



Final Report

Clean Beaches Initiative – Proposition 13 City of Redondo Beach Pier Improvements

June, 2006

Prepared for the

**State Water Resources Control Board
Agreement #01-220-550-1**

Prepared by

**The City of Redondo Beach
Engineering Division**

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INTRODUCTION

Purpose

The Redondo Beach Pier is located in southwest Los Angeles County where Torrance Boulevard meets the sea (Figure A). It is owned and maintained by the City of Redondo Beach. Approximately three million people visit the pier and adjacent beaches each year. The beach immediately south of the pier is owned and operated by the Los Angeles County Department of Beaches and Harbors. Visitors to the beach enjoy swimming, surfing, and other beach amenities including a bicycle path and volleyball courts.

The City of Redondo Beach is committed to reducing pollution and to keeping the beaches clean and open. The City has an extensive urban runoff management program to curb and prevent urban runoff pollution. Numerous structural devices have been installed on the storm drain system throughout the City to remove gross solids and chemicals.



Figure A

Between 2000 and 2005, beaches within the City were closed three times for a total of 5 days. The last closure was in September 2004. During that same period, City beaches were posted 189 times for a total of 617 days (Table 1).

Table 1

Year	Redondo Beach Postings					
	2000	2001	2002	2003	2004	2005
	Redondo Beach Totals					
Total Posted Days	72	58	86	110	137	154
Total Postings	28	21	26	34	36	44
AB411 Posted Days	34	16	20	50	54	75
AB411 Postings	16	6	11	15	17	22
	Redondo Pier Only					
Total Posted Days	0	0	0	0	97	108
Total Postings	0	0	0	0	25	32
AB411 Posted Days	0	0	0	0	43	63
AB411 Postings	0	0	0	0	11	19

Data for closures and posting was obtained from the *State Water Resources Control Board "Beach Watch" web page*. Redondo Beach had four monitoring stations that were monitored (Herondo Street, Redondo Pier, Topaz Street, and Ave I Extended). Until 2004 there was no distinction made as to which station caused the postings. In 2004 and 2005 the data was broken down by reporting station and is shown above.

This beach suffers from recurring high levels of bacteria concentrations thought to be caused by dry weather urban runoff from the pier/storm drain system, an aging sewer system on the pier, a high level of nearby human activity, bird guano accumulation, and leaking trash enclosures.

Funding

In an effort to reduce postings at the pier, the City applied for and received a Clean Beaches Initiative (CBI) grant to improve water quality around the pier. The State of California established the Clean Beaches Initiative Grant Program as part of the Budget Act of 2001, Senate Bill 739 to provide funding in a statewide effort to reduce the health risks and increase the public's access to clean beaches. In accordance with the Costa-Machado Water Act of 2000, Coastal Non-Point Source Program for clean beach projects, funding of \$350,000 was appropriated to provide for this project at the Redondo Beach pier.



Project Components

The Pier Improvements project included several components: sewer line upgrades, trash enclosures, covered trash containers, and a storm drain diversion. The sewer line upgrade included the replacement of 960 feet of existing sewer lines under the pier. It also included the installation of a fish cleaning station. Two trash enclosures were built to prevent bird access to trash and to stop the spreading of trash by the wind. The new enclosures also prevent rainwater contamination. New covered trash containers were also installed.



The final component of the project was a storm drain diversion. The storm drain system that discharges near the pier includes two outlets. One is located just south of the pier and the other is located under the pier. The outlet south of the pier discharges runoff from the vast majority of the watershed (Figure B). However, many years ago a low flow diversion was installed upstream of the outlet which diverted dry weather flow to the smaller storm drain system that discharges under the pier, thus eliminating all dry weather discharge from the outlet south of the pier.

