

**APPENDIX A**  
**WATERSHED WATER QUALITY AND EDUCATION**  
**ACTIVITY SUMMARY SHEETS**

**TITLE:**  
**ID NUMBER:**

**Alpha Project for the Homeless, Inc. Cleanup Sponsorship**  
**MB-1001**

**ACTIVITY IMPLEMENTATION**

The City of San Diego (City) partnered with Alpha Project for the Homeless, Inc. (Alpha Project), through a Memorandum of Understanding to conduct trash and debris cleanups and potential homeless encampment removals throughout the City’s jurisdiction in various watersheds in FY 2008.

Alpha Project conducted a cleanup at several locations. The following table shows the FY 2008 dates of the Alpha Project Cleanup, the locations, the amount removed in tons, and the numbers of workers. Based on this information, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity.

**Table 1 – Alpha Project Cleanups**

<b>Date</b>	<b>Location</b>	<b>Amount removed in tons</b>	<b>Number of workers</b>
7/2/2007	Pacific Beach Tourmaline	0.4	4
7/2/2007	Kellogg Park	0.4	4
7/13/2007	Pacific Beach Crystal Pier	0.4	4
7/13/2007	Mission Bay Santa Clara Pt	0.4	4
7/13/2007	Mission Beach - Belmont Park	0.4	4
7/13/2007	Mission Bay Jetty So Mission Beach	0.4	4
7/13/2007	Mission Bay West Bonita Cove	0.4	4
9/10/2007	Mission Bay Park	0.21	5
9/17/2007	Mission Bay Park	0.21	6
9/24/2007	Mission Bay Park	0.21	6
10/1/2007	Mission Bay Drive	0.21	9
10/9/2007	Mission Bay Drive	0.21	5
10/15/2007	Mission Bay Drive	0.21	3
10/24/2007	Mission Bay Drive	0.21	4
10/30/2007	Mission Bay Drive	0.21	4
11/6/2007	Mission Bay Dr	0.21	4
4/25/2008	Genesse and Banrock St	0.06	4
4/25/2008	Lamont St	0.06	4
4/25/2008	Morell & Honeycutt St	0.06	4
4/25/2008	Quincy & Thomas	0.06	4
5/9/2008	Old Meadow Rd	0.26	4
5/9/2008	Mount Ariane Dr	0.26	4
5/16/2008	Genessee & Bannock St	0.07	4
6/20/2008	Fireway Dr	0.07	5
6/20/2008	5060 Santa Fe St	0.07	5
6/20/2008	Mission Bay Dr/Damon Ave	0.07	5
6/20/2008	Morena Blvd	0.07	5
6/27/2008	Marian Bear Open Space & Tecolote	1.04	12
	<b>TOTAL</b>	<b>6.84</b>	<b>134</b>

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that the City would need to provide locations selected and the amount of trash collected at those locations, and that the Copermittees would receive credit only for the first trash cleanup event in the fiscal year. Locations and trash information are provided above. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

#### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL

#### **TIME SCHEDULE FOR IMPLEMENTATION**

The City will not continue the Alpha Project trash cleanup sponsorship in FY 2009. The reporting of this activity will cease with this annual report.

#### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

#### **OTHER PARTICIPATING ENTITIES**

- Alpha Project for the Homeless, Inc.

#### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

#### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy and for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project result in load reduction of trash and debris directly and of bacteria indirectly through trash and debris as a source.

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562; L Walsh)

## EFFECTIVENESS ASSESSMENT

<b>Watershed: Mission Bay and La Jolla</b>		
<b>ALPHA PROJECT FOR THE HOMELESS, INC. CLEANUP SPONSORSHIP</b>		
<b>Assess the Efficiency and Effectiveness of Sponsoring Local Cleanup Efforts to Remove Litter from Public Areas and Waterways</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction associated with sponsorship?</li> <li>• What is the efficiency of the sponsored cleanup? (\$/person or \$/pound)</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	Achieve load reduction of bacteria (any amount) due to trash cleanup sponsorship	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Tabulation (e.g., number of participants)</li> <li>• Quantification (e.g., pounds of trash collected)</li> </ul>	
<b>Data Recorded</b>	Pounds of trash removed (Outcome Level 4)	13,680 pounds
	Number of participants (Outcome Level 1)	134
	Amount of money spent on cleanups (Outcome Level 1)	\$6,977
	Activity Efficiency (Total Cost/Total Pounds Removed)	\$0.51/pound

### **Objectives**

The goal of the activity assessment is to determine the efficiency of load reduction associated with sponsoring trash cleanups.

### **Analysis and Results**

Alpha Project conducted a cleanup at 21 locations in the Mission Bay and La Jolla WMA on 16 different dates (some locations were visited more than once), with an estimated 134 workers. Approximately 13,680 pounds of trash and debris were removed, and at \$0.51 per pound the total cost of cleanups was \$6,977.

### **Conclusions**

The City's contract with Alpha Project resulted in a load reduction of 13,680 pounds of trash. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

The City will not continue the Alpha Project Cleanups in FY 2009. The reporting of this activity will cease with this annual report. The project's efficiency was determined by comparing the load reduction to the amount of money spent on the cleanup events as indicated above.

**TITLE:**  
**ID NUMBER:**

**I Love a Clean San Diego Trash Cleanup Sponsorship**  
**MB-1002**

### **ACTIVITY IMPLEMENTATION**

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

The City of San Diego (City) sponsored the Rose Creek site in the Mission Bay and La Jolla WMA. 3,810 pounds of trash and debris were removed and 5 pounds of trash and debris was recycled from 4 miles on April 26, 2008 by approximately 55 volunteers.

Based on the information above, the effectiveness assessment section, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity.

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Mission Bay and La Jolla Watershed are included in the list for cleanups and that proper sponsorship arrangements are made.

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- ILACSD
- Volunteers from general public

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>		
<b>ILACSD CREEK TO BAY CLEANUP SPONSORSHIP</b>		
<b>Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction associated with sponsorship?</li> <li>• What is the efficiency of trash cleanup? (\$/person or \$/ton collected)</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Load reduction due to reduction of trash due to trash cleanup sponsorship</li> </ul>	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Tabulation (e.g., number of participants)</li> <li>• Quantification (e.g., pounds of trash collected)</li> </ul>	
<b>Data Recorded</b>	Pounds of trash removed (Outcome Level 4)	3,810 pounds
	Pounds of trash recycled (Outcome Level 4)	5 pounds
	Total pounds of trash removed (Outcome Level 4)	3,815 pounds
	Number of participants (Outcome Level 1)	55
	Amount of money spent on cleanups for all WMAs (Outcome Level 1)	\$5,000
	Estimated amount of money spent on cleanups for Mission Bay and La Jolla WMA (Outcome Level 1)	\$833.33*
	Activity Efficiency (Total Cost/Pounds of Debris Removed)	\$0.22/pound

\*Calculated by dividing total sponsorship cost by six WMAs.

**Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant loads.

**Analysis and Results**

On April 26, 2008, 55 participants removed approximately 3,810 pounds of trash and debris and recycled approximately 5 pounds of trash and debris from numerous sites in

the Mission Bay and La Jolla WMA. The average estimated sponsorship cost was \$833.33 per WMA (\$5,000/6 WMAs). Thus, using the 3,815 pound load reduction associated with this sponsorship, an efficiency of \$0.22 per pound of trash removed was determined.

**Conclusions**

The City's sponsorship of the Creek to Bay Cleanup resulted in a load reduction of 3,815 pounds of trash in the Mission Bay and La Jolla WMA. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

Implementation of this activity and assessment of load reduction as well as further assessment of efficiency will occur again in FY 2009.

**TITLE:** SDCK Coastal Cleanup Day Sponsorship  
**ID NUMBER:** MB-1003

### **ACTIVITY IMPLEMENTATION**

Each fall, San Diego Coastkeeper (SDCK) conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. SDCK recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

Coastal Cleanup Day occurred on September 15, 2007. The City of San Diego sponsored the Rose Creek Pacific Beach site in the La Jolla and Mission Bay Watershed Management Area (WMA). 9,020 pounds of trash and debris were removed (20 pounds of this trash and debris was recycled) by 80 volunteers. Volunteers were asked to track the debris collected by implementing data cards provided by the Ocean Conservancy.

Based on the information above, the effectiveness assessment below, and the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that the City would receive credit only for the first trash cleanup event in the fiscal year. The City, while reporting on multiple trash cleanup events that occurred within the watershed, acknowledges that it will only receive credit for the first one completed in the fiscal year. However, the City also acknowledges that trash cleanups provide more benefits than simply removal of trash – these are events that also involve education, outreach, and public participation. Therefore, the City may choose to continue to implement and report on more than one trash cleanup each year.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with SDCK staff to ensure that sites within the Mission

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Bay and La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- SDCK
- I Love a Clean San Diego (ILACSD)
- Volunteers from general public

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>		
<b>SDCK COASTAL CLEANUP DAY SPONSORSHIP</b>		
<b>Assess the Efficiency and Effectiveness of Sponsoring Local Organization’s Cleanup Efforts to Remove Litter from Public Areas and Waterways</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction associated with sponsorship?</li> <li>• What is the efficiency of trash cleanup? (\$/person or \$/pound collected)</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Tabulation (e.g., number of participants)</li> <li>• Quantification (e.g., pounds of trash collected)</li> </ul>	
<b>Data Recorded</b>	Pounds of trash removed (Outcome Level 4)	9,020 pounds
	Number of participants (Outcome Level 1)	80
	Amount of money spent on cleanups for all six WMAs (Outcome Level 1)	\$6,000
	Amount of money spent on cleanups for the Mission Bay and La Jolla WMA (Outcome Level 1)	\$1,000
	Activity Efficiency (Total Cost/Total Pounds Removed)	\$0.11/pound

**Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of trash cleanup days for actively reducing pollutant load.

**Analysis and Results**

The event's debris removal was tracked using data cards provided by Ocean Conservancy, and a 9,020 pound load reduction recorded for the September 15, 2008 cleanup event. There was a total of \$6,000 estimated for the sponsorship cost for all six WMAs within the City's jurisdiction and 80 participants in this watershed. For the cost estimates, it was assumed that each site sponsored at the "Garibaldi Sponsor" level, or \$1,000. It was anticipated that the sponsorship fee at that level would remain the same for subsequent years. The event's efficiency, calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the pounds of trash removed, was \$0.11 per pound.

**Conclusions**

The City's sponsorship of Coastal Cleanup Day resulted in a load reduction of 9,020 pounds of trash in the Mission Bay & La Jolla Watershed. Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, the City requests credit for a trash cleanup activity as a watershed water quality activity for FY 2008.

Implementation of this activity and assessment of load reduction as well as further assessment of efficiency will occur again in FY 2009.

**TITLE:** Targeted Facility Inspections (Combined)  
**ID NUMBER:** MB-1004, MB-1005, MB-1006, MB-1009

### **ACTIVITY IMPLEMENTATION**

The City of San Diego (City) is developing a focused inspection program to target facilities that are potential sources of high priority pollutants. In the Mission Bay and La Jolla Watershed Management Area (WMA), the City is focusing on animal facilities, auto shops, landscaping-related facilities, and restaurants. The long-term goals of the program are:

- Determine the most efficient frequency of inspections to ensure proper Best Management Practices (BMPs) implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The City delineated a specific area within the Mission Bay and La Jolla WMA to conduct the targeted inspections based on factors such as facility clustering and proximity to other watershed activities being conducted. The overall approach of the site selection process focused first on the specific business categories within the prioritized sectors in each WMA. If multiple category types were targeted for inspection in a particular WMA, a fairly equal distribution of sites from each category was selected for inspection where possible. In addition, knowledge gained by the City from past inspections was used to consider the likelihood of certain business types and areas of the City to be more problematic than others regarding constituents of concern in each WMA

Originally, the FY 2008 watershed-focused inspection program involved multiple inspections at each facility selected for inspection. Due to time constraints and complications with outreach to the affected community, only one inspection was conducted at each facility. The inspections that were conducted provide baseline data for comparison to future years' watershed-focused inspection programs. Information gathered during the FY 2008 watershed-focused inspection program provides information about different WMAs and facility types in the City, which will be helpful in answering the specific goals of the program in future years.

45 full inspection equivalents (35 full inspections and 20 “other site visits”) occurred across the Mission Bay and La Jolla WMA at animal facilities, auto shops, landscaping-related facilities, and restaurants. Full inspection equivalents are equal to the number of full inspections plus one half the number of “other site visits” (site visits that did not result in a full inspection), excluding other site visits where the facility has moved and is gone and a replacement business was found. This metric allows for a more equal comparison of inspection effort among WMAs.

This activity is in active implementation, and source abatement information is included in the effectiveness assessment section of this activity summary sheet. The City requests credit for one of the two required watershed water quality activities for this reporting year with this activity.

The City acknowledges Regional Board staff’s comment<sup>1</sup> that recorded data and assessment are needed regarding the inspections and that the inspections must be above and beyond JURMP requirements. Inspections under this activity were conducted at facilities that were not inspected under the JURMP program. Recorded data and assessment are included in this report.

Regional Board staff also commented on the activity being given credit for one year and that the activity is expected to become “business as usual.” However, the City is implementing this non-capital activity over multiple years to optimize the program prior to incorporating the results and recommendations into the JURMP. Specific changes to the JURMP are not yet planned as the study is ongoing at this time. Incorporating this activity into the JURMP at this time would be premature in putting valuable resources toward wide-scale implementation before the program is optimized. With optimization the City anticipates gaining the strongest improvement to storm water discharge quality that is achievable at this point in time. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as “business as usual.”

It should be noted that all of the inspections (animal, automotive, landscaping-related, and restaurant facilities) are being reported on one activity summary sheet for FY 2008 due to the structuring of this year’s program. The inspections were previously detailed as separate activities in the 2008 Mission Bay and La Jolla WURMP. For consistency, the activity numbers are included in the heading of this summary sheet. The City is not expecting to receive four watershed water activity credits (one for each type of facility) for this program year; the City is requesting credit for one of the two required activities in this program year. However, the program may be restructured in the future and depending on the scale of implementation, the City may request credit for different facilities in the future.

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

Additionally, Regional Board staff commented that animal-related facility inspections will not be given credit in FY08 since they were completed in FY06/07. This statement is not accurate, as restaurant inspections, not animal facility inspections were implemented in FY 2007. Furthermore, the Municipal Permit does not preclude credit over multiple years for non-capital projects. Section E.2.f.(4) states that “capital projects are in active implementation for the first year of implementation only.” There is no reference to non-capital projects.

**TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

**TIME SCHEDULE FOR IMPLEMENTATION**

Activity planning began in July 2007. The City selected and hired a consultant who implemented the watershed-focused project from the end of March through June 2008. The City will continue to evaluate ways to optimize the inspection of various facilities in the future. The City is currently developing its 2009 program and anticipates continuing piloting the targeted inspections through FY 2012.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

The Mission Bay and La Jolla inspections target the following high priority water quality problems:

FACILITY TYPE	HIGH PRIORITY WATER QUALITY PROBLEMS ADDRESSED		
	Nutrients	Bacteria	Metals
Animal		X	
Auto Shops			X
Landscaping-related	X		
Restaurants		X	

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of these targeted inspections will contribute to addressing

discharges, correct behaviors, and abate sources associated with bacteria, metals, and nutrients.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>		
<b>TARGETED FACILITY INSPECTIONS</b>		
<b>Assess the Efficiency and Effectiveness of Facility Inspections</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• Do inspections increase rate of BMP implementation?</li> <li>• Does increased rate of BMP implementation effect source abatement?</li> <li>• What is the optimal frequency of inspection (point of diminishing returns)?</li> <li>• Are spot inspections more effective than scheduled inspections?</li> <li>• Does enforcement alter future behavior (implementing BMPs)?</li> <li>• Does education increase rate of BMP implementation?</li> <li>• How can an estimate of source abatement be made from inspection data?</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Source abatement due to inspections</li> <li>• Increased BMP implementation due to inspections</li> </ul>	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections)</li> <li>• Quantification (e.g., use frequency of BMP implementation to estimate source abatement)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials)</li> <li>• Reporting (e.g., estimates of source abatement for BMPs from 3<sup>rd</sup> party data)</li> </ul>	
<b>Data Recorded</b>	Number of restaurant facility full inspections, spot and scheduled (Outcome Level 1)	21
	Number of restaurant follow-up inspections (Outcome Level 1)	2
	Number of auto facility full inspections, spot and scheduled (Outcome Level 1)	10
	Number of auto follow-up inspections (Outcome Level 1)	1
	Number of animal facility full inspections, spot and scheduled (Outcome Level 1)	2
	Number of animal follow-up inspections (Outcome Level 1)	0
	Number of landscaping facility full inspections, spot and scheduled (Outcome Level 1)	2
	Number of landscaping follow-up inspections (Outcome Level 1)	1
	Number of Sites Needing Corrective Action (Outcome Level 1)	35
	Number of Sites that Implemented Some Corrective Action During Inspection (i.e. BMPs implemented) (Outcome Level 3)	3
	Number of Sites with Source Abatement (based on corrective actions taken) (Outcome Level 4)	3
	Number of missing BMPs (Outcome Level 1)	32
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	0
	Total IC/IDs Receiving Notice of Violation, and therefore abatement (Outcome Level 4)	0
	Total number of full equivalent inspections, spot and scheduled (Outcome Level 1)	45*

<b>Watershed: Mission Bay and La Jolla</b>	
<b>TARGETED FACILITY INSPECTIONS</b>	
<b>Assess the Efficiency and Effectiveness of Facility Inspections</b>	
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change (%) in BMP implementation pre and post-education (Outcome Level 3)</li> <li>• Number of educational information items passed out (Outcome Level 3)</li> <li>• Potential Pollutant Discharge Assessment (Outcome Level 4)</li> </ul>

\* Includes “other site” visits in calculation of the total.

### Objectives

Goals of this activity assessment include determination of the most efficient frequency (e.g., once vs. twice per fiscal year) and type (e.g., random inspections vs. scheduled inspections) of inspections, to ensure proper BMP implementation and reduce pollutant loading.

