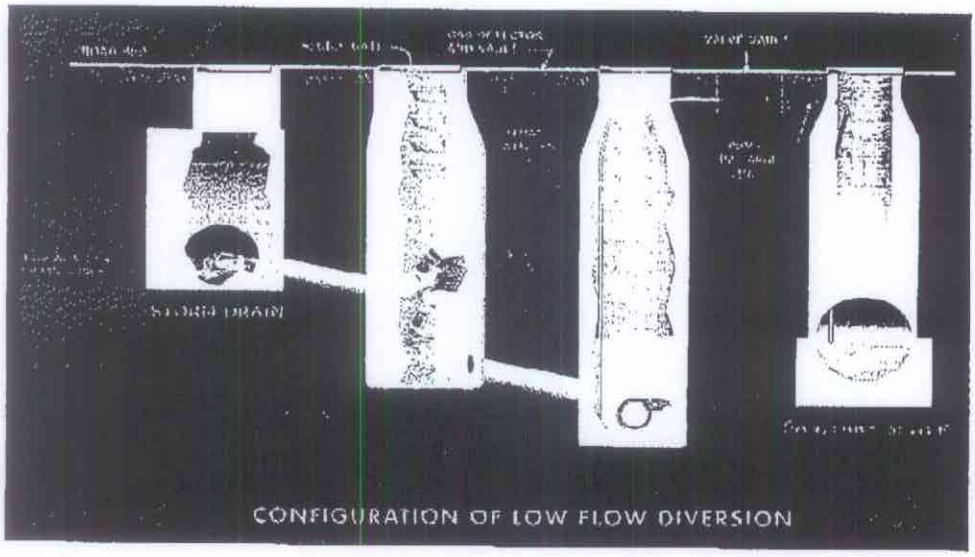
EFFORTS IN IMPROVING BEACH WATER QUALITY

For several years, Public Works (acting on behalf of the District) has been implementing dry-weather beach water quality mitigation measures that include structural and nonstructural BMPs. The structural BMP Program includes the construction of 20 high-priority low-flow diversions and one infiltration pit. The nonstructural BMP Program includes the implementation of activities associated with the Municipal Storm Water Permit.