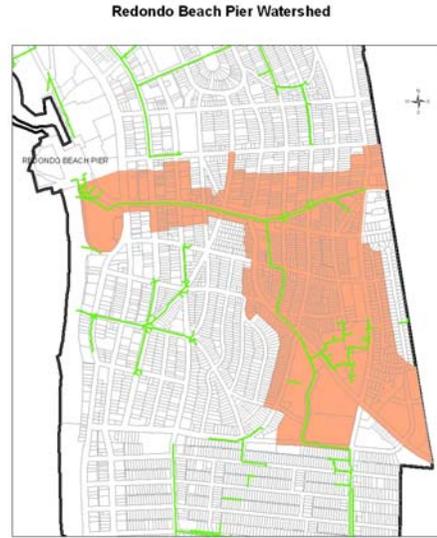


Figure B

The focus of this project was to divert the runoff from the storm drain outlet located under the pier. The typical approach to low flow diversions is to pump/divert dry weather flows into the sanitary sewer system. However, this approach limits the time that diversion can occur to summer months only (April 1 thru October 31), and would still allow dry weather runoff during the winter months to discharge into the bay. In order to overcome this restriction the City elected to divert the dry weather flows into a dry pit/infiltration bed, allowing for year round dry weather flow diversion.

The system that was built includes a gross pollutant removal system (continuous deflection system – CDS unit) and a 60” Diameter x 60 long HDPE perforated pipe surrounded by an 18” thick gravel bed. Once the dry weather flow passes through the CDS unit it enters the 60” pipe. The perforation allows the flow to pass into a surrounding gravel bed and then into the surrounding sub-grade. The system has shown to be effective during the summer and fall months of the “summer” period. During the spring months of the “summer” period, after a very wet 2005 rainy season, the ground water level rose causing the system to be less effective. It is anticipated that during normal rain years the system will be very effective year round.

The sewer line was replaced in April and May of 2003. The City, recognizing the importance of replacing the existing sewer lines, implemented a separate, Harbor funded project, to replace the balance of the pier sewer line in 2003-04. The fish cleaning station was delivered to the City in May and installed in July of 2003. The station serves the many fishermen that use the pier and has significantly reduced the amount of contaminants entering the ocean from the fish cleaning process.

Project Scope & Description

The project was implemented on and adjacent to the Redondo Beach Pier, located at the end of Torrance Boulevard in the City of Redondo Beach. The pier improvement projects included the construction and operation of the following engineered devices and structural mitigation measures:

- Sewer Line Upgrades – The City replaced straps/hangers on approximately 960 feet of pier sewer lines and repaired and replaced any damaged lines as necessary.
- Fish Cleaning Station – The City installed a fish cleaning station on the Pier. Implementation of this element minimized existing or potential leaks of sewage, which had caused bacterial contamination in beach waters.
- Trash Enclosures – The City constructed two trash enclosures to prevent bird access to trash. This element, coupled with the next element, prevents bird-carried or windborne trash and/or litter from contaminating the ocean. In addition, the enclosures prevent rainwater from coming into contact with the trash and causing leached contaminants from entering the ocean.
- Covered trash containers – The City replaced trash containers and covers to prevent bird and rainwater access. This element coupled with the construction of the trash enclosures prevents trash and contaminants from reaching the ocean.
- Storm Drain Diversion – The City diverted a 36” storm drain serving the pier parking structure into a gross pollutant removal system. Groundwater collected as part of a dewatering operation is currently discharged into the storm drain and thus serves as a conveyance mechanism for pollutants during dry weather. Although the groundwater itself does not contain pollutants, when this water enters the storm drain it becomes polluted by the sediments, oil, and litter present in the drain.

These five engineered devices and structural mitigation measures reduce bacterial loading in the vicinity of the Redondo Beach Pier and support efforts to comply with the bacteria TMDLs that are being monitored under the Coordinated Shoreline Monitoring Program (CSMP). Ultimately, it is intended that the project will reduce the number of beach closures and postings in the vicinity of the Redondo Beach Pier.

Current-Existing City Efforts and Programs



Three storm drains in the City have already been equipped with Continuous Deflective Separation units (CDSs) to remove trash and debris. They are located at the South Bay Galleria parking lot, at Calle Miramar and the Esplanade, and on the Sapphire Street storm drain. In addition, City pier staff members inspect the pier’s sanitary sewer lines each week.

Project Timetable

Table 2 below identifies the schedule of major activities associated with this project.