### Analysis and Results

A breakdown of the number of sites needing corrective action and number of sites that implemented at least some corrective action during the inspection were included in the Watershed-Focused Storm Water Compliance Inspection Program Report<sup>2</sup> and is included in Table 1. The table also includes the number of Illegal Connections/Illicit Discharges (IC/ID) observed during inspections, and the total number of IC/IDs abated during inspections. Three of the 35 sites implemented corrective action during the inspection, resulting in source abatement at this facility.

**Table 1. Corrective Actions Implemented at Time of Inspection**

Area	Number of Sites Needing Corrective Action	Number of Sites That Implemented Some Corrective Action During Inspection	Total IC/IDs Observed	Total IC/IDs Eliminated During Inspection
MB/LJ	35	3	0	N/A

Although a load reduction was not calculated for each location, abatement of potential sources (Outcome Level 4) may be assumed with corrective actions being implemented due to the inspections. Future years’ analysis will include a detailed pollutant discharge potential assessment to better show this source abatement. Inspected facilities were assigned a rating to reflect the level of BMP implementation noted at the site, and a separate rating to reflect the facility manager/responsible party’s level of storm water knowledge. Inspectors evaluated BMP assessment ratings based on the cleanliness of the site and the number of recommended corrective actions given to each facility.

Table 2 presents a breakdown of the average knowledge and average BMP implementation scores for inspected facilities in each WMA. In the Mission Bay and La Jolla WMA, the Average BMP Implementation Score increased while the Average

<sup>2</sup> D-MAX Engineering, *Watershed-Focused Storm Water Compliance Inspection Program* (September 2008).

Knowledge score decreased. While some conclusions can be drawn based on the results of the FY 2007 and FY 2008 inspection programs, the number of inspections completed, the individual sites visited, and the business types targeted in each WMA were not the same in FY 2008 as in FY 2007. Because of these differences, drawing definitive conclusions is difficult. The City is modifying its strategy for future years, and the use of the new inspection form should provide the ability to derive more solid conclusions in future years to help optimize the City’s jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

**Table 2. Breakdown of Average Knowledge and BMP Implementation Scores by Area**

<b>Area</b>	<b>Average Knowledge Score FY 2007</b>	<b>Average BMP Implementation Score FY 2007</b>	<b>Average Knowledge Score FY 2008</b>	<b>Average BMP Implementation Score FY 2008</b>
MB/LJ	2.1	2.8	1.9	3

**Conclusions**

The City abated three potential sources of pollutant discharges in the Mission Bay and La Jolla through this activity’s implementation in FY 2008.

During FY 2009, additional inspection data will be collected to augment data collected during FY 2008. Further analysis of inspection efficiency, BMP implementation and education, and their source abatement effectiveness is required before further conclusions can be made and will include the cost of inspections, BMP implementations, education data, and enforcement follow-ups.

**TITLE:** Targeted Municipal Facility Inspections  
**ID NUMBER:** MB-1007

### **ACTIVITY IMPLEMENTATION**

The Storm Water Department had planned to develop a focused inspection activity to target municipal facilities within the Mission Bay and La Jolla WMA. The purpose of the activity was to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

Based on Regional Board staff comments<sup>1</sup>, the Storm Water Department will no longer pursue this activity under the WURMP section of the Municipal Permit. The Storm Water Department may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other projects and significant activities. The reporting of this activity will cease with this annual report.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

Planning and implementation is not yet scheduled for this activity. If it moves forward, it would be reported under the JURMP.

### **PARTICIPATING WATERSHED COPERMITTEE(S)**

- City of San Diego

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Nutrients
- Metals

### **CONSISTENCY WITH THE WATERSHED STRATEGY**

If implemented under the WURMP, the activity would have been consistent based on the City's *Strategic Plan for Watershed Activity Implementation* which identifies bacteria, nutrients, and metals as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity if pursued would contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria, nutrients, and metals at municipal facilities. However, if pursued, the activity would occur under the City's JURMP.

### **EFFECTIVENESS MEASUREMENTS**

<b>Watershed: Mission Bay and La Jolla</b>
<b>TARGETED MUNICIPAL FACILITY INSPECTIONS</b> Assess the Efficiency and Effectiveness of Municipal Facility Inspections

Based on Regional Board staff comments<sup>2</sup>, the Storm Water Department will no longer pursue this activity under the WURMP section of the Municipal Permit. The Storm Water Department may choose to reconsider this as a significant JURMP activity in the future, though staff time and resources are currently allocated to other projects and significant activities. The reporting of this activity will cease with this annual report.

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<sup>2</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

**TITLE:**  
**ID NUMBER:**

**Targeted Aggressive Street Sweeping Project**  
**MB-1010**

### **ACTIVITY IMPLEMENTATION**

The City of San Diego is conducting a 24-month street sweeping effectiveness study in the La Jolla Shores area. The study investigates the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency.

The City is using the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target areas within the Mission Bay and La Jolla WMA. Based on this prioritization plan, the findings of the City's Dry Weather Air Deposition Study, and meetings held with relevant City staff, the routes that have been selected are in the highest priority sectors of the Mission Bay and La Jolla WMA that have a higher potential for metals loading.

In anticipation of the start of sweeping, the City conducted the following community outreach and information dissemination efforts in FY 2008:

- Community meetings held in April 2008 and June 2008 in Clairemont and La Jolla areas
- Route maps, sweeping schedules, and list of frequently asked questions posted on City's *Think Blue* website
- Article on project published in Council District 6 newsletter, *Frye Lights*, in April 2008
- Newspaper display advertisements placed in community newspapers
- Door hangers and brochures distributed in Clairemont
- Information shared with Council Offices

The City installed "no parking" signs along the project sweeping routes in Clairemont in March and April 2008. Sweeping in the Clairemont area began in April 2008. The City's consultant conducted debris baseline monitoring and characterization. Table 1 below summarizes the number of broom miles swept and the pounds of debris removed during the reporting period. Table 1 below also estimates the number of broom miles swept and the pounds of debris removed during the report period above and beyond what would have been swept and removed per JURMP requirements.

**Table 1. Estimates of Miles Swept and Pounds of Debris Removed in FY 2008.**

	Pounds Debris Removed	Broom Miles Swept***
JURMP Requirement*	39,440	582
Street Sweeping Project**	39,440	582
<b>Total</b>	<b>78,880</b>	<b>1,164</b>

Notes:

\*Assumes JURMP requirement of once-a-month sweeping per side in general for streets included in project.

\*\*Assumes street sweeping project in general increased sweeping frequency from once a month to twice a month.

\*\*\*“Broom miles” and not “curb miles” were used to track the distance swept. “Broom mile” is defined as the length traveled by a sweeper when the sweeper’s brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

Based on this information, the effectiveness assessment section, and the total amount of debris removed leading to a direct load reduction of debris and an indirect load reduction of bacteria (a high priority water quality problem in the Mission Bay and La Jolla Watershed Management Area (WMA)), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2008.

The City is in the midst of the street sweeping study and is working to optimize the activity. Therefore, the activity is continuing under the WURMP and not being incorporated into the JURMP as “business as usual” at this time. Additionally, specific changes to the JURMP are not yet planned as the study is ongoing at this time. Once the activity is optimized, the City anticipates incorporating the most efficient activities into the JURMP to gain the strongest improvements regarding storm water discharges.

#### **TMDL APPLICABILITY**

- Area of Special Biological Significance Nos. 29 and 31

#### **TIME SCHEDULE FOR IMPLEMENTATION**

Project planning began in September 2006. Sweeping in the Clairemont area started in April 2008 and is anticipated to continue through summer 2010. Sweeping in the La Jolla area will begin in October 2008. Use of vacuum-assisted street sweepers will begin in FY 2009 for these project routes. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

#### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

#### **OTHER PARTICIPATING ENTITIES**

- N/A

#### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Metals

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identifies metals as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Targeted increased sweeping targets metals on City streets.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>		
<b>TARGETED AGGRESSIVE STREET SWEEPING PROJECT</b>		
<b>Assess the Efficiency of Street Sweeping Frequency and Methods</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)?</li> <li>• Is sweeping more frequently more effective than less frequent street sweeping in debris removal?</li> <li>• What is the optimal street sweeping frequency/method?</li> <li>• What is the impact of street sweeping on COCs in storm water runoff?</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Achieve load reduction for metals based on monitoring information</li> <li>• Observe receiving water quality improvement</li> </ul>	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff)</li> <li>• Tabulation (e.g., amount of money to buy vacuum assisted street sweepers)</li> <li>• Quantification (e.g., load estimate comparison between sweeping methods)</li> </ul>	
<b>Data Recorded</b>	Total pounds of debris removed for the mechanical sweepers* (Outcome Level 4)	39,440 pounds
	Total broom miles swept for the mechanical sweepers** (Outcome Level 4)	582 mile
	Total pounds of debris removed for mechanical sweepers per mile swept (Outcome Level 4)	68 pounds/mile
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Cost of sweeper repairs/maintenance (Outcome Level 1)</li> <li>• Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4)</li> <li>• Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4)</li> <li>• Post-sweeping COC concentrations in runoff (Outcome Level 4)</li> <li>• Cost of vacuum-assisted sweepers (Outcome Level 1)</li> <li>• Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)</li> </ul>	

\*Assumes street sweeping project in general increased sweeping frequency from once a month to twice a month.

\*\*“Broom miles” and not “curb miles” were used to track the distance swept. “Broom mile” is defined as the length traveled by a sweeper when the sweeper’s brooms are physically down on the street per the operator. Based on the data collected by the City of San Diego, only broom miles were tracked accurately using GPS. This broom mileage DOES NOT translate to curb miles physically on the street due to double sweeping, weaving around parked cars/obstacles, backing and turning around, etc.

**Objectives**

The goal of the assessment is to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data will also be evaluated for the purpose of establishing optimal sweeping frequencies.

### **Analysis and Results**

The study included the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. A total of 39,440 pounds of debris was removed by mechanical sweepers, over a total of 582 miles swept. Further analysis is underway to address the study objectives during FY 2009.

### **Conclusions**

Conclusions and recommendations will be made in the final report, as sweeping in the Clairemont area started in April 2008 and is anticipated to continue through summer 2010. Sweeping in the La Jolla area will begin in October 2008. Use of vacuum-assisted street sweepers will begin in FY 2009 for these project routes. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets. This effectiveness assessment monitoring will be coordinated with additional air deposition sampling and effectiveness monitoring of combined Tier I and Tier II BMPs in Mission Bay and La Jolla.

**TITLE:** Mission Bay Watershed Municipal Rain Barrel Installation and Downspout Disconnect Project  
**ID NUMBER:** MB-1011

### **ACTIVITY IMPLEMENTATION**

The City of San Diego (City) is undertaking a municipal rain barrel installation and downspout disconnect project to reduce pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project will consist of installing rain barrel systems, including downspout disconnects and infiltration systems, within the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce pollutant loading from urban runoff during storm events. Rain barrels and downspout disconnects help to capture, store and divert storm water to reduce urban runoff, thus contributing to reduced flooding, erosion and the contamination of surface water with sediments, fertilizers, metals, pesticides and other urban runoff pollutants. Rain barrels collect storm water runoff from buildings and residential rooftops and store until discharged. Rain barrels can be connected to a slow-release, gravity-powered landscaping irrigation system in which the stored runoff is released to landscaped areas for irrigation purposes. These landscaped areas can be designed to promote pollutant load reduction using bioretention, bioswales and other Low Impact Development (LID) techniques. These areas can also be designed as lined planter boxes, swales and filtration systems that keep runoff away from existing structures and utilities. Downspout disconnects are an additional option for redirecting runoff from roof areas to landscaped areas or constructed planter boxes, swales or filtration systems. The project will investigate the effectiveness of rain barrels/downspout disconnects in reducing pollutant loading and will assist the City in attaining its water quality goals. The project includes site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, and effectiveness assessments.

The City is using the prioritization process that is outlined in the *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Mission Bay and La Jolla WMA and other watersheds for this project. Based on this prioritization plan, the two selected sites for rain barrel installation, Kellogg Park and Rose Canyon Purchasing/Central Stores, were in one of the highest priority sectors of the Mission Bay and La Jolla WMA for potential for pollutant loading.

The first phase of this project will focus on installing rain barrel/rain harvesting systems at selected municipal facilities. Ultimately, the City would like to incorporate the use of these LID techniques through a residential program that may include incentives for implementing these systems. Therefore, it is anticipated that the information gathered during this phase of the project will be applied to implementation in residential areas.

Based on these findings, the City may modify its municipal rain barrel installation and downspout disconnect project to increase effectiveness and/or seek City Council approval for additional funding to implement future phases (i.e., incentives) and additional rain barrel/downspout disconnect systems.

A one page information sheet regarding the rain barrels was developed in the summer of 2007. Kellogg Park and Rose Canyon Purchasing/Central Stores were chosen as sites for the installation. The site selection process was long and iterative. Field reconnaissance was required to identify sites with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were also assessed for sources of electrical power for use with automated systems and for adjacent vegetated areas where captured water could be discharged. Sites were also selected for opportunities for education/outreach. Kellogg Park is a publicly accessible City facility located adjacent to the La Jolla ASBS. The Rose Canyon Purchasing/Central Stores site has a 100% impervious surface. This site will be used to assess whether rain barrel/planter combined systems are efficient, effective, and functional as part of an operation and maintenance study.

In a letter<sup>1</sup> documenting its review of the WURMPs, the Regional Board requested that the City provide data on the locations selected, number of barrels installed, and the volume of rain water collected. The location is discussed in this implementation section above. The number of rain barrels has yet to be decided, but will be discussed in future reporting. As the rain barrels are not yet installed, the volume of water captured is not known and will also be discussed in future reporting.

#### **TMDL APPLICABILITY**

- Area of Special Biological Significance Nos. 29 and 31

#### **TIME SCHEDULE FOR IMPLEMENTATION**

Project planning, including site selection, began in July 2007 and is anticipated to continue until the end of calendar year 2008. Initially the project was anticipated to be completed in Spring 2008. Planning, site selection, and procurement of the rain barrels took longer than expected. Some vendor product screening, including rain barrels and concrete planters, was completed in the first quarter of 2008. Procurement of rain barrels and other items and installation started in the second quarter of 2008. Subcontractors will be procured in late 2008. The specifications and installation guidelines will be developed by the end of 2008. A pre-installation meeting will be held at both sites by the end of calendar year 2008.

#### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

#### **OTHER PARTICIPATING ENTITIES**

- San Diego Coastkeeper – project supporter

#### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Metals

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562; L Walsh)

- Bacteria
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address these high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>		
<b>MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROGRAM</b>		
<b>Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing storm water runoff volume?</li> <li>• What is the loading reduction of different systems, particularly for metals and bacteria?</li> <li>• Which system is most efficient in collecting and/or diverting rainwater?</li> <li>• Which system results in the largest load reductions?</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Load reduction due to rain barrel installation</li> <li>• Runoff reduction due to rain barrel installation</li> </ul>	
<b>Data Recorded</b>	Cost of rain barrels for Rose Canyon Purchasing/Central Stores site (Outcome Level 1)	\$14,055
	Cost of rain barrels for Kellogg Park site (Outcome Level 1)	\$2,000
	Estimated cost of operation and maintenance evaluation for all sites (Outcome Level 1)	\$13,086
	Estimated cost of effectiveness monitoring for all sites (Outcome Level 1)	\$21,526
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Number/type of barrels installed (Outcome Level 1)</li> <li>• Volume of storm water captured/diverted (Outcome Level 4)</li> <li>• Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4)</li> <li>• Percent capture of the different systems (acres drained) (Outcome Level 4)</li> </ul>	

**Objectives**

The goal of the rain barrel and rain harvesting assessment is to determine whether rain barrel/rain-harvesting systems reduce storm water runoff, thereby reducing metals and bacteria loads, and if so which system is most effective and efficient.

**Analysis and Results**

Procurement of rain barrels and other items and installation started in the second quarter of 2008. Estimated costs for rain barrel preparation, installation and start-up total approximately \$16,055 (\$14,055 for the Rose Canyon Purchasing/Central Stores site and \$2,000 for the Kellogg Park site). Estimated operation and maintenance costs total \$13,086 or \$2,181 per site for each of the seven sites. Estimated costs for effectiveness

monitoring total \$13,086 or \$3,587.67 per site for each of the seven sites. Further analysis will be completed after installation of the rain barrels through monitoring.

**Conclusions**

Effectiveness and efficiency will be determined by load reduction (determined through monitoring efforts) versus cost of barrel installation and maintenance. Conclusions will be made after the assessment is complete.

**TITLE:**  
**ID NUMBER:**

**Osler Street Hydrodynamic Separator Installation Project**  
**MB-1012**

### **ACTIVITY IMPLEMENTATION**

Osler Street is located on the Northern end of Linda Vista Park in the Mission Bay Watershed Management Area (WMA). The City of San Diego (City) plans to install hydrodynamic separator directly in line with a 24-inch storm drain that traverses the park and discharges into Tecolote Canyon. The 24-inch line is the main collector in a small storm drain network that collects storm flows from the park and associated facilities, neighboring elementary school and the surrounding neighborhood comprised mostly of high density housing. Due to the characteristics of the neighborhood and the observations made during a site visit on December 11, 2007, the storm events in the selected area are likely to gather a variety of trash and other pollutants typical of low income high density residential areas. This played an important part in the site selection making process.

This project includes the installation of a hydrodynamic separator as a retrofit within the existing storm drain system. The hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system.

Site selection and concept planning occurred in FY 2008.

In the Regional Board Comment letter<sup>1</sup>, Regional Board staff indicated that credit will be given for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City acknowledges that the Municipal Permit currently precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that “capital projects are in active implementation for the first year of implementation only.”

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

The project will be transferred to the City’s Engineering and Capital Projects Department in September 2008 for purposes of managing the project through final design, construction and project closeout. A detailed project schedule will be provided from the Engineering and Capital Projects Department in beginning of calendar year 2009. The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated and construction is expected to be completed in FY 2013 instead of being initiated in FY 2010.