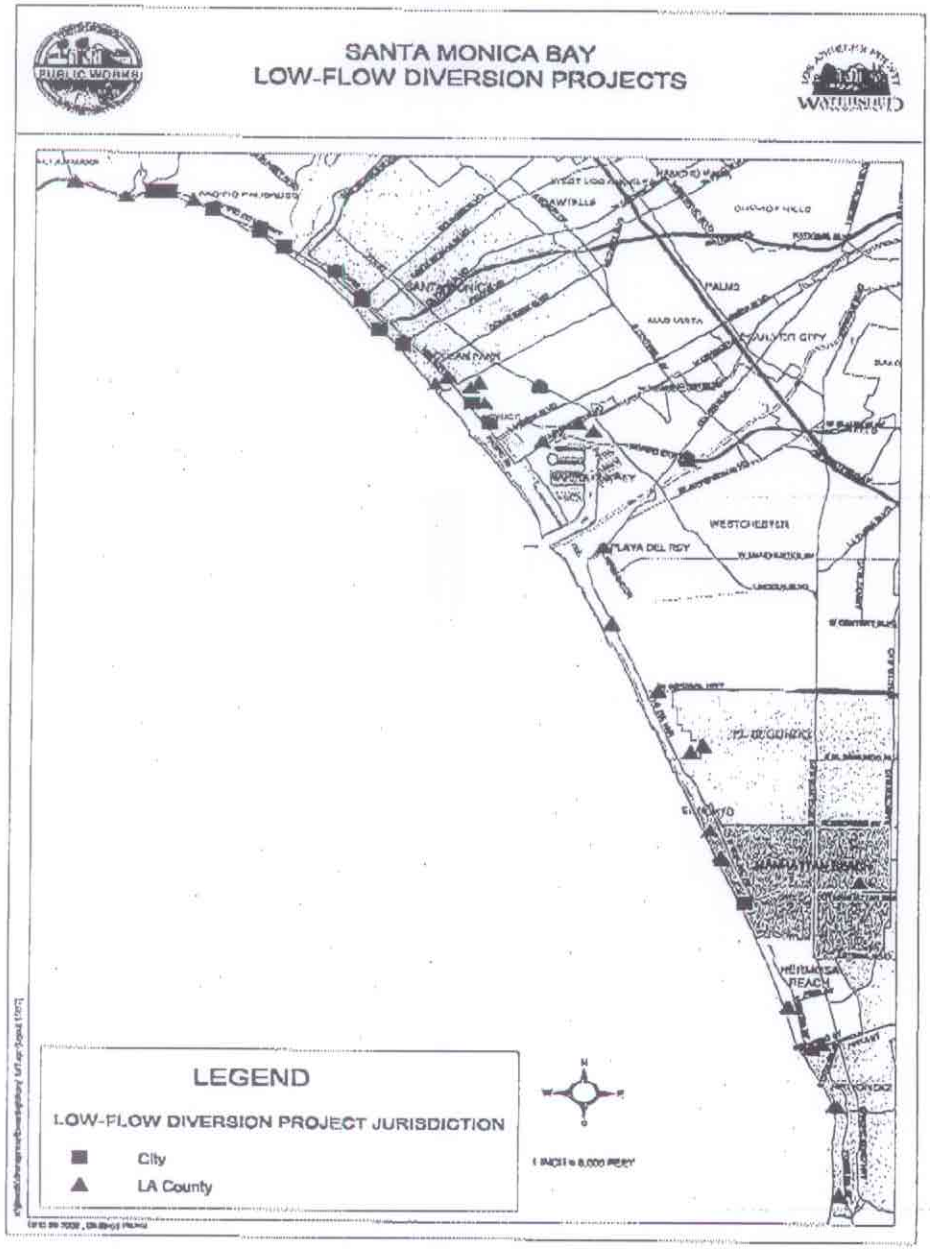
In addition, Beaches and Harbors and Public Works have committed to proactively seek innovative methods to meet water quality regulations. This includes implementing pilot projects and conducting monitoring studies to identify and remediate pollution sources, participating in efforts to scientifically quantify pollution impacts, and pursuing funding initiatives for future water quality regulatory requirements and mandates.

Structural BMP

The District initiated the low-flow diversion program before the adoption of the Santa Monica Bay Beaches Bacteria Dry-Weather TMDL to improve water quality. A low-flow diversion is a structural BMP that collects dry-weather urban runoff and pumps it to sanitary sewer systems for treatment. An alternative to diverting to a sanitary sewer treatment facility is to divert urban runoff into an infiltration pit constructed at the beach. The runoff enters the pit then infiltrates into the sand. Mark Gold of Heal the Bay, in the October 27 news conference, indicated that low-flow diversions are one of the best ways for improving summer beach water quality.



There are 32 major storm drains that outlet to the Santa Monica Bay, and 27 of these are listed in the dry-weather bacteria TMDL for diversion. There are also 3 major storm drains that outlet into the Marina del Rey Harbor. The District owns 27 of the 35 major storm drains, and the Cities of Los Angeles, Santa Monica, and Manhattan Beach own the remaining 8.



District has committed over $21 million to the design and construction of structural BMPs at storm drains owned by the District. Twenty low-flow diversions have either been built or are planned, and one infiltration pit has been constructed. The Cities are also implementing a similar structural BMP Program for the remaining major storm drains.

Contrary to statements made by Heal the Bay that the low-flow diversions are improperly designed and maintained, District's low-flow diversions appear to help maintain good beach water quality. Three of the five locations with low-flow diversions operated by District received A grades this summer. A fourth location with a diversion received an F grade after receiving an A grade in 2004. This low-flow diversion was fully operational, but due to the effects of record rainfall, the dry-weather flow rate exceeded its pumping capacity. The fifth diversion is fully operational, but it is not near a monitoring location included in the Beach Report Card®.