Table 2

Project Schedule

Activity	Date
Install engineered devices and mitigation measures	Beginning spring, 2003; End date projection December 15, 2005
Gather Beach Water Quality Data	Beginning spring, 2003 through March 2006
Prepare draft/final report	March 2006 through June 2006
Review data with technical advisors	Ongoing after final report submitted, 2006

The original schedule of completion data associated with this project is shown in Table 3 below:

Table 3

ORIGINAL SCHEDULE OF COMPLETION DATES

Task		Product	Completion Date
1		Project Management and Administration	On going
	1.1-1.7	Quarterly Reports, Permits, Contract Summary Form, Subcontractor Documentation, and Project Survey Forms	April 1, 2002 and quarterly thereafter until construction is completed in June 2003.
2		CEQA Documents and Permits	Ongoing through December 31, 2002
3		QAPP	January 2003
4		Final Engineering	
	4.1	Project Review	June 2002
	4.2	Select Engineering Firm	September 2002
	4.3	Preparation of Plans and Specifications	November 2002
	4.4	Construction Bidding	December 2002
5		Project Implementation	
	5.1	Sewer Line Upgrades	January 2003
	5.2	Trash Enclosures	January 2003
	5.3	Covered Trash Containers	January 2003
	5.4	Storm Drain Diversion	January 2003
6		Reporting	
	6.1	Monitoring and Reporting Plan	March 2003
	6.2	Draft Final Report	October 2003
	6.3	Final Report	December 2003

In July of 2005, the City's CBI contract was revised. The revised schedule of completion dates is listed in Table 4 below.

Table 4

REVISED SCHEDULE OF COMPLETION DATES

Task		Product	Completion Date
1		Project Management and Administration	On going
	1.1-1.7	Quarterly Reports, Permits, Contract Summary Form, Subcontractor Documentation, and Project Survey Forms	April 1, 2002 and quarterly thereafter until construction is completed in December 2005.
2		CEQA Documents and Permits	Ongoing through December 31, 2002
3		QAPP	July 2005
4		Final Engineering	
	4.1	Project Review	June 2002
	4.2	Select Engineering Firm	September 2002
	4.3	Preparation of Plans and Specifications	November 2002
	4.4	Construction Bidding	December 2002
5		Project Implementation	
	5.1	Sewer Line Upgrades	January 2003
	5.2	Trash Enclosures	January 2005
	5.3	Covered Trash Containers	March 2005
	5.4	Storm Drain Diversion	January 2005
6		Reporting	
	6.1	Monitoring and Reporting Plan	July 2005
	6.2	Draft Final Report	October 2005
	6.3	Final Report	December 2005

Task 1: Project Management & Administration

The project's engineering and design work were completed by City engineers and the project manager. Reporting activities focused on construction activities, or the installation project components. The project manager and project administrator met and spoke weekly to go over the project schedule, delays, and completions. Delays were experienced in the design and construction of the storm drain diversion element, and in the construction of the final trash enclosure.

Task 2: State & Local Permitting

The project received CEQA categorical exemption. No other permits were required.

Task 3: Quality Assurance Project Plan

The QAPP was approved by the State in March of 2006. The QAPP discussed the use of beach water quality data and beach exceedances days (postings) as a way to monitor the effectiveness of the project, comparing beach postings (or exceedances of the three indicators) before the project to beach postings after the project. Results are discussed below in the Results section and shown in Appendices A & B.

Task 4. Project Engineering

The City's engineering staff oversaw the hiring of contractors to install the various elements of the project. No significant engineering designs were required other than for the storm drain diversion. Copies of the available engineering plans or "as-builts" are included in Appendix E.

Task 5 – Project Implementation

Project construction was completed in the fall 2005.

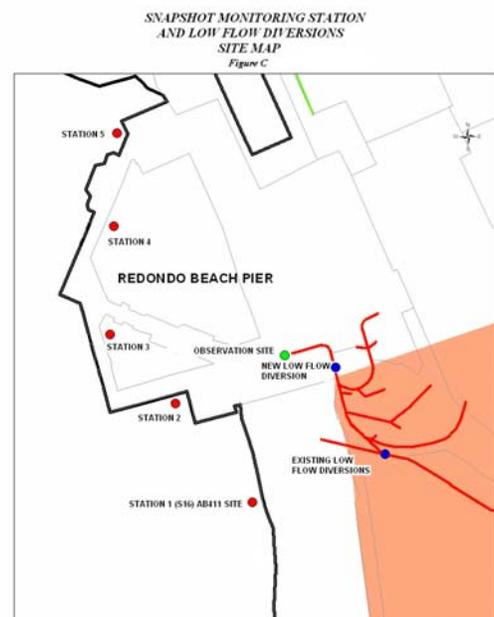
Task 6 – Monitoring, and Draft and Final Report