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562; L Walsh)

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>OSLER STREET HYDRODYNAMIC SEPARATOR INSTALLATION PROJECT</b>	
<b>Assess the Efficiency and Effectiveness of the Hydrodynamic Separator</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction efficiency of the hydrodynamic separator?</li> <li>• How effective is the separator at reducing loads of priority pollutants?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	Reduction in priority pollutant loads
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the hydrodynamic separator is working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li> <li>• How much money spent on implementation and maintenance (Outcome Level 1)</li> </ul>

**Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of the hydrodynamic separator to reduce the amount of trash, sediment, oil, and grease flowing into the storm drain system.

**Analysis and Results**

Assessment is not possible at this time, as the activity is still in its planning phase. However, once the activity is complete, an assessment of effectiveness will be conducted to show the load reduction and cost efficiency associated with hydrodynamic separators.

**Conclusions**

Conclusions will be made as to future implementation of other similar projects once the project and effectiveness assessment are complete.

**TITLE:** La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV)  
**ID NUMBER:** MB-1013

### **ACTIVITY IMPLEMENTATION**

The City of San Diego (City) has been installing a low flow storm drain diversion system in phases to serve the Pacific Ocean coast of the La Jolla, Pacific Beach, and Ocean Beach areas. Phases I and II have been completed using grant monies from the Environmental Protection Agency. Phase III is nearly complete. Phase III will include a total of 11 locations from La Jolla Point to Ocean Beach.

Phase IV focuses on the La Jolla ASBS to address the prohibition of dry weather flows under the Ocean Plan Exception Process. Four low flow coastal diversions are planned for this fourth phase: Camino del Oro (Camino del Oro near El Paseo Grande), 7920 Princess St. (Torrey Pines Rd. and Princess St.), Torrey Pines Rd. and Charlotte St. (Torrey Pines and Amalfi), and 1624 Torrey Pines Rd. (Torrey Pines and Coast Walk). The City held a workshop to present the concept for these sites on July 30, 2008 and invited the La Jolla Town Council, the La Jolla Community Planning Group, the La Jolla Shores Association, San Diego Coastkeeper, and the general public.

The UC Regents – UCSD applied to the State Board for an implementation grant under this Consolidated Grant program (Proposition 50) for multiple structural control projects consistent with the La Jolla Shores Integrated Coastal Watershed Management Plan (ICWMP) (see activity summary sheet MB-3003 La Jolla Shores Integrated Coastal Watershed Management Plan) including these low flow diversions. City staff coordinated with UC Regents-UCSD for the City to be a subcontractor on this grant for the implementation of three low flow diversions. The fourth diversion that is part of this phase is funded under an Environmental Protection Agency grant. The State has since suspended many grant programs, including the Consolidated Grants Program and the impact to this project has not yet been determined.

Under the Proposition 50 grant, the City, UCSD, and other entities that contributed to the development of the ICWMP participate in quarterly Technical Advisory Committees, in addition to implementing pollution prevention and structural controls.

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated the La Jolla Dry Weather Flow Diversions activity will be given a WURMP credit. The City will request credit for this activity when the diversions are constructed and a load reduction determination can be established.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

**TIME SCHEDULE FOR IMPLEMENTATION**

The 60% design for this project will be done by the end FY 2009 (60% design) with 100% design expected in FY 2010. The project was previously anticipated to be completed in FY 2010; however, contract negotiations took longer than anticipated and during the preliminary design, buried storm drains proved difficult to locate, thus delaying the design progress. Construction is now expected to occur in FY 2011. However, due to the suspension of the Consolidate Grants Program, this project may be subject to further delay. As mentioned above, the impact due to suspended grant funding has not yet been determined.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Metals
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>LA JOLLA SHORES ASBS POLLUTION CONTROL PROGRAM (AKA LOW FLOW DIVERSIONS PHASE IV)</b>	
<b>Assess the Efficiency and Effectiveness of the Dry Weather Flow Diversions</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction efficiency of the flow diversions?</li> <li>• How effective are these diversions at reducing loads of priority pollutants?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reduction in priority pollutant loads</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the system upgrades are working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> </ul>

	<ul style="list-style-type: none"> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li> <li>• How much money spent on implementation and maintenance (Outcome Level 1)</li> </ul>

### **Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of installing low flow diversions to divert dry weather runoff into the sewer system for treatment instead of low flows discharging out of storm drain outfalls directly into the ASBS. Targeted high priority pollutants include bacteria, metals and nutrients.

### **Analysis and Results**

Assessment is not possible at this time, as the diversions have not yet been constructed. Prior to construction, monitoring will be conducted to determine baseline conditions. Post-construction monitoring will be conducted as well for comparison to baseline conditions and assessment of effectiveness.

### **Conclusions**

At the end of FY 2008, this project was nearing completion of the pre-design phase. Construction is expected to occur in FY 2011. Once construction and assessment are both complete, conclusions will be made as to the effectiveness and efficiency of the project.

**TITLE:** Kellogg Park Green Lot Retrofit Project  
**ID NUMBER:** MB-1014

### **ACTIVITY IMPLEMENTATION**

This project will replace the conventional asphalt of the Kellogg Park parking lot with porous asphalt to allow for the infiltration of urban runoff. Originally the project considered only the western half of the parking lot. In late FY 2008, the project was expanded to include the entire parking lot. The concrete curb around the existing planter areas and the asphalt paving will be removed, and the parking lot will be graded to drain toward the planter areas. Existing palm trees within the planter areas will remain undisturbed, and new concrete gutters will be placed to convey high flows from the ends of each planter area to the existing catch basins at the north and south ends of the parking lot. Pervious concrete will be placed as the new driving and parking surface within the lot. The concept design for the western half of the parking lot was worked on in FY 2008. An additional conceptual design will also be completed in FY 2009 taking into account the replacement of the entire parking lot. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, Area of Special Biological Significance (ASBS), and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Watershed Management Area (WMA).

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that construction is anticipated in FY 2010 and a WQA credit will be granted. As indicated in the schedule below, construction, previously anticipated for FY 2010, is expected to be completed in FY 2011.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

### **TIME SCHEDULE FOR IMPLEMENTATION**

Design for this project will be initiated in the fall of 2008 and is anticipated to be completed in the first half of FY 2010. Construction, previously anticipated for FY 2010, is expected to be completed in FY 2011. The competitive bid process and contract negotiations with the selected design consultant took longer than anticipated. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Metals
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>KELLOGG PARK GREEN LOT RETROFIT PROJECT</b>	
<b>Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Lot-type BMPs</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction efficiency of retrofits?</li> <li>• How effective are retrofits at reducing loads of priority pollutants (metals and bacteria)?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reduction in priority pollutant loads</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the retrofit is working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li> <li>• Change in pollutant concentrations in runoff into storm drains or receiving water (Outcome Level 5)</li> <li>• How much money spent on implementation and maintenance (Outcome Level 1)</li> <li>• Dataset of load contributions for specific activities (Outcome Level 4)</li> </ul>

**Objectives**

The goal of the project is to reduce runoff volume through infiltration. The goal of this analysis is to determine the load reduction efficiency of LID BMP retrofits through

reduction of runoff volume. The load reduction efficiencies will also be estimated and used to determine the efficacy of future LID BMP implementations of similar type. High priority pollutants targeted include bacteria, nutrients, and metals.

### **Analysis and Results**

The concept design for this project began in FY 2008 and baseline monitoring was completed. Currently, load estimates are being calculated and will be included in the project report. Once design and construction are complete, additional assessment will be completed to determine the effectiveness of this activity.

### **Conclusions**

As mentioned above, the assessment will be completed after project construction and conclusions will be made at that time. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the WMA.

**TITLE:**  
**ID NUMBER:**

**Mt. Abernathy Green Street Retrofit**  
**MB-1015**

### **ACTIVITY IMPLEMENTATION**

This activity will involve the construction of vegetated planter areas between the curb and sidewalk to infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. Cuts will be made into the existing street curb to allow flows to leave the street paved section and enter the planter areas. Additional cuts will be made to permit high flows to exit the planter areas and re-enter the street section. The planter area will be slightly lower than the street gutter elevation to allow the street to drain into the planters. This system will be designed to collect and infiltrate runoff from the residences and the first-flush portion of storm events from the street through the curb cuts. The use of porous sidewalks and bioretention/planters will increase the porous area and infiltration, thereby reducing the storm flows and pollutant loads. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the Watershed Management Area (WMA).

The Mt. Abernathy Neighborhood site was selected after several site reconnaissance visits. This community of approximately 90 homes was selected because the City of San Diego (City) right-of-way has not been improved with landscaping by homeowners or by the City. The community drains to one catchment that can be readily monitored for effectiveness.

The conceptual design for this project began in FY 2008 and will be finished in FY 2009.

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that the activity will involve the construction of vegetated planter areas between the curb and sidewalk, and their connection to receive flows from the street to allow for infiltration. The City will request credit when the project is implemented and a determination of load reduction can be reasonably established.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated. The conceptual design for this project will be completed in FY 2009. Construction is expected to be completed in FY 2011 instead of FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562; L Walsh)

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Metals
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and retention.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>MT. ABERNATHY GREEN STREET RETROFIT</b>	
<b>Assess the Efficiency and Effectiveness of Retrofitting Existing Infrastructure with Green Street-type BMPs</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction efficiency of the retrofits?</li> <li>• How effective are retrofits at reducing loads of priority pollutants?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reduction in priority pollutant loads</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the retrofit is working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li> <li>• How much money spent on implementation and maintenance (Outcome Level 1)</li> <li>• Dataset of load contributions for specific activities (Outcome Level 4)</li> </ul>

**Objectives**

The goal of the analysis is to determine the load reduction efficiency of the retrofits. The load reduction efficiencies will also be estimated and used to determine the efficiency of future BMP implementations. High priority pollutants include bacteria, metals and nutrients.

### **Analysis and Results**

This activity involves the installation of porous sidewalks and vegetative planters in the Mt. Abernathy Neighborhood to reduce runoff volume. This community of approximately 90 homes was selected because the City right-of-way has not been improved with landscaping by homeowners or by the City. The community drains to one catchment that can be readily monitored for effectiveness and assessment will be conducted after the project is constructed.

### **Conclusions**

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading. Conclusions will be made after the activity is complete and effectiveness has been determined.

**TITLE:** Bannock Avenue Streetscape Enhancement & Bacteria Treatment Project  
**ID NUMBER:** MB-1016

### **ACTIVITY IMPLEMENTATION**

Within the tributary watershed of the Bannock Avenue Neighborhood, vegetated planter areas will be constructed between the existing curb and the sidewalk. Cuts will be made in the existing curbs to allow flow to exit the street paved section as well as enter and exit the planter areas. The planter areas will be filled with cobbles and/or gravel to a depth of approximately 1 foot and planted with landscaping to be determined during final design. The cobbles and/or gravel must be placed to an elevation approximately 1 inch below the adjacent sidewalk and curb to ensure no Americans with Disabilities Act (ADA) access issues are encountered. The cobbles and/or gravel will be prevented from spilling into the street through the curb cut by a metal screen. Some existing sidewalks will be replaced with new pervious concrete sidewalks. The need for temporary or permanent irrigation to establish the planter areas must be determined during final design.

Within North Clairemont Park, a diversion structure will divert flows to a trash segregation unit, followed in series by an AbTech (Bacterial Treatment System) unit. From the AbTech unit, flows will be returned to the natural drainage course at the location of the existing storm drain system outlet headwall. The diversion structure will be sized to divert the 85<sup>th</sup> percentile storm event in order for it to be treated by the trash segregation and AbTech units. This size storm was selected because this treatment BMP is a pilot project to assess the effectiveness of this treatment technology. The larger storm event would result in a significantly larger system and higher project cost. The City of San Diego (City) determined that the 85<sup>th</sup> percentile storm was adequate to assess the effectiveness of this treatment technology through the pilot program because this technology has not been proven at larger flows. Should this technology prove cost effective for storm flows, the system may be expanded for a larger design storm.

This project was identified as “Infiltration BMP Retrofit #1” in the 2008 Mission Bay & La Jolla WURMP. In the latter half of FY 2008, a site was selected and conceptual design was completed.

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that this activity will be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City acknowledges that the Municipal Permit currently precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that “capital projects are in active implementation for the first year of implementation only.”

The Regional Board also indicated that additional information such as the selected location and effectiveness should be reported. The selected location is discussed in the

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562; L Walsh)

Activity Implementation section of this Activity Summary Sheet. The effectiveness data will be provided to the Regional Board when the pre- and post- installation monitoring is complete and the resulting reporting is finalized.

**TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

**TIME SCHEDULE FOR IMPLEMENTATION**

The project will be transferred to the City’s Engineering and Capital Projects Department in September 2008 for purposes of managing the project through final design, construction and project closeout. The design phase of previously initiated projects is taking longer than anticipated; thus the schedule for this project has been updated and construction is expected to be completed in FY 2013 instead of being initiated in FY2010.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>BANNOCK AVENUE STREETScape ENHANCEMENT &amp; BACTERIA TREATMENT PROJECT</b>	
<b>Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project</b>	
<b>Management Questions:</b>	<ul style="list-style-type: none"> <li>• What is the bacteria load reduction efficiency?</li> <li>• How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reduction in priority pollutant loads</li> </ul>

<p><b>Assessment Method(s)</b></p>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the treatment is working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<p><b>Recommended Data</b></p>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li> <li>• How much money spent on implementation and maintenance (Outcome Level 1)</li> <li>• Dataset of load contributions for specific activities (Outcome Level 4)</li> </ul>

**Objectives**

The goal of this assessment is to determine the project’s effectiveness and efficiency for reducing bacteria load with the installation of vegetative planters, trash segregation units, and bacterial treatment systems in the Bannock Avenue Neighborhood.

**Analysis and Results**

This project is still in the planning phase and has not been implemented yet; therefore effectiveness assessment has not been completed at this time. Assessment will be conducted after project completion.

**Conclusions**

Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading in order to determine pollutant load reduction and to make conclusions on the effectiveness of this type of project.

**TITLE:** Infiltration BMP Retrofit #2  
**ID NUMBER:** MB-1017

### **ACTIVITY IMPLEMENTATION**

This activity will involve the implementation of an infiltration project in the Mission Bay and La Jolla Watershed Management Area (WMA) to reduce runoff volume. The activity may be implemented in a municipal parking lot (“Green Mall”), an industrial/commercial right-of-way (“Green Mall”), or a residential right-of-way (“Green Street”). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other best management practices (BMPs) being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated Total Maximum Daily Loads (TMDLs) in the receiving waters of the WMA.

The project did not advance in FY 2008. It is currently on hold due to limited resources that have been allocated to other watershed activities which are moving forward.

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that this activity will be given credit for the year it is installed, with pre- and post- installation monitoring conducted and reported to the Regional Board. The City acknowledges that the Municipal Permit currently precludes capital activities from achieving compliance credit in multiple years. Section E.2.f(4) states that “capital projects are in active implementation for the first year of implementation only.”

The Regional Board also indicated that additional information such as the selected location and effectiveness should be reported. Site specific details will be provided when the project moves forward and a location is selected. The effectiveness data will be provided to the Regional Board when the pre- and post- installation monitoring is complete and the resulting reporting is finalized.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

Project planning began in July 2007; however the project is currently on hold as noted above. When the project moves forward, water quality monitoring may be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Metals
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as a high priority water quality problem and recommends implementing load reduction/source abatement activities to address it. It is anticipated that this activity will address the high priority water quality problems by reducing and treating runoff volume of pollutants via infiltration and treatment when the project moves forward.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>INFILTRATION BMP #2</b>	
<b>Assess the Efficiency and Effectiveness of the Design and Construction of the Infiltration BMP</b>	
<b>Management Questions:</b>	<ul style="list-style-type: none"> <li>• What is the load reduction efficiency of LID BMP retrofits?</li> <li>• How effective are LID BMP retrofits at reducing loads of priority pollutants?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reduction in priority pollutant loads</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the retrofit is working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<b>Assessment Measures, Assessment Outcome Levels &amp; Data:</b>	<ul style="list-style-type: none"> <li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li> <li>• How much money spent on implementation and maintenance (Outcome Level 1)</li> <li>• Literature review or other information to provide data to estimate load reductions (Outcome Level 4)</li> <li>• Dataset of load contributions for specific activities (Outcome Level 4)</li> </ul>

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

**TITLE:** Public Service Announcements: Karma, Karma Second  
Chance, Karma Tourist  
**ID NUMBER:** MB-2001

**ACTIVITY IMPLEMENTATION**

The City of San Diego (City) secured a contract with film production company, American Dream Cinema to produce three Think Blue Public Service Announcements (PSAs) with a focus on the effects of trash and bacteria to local waterways. The PSAs, entitled *Karma*, *Karma Second Chance*, and *Karma Tourist*, used humor to convey the importance of the public's role in the proper disposal of trash and the impacts litter and pollution have on local waterways and beaches. Additionally, the PSAs encouraged positive behavioral change by providing simple steps that can be taken to reduce trash and bacteria from entering storm drains and ultimately, the ocean. 3,198,751 impressions were made in homes through television and 1,025,636 impressions were made to the public through radio announcements.

According to Regional Board staff comments<sup>1</sup>, the City will need to answer effectiveness measurement questions in the annual report. Effectiveness measurement questions can be found in the Effectiveness Assessment section of this activity summary sheet.

**TMDL APPLICABILITY**

- N/A

**TIME SCHEDULE FOR IMPLEMENTATION**

English and Spanish versions of the PSAs were developed in FY 2007 and FY 2008 and were broadcast on a number of television and radio stations throughout the Mission Bay and La Jolla Watershed Management Area (WMA) from January 2008 to May 2008. The City will continue to work with various broadcast media outlets to distribute and air the PSAs, as well as produce additional pollutant-specific spots in FY 2009.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- Various Television and Radios Stations in San Diego

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Gross Pollutants

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy Mission Bay and La Jolla WMA and the City’s *Strategic Plan for Watershed Activity Implementation* identifies trash and bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs will result in both increased knowledge and awareness regarding bacteria and trash and future load reductions of trash and debris directly and bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>		
<b>PUBLIC SERVICE ANNOUNCEMENTS: KARMA, KARMA SECOND CHANCE, KARMA TOURIST</b>		
<b>Assess the Efficiency and Effectiveness of Public Service Announcements</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What changes in awareness/attitude regarding bacteria and gross pollutants was achieved after implementation?</li> <li>• How efficient is this education activity based on total cost versus number of people (targeted audience) reached?</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reach goal of number of listeners (radio) and homes (television) reached, based on survey results</li> <li>• Increased level of knowledge/attitude based on post-activity surveys</li> </ul>	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Survey (e.g., administer survey to assess knowledge and attitude of participants)</li> <li>• Quantification (e.g., number of residents reached by PSA)</li> </ul>	
<b>Data Recorded</b>	Number of impressions made in homes through television in MB/LJ (Outcome Level 1)	3,198,751
	Number of impressions made to the public through radio announcements in MB/LJ (Outcome Level 1)	1,025,636
	Percentage of public who had heard of <i>Think Blue</i> during 2008 (Outcome Level 2)	45%
	Change in pollutant-related behavior from survey results (Outcome Level 3)	Yes*

\*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year’s survey and method of assessment.