Nonstructural BMP

The Storm Water Quality Management Programs (SQMPs) under the Municipal Storm Water National Pollutant Discharge Elimination System (NPDES) Permit detail nonstructural activities to minimize the discharge of pollutants into receiving waters through the storm drain system. These SQMPs include Public Information and Participation Program, Industrial/Commercial Facilities Control Program, Development Planning Program, Development Construction Program, Public Agency Activities Program, and Illicit Connections and Illicit Discharges Elimination Program. The District is designated as the Principal Permittee and they spend approximately $50 to $65 million annually to implement these programs, which are designed to improve water quality through public education, development control, and enforcement. The County of Los Angeles is also named as one of the Permittees responsible for complying with the NPDES Permit requirement.

Structural Pilot Projects

District has committed to a number of pilot projects designed to provide multiple benefits for the general public while incorporating elements that enhance the surrounding environment and habitat. These projects differ from traditional public works projects in that they were developed in collaboration with a variety of stakeholders and environmental groups. This collaboration has ensured that the benefits of each project are maximized. These benefits include the improvement of water quality, flood protection, groundwater recharge, incorporation of natural vegetation, habitat restoration, and recreational activities, such as bird watching or sports activities as well as many others. A few of these innovative projects are briefly described below.

Sun Valley Park Project

District, in collaboration with the Sun Valley Watershed Stakeholders Group, designed a watershed management project at the Sun Valley Park and Recreation Center to protect the area from flooding, reduce stormwater pollution, increase local groundwater supplies, create recreational opportunities, and provide community beautification. Construction on the project commenced in May 2004 and will be completed in

March 2006. This project has attracted multiple partners, including the City of Los Angeles, State Department of Water Resources, and TreePeople. It also has won the 2005 ASCE Award for Outstanding Public/Private Sector Civil Engineering Project.

Tuxford Green

District is proposing a project that will decrease flooding at the intersection of Tuxford Street and San Fernando Road in Sun Valley. Multiuse components of the project include native landscaping, passive seating areas, interpretive displays, and water conservation through the use of a cistern for irrigation. The project will also improve downstream water quality through the use of a stormwater separation device. The project will begin in July 2006 and is anticipated to be completed by February 2007.

Tujunga Wash Restoration Project

District is partnering with the Mountain Recreation Conservancy Authority to create over a mile of greenway and an alternative streamcourse along the existing right of way on each side of the Tujunga Wash channel. The greenway will be filled with native trees, shrubs, and perennials, and it will promote public use with meandering walkways and a bike path. The constructed stream will mimic a small tributary in the region, having a natural, unlined streambed with continual flows. This streamcourse will improve water quality, increase aesthetic value, and create riparian habitat for a number of species. The project began in August 2005 and is estimated for completion in December 2006. Multiple grants were awarded for the project.

Dominguez Gap Wetlands Multiuse Project

This project consists of implementing a multipurpose wetland development and providing groundwater recharge within the Dominguez Gap Spreading Grounds located in the City of Long Beach adjacent to the Los Angeles River. The wetland will provide water quality improvements with passive recreation and wildlife habitat elements on the 34 acres of the existing Dominguez Gap Spreading Grounds East Basin. The site will promote public use by providing multipurpose trails, educational signage, and landscape enhancements. The project will begin in July 2006 and is anticipated to be completed in April 2007. The project has multiple partners, including the California Coastal Conservancy, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, and CalFed Bay Delta Authority.

Marie Canyon Water Quality Improvement Project

District is using grant funding to construct a dry-weather treatment system in the North Santa Monica Bay. Work on the project began in February 2005 and is anticipated to be completed in April 2007. This pilot project will be evaluated to determine if treating urban runoff in lieu of diverting it to the sewage system is a

practicable alternative. Although the primary focus of this system will be bacteria reduction, this technology could be used throughout the County to reduce other contaminants found in urban runoff, such as pesticides and metals.

Marina del Rey Circulation Enhancement

Beaches and Harbors is also using grant funding for the Marina Beach Water Quality Improvement Project. Work on the project began in 2003 and is anticipated to be completed in early 2006. This project will improve water circulation at Marina Beach. Two water circulators will be mounted on guide poles underneath the existing floating dock on the north side of the beach. The pumps have a large, slowly rotating "banana-blade" propeller, encased in a cage for safety, which will induce a gentle current along the beach face. Increased circulation is expected to result in more indicator bacterial exposure to ultra violet light (from sunlight), which promotes rapid die-off and lowers bacteria levels.