The Project's data will include the number of days of beach postings and levels of exceedances after the Project's completion and to compare this data with past similar data to observe any noticeable decreases in beach postings. This data assessment will be useful in providing information about the effectiveness of the pollution prevention measures for bacterial pollution sources. The data will be made available to the public for purposes of watershed education, and to the regulatory and resource management agencies to supplement their existing data collection efforts.

Data will be compiled and maintained at the City of Redondo Beach Engineering and Building Services Department, 415 Diamond Street, Redondo Beach, CA 90277. The information will be shared with the State Water Resources Control Board, the Los Angeles Regional Water Quality Control Board, and upon request to other state, federal, and local agencies and organizations.

6.1. General Overview of Monitoring

Historically the City of Los Angeles' Bureau of Sanitation Environmental Monitoring Division (LA BSEMD) at the Hyperion Publicly Owned Treatment Works (POTW) monitors water quality at a sampling station south of the Redondo Beach Pier, Station S16 (Also designated SMB-6-2 in the Coordinated Monitoring Plan (CMP) of the Santa Monica Bay Beaches Bacteria Total Maximum Daily Load (SMBBB TMDL). In the AB411 Ocean Monitoring Program this site is identified as "Redondo Pier". In November 2004 the City of Redondo Beach, started monitoring the site in compliance with the SMBBB TMDL CMP. As part of the SMBBB TMDL CMP, an



observation site was established at the outlet that discharges under the pier.

In addition to the ongoing monitoring being conducted, two snapshot sampling events were performed in the water along a cross section of the Redondo Beach Pier. Four monitoring sites plus Station SMB-6-2 were sampled. Figure C above shows the location of the five sampling stations. The first snapshot event occurred from December 2, 2002 through January 22, 2003. The second snapshot event occurred from January 23, 2006 through February 20, 2006.

Summary of Monitoring Design:

The monitoring design consists of two components. They are the Snap-Shot monitoring across the pier and the on-going monitoring at the AB411 site.

Snap-Shot Monitoring Design: The Snap-Shot monitoring was performed over two periods. During the first period, the monitoring design includes daily sampling for one week and then weekly sampling for five more weeks. During the second period, the monitoring included only weekly sampling for five weeks. Samples were taken from the five monitoring stations and analyzed for Total and Fecal Coliform. The samples were collected and analyzed by Michelson Laboratory.

On-going Monitoring Design: The continuous monitoring involves only the AB411 station. This station has been monitored by LA BSEMD for many years as part of the Hyperion POTW monitoring program, and the data is now being used in the AB411 Ocean Monitoring program. In November 2004, the monitoring site was included in the Santa Monica Bay Beaches Bacteria TMDL Monitoring Program. Since then the site has been monitored by Michelson Laboratory.

Pre-November 2004, the site was sampled daily by LA BSEMD. The sample was analyzed for Total and Fecal (*E coli*) Coliform. One day during each week an additional sample was taken and analyzed for Enterococci.

Since November 2004, the site has been sampled weekly (samples are taken on Monday to conform to other sampling conducted by the Los County Environmental Service – AB411 program). The sample is analyzed for Total and Fecal Coliform and Enterococci.

In addition to the water quality sampling, flow observations are made at the Observation Site. Flow from the outlet is observed weekly and classified at one of five levels (dry, ponding, low flow, medium flow, and heavy flow).

Pre-November 2004, bacterial parameters were monitored using protocols of the LA BSEMD at Hyperion. Since November 2004, monitoring has been conducted using protocols of Michelson Laboratory. The sampling program was included in the Project's QAPP.

6.2 Data Collected

Data was obtained from the City of Los Angeles Bureau of Sanitation for years 1999-2004 (October) on water quality sampling for the Pier station, including data for the three indicators mentioned above. Since November 1, 2004, the results of the sampling by the private lab were tabulated into an excel spreadsheet and emailed to the City of

Redondo Beach QA officer. The data was electronically transferred into an MS Access database for storage and analysis. The data for the snapshot monitoring was conveyed from the private lab to the QA officer via hardcopy laboratory certification. The QA office transferred this information into an MS Excel spreadsheet for storage and analysis.