**Objectives**

This goal of this assessment is to determine the effectiveness of the *Karma*, *Karma Second Chance*, and *Karma Tourist* PSAs in educating the public about causes of bacteria and gross pollutant loading, and in encouraging positive behavioral change.

**Analysis and Results**

The PSAs were developed in the FY 2008, and broadcast on several TV and radio stations throughout the Mission Bay and La Jolla WMA from February 2008 to April 2008. The PSAs were broadcast in both English and Spanish.

Out of 800 total residents from all WMAs who participated in the random digit-dial 2008 *San Diego Storm Water Survey*, 52% of residents became aware of the *Think Blue* message by seeing the television ads, and 13% of residents heard the radio

announcements in FY 2008. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. To estimate the number of impressions made in the Mission Bay and La Jolla WMA, the total number of impressions City-wide (15,680,381 for television and 5,027,700 for radio ads) was multiplied by the proportion of residents living in the Mission Bay and La Jolla WMA (20% of the City's total population). According to the random survey, groups most likely to have seen the television ad were: residents who knew that storm water was untreated (25%); people without college degrees (25%); and residents of the San Diego Bay (26%) and San Diego River (25%) WMAs. Groups most likely to have heard the radio ad were: residents who are white (9%); residents in the 35-49 age group (9%); and people between the ages of 18 and 35 (9%).

### **Conclusions**

The City will work with various broadcast media outlets to continue distribution of the PSAs in FY 2008-2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Mission Bay and La Jolla WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

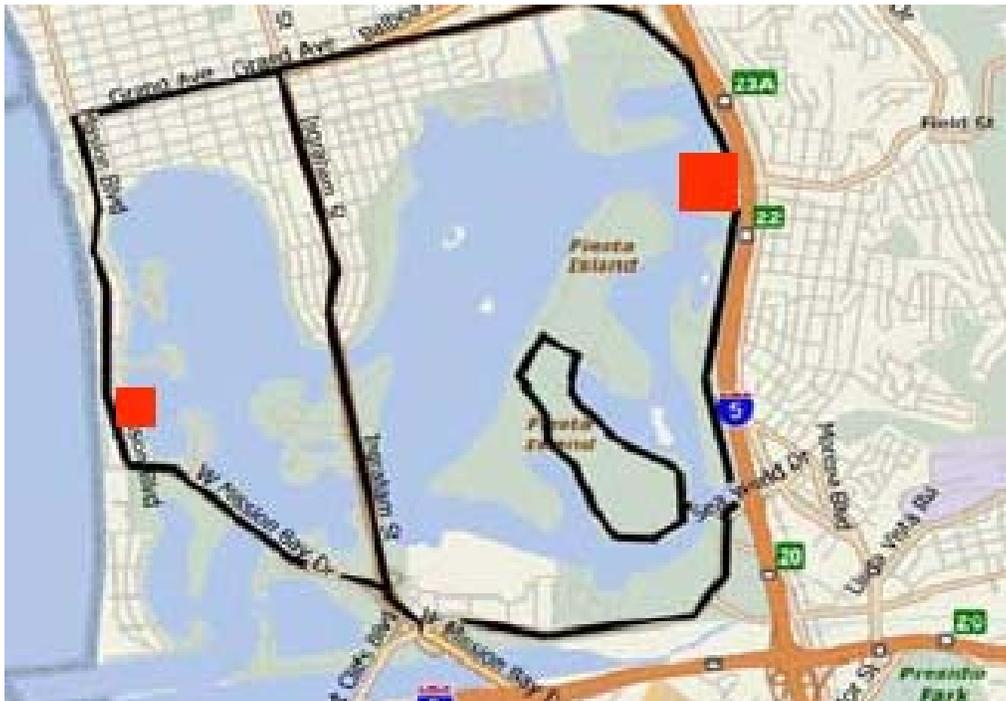
Furthermore, the *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all WMAs who participated in the random survey, 45% reported exposure in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

It is worth noting that the City's PSAs continue to reach new individuals in the Mission Bay and La Jolla WMA, as evident by the estimated number of individual impressions from television and radio announcements watershed-wide. Although a direct, statistical correlation is not clear, the number of impressions and the results of the random survey indicate that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

**TITLE:** Mobile Advertising  
**ID NUMBER:** MB-2002

**ACTIVITY IMPLEMENTATION**

The City of San Diego (City) has retained a contract with a mobile advertising firm, Admobile, to advertise *Think Blue* messages on static billboard trucks in the Mission Bay and La Jolla Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria and trash. The goal of mobile advertising is to educate the public about the impacts litter and pollution have on local waterways and beaches and to encourage positive behavioral change. These advertisements were developed in FY 2008 and were displayed throughout the Mission Bay and La Jolla watershed in both English and Spanish. The estimated audience was 638,480 impressions per four-week period. The following image shows the Mission Bay and La Jolla WMA route that was driven using a Billboard Trailer.



According to Regional Board staff comments<sup>1</sup> for other WURMPs (e.g., San Diego River's), the City will need to answer effectiveness measurement questions and provide routes in the annual report. The routes are provided in the Activity Implementation section. Effectiveness will be measured in the Mission Bay and La Jolla WMA in FY 2009. Efficiency will be determined by analyzing advertisement costs.

<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

**TMDL APPLICABILITY**

- None

**TIME SCHEDULE FOR IMPLEMENTATION**

In FY 2008, The City coordinated the design of the advertisements and will have the advertisements created and placed on the company’s static billboard trucks. The Billboard Trailer was driven around pre-determined routes in the Mission Bay and La Jolla WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change. The City plans to continue to implement mobile advertising in FY 2009.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- None

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Metals

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy and the *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Utilizing mobile advertising will result in increased knowledge and awareness regarding bacteria (and trash as a vector) directly, and will promote behavior change and future load reduction of trash and debris directly and of bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

<b>MOBILE ADVERTISING</b> <b>Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What change in awareness /attitude regarding bacteria was achieved after implementation?</li> <li>• How efficient is this education activity based on total cost versus number of people (targeted audience) reached?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reach pre-set percentage of residents within target WMA</li> <li>• Increased level of knowledge/attitude based on post-activity surveys</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Survey (e.g., administer survey to assess knowledge and attitude of participants)</li> <li>• Quantification (e.g., number of residents reached by advertisements)</li> </ul>

<b>MOBILE ADVERTISING</b>		
<b>Assess the Efficiency and Effectiveness of Advertisement on Static Billboard Trucks</b>		
<b>Data Recorded</b>	Number of impressions in the Mission Bay and La Jolla WMA (Outcome Level 1)	38,750 DEC*
	Percentage of public who had heard of <i>Think Blue</i> during 2008 (Outcome Level 2)	45%
	Change in pollutant-related behavior based on survey results (Outcome Level 3)	Yes**
<b>Recommended Data</b>	Advertisement costs (Outcome Level 1)	

\*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated audience in the FY 2008 was 638,480 impressions per 4 week period for Mission Bay and La Jolla.

\*\*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

## Objectives

The goal of this assessment is to determine the effectiveness of mobile advertising to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

## Analysis and Results

The mobile advertisements were developed in the FY 2008 and displayed throughout Mission Bay and La Jolla in both English and Spanish. The estimated audience was 638,480 total impressions per 4-week period. Out of 800 randomly selected residents from all WMAs who participated in the *Think Blue* survey, approximately 33% of residents became aware of the *Think Blue* message via mobile advertising in FY 2008.

## Conclusions

The City plans to continue to implement mobile advertisements in FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of the residents living in the Mission Bay and La Jolla WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable changes in knowledge, awareness and/or change in behavior with the cost of this activity.

The 2008 San Diego Storm Water Survey statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all WMAs who participated in the random survey, 45% reported exposure to mobile advertising in 2008. These results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are reportedly engaging in negative storm water practices.

Furthermore, the increase in impressions made in FY 2008 also indicates that this activity is effective in reaching residents and disseminating information to raise knowledge, awareness and/or create a change in behavior regarding storm water issues. This activity will continue in future fiscal years with the hopes that a long-term assessment will provide more complete results.

**TITLE:**  
**ID NUMBER:**

**La Jolla Commercial CBSM Efforts**  
**MB-2003**

### **ACTIVITY IMPLEMENTATION**

In researching methods of public education, the City of San Diego's Storm Water Division (City) found that an emerging field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has retained consultants to develop and initiate CBSM and has implemented a pilot project using this approach in the La Jolla community to attempt to achieve pollution prevention awareness and behavioral change. Research has been completed, and observations, interviews and surveys are currently underway. Outreach interventions and assessment methods are being developed based on research findings to date. Currently, recommendations for education/outreach strategies include structural interventions, public participation, incentives and specific messaging. As the CBSM program in La Jolla developed, it became clear that the CBSM activities needed to be implemented differently for residential and commercial facilities/areas in order to achieve valid, useful, and conclusive data.

During FY 2008, the CBSM activities in the business area of La Jolla Shores included analysis and reporting of observational research to identify target behaviors for the outreach program (July 2007), development of a survey and protocol to assess the prevalence of water-based behaviors engaged in by businesses (August – September 2007), staff training for survey implementation (October 2007), analysis and reporting of business survey results (December 2007), and development of program recommendations (June 2008).

In the Regional Board Comment letter<sup>1</sup>, Regional Board staff indicated that the City will need to provide more information about the types of techniques used and provide answers to the effectiveness measurement questions. The types of techniques used are discussed in the Activity Implementation section and the effectiveness measurement questions are answered in the Effectiveness Assessment section in this FY 2008 activity summary sheet.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

### **TIME SCHEDULE FOR IMPLEMENTATION**

During FY 2009, the CBSM activities in the business area of La Jolla Shores will include development of a telephone script and protocol to recruit businesses to participate in an in-person BMP training session, development and scripting of individualized BMP trainings, coordination and participation in “train the trainer” sessions, coordinating and planning for post-intervention outcome observations, training and scheduling for outcome observations, data entry and management, and data coding.

Based on the key findings from the survey of La Jolla businesses, the City will develop a script and protocol to recruit business owners, managers, and employees to participate in BMP training sessions. This community-based outreach approach is designed for in-person delivery, therefore the training will be conducted by City staff and consultants in FY 2009.

Immediately following the BMP trainings, organization and preparation for a second observational study (post-intervention) in La Jolla Shores will take place. The study will be identical to that implemented at the start of the project (Summer 2007) and is intended to provide an assessment of program effectiveness in the pilot area (La Jolla Shores) compared to the control area that did not receive the intervention (WindanSea). Observational data will be collected from a variety of days and times in both the pilot (20 shifts) and control areas (20 shifts) during FY 2009. Data entry and analyses will be performed with results expected in January 2009.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Gross Pollutants (Trash)

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>		
<b>LA JOLLA COMMERCIAL CBSM EFFORTS</b>		
<b>Assess the Effectiveness of Public Outreach</b>		
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?</li> </ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reach goal number of people within the WMA, based on survey results</li> <li>• Increased level of knowledge/attitude based on post-activity surveys</li> </ul>	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Observations (un-obtrusive observations to record polluting behavior and/or results of polluting activity in the area)</li> <li>• Interview / Survey (e.g., administer interview survey to assess knowledge and attitude of participants)</li> <li>• Quantification (e.g., number of businesses reached)</li> </ul>	
<b>Data Recorded</b>	Amount of pollution and polluting activity observed during two week test period (Outcome Level 1)	1,846
	Number of business owners/managers participating in informational interview (Outcome Level 2)	30
	Percentage of interviewed businesses who felt that pollution is a significant issue and agreed to participation in future education efforts (Outcome Level 1)	75%
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change in knowledge or attitude (Outcome Level 2)</li> <li>• Change in commercial outdoor water use (measured by observable decreases in standing water) (Outcome Levels 3 and 4)</li> <li>• Decrease in observable amount of litter (Outcome Level 3 and 4)</li> </ul>	

**Objectives**

The assessment goal is to determine the effectiveness of various methods of intervention based on the CBSM outreach model. The specific project goal is educating the public to increase knowledge and awareness, about causes of trash and bacteria loading based upon targeted pollutant-related behaviors, and eventually create positive attitude and behavioral changes.

**Analysis and Results**

Based upon observational research results, short-term assessment revealed that a total of 1,846 polluting events were observed in the Commercial area. Litter (trash and cigarette butts) was identified as the number one polluting behavior in the business area of La Jolla Shores. In addition, the combined observations of water from an unknown source (e.g., water in the gutter, wet pavement, etc.) presented a significant concern. Based on the high level of pollution observed, the local businesses were contacted and asked to participate in an interview regarding their knowledge and awareness of pollution, as well as the activities in which their businesses engage.

Water-based behavior survey results reveal that a total of 30 business owners/managers (an 80% response rate) participated in the interview regarding the most frequently reported pollution and/or water-based activities in the area. Over 80% of business agreed that pollution in the area was an issue. Very few businesses self-reported “hosing in front of their business” or “hosing mats or equipment.” However, several businesses reported

that they regularly see their neighboring businesses engaging in these behaviors. This interview not only served as a method by which to gather data, it was also used to educate businesses about storm water issues. Seventy five percent (75%) of the businesses interviewed agreed to be contacted in the future to participate in storm water pollution prevention training session. Because of the interviews, more businesses became aware of bacteria and gross pollutant issues. Based on the results of the observations and interviews, a structural intervention targeting trash and cigarette butts and a community-level intervention to target water use by business owners was recommended. Therefore, the Storm Water Department began creating a pollution prevention business-based training module, and also began negotiation with other Departments to provide more trash receptacles in the area.

### **Conclusions**

In FY 2008, the 75% positive response among interview participants indicated that the outreach was effective in raising awareness of storm water issues. It is anticipated that the business-based training module and increase in trash receptacles, both of which began development this year, will lead to a decrease in pollutant behavior as well.

During FY 2009, the CBSM activities in the business area of La Jolla shores will include development of telephone scripts and protocols to recruit businesses to participate in BMP training sessions. The training will be implemented by City and consultant staff in FY 2009. Afterward a second observational study will be organized, and data will be collected in FY 2009. Future effectiveness will be measured by the change in public knowledge, as determined by survey results.

**TITLE:**  
**ID NUMBER:**

**Genesee Commercial CBSM Efforts**  
**MB-2004**

### **ACTIVITY IMPLEMENTATION**

In researching methods of public education, the City of San Diego's Storm Water Department (City) found that an emerging field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has retained consultants to develop and initiate the CBSM pilot project, and has implemented a pilot project using this approach in the La Jolla community to attempt to achieve pollution prevention awareness and behavioral change.

The resource intensive research which was planned for the Genesee area is currently on hold pending the results and effectiveness assessment of the La Jolla investigation. If and when the project moves forward, research in the Genesee area will be initiated, along with observations and other methods of gathering data in order to determine that best outreach program for the project. Outreach interventions and assessment methods will then be developed based on the research findings.

In the Regional Board Comment letter<sup>1</sup>, Regional Board staff indicated that the City will need to provide more information about the types of techniques used and provide answers to the effectiveness measurement questions. The types of techniques used and the effectiveness measurement questions will be included in future reports when and if this activity is implemented.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

As noted above, this activity is on-hold.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- Gross Pollutants (Trash)

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identifies bacteria as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly if and when it is implemented.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>GENESEE COMMERCIAL CBSM EFFORTS</b>	
<b>Management Questions:</b>	<ul style="list-style-type: none"> <li>• To what extent is there an observable difference in the level of either pollutants or polluting behaviors between the pre and post intervention observations?</li> <li>• How much change in awareness was achieved?</li> <li>• What changes in levels of behavior was achieved after implementation?</li> <li>• How does the pilot target area compare to non-pilot areas (based on surveys, observations and self-report result comparisons)</li> <li>• How do the survey results change pre and post activity implementation?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Achieve increased awareness of bacteria and TMDL issues (e.g., reach 50% of the businesses in the target watershed)</li> <li>• Achieve higher incidence of knowledge and attitude in pilot group when compared to general public</li> <li>• Achieve increasing rates of knowledge and attitude or change in behavior with increased outreach (based on repeated survey results)</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Survey (e.g., administer survey to assess knowledge and attitude of participants )</li> <li>• Quantification (e.g., count observable pollution and behavior of participants in program)</li> <li>• Monitoring (e.g., water quality monitoring at base of targeted watershed)</li> <li>• Tabulation (e.g., amount of money spent on education and outreach, number of residents and households reached)</li> <li>• Reporting (e.g., estimates of load reduction based on 3<sup>rd</sup> party data, number of individuals or households reached)</li> </ul>
<b>Assessment Measures, Assessment Outcome Levels &amp; Data:</b>	<ul style="list-style-type: none"> <li>• Number of number of stakeholders, residents, and business reached (Outcome Level 1)</li> <li>• Change in knowledge and attitude based on survey data (Outcome Level 2)</li> <li>• Change in behavior based on survey data (Outcome Level 3)</li> <li>• Dataset of load contributions for specific activities (Outcome Level 3)</li> <li>• Volume of trash or other pollutants removed from study area (Outcome Level 4)</li> </ul>

The effectiveness assessment for this activity will be developed and completed when and if this activity moves forward. The above table provides an example of what questions, methods, and measures may be used for the assessment.