Pollution Source Identification

Identifying and eliminating the source of pollution is the most efficient way to reduce pollution impacts. Efforts in source investigation have been limited to this point, but they will become increasingly important as structural solutions continue to rise in cost. Two very different methods for source investigation are currently available. One relies heavily on field work to investigate each individual watershed and drainage area. The other depends on technologically advanced water quality analysis to determine the type of animal causing bacteria contamination.

Next summer, District will propose to initiate source identification efforts in the North Santa Monica Bay Rural Sub-Watersheds as part of the dry-weather bacteria TMDL compliance strategy for the area. These efforts will include field reconnaissance and strategic water quality monitoring throughout priority drainage areas to locate pollution sources. Remediation measures will then be considered for implementation to eliminate or reduce the impact of these sources. Public Works will use this experience to implement further efforts throughout the County.

Source identification can also be accomplished using Microbial Source Tracking, which uses advanced DNA analysis to determine if bacteria contamination originates from human sources or from other animals. One of the difficulties in identifying the source of bacteria pollution is that the indicators used for health standards can originate from any warm-blooded animal. Microbial Source Tracking may help eliminate this uncertainty. Efforts in San Diego revealed that elevated bacteria levels in Mission Bay were primarily caused by birds. Currently, the process is very expensive and often inconclusive. The Mission Bay study cost over $1 million. The scientific community is working to develop a more efficient methodology, and the future use of these methods will depend greatly

on technological advances. Public Works' staff cochairs a Microbial Source Tracking Committee formed by public agencies subject to the Santa Monica Bay Beaches Bacteria TMDL. This committee will stay informed on the current state of the technology so that it can be implemented appropriately when necessary.

Stable and Long-Term Funding Mechanism

The cost to meet the evolving and stringent water quality regulations continues to increase and exceeds available funding. The projects and programs necessary to meet regulations while providing multiple benefits are anticipated to cost hundreds of millions of dollars per year. Since funding for these measures is not available, a critical priority for the County is to identify stable and long-term revenue sources. Currently, Public Works is working with the Los Angeles Regional Watershed Infrastructure Funding Workgroup to develop a Countywide Integrated Watershed Management Plan. The proposed plan will outline a voter approved, stable, and long-term funding mechanism to finance projects and programs that provide water quality benefits and reduce pollutant loads to the impaired waters of the County of Los Angeles. Following is a partial list of entities that are participating in the workgroup:

- City of Long Beach
- City of Los Angeles Department of Water and Power
- Sanitation Districts of Los Angeles County
- TreePeople
- City of Los Angeles Bureau of Sanitation
- City of Santa Monica
- City of Signal Hill
- Brown and Caldwell
- Los Angeles Regional Water Quality Control Board
- Construction Industry Coalition for Water Quality
- Mountains Recreation and Conservation
- Coalition for Practical Regulations
- Heal the Bay
- Building Industry Association
- Los Angeles and San Gabriel Rivers Watershed Council
- County of Los Angeles Department of Public Works

Representatives from the Riverside County Flood Control District, Santa Ana Watershed Project Authority, and Chief Administrative Office of the County of San Diego have attended meetings, but are not officially part of the workgroup.

On September 13, 2005, your Board unanimously approved a Motion requiring the Chief Administrative Office with assistance from Public Works, County Counsel, and other appropriate departments to recommend how to best implement a stable and long-term funding mechanism to finance the construction and operations and maintenance of regional projects that address water quality as well as provide other benefits and to identify the cost and timing to implement such a mechanism. The

Motion also requested the establishment of a list of projects that could be completed in all parts of the County. Public Works is working with the Chief Administrative Office to provide these recommendations.

CONCLUSION

Heal the Bay's 2005 Summer Beach Report Card® revealed the worst grades for the County of Los Angeles beaches in five years. However, after considering the many factors and uncertainties associated with the grading system, it is unclear whether the beaches presented a greater health risk to the public this summer compared to prior summers.

In the last ten years, the County has been committed to water quality improvement projects and conducted extensive public education to limit the impact of human-related bacteria sources at the beaches. This includes embarking on a construction program for 20 low-flow diversions and an education program that reaches millions of residents and thousands of businesses each year.