Rainfall data was obtained from a Los Angeles County Rainfall Monitoring System gage located in Redondo Beach (42C). Historical daily rainfall was obtained for the site and entered into the Pier station database.

6.3 Data Analysis

The data was analyzed for a number of criteria, including days where water quality limits were exceeded, and average concentrations for various periods during the year, including dry-summer, dry-winter, and wet seasons. Although pre-November 2004 samples were taken daily, only one sample for each week was used for the analysis. This day coincided with the day when the sample was analyzed for Enterococcus. This also allowed for a more direct comparison of the number of exceedances before and after November 2004.

Table 6 summarizes the Pier station data from years 1999-06 (February) for each indicator, and Table 7 summarizes the data for the five stations collected during the two snapshot periods (see Appendix A). Graphs 1-7 in Appendix B highlight the data from the tables in a more visual manner for the Pier station. The charts show the yearly number of exceedances and average concentrations for each indicator and the number of exceedance days. Graphs 8-12 in Appendix B highlight the snapshot data. The charts show average concentrations in 2003 and 2006 and the actual results by station both in 2003 and 2006.

Annual rainfall data is shown in Graph 13 in Appendix C.

The data includes data before the project and after the project, in order to compare pre and post data, as a strategy to measure effectiveness in reducing bacterial loading from the Pier.

RESULTS

Water Quality Sampling

Sampling data for the Pier monitoring station, SMB-6-2 (S16), was obtained from the City of Los Angeles for years 1999 through 2004 (October). The data was analyzed separating summer and winter dry weather from wet weather, and averaging concentrations of each of the three indicators. Water quality exceedances for the three parameters were determined, along with the total number of exceedance days (only one exceedance day was counted even though more than one of the parameters' limits was exceeded on the same day). This data was totaled for each year and grouped according to the season (dry weather summer and winter and wet weather). In addition, the average concentration for the three parameters was calculated and grouped as above.

A snapshot sample was also conducted in 2003 and 2006. The snapshot included taking samples from four stations located across the Pier and the historical station located south of the Pier (SMB-6-2). In 2003, samples were taken at each station daily for one week and then once a week for five additional weeks. In 2006, samples were taken once a

week for five weeks. Both snapshots were conducted during the winter season in an attempt to see the impact of rainfall. Samples were tested for Total and Fecal Coliform. The sampling locations were previously shown in Figure C.

Appendices A and B contain the summary tables of this data for each indicator over time as well as graphs showing (visually) the data for concentrations and exceedances by year.

Historical Trends

Graphs 1 through 6 show variations in concentrations and days of exceedances for the three parameters over the time period between 1999 and 2006 (Note: the 2006 numbers are for a partial year and not used in evaluation) at the monitoring station just south of the Pier (SMB-6-2). Pre-2003, the concentration and exceedances showed an increasing trend during all seasons and wet conditions. Starting in 2003, a downward trend began during Winter-dry and Wet weather conditions. However, the summer dry conditions did not show the same trend.

The significant improvement since the completion of the project indicates that it has been effective. The high rainfall amounts during the 2004-05 period (see Graph 13) did not appear to effect the downward trend. This may indicate that the runoff from the storm drain outlets (under and next to the pier) may have a lesser influence on water quality than do other factors. The fluctuation in concentrations and exceedance days during summer-dry weather may indicate that the increase in human activity (and correlating bird population) on and around the pier during the summer still may have an impact.

Snapshot Results

Graphs 8 through 12 show the results for the two snapshots. Graph 8 shows the average concentration of all samples for both parameters in 2003 (before) and 2006 (after). The intent of this graph is to determine if there are any hot spots across the Pier. The Total Coliform-before line appears to show an increase at the north side of the Pier. However, this sample trend did not appear for the Fecal Coliform-before. This trend was less apparent in both Total and Fecal-after lines. However, there was a significant decrease for all stations from before to after for Total Coliform and to a lesser extent for Fecal Coliform.