**TITLE:** Mt. Abernathy LID Green Street Outreach  
**ID NUMBER:** MB-2005

### **ACTIVITY IMPLEMENTATION**

Mt. Abernathy Green Street Outreach will be performed to support the planned “Green Street” construction in a small sub-section of the Clairemont community in the Mission Bay Watershed Management Area (WMA). Construction will include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

The schedule for this outreach will parallel the Mt. Abernathy Low Impact Development (LID) Green Street Construction. The City anticipates retaining several outreach consultants, including at least one firm that specializes in Community Outreach. Planning will occur in FY 2009, with implementation, outreach, and evaluation continuing through FY 2011.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Gross Pollutants (Trash)

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identifies bacteria as high priority water quality problems in the WMA. This effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

### **EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>MT. ABERNATHY LID “GREEN STREET” OUTREACH</b>	
<b>Assess the Efficiency and Effectiveness of Educating the Public About Green Street-type BMPs</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• Does education regarding the LID retrofits effectively raise awareness of bacteria, metal and nutrient pollutant issues?</li> <li>• Does education regarding the LID retrofits effectively change pollutant behavior among residents?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reach goal number of people within the Mission Bay and La Jolla WMA, based on survey results</li> <li>• Increased level of knowledge/attitude based on post-activity surveys</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Survey (e.g., administer survey to assess knowledge and attitude of participants)</li> <li>• Quantification (e.g., number of residents reached)</li> </ul>
<b>Data Recorded</b>	<ul style="list-style-type: none"> <li>• Number of educational information items passed out (Outcome Level 1)</li> <li>• Change in knowledge or attitude (Outcome Level 2)</li> <li>• Change in pollutant-related behavior (Outcome Level 3)</li> </ul>

### **Objectives**

The goal of this assessment is to determine the effectiveness of educating the public on the LID retrofit best management practices (BMPs) in reducing bacteria and gross pollutant loads from runoff in the Mt. Abernathy Neighborhood.

### **Analysis and Results**

Assessment is not possible at this time, as this activity has not yet been implemented. Outreach activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

### **Conclusions**

This activity has not yet been implemented. Effectiveness will be measured by the change in public knowledge and change in pollutant behavior among residents, as determined by survey results, and conclusions will be made once effectiveness is determined.

**TITLE:****La Jolla Residential CBSM Efforts****ID NUMBER:****MB-2010 (Formerly reported as MB-1008 Targeted Residential Activity Characterization)****ACTIVITY IMPLEMENTATION**

In researching methods of public education, the City of San Diego's Storm Water Division (City) found that an emerging field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has retained consultants to develop and initiate CBSM, has implemented a pilot project using this approach in the La Jolla community to attempt to achieve pollution prevention awareness and behavioral change. Research has been completed, and observations, interviews and surveys are currently underway. Outreach interventions and assessment methods are being developed based on research findings to date. Currently, recommendations for education/outreach strategies include structural interventions, public participation, incentives and specific messaging. As the CBSM program in La Jolla developed, it became clear that the CBSM activities needed to be implemented differently for residential and commercial facilities/areas in order to achieve valid, useful, and conclusive data.

During FY 2008, the CBSM activities in the residential area of La Jolla shores included analysis and reporting of observational research aimed at identifying target behaviors for the outreach program (August 2007). Observation results led to the development of a residential survey aimed at assessing barriers to engaging in best practices for outdoor water-use (October 2007). Internal survey protocols were developed (November – December 2007), with City staff and volunteers training for survey implementation (November 2007). The survey was then mailed La Jolla Shores residents (January – February 2008), with analysis and reporting of residential survey results (March 2008), and development of general program recommendations based on the survey data (April – June 2008).

In the Regional Board comment letter<sup>1</sup>, Regional Board staff indicated that the City will need to provide more information about the types of techniques used and provide answers to the effectiveness measurement questions. The types of techniques used are discussed in the Activity Implementation section and the effectiveness measurement questions are answered in the Effectiveness Assessment section in this FY 2008 activity summary sheet.

**TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- Tecolote Creek Bacteria TMDL

**TIME SCHEDULE FOR IMPLEMENTATION**

During FY 2009, the planned CBSM activities in the residential area of La Jolla shores include presentation of residential survey results to Think Blue staff and consultants, development of survey results summary for La Jolla residents who participated, and development of general program recommendations.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Gross Pollutants (Trash)

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy as well as the City’s *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) identifies bacteria as high priority water quality problems in the WMA. This CBSM effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>LA JOLLA RESIDENTIAL CBSM EFFORTS</b>	
<b>Assess the Effectiveness of Public Outreach</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What changes in awareness/attitude regarding trash and bacteria were achieved after event/educational materials distribution?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reach goal number of people within the WMA, based on survey results</li> <li>• Increased level of knowledge/attitude based on post-activity surveys</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Observations (un-obtrusive observations to record polluting behavior and/or results of polluting activity in the area)</li> <li>• Survey (e.g., administer survey to assess knowledge and attitude of participants)</li> <li>• Quantification (e.g., number of residents reached)</li> </ul>

<b>Watershed: Mission Bay and La Jolla</b>		
<b>LA JOLLA RESIDENTIAL CBSM EFFORTS</b>		
<b>Assess the Effectiveness of Public Outreach</b>		
<b>Data Recorded</b>	Amount of pollution and polluting activity observed during two week test period	1,127
	Number of resident responses who completed information based surveys (Outcome Level 2)	122 (62%)
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change in knowledge or attitude (Outcome Level 2)</li> <li>• Change in residential outdoor water use (measured by observable decreases in standing water) (Outcome Level 3 and 4)</li> <li>• Decrease in observable amount of pet waste (Outcome Level 3 and 4)</li> </ul>	

### **Objectives**

The assessment goal is to determine the effectiveness of various methods of intervention based on the CBSM outreach model. The specific project goal is educating the public to increase knowledge and awareness, about causes of trash and bacteria loading based upon targeted pollutant-related behaviors, and eventually create positive attitude and behavioral changes.

### **Analysis and Results**

During FY 2008, the CBSM activities in the residential area of La Jolla shores included analysis and reporting of observational research aimed at identifying target behaviors for the outreach program (August 2007). Other activities included survey development and volunteer training. Based upon observational research results, short-term assessment revealed that a total of 1,127 polluting events were observed in the residential area of La Jolla Shores. Litter was identified as the number one polluting behavior/evidence of behavior in the area. Other frequently observed issues included standing water, wet pavement, and pet waste. Although there was some evidence of over-irrigation, the source for the majority of the observed water could not be identified. Based on the results of the observational data it was hard to make positive source identification. Therefore, a survey methodology to identify self-reported behaviors and barriers to performing best management practices across a range of residential outdoor water use activities (car washing, hosing, pool maintenance, etc.) was developed.

The survey was distributed to approximately 198 residents using a multiple contact mail survey methodology, resulting in 122 completed surveys (62% response rate). Results indicated that while water-based behaviors (such as hosing and car washing) were infrequent, while over watering may be a problem due to residents checking their sprinkler systems incorrectly. Based on these findings, it is recommended that the City provide residents with additional information on appropriate watering times and sprinkler adjustments. Another targeted behavior involved pet waste. Based on the survey's findings, the City plans to implement a combined structural and motivational approach consisting of dog waste bag dispensers, specific messaging and pledges/community commitment.

## **Conclusions**

In FY 2008, the 62% response rate for completed surveys indicated that the outreach was effective in raising awareness of storm water issues. The findings from the survey results have also identified specific pollutant behaviors to be targeted for outreach. It is anticipated that providing residents with information regarding over-watering will lead to a change in residential outdoor water use, measurable by observing decreases in standing water. It is anticipated that targeting pet waste by providing dog waste bag dispensers and outreach to communities will lead to a change in residential handling of pet waste, and a decrease in observable pet waste in the communities.

During FY 2009, the CBSM activities in the residential area of La Jolla shores will include development of specific messaging and materials targeting excessive residential water use and BMPs for outdoor water usage. Other outreach material will focus on pet waste and proper BMPs, as well as the installation of pet trash bag dispensers in the community to realize load reductions of bacteria laden waste and vectors, such as trash and wash water. Once the intervention is complete, a second observational study will be conducted, and data will be collected in FY 2009. Effectiveness will be measured by the change in public knowledge, awareness and reported/observed behavior, as determined by survey results.

**TITLE:**  
**ID NUMBER:**

**Tecolote Creek Bacterial Source Identification Study (Phase I)**  
**MB-3001**

### **ACTIVITY IMPLEMENTATION**

This activity involved the identification of bacterial sources in the Tecolote Creek Watershed through wet and dry weather monitoring surveys including visual observations, spot sampling, and laboratory analysis of data accumulated through monitoring. The study focused on locating primary sources of high bacterial loading to identify if human contamination are a contributing factor. This study also provided specific recommendations for source control and pollution prevention/reduction based on the conclusions of the analysis.

Sampling and monitoring associated with this activity began in October 2007 and was continued through April 2008. Data analysis and reporting began once monitoring concluded and the final report was completed in August 2008.

A randomized design was used to assess bacterial contributions to Tecolote Creek from likely loading sources as identified in Long Term Baseline Effectiveness Assessment (Weston, 2006). During both dry and wet weather surveys, samples were collected from specific land uses of interest including residential, restaurants, nurseries, schools, and from within the creek. During dry weather, randomized samples were collected to be best representative of the specific targeted land use. During wet weather, samples were taken throughout the storm event and loads were calculated based on drainage areas and modeled flows. Key findings from the assessment of likely bacterial loading source contributions were that, while golf courses and nurseries contributed higher bacterial concentrations during wet weather, their contribution to overall load was a smaller fraction compared with the loading from residential land use areas. Further investigation is required to assess “other” loads entering the creek under wet conditions. During dry weather, nuisance flows from over-irrigation were observed to be the most significant source of bacteria as well as the greatest contributing transport mechanism. Residential and commercial flows were the most frequently observed. However, most residential runoff did not reach the storm drain. In comparison, significant volumes of commercial runoff were observed to reach the storm drain system. Nursery flows, through low, contributed high bacterial concentrations. The results suggest that management of flows from residential and commercial land use will provide the most significant improvement in bacterial transport during both dry and wet weather events.

All samples collected during dry and wet weather sampling tested positive for general *Bacteroides* indicating the presence of recent feces from warm-blooded animals. However, very few samples were positive for human *Bacteroides*. During the two dry weather events, only five samples tested positive for human-specific *Bacteroides*. During follow-ups, no samples retested positive for human *Bacteroides*. This suggests a transient source (i.e., homeless encampments) was likely responsible. Only one site, (Site 4B, at the base of the golf course), tested positive for human *Bacteroides* during both the first and second dry weather event. During the two wet weather events, only one sample tested positive for human-specific *Bacteroides*. This sample occurred during the second storm at

the MLS during peak bacterial concentrations. Throughout the duration of the storm, no further samples tested positive for human-specific *Bacteroides*.

Priority land use activities were investigated in this study. The most significant loads in Tecolote Creek originate from nuisance flows associated with over-irrigation. Control of commercial over-irrigation should be a focus as well as residential over-irrigation. Nursery tailwater concentrations were high, but comparative total loading to the creek is a smaller percent. The results confirm these sources have higher bacterial loading potential and that they should be the focus of education and enforcement activities to promote implementation of minimum baseline BMPs.

The results of this limited investigation into bacterial regrowth suggest that ponded areas of the creek do not contribute significant loads of bacteria. However, some evidence points to sediments as a reservoir of bacterial loading and, as such, may contribute loads during sediment resuspension. Further investigation of these potential natural source will be necessary before management actions can be implemented.

The presence of human fecal contamination was investigated using *Bacteroides* as an indicator. Positive *Bacteroides* presence was observed in four locations where there was evidence of transient populations (evidence included recent toilet paper, trampling and cigarette butts). There was no evidence of sanitary sewer leaks in the creek during the times sampling occurred.

#### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

#### **TIME SCHEDULE FOR IMPLEMENTATION**

Phase I of this project is complete and will not be reported on in FY 2009. Copies of the report were provided to the Regional Water Quality Control Board's assigned TMDL staff. A Monitoring Plan for Phase II of the Tecolote Creek Bacterial Source Tracking Investigation will be completed in FY 2009. Monitoring will occur between December 2008 and June 2009. Phase II will aim to fill key data gaps identified in the Tecolote Phase I study and further identify bacterial sources in Tecolote Creek. The study will also aim to provide additional data for use in the preparation of the Final Tecolote Bacterial TMDL. Phase II is described in greater detail in MB-3002 - Tecolote Creek Bacterial Source ID Study (Phase II).

#### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

#### **OTHER PARTICIPATING ENTITIES**

- N/A

#### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The City’s *Strategic Plan for Watershed Activity Implementation* and the Copermittees’ Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA. The *Strategic Plan for Watershed Activity Implementation* identified data gaps in the information known on bacteria source and re-growth in the WMA. This study will fill this data gap by identifying sources of bacteria in the WMA which will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>TECOLOTE CREEK BACTERIAL SOURCE IDENTIFICATION STUDY (PHASE I)</b> Assess the Effectiveness of the Bacterial Study	
<b>Expected Outcome(s)</b>	<ul style="list-style-type: none"><li>• Findings and assessments will be presented in FY 2009</li></ul>

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

**APPENDIX B**  
**ACTIVITY SUMMARY SHEETS FOR NEWLY**  
**REPORTED WATERSHED ACTIVITIES**

**TITLE:** Beach Area Low Flow Storm Drain Diversion Project, Phase III  
**ID NUMBER:** MB-1018

### **ACTIVITY IMPLEMENTATION**

In 1997, the Beach Area Low Flow Diversion Project was created at the request of the San Diego Council Members Wear and Mathis. Storm drain outfalls along the coastline were inventoried and each drain outfall was rated for the potential for human contact with the flow from the drain (i.e. flow crosses the beach). Outfalls, which were labeled by the street name location, were identified as having high or medium potential were studied to determine the feasibility and cost of diverting low flows to the wastewater collection system. High priority sites due to continuous urban runoff flows during dry weather became Phase I of the project. As a result, Phase I low flow diversion facilities included Tourmaline, Bonair/Neptune, Ravina, Avenida de la Playa, Vallecitos, Camino del Oro, and south of Vista de la Playa. These sites became operational in 1998 and 1999 at a cost of \$1 million.

Phase II projects included El Paseo Grande, Spindrift, Children's Pool, 711 Coast Boulevard, Coast Boulevard (at lifeguard station), 465 Coast Boulevard, Coast Boulevard at Pump Station 24, Neptune and Belvedere, Neptune and Westbourne, Neptune at Playa Del Norte, Neptune at Playa Del Sur, Neptune at Gravilla, Neptune at Kolmar, Neptune North of Kolmar, Neptune at Rosemont, Neptune at Palomar, Coast Boulevard at Grand, and Ocean Boulevard at Grand. Phase II projects became operational by July of 2007.

Phase III projects include Missouri Street, Chalcedony, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Street, and South of Loring Street. These facilities have been constructed but are not yet operational.

This project was inadvertently left out of the Mission Bay & La Jolla WURMP, submitted to the Regional Board in March 2008. Therefore, the Regional Board did not include comments on this specific project in its comment letter<sup>1</sup>. However the Regional Board did state that another low flow diversion project, the La Jolla Dry Weather Flow Diversions, will be given activity credit. The City will request credit for the diversions described in this activity summary sheet when they are operational and load reduction is achieved.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

### **TIME SCHEDULE FOR IMPLEMENTATION**

Phase III projects are expected to be operational in FY 2009.

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562; L Walsh)

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Metals
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>BEACH AREA LOW FLOW STORM DRAIN DIVERSION PROJECT, PHASE III</b>	
<b>Assess the Efficiency and Effectiveness of the Flow Diversion Facilities</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"><li>• What is the load reduction efficiency of the storm drain diversions?</li><li>• How effective are these diversions at reducing loads of priority pollutants?</li></ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"><li>• Reduction in priority pollutant loads</li></ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"><li>• Inspections (e.g., ensure the system upgrades are working as designed)</li><li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li><li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li><li>• Tabulation (e.g., amount of money spent on implementation and maintenance)</li><li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li></ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"><li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li><li>• How much money spent on implementation and maintenance (Outcome Level 1)</li></ul>

**Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of the Phase III low flow diversion facilities to divert urban runoff flows during dry weather. Targeted high priority pollutants include bacteria, metals and nutrients.

### **Analysis and Results**

Effectiveness assessment is not possible at this time, as the Phase III facilities are not yet operational. Phase III projects include Missouri Street, Chalcedoney, Law Street, Chelsea Avenue, Marine Street, Fern Glen, Point Loma Avenue, Felspar Avenue, and South of Loring Street. Once the facilities become operational, an effectiveness assessment will be conducted.

### **Conclusions**

Phase III projects are expected to be operational in the FY 2009. Effectiveness and efficiency will be determined by comparing load reduction to implementation costs, and through water quality monitoring. After assessment is complete, conclusions will be made based on the effectiveness and the efficiency of the project.

**TITLE:** South Shores RV Pump-Out Station  
**ID NUMBER:** MB-1019

### ACTIVITY IMPLEMENTATION

The City of San Diego's South Shores Park is just east of SeaWorld San Diego. On the west side, the park includes a large parking lot, boat launch ramp, restrooms, and one RV Dump, which was previously closed due to an apparent faulty design that jeopardized both traffic safety and bay water quality in March 2007. The City's Engineering & Capital Projects' Architectural Engineering Division was asked to evaluate the condition of the closed RV Dump Site and come up with solutions for quickly re-establishing service while addressing the issues of concern.

The following photograph was taken prior to installation upgrades during a period when spills had been observed. There was no barrier between the dump area and a storm drain inlet.



By installing speed bumps at either ends of the newly constructed median/RV lane (that separate the boat towing vehicles from the RV's), all of the overflows mentioned earlier as issues of concern can be contained and properly directed into the sanitary sewer system. The amount of rain flow that would be directed into the sewer system as a result of this design would be minimal and limited to an area equal to about the footprint of the RV. Rain flow should be captured, as it is anticipated that these flows will pick up any overflows the RV leaves behind from its dumping operation.

In order to address the issue of traffic safety, the RV Dump Site was redesigned so that the RV approach is in the direction of traffic flow. This was done by relocating the discharge point to the driver's side of the RV and protecting it within a newly constructed median of stamped concrete. The existing discharge point was kept in service to accommodate the few RV's with their discharge fittings on the passenger side. This eliminated the need for any RV to go against the flow of traffic. In order to ensure traffic

safety, the boat launch lanes as well as the RV lane were striped and signed adequately to separate and direct traffic with “RV Dump Only” and directional arrows.