Public Works is now working to complete multiple benefit projects and programs that will limit the impact of urban runoff pollution throughout each watershed in the Los Angeles Basin and ensure compliance with existing and future regulatory requirements. These innovative projects are being developed through extensive collaboration with the environmental and regulatory communities. The cost to implement multiple benefit projects is estimated to reach hundreds of millions of dollars per year. These projects are currently funded by the District Benefit Assessment and grant funding opportunities. These sources cannot fund all the compliance activities necessary to meet water quality regulations. Therefore, identifying a diverse, stable, and long-term revenue source to finance these projects to address regulations is a critical priority for the County.

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Appendix A

Heal the Bay's
2005 California Summer Beach Report Card®

Heal the Bay

Heal the Bay's 2005
California Summer Beach Report Card™

Heal the Bay's 2005 California Summer Beach Report Card™ provides beachgoers with essential water quality information by grading approximately 450 monitoring locations from Humboldt County to San Diego County. The grades are based on dry weather water quality data provided by over 20 different entities throughout California. The data presented in this report was collected between Memorial Day and September 30, 2005.

This year's End of Summer Beach Report Card is different from previous End-of-Summer reports because it utilizes a revised grading methodology. Heal the Bay has revised the BRC methodology to more accurately characterize beach water quality. Over the past year, Heal the Bay has worked with beach water quality and human health experts from the State Water Resources Control Board (SWRCB), public health agencies, and other members of the statewide Beach Water Quality Work Group (BWQW) to refine our grading system. Major modifications to our methodology include incorporating the state and federal geometric mean health standards, and increasing the emphasis on the most recent week's sample relative to the previous three week's samples. Heal the Bay's Beach Report Card grading system is now endorsed by the State Water Resources Control Board and the Beach Water Quality Workgroup as an effective way to communicate beach water quality to the public.

California The overall water quality at California beaches this past summer was very good. Of the approximately 450 monitoring locations throughout California, 407 locations (91%) received very good-to-excellent water quality marks (365 As and 42 Bs). There were 41 locations (9%) that received fair-to-poor water quality marks (20 Cs, 6 Ds and 15 Fs). Overall, California's summer beach water quality grades were slightly better than the summers of 2004 and 2003.

Del Norte County Historically, there were three locations monitored in the vicinity of Crescent City as part of the County's beach monitoring program. These locations were Pebble Beach, Crescent City Harbor, and Crescent Beach. However, Heal the Bay has never been unable to obtain any water quality monitoring data over the past three years, since Humboldt County stopped processing the samples, for Del Norte County. It remains unclear whether any beach water quality monitoring is being completed at this point in time

Humboldt County Beach water quality was excellent, with all five water quality monitoring locations receiving As or Bs. There were no known sewage spills that led to beach closures this summer.

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Mendocino County The eight monitoring locations are MacKerricher Beach State Park at Mill Creek, MacKerricher Beach State Park at Virgin Creek, Caspar Beach at Caspar Creek, Russian Gulch Campground, Big River near Pacific Coast Highway Bridge, Navarro River at Navarro Beach Road, Van Damme State Park at the Little River, and Greenwood Creek Project at Greenwood Creek. Heal the Bay was unable to obtain the data for this analysis. There were no known sewage spills that led to beach closures.

Sonoma County beach water quality was generally excellent except for one location. Of the seven monitoring locations that were sampled regularly over the summer, six locations (86%) received A grades. Campbell Cove State Park beach in Bodega Bay received the county's only C grade. Once again, water quality at this site was excellent from May through August but began its typical seasonal decline in water quality the first week in September, which drove the overall summer grade down to a C. There were five known sewage spills that led to beach closures.

Marin County There are 37 bayside (Tomales, San Francisco, and San Pablo Bay) and oceanside monitoring locations covered by Marin County's water quality monitoring program. Oceanside monitoring locations include Dillon Beach, McClures Beach, Kehoe Beach, Drakes Beach, Limantour Beach, Bolinas Beach (Wharf Road), Stinson Beach, Muir Beach, Cronkhite Beach, Rodeo Beach, and Baker Beach. Heal the Bay was unable to obtain the data for this analysis. There were no known sewage spills that led to beach closures.