Graphs 9 and 10 show each sample concentration for Total Coliform in 2003 and 2006. The vertical scales of both graphs are the same. The 2003 (before) graph shows a significant variation in concentration from day to day. This significant variation doesn't appear in the 2006 (after) graph. However, there is a significant decrease between the two periods in the concentration at all stations. It would appear that the improvements had a significant effect on the water quality across the entire Pier. Graphs 11 and 12 show similar improvements in the Fecal Coliform concentration.

Rainfall Results

Graph 13 in Appendix C shows annual calendar year rainfall for 1994-2006 (April) and Graph 14 shows rainfall versus annual days of exceedances for the same time period. Note that exceedances closely follow rainfall, indicating that exceedances increase when rainfall increases and vice versa. One might draw a conclusion that the best way to reduce exceedances is to reduce the quantity of runoff to the Bay through various Best Management Practices, such as infiltration pits or cisterns, instead of trying to treat and release it.

Project Component Installation Results

Solid Waste Management Component

The original trash management program included two trash enclosures at the Pier. One was located at the base of the Pier and the other at the mid-section of the Pier over the water, with metal dumpsters that leaked and attracted birds. The trash enclosure at mid-section was renovated to include a metallic door that completely encloses the trash. A new trash enclosure was also built at the base of the pier. In addition, new covered trash containers were purchased for use across the Pier. A City trash vehicle replaces the compactor dumpster on a regular basis, over land; previously, a City trash vehicle had to drive onto the Pier to retrieve trash, allowing trash to escape from the containers during the transfer process. The new system has eliminated this problem. (See photos on Appendix D)

Fish Cleaning Sinks Component

The City had existing fish cleaning stations (photos of Appendix D), which allowed fishermen to clean their catch. However, the sinks emptied directly into the Bay, attracting birds, which would then take up residency under the Pier and contributing to higher bacterial counts. A new fish cleaning station with a garbage disposal was installed to grind fish materials and send this material directly into the sanitary sewer, preventing debris from entering the Bay and discouraging bird attraction.

Sanitary Sewer Component

In April 2003 the City replaced approximately 960 feet of pier sewer lines including replacement of straps/hangers and other miscellaneous repair. During this construction it was determined that the entire public main under the pier needed replacement. Therefore, in FY 2003-04 the City replaced the balance of the sewer main using City funds.

Storm Drain Diversion Component

The 36" storm drain the discharges underneath the pier collects dry weather flow from the entire Pier watershed (see watershed map Page 5). The estimated dry weather flow from this watershed is 50,400 gpd (based on 230 gpd/ac x 219 ac watershed).

Table 5 below shows the flow observation data collected at the Observation Site since November 2004 on “non-rain days”. The data shows that during the summer and fall months, 15 of 17 observances were “dry”, during the winter and spring months, 21 of 37 were dry, and during the AB411 months, 21 of 31 observances were “dry”. Although prior to the installation of the diversion in December 2004 no systematic flow observations were made, inspectors regularly observed low to medium flows.

The two times flow was observed during the Summer and Fall period occurred at the end of the very wet 2004 rain year and in the Fall of 2005 after an early rain in October. During the Winter-Spring and AB411 periods, 13 of 16 and 8 of 10 observed flows, respectively occurred during or just after the 2004 rainy season.

Because the infiltration bed is located just above normal ground water level it would appear that during a wet season with very high rainfall the ground water level will rise, causing the system to be less effective. However, it is anticipated that during normal rain years the system will be up to 93% effective year round and up to 97% effective during the AB411 period.

Table 5						
Flow Observations at Observation Site Since November 2004						
Dry	Ponding	Low Flow	Medium Flow	Heavy Flow	Total	Percent
Total						
36	0	5	2	11	54	66.67%
Summer and Fall						
15	0	1	0	1	17	88.24%
Winter and Spring						
21	0	4	2	10	37	56.76%
AB411 Period						
21	0	3	0	6	30	70.00%
<i>The criteria for observed flow is: low flow = garden hose or less, heavy flow = fire hose or more, medium flow = between garden hose and fire hose.</i>						

PROBLEMS & RECOMMENDATIONS

This Project has proven successful in all of its components in preventing releases and discharges of urban-generated pollutants from business trash containers and trash enclosures, and from sanitary sewer lines into the Bay, thereby improving water quality and reducing some health risks to swimmers.