The following photograph shows the completed upgrades. The constructed berms prevent spills reaching the original inlet and discharging into Mission Bay.



Construction was finished in late calendar year 2007. This project is considered completed.

#### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creek Bacteria TMDL

#### **TIME SCHEDULE FOR IMPLEMENTATION**

Construction was finished in late calendar year 2007. This project is considered completed and this activity will not be reported on in the future.

#### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

#### **OTHER PARTICIPATING ENTITIES**

- N/A

#### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

#### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem in the Mission

Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address it.

**EFFECTIVENESS ASSESSMENT**

This activity was initially planned and constructed while Municipal Permit 2001-01, NPDES No. CAS 0108758 was in effect. Therefore, a detailed assessment answering specific management questions was not conducted. However, the redesign of the site eliminates the high potential of raw sewage discharges associated with RV dumping from reaching a storm drain inlet that leads directly to Mission Bay, abating a known source, as the photographs above clearly show.

**TITLE:** Avenida De La Playa Storm Drain Replacement and Low Flow Diversion  
**ID NUMBER:** MB-1020

### **ACTIVITY IMPLEMENTATION**

During the City of San Diego's (City's) Beach Area Low Flow Storm Drain Diversion Project Phase I construction (briefly described in Activity Summary Sheet - MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III), a diversion was built upstream from the outfall at the beach on Avenida de la Playa with much of the flow from the large drainage area being diverted. However, there is significant dry weather flow from the area downstream of the diversion. The invert elevation of the existing beach outfall is at the mean sea level and sand regularly blocks all flow, except during the largest winter storms. Dry weather flows collect and stagnate, creating a known source of bacterial discharge to the receiving waters of the La Jolla State Marine Conservation Area (ASBS No. 29). The City is proposing a second dry weather diversion facility closer to the point of discharge at the beach along Avenida de la Playa and replacement of the pipe due to the dry weather issues, tidal intrusion, groundwater intrusion, and other issues associated with the current condition of the pipe.

In late fiscal year 2008, the City prepared a concept proposal, including this project, to apply for funds under the State's Proposition 84 ASBS Grant Program.

The goal of this project is to eliminate bacteria loads and other pollutants, such as metals and nutrients, typically discharged through low flows to the ASBS by replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall.

This activity was not included in the 2008 Mission Bay and La Jolla WURMP as it was initiated after the March submittal date. The City has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. This activity conforms to this strategic approach by tiering. It prioritizes the low flows to the ASBS and helps prevent pollutant release.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

### **TIME SCHEDULE FOR IMPLEMENTATION**

Planning began in FY 2008 for the Avenida de la Playa Storm Drain Replacement and Low Flow Diversion Project and is anticipated to continue into FY2010 with design. Project completion is anticipated to occur in FY 2013. However, due to the suspension of the Proposition 84 ASBS Grant Program, this project may be delayed.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Metals
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay and La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. By replacing 1,173 linear feet of existing storm drain with a new reinforced concrete box (RCB) culvert and a dry weather diverter located near the outfall, sediment will no longer be trapped within the pipe allowing bacteria to grow within the warm waters and sediments contained in the pipe.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>AVENIDA DE LA PLAYA LOW FLOW STORM DRAIN DIVERSION PROJECT</b>	
<b>Assess the Efficiency and Effectiveness of the Flow Diversion Facilities</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"><li>• What is the load reduction efficiency of the storm drain diversions?</li><li>• How efficient are these diversions at reducing loads of priority pollutants?</li></ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"><li>• Reduction in priority pollutant loads</li></ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"><li>• Inspections (e.g., ensure the system upgrades are working as designed)</li><li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li><li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li><li>• Tabulation (e.g., amount of money spent on implementation and maintenance)</li><li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li></ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"><li>• Change (%) in load reduction pre and post-implementation (Outcome Level 4)</li><li>• How much money spent on implementation and maintenance (Outcome Level 1)</li></ul>

**Objectives**

The goal of this analysis is to determine the diversion project’s effectiveness and efficiency in reducing pollutant loads.

**Analysis and Results**

Assessment is not possible at this time, as the project is still in the design phase. Planning began in FY 2008 for the Avenida de la Playa Storm Drain Diversion and Low Flow Diversion Project. Post-construction monitoring will be conducted and effectiveness assessment will be completed once the project is complete. Efficiency will be determined by comparing load reduction to implementation costs.

**Conclusions**

Once the project is complete and the effectiveness assessment has been conducted, conclusions will be made as to future implementation of other similar activities.

**TITLE:** Mission Bay and Coastal Beaches Sewer Interceptor System  
Upgrades  
**ID NUMBER:** MB-1021

### **ACTIVITY IMPLEMENTATION**

In 1987, the City of San Diego (City) committed to expand the low flow diversion system around Mission Bay with the Mission Bay Sewage Interceptor System (MBSIS) project. This initial project provided interception capability for 65 drain outlets within the remaining 10 percent of the tributary drainage basin. At a cost of \$9 million, the project was completed in 1994 and expanded the number of facilities to 46 (14 pump stations and 32 gravity systems). A telemetry control system was also included to provide a more efficient operation. The remote telemetry automatically was used to shut down each facility whenever it rains. Therefore, the labor-intensive effort of physically shutting down each facility was avoided. The new storm water pumping station constructed in Mission Beach at Santa Clara Point was constructed with low flow pumps to divert dry weather flows to the wastewater collection system.

The current CIP project provides for the design and construction of upgrades to 31 sites within MBSIS.

Three Congressional Federal Grants were issued through EPA's Appropriations Act totaling approximately \$10 million. These grants fund 55% of the design, environmental, and construction costs of MBSIS and coastal low flow (CLF) Phases II, III and IV (see Activity Sheets MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III and MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV) for more information). In order to be eligible for these federal grants, each of the phases must clear the EPA's National Environmental Policy Act (NEPA), a process that can span up to a year. These grants are reimbursable. Upfront funding is required from the City.

As of September 2007, the design for the upgrades was completed. The City is currently looking for construction funding. The activity was not included in the 2008 Mission Bay & La Jolla WURMP because the activity had been on-hold pending construction funding. The City is again actively seeking funding to front the reimbursable construction costs.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

The City will continue to try to get additional funding in FY 2009 so that the reimbursable grants may be utilized and the MBSIS project may be constructed.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City’s *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>MISSION BAY AND COASTAL BEACHES SEWAGE INTERCEPTOR SYSTEM UPGRADES</b>	
<b>Assess the Efficiency and Effectiveness of the Flow Diversion System</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>• What is the load reduction/source abatement efficiency of the upgrades?</li> <li>• How effective are the upgrades at reducing loads of priority pollutants?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Reduction in priority pollutant loads</li> </ul>
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Inspections (e.g., ensure the system upgrades are working as designed)</li> <li>• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)</li> <li>• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)</li> <li>• Tabulation (e.g., amount of money spent on implementation and maintenance)</li> <li>• Reporting (e.g., estimates of load reduction from 3<sup>rd</sup> party data)</li> </ul>
<b>Recommended Data</b>	<ul style="list-style-type: none"> <li>• Change (%) in level of potential discharges/load reduction due to implementation (Outcome Level 4)</li> <li>• How much money spent on implementation and maintenance (Outcome Level 1)</li> </ul>

**Objectives**

The goal of this assessment is to determine the effectiveness and efficiency of the upgrades to the MBSIS flow diversion system in reducing bacteria load and improving water quality.

**Analysis and Results**

.As of September 2007, the design for the upgrades was completed. The City will continue efforts to secure construction funding in FY 2009 so that the reimbursable grants may be utilized and the MBSIS upgrades may be completed. Effectiveness will be

determined after the upgrades are completed through an assessment of load reduction/source abatement.

**Conclusions**

Conclusions will be made at the completion of the activity, after implementation and assessment is complete.

**TITLE:**  
**ID NUMBER:**

**Clean Construction Poster and Brochure Distribution**  
**MB-2006**

**ACTIVITY IMPLEMENTATION**

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) Clean Construction poster and brochure to be handed out to development applicants receiving a grading or public improvement permit from the City of San Diego (City). The poster is large and durable enough to be posted outdoors or indoors to serve as a steady reminder to construction managers and workers of storm water issues and Best Management Practices (BMPs). A double-sided brochure has been developed as well. Both the poster and brochure were updated in FY 2008. Photos on the poster and brochure illustrate erosion and sediment control measures as well as good housekeeping practices. In the FY 2005 Annual Report, this activity was originally reported as producing a flyer for distribution during pre-construction meetings; however, after further evaluation, City staff determined that it was best to reproduce an existing Clean Construction poster and brochure to supplement existing construction-related fact sheets already passed out by City staff as part of its Jurisdictional Urban Runoff Management Program.

City staff coordinated with Development Services Department staff to distribute the poster in FY 2008 to development applicants receiving a grading or public improvement permit from the City. Based on the number of permits granted, the total number of posters distributed in the Mission Bay and La Jolla Watershed Management Area (WMA) was 95.

The Regional Board provided comments<sup>1</sup> on the March 2008 WURMPs based on an audit conducted by PG Environmental. One comment stated, “It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit...pollutant reduction is, or should be, the true objective of the WURMP...”

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for “credit” under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet MB-3008 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board’s threshold for receiving “credit” under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

This activity is one of those not previously included in the March 2008 WURMPs because it does not meet the strict requirements for effectiveness assessment for watershed education activities. However, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these posters and brochures have been distributed over a number of years and the City plans to continue their distribution.

**TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL

**TIME SCHEDULE FOR IMPLEMENTATION**

- City staff will continue to distribute the poster and/or brochure to permit applicants in FY 2009.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Sediment
- Metals
- Nutrients

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria, sediment, metals, and nutrients as high priority water quality problems throughout the WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with erosion and sediment.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>
<b>CONSTRUCTION BMP POSTER AND BROCHURE DISTRIBUTION</b> Assess the Efficiency and Effectiveness of Posters in Promoting Awareness

For FY 2008, the City distributed 95 posters as referenced above in the Activity Implementation section. Due to the nature of this activity, comprehensive effectiveness assessment to show knowledge or behavior change is not being conducted for this activity. The City may continue to report on the distribution of the poster to permit

applicants, but is not requesting credit as a WMA education activity due to the strict assessment requirements in the Municipal Permit for education activities.

**TITLE:**  
**ID NUMBER:**

**Restaurant Best Management Practices Booklet Distribution**  
**MB-2007**

### **ACTIVITY IMPLEMENTATION**

The City of San Diego (City) obtained permission several years ago from the County of San Diego to modify its *What's Cookin'?* booklet, a guide for food and drinking establishments to implement Best Management Practices (BMPs), for distribution to City-permitted facilities within the Mission Bay and La Jolla Watershed Management Area (WMA) during inspections. After review by restaurant employees, the booklet could be kept by owners/managers for reference and the fact sheets could be posted to serve as steady reminders to owners/managers and workers about storm water issues and BMPs. The booklets were not modified in FY 2008 but continue to be distributed.

Storm Water Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for the continued distribution of the booklet in FY 2008 to City-permitted facilities. The City distributed 597 booklets in the Mission Bay and La Jolla WMA.

The Regional Board provided comments<sup>1</sup> on the March 2008 WURMPs based on an audit conducted by PG Environmental. One comment stated, "It appears that pollution reduction is a secondary goal to achieving compliance with the WURMP requirements, as written in the permit...pollutant reduction is, or should be, the true objective of the WURMP..."

The City agrees that the true objective of its Storm Water Program, which includes the WURMPs, JURMP, and regional programs, is pollutant reduction. The City acknowledges, however, that the WURMPs were written to comply with the Municipal Permit, and therefore only those watershed activities that were anticipated to be implemented for "credit" under the Municipal Permit were included. It is worth noting that the City is implementing a *Strategic Plan for Watershed Activity Implementation* (refer to Activity Sheet MB-3008 for more detail) as well as numerous watershed activities, including monitoring studies and additional education activities, which do not meet the Board's threshold for receiving "credit" under the Municipal Permit and are in addition to those that were disclosed in the March 2008 WURMPs.

This activity is one of those not previously included in the March 2008 WURMP because it does not meet the strict requirements for effectiveness assessment for watershed education activities; however, it is an important component of the City's Storm Water Program and is therefore being included in this annual report. Furthermore, these booklets have been distributed over a number of years and the City plan to continue their distribution.

### **TMDL APPLICABILITY**

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

- San Diego Region Beaches and Creeks Bacteria TMDL

**TIME SCHEDULE FOR IMPLEMENTATION**

The City will continue to coordinate with FEWD Program staff for distribution of the booklet in FY 2009 to City-permitted facilities.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla WMA as well as the City's *Strategic Plan for Watershed Activity Implementation* identifies bacteria as a high priority water quality problem throughout the WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused education activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>
<b>RESTAURANT BMP BOOKLET DISTRIBUTION</b>
<b>Assess the Efficiency and Effectiveness of Educational Booklet Distribution</b>

For FY 2008, the City distributed 597 booklets as referenced above in the Activity Implementation section. Due to the nature of this activity, comprehensive effectiveness assessment to show knowledge or behavior change is not being conducted for this activity. The City may continue to report on the distribution of the booklet, but is not requesting credit as a WMA education activity due to the strict assessment requirements in the Municipal Permit for education activities.

**TITLE:** Transit Shelter and Billboard Advertisements  
**ID NUMBER:** MB-2008

### **ACTIVITY IMPLEMENTATION**

The City of San Diego Storm Water Pollution Prevention Division (City) secured a contract with outdoor advertising company CBS Outdoor to display *Think Blue* billboards and bus shelters located in the Mission Bay and La Jolla Watershed Management Area (WMA). The City created advertisements that target behaviors associated with bacteria. The goal of the billboards is to educate the public about their impact on the causes of pollution and to encourage positive behavioral change. These advertisements were developed in FY 2008, and were displayed throughout the Mission Bay and La Jolla watershed in both English and Spanish.

This activity was not included in the 2008 Mission Bay and La Jolla WURMP, and is a newly reported activity. During the search for location for a similar activity in other WMAs, suitable locations were found in this WMA.

Transit shelter *Think Blue* advertisements were located at four locations in FY 2008:

- W. Mission Bay Dr. and Quivera Rd
- Linda Vista Rd. and Mesa College Dr.
- Clairemont Dr. and Clairemont Mesa Blvd.
- Genesee and Nobel Dr.

Billboards were advertised at one location in FY 2008:

- Ingraham St. and La Playa Ave.

Over the four-week viewing period, there were 1,931,720 impressions for transit shelter advertisements and 449,400 impressions for billboards.

According to Regional Board staff comments<sup>1</sup> on other WURMPs the City is involved in (e.g., San Diego River), the City will need to answer effectiveness measurement questions and provide locations of the billboards and transit centers in the annual report. The locations are provided in the Activity Implementation section. Effectiveness measurement is discussed in the Effectiveness Assessment section.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

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<sup>1</sup> Robertus, John H. "COMMENTS ON THE MARCH 2008 WATERSHED URBAN RUNOFF MANAGEMENT PLAN (WURMP) AND USEPA/REGIONAL BOARD APRIL 2008 WURMP ASSESSMENTS." September 23, 2008. (Place Number 710562: L Walsh)

## TIME SCHEDULE FOR IMPLEMENTATION

The City plans to continue to implement transit shelter and billboard advertisements in FY 2009.

## PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

## OTHER PARTICIPATING ENTITIES

- N/A

## HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

## CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Collective Watershed Strategy as well as the City's *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla WMA bacteria as a high priority water quality problem in the WMA. The outdoor advertisements will result in increased knowledge and awareness regarding bacteria and result in future load reduction of trash and debris directly and of bacteria indirectly.

## EFFECTIVENESS ASSESSMENT

<b>TRANSIT SHELTER AND BILLBOARD ADVERTISEMENTS</b> Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness		
<b>Management Questions</b>	<ul style="list-style-type: none"><li>• What changes in awareness /attitude regarding bacteria and sediment was achieved after implementation?</li><li>• How efficient is this education activity based on total cost versus number of people (targeted audience) reached?</li></ul>	
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"><li>• Reach pre-set percentage of residents within target WMA</li><li>• Increased level of knowledge/attitude based on post-activity surveys</li></ul>	
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"><li>• Survey (e.g., administer survey to assess knowledge and attitude of participants)</li><li>• Quantification (e.g., number of public reached by ads)</li></ul>	
<b>Data Recorded</b>	Number of billboard advertisement impressions in the Mission Bay and La Jolla WMA (Outcome Level 1)	449,400 DEC*
	Number of transit shelter advertisements impressions in the Mission Bay and La Jolla WMA (Outcome Level 1)	68,990 DEC*
	Number of public participants reached by billboard advertisements in all WMAs (Outcome Level 1)	7%
	Percentage of public who had heard of <i>Think Blue</i> during FY 2008 (Outcome Level 2)	45%
	Change in pollutant-related behavior (Outcome Level 3)	Yes**
<b>Recommended Data</b>	Advertisement costs (Outcome Level 1)	

\*The Daily Effective Calculation (DEC) was calculated using a weighted average of traffic flow, including adjustments for daily traffic, intersection and pedestrian viewship, and vehicle load (1.3 occupants over age 18 per car). The estimated total for impressions per 4 week period in the FY 2008 was 1,931,720 for transit shelter ads and 449,400 for billboards.

\*\*There was a 5% decrease in the percentage of residents who reported hosing down their driveways, but the few other decreases in pollutant-related behavior were percentages too small to fall within the acceptable range for statistical outcomes at a 95% confidence

level. For those behaviors, the percentages of change were so small that they cannot be assumed to be a result of the activity based on this year's survey and method of assessment.

## **Objectives**

The goal of this assessment is to determine the effectiveness of transit shelter billboards to educate the public about the causes of storm water pollution and to encourage positive behavioral change.