San Francisco County Overall beach water quality in San Francisco County was excellent. Of the 14 monitoring locations that were sampled regularly over the summer, 13 locations (92.9%) received very good-to-excellent water quality marks (11 As and 2 Bs). Both coastal and bayside monitoring locations at such spots as Aquatic Park Beach, Crissy Field Beach, Candlestick Point, and Ocean Beach, all received excellent marks this past summer. Baker Beach at Lobos Creek received the County's only failing grade. The County's raw data is made available to the public on the website http://sfwater.org/. There were four sewage spills or combined sewage overflows that resulted in beach closures this past summer.

San Mateo County This summer, San Mateo's overall water quality was very good. Of the 21 monitored locations, 18 (86%) received As. Once again, water quality problems impacted Pillar Point Harbor at Capistrano Avenue beach, which received the County's only F grade. In addition, both Fitzgerald Marine Reserve at San Vicente Creek and Venice Beach at Frenchman's Creek received grades of C. There were no known sewage spills that led to beach closures.

Santa Cruz County Overall water quality in Santa Cruz this past summer was very good excellent. Of the 13 weekly sampled locations, 11 (84.6%) received A grades. The two locations that did not receive an A grade were Cowell Beach west of the wharf and Capitola Beach west of the jetty. Both of these locations received C grades. There were no known sewage spills that led to beach closures this summer.

Monterey County Beach water quality in Monterey County was excellent. All eight monitoring locations, including Stillwater Cove at Beach and Tennis Club, received A grades. There were no known sewage spills that led to beach closures.

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San Luis Obispo County Water quality at beaches in San Luis Obispo County was again excellent, with only one monitoring location receiving lower than a B grade. In fact, 21 (91%) of the 23 monitored locations received A grades. Both Pismo Beach at Wadsworth Street (B) and Pismo Beach Pier (C) received the counties two non-A grades. There were no known sewage spills that led to beach closures.

Santa Barbara County This summer's water quality at beaches in Santa Barbara County was very good. Of the 20 water quality monitoring locations, 15 (75%) received A grades. The other five beach locations, Goleta Beach, Arroyo Quemada, Haskell's Beach, Leadbetter Beach and East Beach at Mission Creek, all received B grades. On a side note, the County of Santa Barbara will no longer sample the once infamous Arroyo Quemada monitoring location after this season. This is the same location that was deemed to have the worst water quality in all of Southern California five years ago. However, over the last three years water quality dramatically improved at this site due to an unconventional but effective best management practice, namely the use of a falconer to deter the numerous seagulls contributing to water quality problems. There were no known sewage spills that led to beach closures.

Ventura County Overall water quality at beaches throughout Ventura County was once again excellent. For example, 55 (98%) of the 56 monitoring locations received A grades. The only Ventura County monitoring site to not receive an A grade was San Buenaventura beach south of the drain at San Jon Rd., which received a grade of C. On a surprising note, both Kiddie and Hobie Beaches had very good-to-excellent water quality this past summer. These locations have historically had, at best, fair-to-poor water quality. There were no known sewage spills that led to beach closures.

Los Angeles County While 47 (57%) of the 82 monitored locations received As, this was the lowest percentage of all the coastal counties that monitor beach water quality. In fact, the number of beaches that received Fs was the highest it has been in the last five years, and the number of As was the lowest for the same time period.

The four-year summer average (2000 to 2004) for the number of As and Fs was 57 and three respectively. This year's numbers were 47 and 11. Additionally, of the 365 monitoring locations sampled in Southern California, 33 (9%) received a grade of C or lower, with most of those fair-to-poor grades (61%) concentrated in L.A. County. For example, 85% of all Fs in Southern California (Santa Barbara County to San Diego County) were in Los Angeles.

Last winter's heavy rains were not the sole cause of the poor grades. Neighboring counties such as Santa Barbara, Ventura, Orange, and San Diego each received record rainfall amounts in their respective counties, yet each county had excellent summer beach water quality.