The fish cleaning station is somewhat effective but is subject to the abuse inflicted upon the sinks by fishermen. People lose or intentionally put into the sinks and grinder mechanism objects that destroy the grinders.

The solid waste management component is working very well as business trash is being kept in more leak-proof containers in new trash enclosures. These practices keep trash in the containers and do not allow the loss of trash during windy days.

The storm drain diversion appears to be successful after two years of operation. Additional monitoring will be required to determine the impact of winter rains and groundwater levels on the effectiveness of the diversion effort.

Recent evidence has shown that bacteria in beach sand may contribute to high levels in the water. Further, the impact of this source of bacteria could be more pronounced during extreme tidal conditions. Figures D & E below compare tidal conditions to beach postings for the Redondo Pier monitoring station.

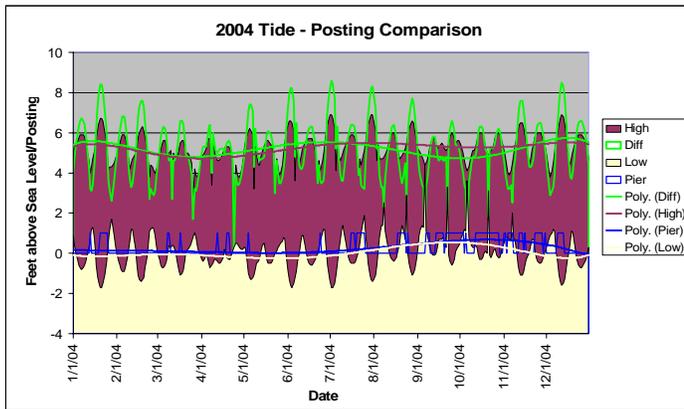


Figure D

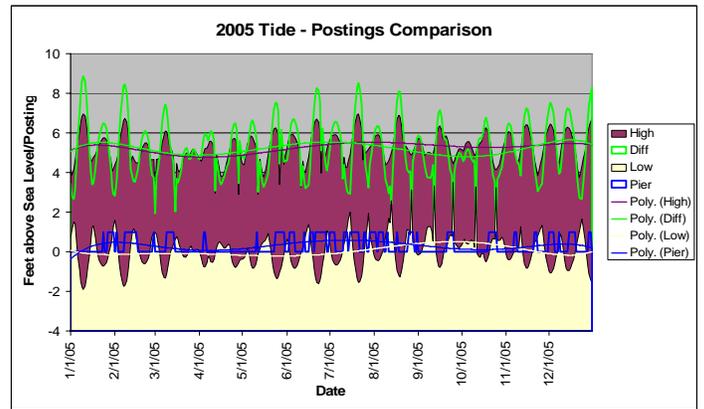


Figure E

The trend line in 2005 shows a correlation between a high number of postings and extremes in the daily high and low tides. However, in 2004, this correlation was not as pronounced. Another factor that could have an effect is rainfall. The rainfall in 2003 (prior to the 2004 summer period) was only normal and the posting in the 2004 summer were low, while the 2004 rainfall was very high and the posting in 2005 summer were high. Therefore the combination of extreme tides and high prior-year rainfall could be affecting the water quality. It is also possible that this phenomenon is exaggerated because this section of beach is somewhat enclosed by the pier and harbor to the north and the Topaz jetty to the south. Further analysis of these parameters will be needed to come to any conclusions.

CONCLUSIONS

The various components of the Project are working well including the trash management, fish cleaning station, sanitary sewer lines, and storm drain diversion. Determining the type of bacteria, that is, performing genetic analyses to determine if

human or non-human bacteria, found in the water, and thus, potential sources of such bacteria, would help guide future endeavors of urban runoff pollution mitigation.

The data results, tables, and graphics also indicate that while the project has been very successful, there are most likely other factors that have not been fully examined that are influencing exceedances. These factors include the role of beach sand, pier pilings, marine wildlife and other naturally occurring, non-storm water related elements, and their impact on exceedances. The effect of fluctuations in rainfall over time, and other geological effects are also other considerations for future work.

Future work for the Project includes completion of a sewer lateral study.

CONTACT INFORMATION

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