## **Analysis and Results**

Transit shelter *Think Blue* advertisements were located at four locations in the Mission Bay and La Jolla WMA in the FY 2008: W. Mission Bay Dr., Quivira Rd; Linda Vista Rd., Mesa College Dr.; Clairemont Dr., Clairemont Mesa Blvd.; and Genesee, Nobel Dr.. Billboards were advertised at one location in the FY 2008: Ingraham St., La Playa Ave. The number of public reached varied by location. Over the four-week viewing period, there were 1,931,720 impressions for transit shelter advertisements and 449,400 impressions for billboards.

Out of 800 total residents from all WMAs who participated in a random digit-dial *2008 San Diego Storm Water Survey*, 7% became aware of the *Think Blue* message by seeing the billboards in FY 2008. The respondents were selected randomly in order to fairly and accurately represent the City as a whole. According to the survey, groups most likely to have seen the billboard were: residents under 50 years of age, (38%) compared to seniors (24%); Latino women (49%) compared to white men (31%) and white women (32%); and Latino renters (50%) compared to white homeowners (29%).

## **Conclusions**

The *2008 San Diego Storm Water Survey* statistics were reported with a 95% confidence level for citywide results. Of the percentage of residents in all WMAs who participated in the survey, 45% reported exposure in 2008. The survey results correlate well to the daily effective calculation (DEC), estimated to be 68,990 impressions per day for transit shelter advertisements and 16,050 impressions per day for billboards in the Mission Bay and La Jolla WMA.

The 2008 survey results show a 5% reported decrease in the percentage of residents hosing down their driveways, and a 2% reported decrease in residents using pesticide or weed killers. While some of the percentage changes are not statistically significant, they still represent a positive behavioral change as fewer people are engaging in negative storm water practices. The large number of transit shelter advertisement impressions made in FY 2008 also supports the assertion that the transit shelter advertisement program is effective, due to increasing public exposure to bacteria and gross pollutant issues.

Implementation of the advertisements will continue in the FY 2009. Effectiveness will continue to be measured via surveys comprised of a random sample of residents in the Mission Bay and La Jolla WMA to determine whether this activity results in a change in knowledge and awareness associated with storm water issues, or results in a change in pollution-related behavior. Efficiency will be calculated by comparing measurable

changes in knowledge, awareness and/or change in behavior with the cost of this activity. The continuation of the activity and surveys will allow for longer-term assessment and should provide more complete results on which to base the conclusion of increased awareness and reported behavior changes.

**TITLE:** Mission Bay Focused Outreach  
**ID NUMBER:** MB-2009

### **ACTIVITY IMPLEMENTATION**

In order to prevent bacteria pollution in Mission Bay in FY 2008, the City of San Diego's (City's) *Think Blue* program implemented a summer outreach campaign that targeted key sources of bacteria pollution in Mission Bay. The campaign provided direct outreach to Mission Bay users, specifically recreational vehicle (RV) users and boaters, in an effort to prevent Mission Bay from being closed due to bacterial pollution during the high-use summer season, as it was in 2006.

During the summer of 2007, a variety of education and outreach methods were employed to reach the key target audiences, including:

- An outreach greeter station staffed with *Think Blue* staff and consultants, in order to increase direct public education and interaction. The booth was located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza boat launch, and was operational during the Independence Day and Labor Day Holiday weekends.
  - Public education materials available in the booth included Think Blue pollution prevention education materials (such as brochures and tip cards), along with best management practice (BMP) giveaways, such as brooms and dustpans.
- Specialized postcards targeting each Mission Bay user group (RV users, boaters, and general visitors) were developed and available in both English and Spanish.
- One dozen trash receptacles were wrapped with banners at different locations throughout Mission Bay to promote the slogan, "Help Keep Mission Bay Clean and Safe".
- The "*Think Blue*" pollution prevention message was stenciled on over 3 dozen trash receptacles located on Fiesta Island.
- Mobile ad display was visible at the entrance of Mission Bay East during Holiday (Memorial, Independence and Labor Day) weekends.
- Direct outreach and observations occurred at the 2007 Over the Line Tournament at Fiesta Island.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

During FY 2009, the following direct outreach and observations efforts will occur:

- An outreach greeter station staffed with *Think Blue* staff and consultants, in order to increase direct public education and interaction. The booth will be located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza

boat launch, and will be operational during the Independence Day and Labor Day Holiday weekends.

- Public education materials available in the booth will include *Think Blue* pollution prevention education materials (such as brochures and tip cards), along with BMP giveaways, such as brooms and dustpans.
- Direct contact and collaboration with marinas operating in and serving Mission Bay in order to distribute specialized pollution prevention BMP postcards targeting boaters/boat owners.
- Outreach to RV visitors at the 2008 Over the Line Tournament.
- Mobile ad display at the entrance of Mission Bay East during the Memorial Day, Independence Day, and Labor Day holiday weekends.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- San Diego Coastkeeper
- City of San Diego Park & Recreation Department
- City of San Diego Lifeguards
- Mission Bay stakeholder groups (OMBAC, Mission Bay Planning Committee, etc.)

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria
- Gross Pollutants (Trash)

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy and the *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla Watershed Management Area (WMA) both identify bacteria as a high priority water quality problem in the WMA. This outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash and debris directly and of bacteria indirectly.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>MISSION BAY FOCUSED OUTREACH</b>	
<b>Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness</b>	
<b>Management Questions</b>	<ul style="list-style-type: none"> <li>● What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation?</li> <li>● How efficient is this education activity based on total cost versus number of people (targeted audience) reached?</li> </ul>
<b>Targeted Measurable Outcome(s)</b>	<ul style="list-style-type: none"> <li>● Reach pre-set percentage of residents within target watershed</li> <li>● Increased level of knowledge/attitude based on post-activity surveys</li> </ul>

<b>Watershed: Mission Bay and La Jolla</b>							
<b>MISSION BAY FOCUSED OUTREACH</b>							
<b>Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness</b>							
<b>Assessment Method(s)</b>	<ul style="list-style-type: none"> <li>• Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants)</li> <li>• Quantification (e.g., number of residents/ visitors reached and number of materials distributed)</li> </ul>						
<b>Data Recorded</b>	<i>Think Blue</i> FY 2008 Mission Bay Outreach Studies						
	<i>Holiday</i>	<i>Number of Visitors to Outreach Booth</i>	<i>Number of passers-by Observed (daily avg)</i>	<i>Number of Visitors Approached</i>	<i>Observed Boat Launches</i>	<i>Observed Parked RVs</i>	<i>Total Materials Distributed</i>
	Independence Day 2007	463	1,416	966	318	463	2,922 *
	Labor Day 2007	74	1,032	223	113	154	277
	Memorial Day 2008	29	16	6	n/a **	26	12
	Estimated total visitors (impressions) exposed to the <i>Think Blue</i> Booth in Mission Bay in FY 2008 (Outcome Level 1)						14,472
	Estimated total visitors (impressions) exposed to the <i>Think Blue</i> Mobile Ad during Mission Bay Focused outreach (17 days) in FY 2008 (Outcome Level 1)						658,750
	Number of Surveys administered in FY 2008 *** (Outcome Level 1)						32
	Percentage of individuals surveyed who reported a willingness to take steps to engage in behavior that would prevent pollution (Outcome Level 3)						60%
	<b>Recommended Data</b>	Reported changes in attitudes, awareness and non-pollutant behavior (Outcome Level 3)					

\*Includes walkups, visitors approached by staff and materials given to park rangers and lifeguards to distribute (disseminated at July 3 *Think Blue* Press Conference).

\*\* Weather was cold and rainy and booth was closed for 50% of the holiday weekend, therefore very few boat launches were observed

\*\*\* Surveys and administration protocol was still under development in FY 2008

## Objectives

The goal of this assessment is to determine the effectiveness of the FY 2008 summer outreach campaign in increasing knowledge and awareness in the target audience (RVers, boaters and visitors to Mission Bay) in order create positive behavioral change that will reduce bacteria and gross pollutants.

## Analysis and Results

The City's *Think Blue* campaign implemented a summer outreach campaign in FY 2008 that targeted key areas of concern for pollution in Mission Bay. The campaign was conducted during the major summer holidays (Independence Day 2007, Labor Day 2007 and Memorial Day 2008) and provided direct outreach to Mission Bay users, specifically RV users and Boaters. Efforts were made, to increase awareness of pollutants sources (specifically bacteria), in order to reduce those sources, prevent pollution and avoid a

beach closure in Mission Bay during the high-use Summer Season. Examples of outreach activities included informational postcard distribution to both *Think Blue* booth visitors and those in proximity of the booth; mobile ad display at the entrance of Mission Bay East during holiday weekends; and direct outreach and observations to boaters and RV users in the area.

During FY 2008, over 14,000 visitors to East Mission Bay were exposed to the *Think Blue* Mission Bay Outreach, which was promoting the message, "Help Keep Mission Bay Clean and Safe". Over 566 individuals approached the booth to speak with staff; over 1,000 Bay users were approached by staff, with over 3,200 people receiving pollution prevention outreach material. 14,472 individuals passed by the *Think Blue* booth and are estimated to have been exposed to the outreach messaging. The *Think Blue* Mobile Ad that was circulating in the Mission by area and was displayed at the entrance of East Mission Bay during the three holidays (17 days total) is estimated to have been viewed by 658,750 individuals based on traffic counts and pedestrians.

FY 2008 was the second year that *Think Blue* participated in Focused Mission Bay Outreach. Due to the Holiday schedule and staffing availability, data collected across all three holidays is not consistent. For example, during the 4th of July 2007, the booth was available to the public for 10 days, whereas for Labor Day and Memorial Day it was limited to 3 days each weekend. FY 2008 was also the first year that *Think Blue* attempted to perform survey assessment, hence adjustments were made in regard to questions asked as well as survey protocol. Of the 20 individuals who completed the assessment survey, 60% reported a willingness to take steps to engage in behavior that would prevent pollution. Unfortunately, due to the small sample size, this number is not statistically significant, but if verified in future surveys with more respondents, it can be considered an indicator of a Level 3 Outcome.

Furthermore, there were several confounds for Memorial Day 2008. Due to the rain, there were very few visitors observed in East Mission Bay, and on two occasions the booth was removed early due to the inclement weather. In addition, gas prices were \$4+ per gallon (travel was decreased as a whole throughout the County as reported by CalTrans) and a temporary beach alcohol ban was in effect, which decreased visitorship to all beaches throughout the City in FY 2008. Therefore, *Think Blue* experienced a noticeable decrease in booth visitors/data for that holiday weekend.

### **Conclusions**

Mission Bay Focused Outreach is proving to be an effective way to reach visitors to East Mission Bay during the major summer holidays. The large numbers of impressions (14,472 exposed to *Think Blue* booth, and 658,750 exposed to mobile advertising) and direct contacts via walkup (556 persons), educational material distribution (3,211 items) and survey participation in FY 2008 support the assertion that the focused outreach program is effective, due to increasing public exposure to bacteria and gross pollutant issues. More of the public is now aware of storm water issues and the *Think Blue* campaign due to this focused outreach.

Implementation of the campaign will continue in FY 2009, and include hosting the outreach booth, in order to distribute specialized informational postcards tailored to RV users, boaters, and general visitors as well as displaying the Mobile Ad at the entrance of the Bay. Assessment survey protocol will be revised, and surveys administered will be increased in an effort to gather statistically valid information regarding knowledge, attitudes and pollution prevention behavior of Mission Bay visitors. Outreach in FY 2009 will expand to include Mission Bay special event outreach as well as targeted Marina and boater outreach. Effectiveness will be measured further via surveys comprised of residents in the Mission Bay and La Jolla WMA to determine awareness, knowledge retention and behavior change.

**TITLE:** Tecolote Creek Bacterial Source Identification Study (Phase II)  
**ID NUMBER:** MB-3002

### **ACTIVITY IMPLEMENTATION**

The Tecolote Creek Bacterial Source Identification Study (Phase I) involved the identification of bacterial sources in the Tecolote Creek Watershed through wet and dry weather monitoring surveys including visual observations, spot sampling, and laboratory analysis of data accumulated through monitoring. Data analysis and reporting began once monitoring concluded in April 2008 and the final report will be completed in August 2008. The Phase I study proved a need for for a Phase II bacterial source identification study. Phase II will aim to fill key data gaps identified in the Tecolote Phase I study and further identify bacterial sources in Tecolote Creek.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

A Monitoring Plan for Phase II of the Tecolote Creek Bacterial Source Tracking Investigation will be completed in FY 2009. Monitoring will occur between December 2008 and June 2009. The study will also aim to provide additional data for use in the preparation of the Final Tecolote Bacterial TMDL.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The City's *Strategic Plan for Watershed Activity Implementation* and the Copermittees' Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) identify bacteria as a high priority water quality problem in the Mission Bay and La Jolla WMA. The City's *Strategic Plan for Watershed Activity* identified data gaps in the information known on bacteria source and re-growth in the WMA. This study will fill this data gap by identifying sources of bacteria in the WMA which will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

## EFFECTIVENESS ASSESSMENT

<b>Watershed: Mission Bay and La Jolla</b>	
<b>TECOLOTE CREEK BACTERIAL SOURCE IDENTIFICATION STUDY (PHASE II)</b> Assess the Effectiveness of the Bacterial Study	
<b>Expected Outcome(s)</b>	<ul style="list-style-type: none"><li>• Findings and assessments will be presented in August 2008</li></ul>

Effectiveness is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

**TITLE:** Areas of Special Biological Significance Nos. 29 and 31 –  
Integrated Coastal Watershed Management Plan

**ID NUMBER:** MB-3003

### **ACTIVITY IMPLEMENTATION**

The California State Water Resources Control Board (SWRCB) has established 34 Areas of Special Biological Significance (ASBS) off of the California coast. Two adjacent ASBS exist within the jurisdiction of the City of San Diego (City): ASBS No. 31 (the San Diego Marine Life Refuge at the Scripps Institution of Oceanography) and ASBS No. 29 (the San Diego–La Jolla Ecological Reserve off the coast of La Jolla Shores). The discharge of constituents or “wastes” contained within storm water discharges into the ASBS is prohibited by the California Ocean Plan. However, the Ocean Plan allows jurisdictions to apply to the SWRCB for exceptions to the prohibition if certain conditions are met. The exception is anticipated to still prohibit the discharge of dry weather flows into the ASBS. Scripps Institution of Oceanography received its exception for ASBS No. 31 in 2004.

The City applied to the SWRCB for its exception for ASBS No. 29 in May 2006. While awaiting approval of the exception, the City is working towards the execution of a three-step program designed to reduce impacts to the receiving waters of both ASBS Nos. 29 and 31. The three steps are: formulation of a management plan; execution of a monitoring program; and implementation of Best Management Practices (BMPs).

The City worked with the La Jolla ASBS Project Team consisting of Scripps Institute of Oceanography (SIO), University of California, San Diego (UCSD) and San Diego CoastKeeper on the development of the Integrated Coastal Watershed Management (ICWMP) for the ASBS Nos. 31 and 29 and the associated La Jolla Shores watershed. The development of the ICWMP was completed under a Proposition 40 Grant through the SWRCB. The ICWMP presents the process by which projects to reduce the impacts to the ASBS are developed, implemented and assessed. This innovative process, entitled the ASBS Protection Model, has been developed by the Project Team to apply not only to the ASBS in La Jolla, but also to the other ASBS in California. The ICWMP presents a phased tiered approach to BMP implementation. The ASBS Protection Model, as detailed in the plan, includes an assessment element that will evaluate the effectiveness of these projects to reduce pollutant loads and potential impact to the ASBS ecosystem.

Tasks Completed in FY 2008 include:

- A public outreach meeting was held in August 2007 to solicit public input on the plan.
- The ICWMP was approved by City Council and the Mayor in June 2008.
- The ICWMP presents a phased tiered approach to BMP implementation through projects that include the following:
  - Kellogg Park Green Lot Retrofit project (see Activity Sheet MB-1014 Kellogg Park Green Lot Retrofit project)

- Increased inspections of restaurants and targeted residential outreach to reduce bacteria loads to the ASBS (see Activity Sheet MB-1004, MB-1005, MB-1006, MB-1009 Target Facility Inspections (Combined)).
- Targeted residential outreach using Community Based Social Marketing methods to reduce bacteria loads to the ASBS occurred (see Activity Sheets MB-2003 La Jolla Commercial CBSM Efforts and MB-2010 La Jolla Residential CBSM Efforts).
- Aggressive street sweeping to reduce metals loading occurred (see Activity Sheet MB-1010 Targeted Aggressive Street Sweeping Project)
- Low Flow Diversions (see Activity Sheets MB-1013 La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV), MB-1018 Beach Area Low Flow Storm Drain Diversion Project, Phase III, and MB-1020 Avenida de la Playa Storm Drain Replacement and Low Flow Diversion).

### **TMDL APPLICABILITY**

- Area of Special Biological Significance Nos. 29 and 31

### **TIME SCHEDULE FOR IMPLEMENTATION**

Tasks planned for FY 2009 include:

- Agreement for grant funding will be completed. Construction funding for the La Jolla Shores ASBS Pollution Control Program (aka Low Flow Diversions Phase IV, Consolidated Grants) will be appropriated in late FY 2009 or early FY2010.
- TAC meetings will continue to be held associated with the grant.
- Continue implementation of the first phase of projects that include Tier I and II BMPs.
- Phase III diversions are expected to be operational in FY 2009.

Activities and BMPs implemented under the ICWMP are and will continue to be reported on in separate activity summary sheets. Since the ICWMP has been adopted and is now in implementation, reporting specific to the ICWMP will cease with this annual report.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- UC-Regents UCSD
- Scripps Institute of Oceanography
- Coastkeeper

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

The following pollutants have been identified as potential constituents of concern (COC) and high priorities are in bold:

- **Bacteria**
- **Metals**
- Dioxins/Furans (expressed as TCDD equivalent)
- Oil and Grease
- Sediment
- Pesticides
- Toxicity
- Gross Pollutants

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) as well as the City's *Strategic Plan for Watershed Activity Implementation* includes bacteria, metals, and nutrients as high priority water quality problems and recommends implementing load reduction/source abatement activities to address it.