A number of factors contributed to the poor water quality at L.A. County beaches, including:

- Low-flow diversions implemented at a number of beaches, including Santa Monica Canyon, Pulga Canyon, Pico/Kenter, and Imperial Highway only work if they are designed properly and maintained on a regular basis. Many diversions simply failed because of improper design and siting, they were not turned on, and/or a lack of regular maintenance after construction, which lead to runoff flows reaching the beach and causing poor water quality.
- The failure to implement AB538, the law requiring sanitary surveys (source investigations) to be completed at beaches where water quality problems persisted. The purpose of the law is to identify the sources causing beach water quality impairment, and implement necessary strategies to abate the pollution source. Unfortunately, the State never enforces or requires municipalities to implement these surveys when exceedances occur. Given that some of these locations were exceeding State bathing water standards for the entire summer, the failure to implement a source investigation and identification effort for locations such as Santa Monica Pier, Redondo Pier, Paradise Cove, Latigo Canyon, and Topanga State Beach, was a serious breakdown by agencies charged with protecting beachgoer health.
- Enclosed beaches such as Cabrillo Beach and Avalon Beach are located within man-made marinas with no adequate flushing mechanism. At these sites, simple engineering solutions and/or identifiable sources to regulate may not exist.

There were no known sewage spills that led to beach closures.

Orange County Overall water quality at beaches in Orange County this past summer was excellent. Of the 104 water quality monitoring locations covered by the Beach Report Card, 97 (93%) received A or B grades. In fact, 92 (89%) of the monitored beaches in Orange County received an A grade, the highest number of As in the last four years. There were only seven locations that received a grade of C or lower. These locations were: Huntington State Beach at Newland Ave. (C), Huntington State Beach at Magnolia Blvd. (F), Newport Bay Harbor Patrol Beach (C), Monarch Beach North (C), San Juan Creek at the ocean interface (C), Doheny Beach at Poche Creek (D), and Dana Point Harbor, Baby Beach-west end (C).

There were eight sewage spills that led to beach closures throughout the summer, discharging approximately 605 gallons sewage. This amount is higher then reported, given four of the eight spills were of unknown quantities.

San Diego County Water quality at beaches in San Diego County was excellent again this summer. Of the 95 locations monitored, 90 (95%) sites received either an A or B grade. This summer also marks the best overall water quality in San Diego since AB411 requirements began in 1999. There were only five locations that received fair-to-poor water quality marks: four of them were located in either San Diego Bay (2 Cs) or Mission Bay (2 Cs). Pacific Beach at PB Point-downcoast of Linda Way was the only location in San Diego County to receive an F. In fact, 78 (82%) of the beaches monitored this summer had excellent water quality (As).

There were four sewage spills this summer that led to beach closures, discharging approximately 48,900 gallons.

Heal the Bay's website, www.healthebay.org, is updated every Friday with weekly Beach Report Card grades for all sampled locations. Heal the Bay's Beach Report Card is based on weekly water quality monitoring data provided by dischargers and health agencies. Data is analyzed as soon as it is made available by these agencies. The report is a comprehensive examination of coastal water quality throughout California. Beaches are graded using an A-F scale based on the risk of ocean users becoming ill. Samples are analyzed for three indicator bacteria. A fact sheet detailing the exact methodology used in determining grades for each location is available from the Heal the Bay office or at healthebay.org.

The report is not designed to measure the amount of trash or toxins found at local beaches. Heal the Bay reminds you not to swim or surf within 100 yards of any flowing storm drain or for three days after a rainstorm. After a rain, indicator bacteria counts at beaches throughout California usually *far exceed* health criteria stipulated in the state's Beach Closure and Health Warning Protocol.

Heal the Bay is a nonprofit environmental organization dedicated to making Santa Monica Bay and Southern California coastal waters safe and healthy for people and marine life.