The ICWMP presents the process for the development, implementation and assessment of management actions that will be taken locally to protect and improve water quality in the two ASBS off the coast of La Jolla. This ICWMP addresses the urban runoff and storm water discharges from these watersheds through identification of the major constituents of concern that potentially impact the ASBS, potential sources of these constituents, identified data gaps, and the recommended first phase of BMPs to reduce the constituent loads and potential impacts to the ASBS. The ASBS Protection Model presented in the ICWMP provides a process to assess the effectiveness of the BMPs implemented to reduce potential impacts to the ASBS.

### **EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>
<b>ASBS NOS. 29 AND 31: INTEGRATED COASTAL WATERSHED MANAGEMENT PLAN</b> Assess the Effectiveness of the Management Plan

The ICWMP is in its implementation phase, with BMPs and monitoring studies being implemented by the City, UCSD, SIO, and San Diego CoastKeeper, and is not assessed as part of this report. Activities implemented under the plan will be assessed as completed. As outlined in the plan, performance is to be measured using BMP effectiveness monitoring, paired watershed studies, ambient receiving water quality changes, qualitative assessments, and Ecosystem Assessment monitoring. Many of these studies are being done by other WMA Management Group members who helped develop the plan.

As outlined in the plan, data gaps will be filled using the following studies and evaluations: Atmospheric Deposition Impact Evaluation; Sediment Loading from open space canyons; design storm studies; benthic marine surveys in coordination with the Southern California Bight 2008 program; bioaccumulation study; sub-tidal, inter-tidal,

and sediment microbial community studies. As with the performance measurements, other Watershed Management Group members are conducting many of these studies. Any activities or studies being conducted by the other group members without City involvement will not be reported under the WURMP in this or future annual reports. The City, however, is conducting or plans to conduct the Atmospheric Deposition study, the Sediment Loading study, the design storm study, in addition to BMP effectiveness monitoring. Please see the appropriate activity summary sheets in this report for more information on these studies and BMP effectiveness monitoring.

**TITLE:**  
**ID NUMBER:**

**La Jolla Shores Sediment Source Study**  
**MB-3004**

### **ACTIVITY IMPLEMENTATION**

As part of recent efforts to protect coastal resources and areas of special biological significance (ASBS), water quality monitoring has been conducted in areas that discharge urban runoff to the two ASBS in the La Jolla area. These monitoring efforts have resulted in the identification of metals, bacterial, and sediment loads as primary pollutants of concern for waters discharging to the ASBS. However, the studies conducted to date have not identified specific sources of these pollutants nor have they characterized the nature of the particulates causing suspended sediment concentrations to exceed water quality objectives. Although runoff from both residential areas and natural open space areas are thought to be significant contributors to the pollutant loads observed in this urbanized setting, the relative contribution of fine and coarse sediment fractions from each land use type is not well understood.

The primary goal of the La Jolla Shores Sediment Source Study that the City of San Diego (City) is conducting is to identify sediment sources and to characterize sediment loads from different land use areas within the La Jolla Shores Coastal Watershed during storm events.

The study is designed to answer several key study questions:

1. During storm events, how does land use influence sediment loading?
2. Do sediment loading patterns or the relative grain size proportions change throughout a storm hydrograph?
3. What is the estimated sediment and pollutant load entering the ASBS during a large storm event?
4. What are the water quality and sediment conditions in the ASBS receiving water?
5. Are concentrations of constituents in runoff correlated with specific sediment loads or grain size fractions?
6. What potential BMP solutions are available, applicable, and feasible for implementation in the La Jolla Shores Watershed based upon the data compiled in this study?

Understanding the source and nature of sediments and associated pollutants entering the ASBS from the watershed as well as their fate once they enter the marine environment will help the City establish a baseline to measure the effectiveness of management actions. In addition, the study will help the City prioritize and implement cost-effective best management practices (BMPs) to reduce pollutant loading to the ASBS. Finally, the study will assist the City in meeting current and future ASBS regulatory compliance requirements by assessing sediment and pollutant loads that travel from the La Jolla Shores Coastal Watershed to the nearby ASBS.

Sampling began in FY 2008.

**TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

**TIME SCHEDULE FOR IMPLEMENTATION**

Data will be collected from sampling events occurring in FY 2009 to fill in data gaps and provide a more robust data set for analysis. Following the FY 2009 sampling, a final report will be produced detailing the results.

**PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

**OTHER PARTICIPATING ENTITIES**

- N/A

**HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

**CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The City’s *Strategic Plan for Watershed Activity Implementation* and the Copermittees’ Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) identify sediment and bacteria as water quality problems in the Mission Bay and La Jolla WMA. The City’s *Strategic Plan for Watershed Activity Implementation* identified data gaps in the information known on sediment loading and bacteria sources in the WMA. This study will fill these data gaps.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>LA JOLLA SHORES SEDIMENT STUDY</b> Assess the Effectiveness of the Sediment Study	
<b>Expected Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Findings and assessments will be presented in FY 2009</li> </ul>

Effectiveness is not being assessed as this is not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

**TITLE:** La Jolla Design Storm Study  
**ID NUMBER:** MB-3005

### **ACTIVITY IMPLEMENTATION**

As part of the City of San Diego's planning for the San Diego Region Beaches and Creeks Bacteria Total Maximum Daily Load (TMDL), a design storm assessment will be conducted. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm.

Parameters for existing pollutograph sampling scheduled as part of the La Jolla ASBS Sediment project were added to this project in FY 2008. Three sites in the watershed are being monitored: LJCYN (representing open space land use), LJRES (representing residential land use), and LJEND (representing mixed land use). This study was not conducted as part of TMDL monitoring.

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

This study will include assessment, sampling, analysis, and reporting in FY 2009. Study completion is anticipated in FY 2009.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The study will help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the priority water quality problems.

## EFFECTIVENESS ASSESSMENT

<b>Watershed: Mission Bay and La Jolla</b>	
<b>LA JOLLA SHORES DESIGN STORM STUDY</b> Assess the Effectiveness of the Study	
<b>Expected Outcome(s)</b>	<ul style="list-style-type: none"><li>• Findings and assessments will be presented in FY 2009</li></ul>

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

**TITLE:** Tecolote Creek Design Storm Study  
**ID NUMBER:** MB-3006

### **ACTIVITY IMPLEMENTATION**

As part of planning for the Tecolote Creek Bacteria Total Maximum Daily Load (TMDL), a design storm assessment will be conducted. A design storm is a rainfall event of specified size and return frequency (e.g., one year, five year, ten years) that is used to calculate runoff volumes and loads for best management practice (BMP) design and implementation. BMP design criteria are based on the TMDL load reductions and the concentrations and loads of constituents over the course of the design storm.

Parameters for existing pollutograph sampling scheduled as part of the Tecolote Creek Phase II Bacterial Source ID Study were added to this project. One site at the base of the watershed will be monitored with samples collected for grain size and bacteria. A settling experiment to see how bacteria are transported through a storm event will be conducted. Additionally, a speciation will occur to determine if bacterial species are altered throughout a storm event.

### **TMDL APPLICABILITY**

- Tecolote Creek Bacteria TMDL

### **TIME SCHEDULE FOR IMPLEMENTATION**

This study will include assessment, sampling, analysis, and reporting in FY 2009. Study completion is anticipated in FY 2009.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Bacteria

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The City of San Diego has adopted an integrated, tiered, and phased strategy to ensure the implementation of activities most efficient in protecting and improving water quality. The study is in line with the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). The study will help to fill data gaps identified in the Strategic Plan, which include Design Storm Determination through pollutograph development for the priority water quality problems.

**EFFECTIVENESS ASSESSMENT**

<b>Watershed: Mission Bay and La Jolla</b>	
<b>TECOLOTE CREEK DESIGN STORM STUDY</b> Assess the Effectiveness of the Study	
<b>Expected Outcome(s)</b>	<ul style="list-style-type: none"><li>• Findings and assessments will be presented in FY 2009</li></ul>

Effectiveness is not being assessed because this is not a water quality or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

**TITLE:** Dry Weather Aerial Deposition Study (Phase II)  
**ID NUMBER:** MB-3007

### **ACTIVITY IMPLEMENTATION**

The City of San Diego (City) conducted an Aerial Deposition Study (Phase II) in several watersheds in the City's jurisdiction in both the San Diego Bay and Mission Bay and La Jolla Watershed Management Areas (WMAs). This study was conducted to address sources of metal and particulate pollutants that settle out on watershed surfaces and have the potential to wash off. The study was specifically used to address the fact that ocean waters within the La Jolla Area of Special Biological Significance (ASBS) must meet a daily maximum Ocean Plan standard of 12 parts per billion for copper for which there are no identified point sources in the area.

Data was collected beginning September 10, 2007. The study was designed to address the following questions:

- Q1 - What is the annual aerial deposition rate in the high loading areas identified in the initial dry weather aerial deposition study?
- Q2 - What is the wet weather aerial deposition rate at the SD8(1) location (located in Chollas Creek)?
- Q3 - What is the solubility of copper, lead, and zinc in atmospheric deposition particles during dry and wet conditions?

In the La Jolla and Mission Bay WMA, dry deposition analyses occurred at two high traffic surface streets, and one reference site at the following locations:

- Scripps Institute of Oceanography (SIO) Pier (Reference site and provides direct deposition assessment to the ASBS surface)
- La Jolla Parkway (High traffic surface street, high braking)
- La Jolla Shores Drive (High traffic surface street, high braking)

As of June 30, 2008, the project is approximately 65% complete (field work is approximately 85% complete). The following information summarizes the progress to date:

- Nineteen of 24 annual dry deposition events completed
- Three of three wet deposition events completed
- Three of three solubility events completed

Based on data collected during the study, mean deposition results for copper was highest at La Jolla Parkway (44.8  $\mu\text{g}/\text{m}^2/\text{day}$ ). Lead deposition rates were infrequently detected or were low in comparison to other metals. Mean zinc deposition rates were highest at La Jolla Parkway (221  $\mu\text{g}/\text{m}^2/\text{day}$ ). The highest mean net particle deposition rates were found at La Jolla Shores Drive and La Jolla Parkway (188,803 and 150,611  $\mu\text{g}/\text{m}^2/\text{day}$ ). The SIO Pier reference site had the lowest deposition rates of copper, lead, and zinc.

### **TMDL APPLICABILITY**

- Area of Special Biological Significance Nos. 29 and 31

### **TIME SCHEDULE FOR IMPLEMENTATION**

Sample collection is expected to continue through August 2008. Remaining tasks include data analysis and draft reporting, peer review, and final reporting. The draft report is anticipated to be delivered November 2008 and the final report January 2009.

The City will be conducting a Phase III Aerial Deposition Source Evaluation from January through June 2009. The primary focus is directed to answer specific questions related to metals TMDLs in the City. This study is intended to supplement the initial dry weather aerial deposition study and the annual aerial deposition study. The purpose of this focused effort is to evaluate the potential emission sources that were identified by the previous two studies. The initial dry weather aerial deposition study (Phase I) assessed a three month period during the summer of 2006. The aerial deposition study evaluated the annual variation, solubility of particles, and the wet aerial deposition contribution. The Phase I and Phase II studies used techniques to locate specific assessments of flux conditions but not source specific wind direction assessments.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- N/A

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- Metals (specifically Zinc / Copper / Lead)

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

The City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the La Jolla and Mission Bay WMA identify metals as a high priority water quality problem and identify data gaps in the information known on sources of metals. The aerial deposition study presents the results and findings of the conditions related to aerial deposition as a source. The study data can be used to provide model input data for future BMP evaluations and watershed activities. The report also provides information related to aerial particulate sources and relevance to each watershed.

## EFFECTIVENESS ASSESSMENT

<b>Watershed: Mission Bay and La Jolla</b>	
<b>DRY WEATHER AERIAL DEPOSITION STUDY</b> Assess the Efficiency and Effectiveness of the Aerial Deposition Study	
<b>Expected Outcome(s)</b>	<ul style="list-style-type: none"><li>• Findings and assessments will be presented in the final report in 2009</li></ul>

Effectiveness is not being assessed as this not an implementation or education activity. This study is filling pollutant source data gaps as identified above. Future activities implemented in response to the results of the monitoring study will be reported as separate activities.

**TITLE:** City of San Diego Strategic Plan Implementation  
**ID NUMBER:** MB-3008

**ACTIVITY IMPLEMENTATION**

In spring 2006, the City of San Diego (City) initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Storm Water Permit requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts was the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan). Its preparation involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers. The review and assessment were used to prioritize the water quality problems and their sources for the Watershed Management Areas (WMAs) that the City has jurisdiction in and to geospatially prioritize the City’s portion of each of those WMAs, using best professional judgment, for activity implementation.

The Strategic Plan uses an integrated, tiered, and phased approach with regards to activity implementation. Activities that address multiple regulations simultaneously and offer multiple environmental sustainability benefits are favored over those that do not (integration). Activities that target pollutant sources and prevent pollutant generation and release in the first place are emphasized and maximized before the implementation of more expensive structural and treatment solutions (tiering). Furthermore, the City pilots activities on a limited scale to measure their effectiveness and efficiency before it implements them on a broad scale (phasing).

In addition, the City is of the opinion that the integration of storm water and urban runoff pollution management with other environmental efforts and infrastructure improvements is crucial for achieving efficiencies and cost savings in a period of seemingly perpetual municipal budget deficits. This integration is also crucial for obtaining the public’s support of storm water and urban runoff pollution management efforts.

Development of the Strategic Plan included the formulation of a list of activities to implement over a five-year period. These activities have been integrated into the various Watershed Urban Runoff Management Programs (WURMPs) that the City implements in conjunction with other local jurisdictions. Each fiscal year, the City updates its list of activities to reflect new data, schedule changes, and staffing and budgetary considerations. Many of these activities are reported as watershed water quality and education activities in the various WURMPs. However, the City has a list of project types and sources it plans to implement/target. Because these are so conceptual in nature, the City does not report on them as specific activities. Those that are concepts not yet into development but planned for initiation within the next few years are listed in the table below.

**Table 1 – Conceptual Projects**

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Tecolote Watershed "Green Street" Infiltration Retrofit	Green Street	Water Quality	Structural	Bacteria, Metals & Sediment

<b>Activity Description</b>	<b>Activity Type Classification</b>	<b>Type</b>	<b>Class</b>	<b>Primary Target Pollutant</b>
Mission Bay Drive Trash BMP	Inlet Trash/Debris Separation	Water Quality	Structural	Trash
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash
Maple Canyon Water Quality Improvement Project	Sustainable Canyons	Water Quality	Structural	Metals, TSS, Bacteria, Pesticides & Trash
"Green Mall" Infiltration Retrofit	Green Mall	Water Quality	Structural	Targeted Multiple Pollutants
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants
Copper Brake Pad Alternative Legislative Mandate	Product Substitution	Water Quality	Non-structural	Metals
Tijuana River Solid Waste Removal and Transfer Facility	Trash/Debris Separation	Water Quality	Structural	Trash, bacteria
Wild Animal Park Demonstration Wetlands Treatment Project	Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System	Water Quality	Structural	Bacteria, Dissolved Minerals, Gross Pollutants, Metals, Nutrients, Oil & Grease, Organics, Pesticides, & Sediment
Residential Landscaping Retrofit Pilot Project	Residential Landscaping Retrofit	Water Quality	Non-structural	Targeted Multiple Pollutants
Smart Irrigation and Controller Incentive/Giveaway Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Targeted Multiple Pollutants
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A
Pet Waste Dispenser Program	Doggie Bag Dispenser	Water Quality	Non-structural	Bacteria
Posted Street Sweeping Routes	Street Sweeping	Water Quality	Non-structural	Metals, Trash & TSS
Municipal Park Artificial Turf Pilot Project (1)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (2)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Municipal Park Artificial Turf Pilot Project (3)	Artificial Turf	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
(1)				
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment
Commercial Pest Control Art Turf or Product Sub	Product Sub	Water Quality	Non-Structural	Pesticides
Residential Pesticide Management Art Turf or Prod Sub	Product Sub	Water Quality	Non-Structural	Pesticides
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants
Green Street Filtration	Green Street	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Lot Filtration	Green Lot	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Green Mall Filtration	Green Mall	Water Quality	Structural	TSS, Metals, Bacteria, Pesticides & PAHs
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (1)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (2)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System (3)	Low-Flow Storm Drain Inlet Multi-Pollutant Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (1)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS
Home Auto Activities (Metals) Code Mod and Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease
Alley Cleanup and Sweeping Pilot Project	Street Sweeping	Water Quality	Non-structural	Bacteria, Trash & Metals

### **TMDL APPLICABILITY**

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

- Area of Special Biological Significance Nos. 29 and 31

Note: In addition to current and pending TMDLs, the Strategic Plan reviewed the Clean Water Act 303(d) list of impaired water bodies for the San Diego region and used the information to help prioritize the water quality problems, pollutant sources, and areas of the City to target for activity implementation.

### **TIME SCHEDULE FOR IMPLEMENTATION**

Each activity has its own specific implementation schedule. However, implementation of Phase I of the Strategic Plan (the piloting stage before implementation on a broader scale) is anticipated to occur from FY 2008 through FY 2013.

### **PARTICIPATING WATERSHED COPERMITTEES**

- City of San Diego

### **OTHER PARTICIPATING ENTITIES**

- None

### **HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED**

- All Water Quality Problems are addressed as the goal of the Strategic Plan is to address multiple problems simultaneously as feasible to achieve efficiencies

### **CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY**

Subsequent to the adoption of the Municipal Storm Water Permit (Order No. R9-2007-0001) in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in developing a Collective Watershed Strategy for each WMA. Application of the Model Watershed Strategy results in prioritizing areas within each WMA for activity implementation; selecting and prioritizing appropriate watershed activities, including monitoring and pollutant source identification studies, for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in Section 3, Water Quality Assessment, of this WURMP.

## **EFFECTIVENESS ASSESSMENT**

**Watershed: Mission Bay and La Jolla**

**CITY OF SAN DIEGO STRATEGIC PLAN IMPLEMENTATION**

Each activity will be assessed independently, and programmatic assessment will occur annually in Section 4 of the WURMP annual report.

Assessment of the Strategic Plan is a long-term effort and will involve tracking the City's progress on piloting activities over the next five years to be able to make conclusions on how to optimize the efficiency of its storm water program to meet water quality goals and regulations.

**APPENDIX C**  
**UPDATED LAND USE MAP**