For more information, please contact: Joanne Forster, Communications Director, Heal the Bay, 310.453.0395 X113, jforster@healthebay.org

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CALIFORNIA WATER QUALITY

Table 1
Heal the Bay's
2005 California End of Summer Beach Report Card
Overall Grades by County

County	A	B	C	D	F	Total
Humboldt	3	2	0	0	0	5
Sonoma	6	0	1	0	0	7
San Francisco	11	2	0	0	1	14
San Mateo	18	0	2	0	1	21
Santa Cruz	11	0	2	0	0	13
Monterey	8	0	0	0	0	8
San Luis Obispo	21	1	1	0	0	23
Santa Barbara	15	5	0	0	0	20
Ventura	55	0	1	0	0	56
Los Angeles	47	15	4	5	11	82
Orange County	92	5	5	1	1	104
San Diego	78	12	4	0	1	95
Southern California	287	37	14	6	13	357
Total	365	42	20	6	15	448

Table 2
Heal the Bay's
2005 California End of Summer Beach Report Card
Grades by Percentage for each County

County	A	B	C	D	F	Total %
Humboldt	60.0%	40.0%	0.0%	0.0%	0.0%	100%
Sonoma	85.7%	0.0%	14.3%	0.0%	0.0%	100%
San Francisco	78.6%	14.3%	0.0%	0.0%	7.1%	100%
San Mateo	85.7%	0.0%	9.5%	0.0%	4.8%	100%
Santa Cruz	84.6%	0.0%	15.4%	0.0%	0.0%	100%
Monterey	100.0%	0.0%	0.0%	0.0%	0.0%	100%
San Luis Obispo	91.3%	4.3%	4.3%	0.0%	0.0%	100%
Santa Barbara	75.0%	25.0%	0.0%	0.0%	0.0%	100%
Ventura	98.2%	0.0%	1.8%	0.0%	0.0%	100%
Los Angeles	57.3%	18.3%	4.9%	6.1%	13.4%	100%
Orange County	88.5%	4.8%	4.8%	1.0%	1.0%	100%
San Diego	82.1%	12.6%	4.2%	0.0%	1.1%	100%
Southern California	80.4%	10.4%	3.9%	1.7%	3.6%	100%
Total	81.5%	9.4%	4.5%	1.3%	3.3%	100%

Appendix B

Sample Beach Grade Calculation

The following provides a basic idea of how Heal the Bay calculates Beach Grades.

The following thresholds are used to assign point deductions

Exceedence Thresholds

Group	1 T - 1 s.d.	2 T + 1 s.d.	3 >T + 1 s.d.	4 Very High Risk
Total Coliform	6,711-9,999	10,000[2]-14,900	>14,900	*
Fecal Coliform	268-399	400-596	>596	*
Enterococcus	70-103	104-155	>155	*
Total to Fecal Ratio (when: Total >= 1,000)	10.1-13	7.1-10	2.1-7	<2.1

(1) s.d. - standard deviation

(2) Bold red numbers are the state's standards for a single sample.

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A certain number of points are assigned for each threshold occurrence

Threshold Points

Group	1 T - 1 s.d.	2 T + 1 s.d.	3 >T + 1 s.d.	4 Very High Risk
Total Coliform: **Fecal Coliform** **Enterococcus**	6	18	24	*
Total to Fecal Ratio (when: Total >= 1,000)	7	21	35	42

s.d. - standard deviation

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Each weekly grade is based on the previous four weeks
previous four weeks of data with a weight of 1.5 added to the present week.

$$100 - 3weektotal - 1.5 * presentweek = score$$

A factor for the geometric mean of the data is also included.

Letter grades are then assigned on the following scale:

Points	Letter
100	A+
90-99	A
80-89	B
70-79	C
60-69	D
0-59	F

The weekly grade calculation for 9/6/05 is shown as an example

DHS Beach Monitoring Data for Paradise Cove, Malibu

Date	Total Coliform		Fecal Coliform		Enterococcus		Total to Fecal Ratio		Subtotal
	cfu/100 ml	Points	cfu/100 ml	Points	cfu/100 ml	Points	Ratio	Points	
08/15/2005	1067	0	126	0	64	6	8.5	21	
08/22/2005	41	0	10	0	98	6	4.1	0	
08/29/2005	41	0	10	0	10	0	4.1	0	
09/06/2005	63	0	52	0	10	0	1.2	0	

Grade for 9/6/05

$$100 - 3weektotal - 1.5 * presentweek = score$$

$$\Rightarrow 100 - (27 + 6 + 0) - 1.5 * 0$$

$$= 67$$

$$\Rightarrow \underline{Grade = D}$$