

APPENDIX A
WATERSHED WATER QUALITY AND EDUCATION
ACTIVITY SUMMARY SHEETS

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TITLE: I Love a Clean San Diego Trash Cleanup Sponsorship
ID Number: 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 ILACSD Creek to Bay Cleanup occurred on April 24, 2010. The City of San Diego (City) sponsored the Marian Bear Memorial Park site in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 50 volunteers removed 211 lbs of trash and debris and recycled 36 pounds of trash and debris over a two-mile area.

The City requests that the Regional Board accept this activity as a watershed water quality activity for FY 2010 as the effectiveness assessment below demonstrates that this activity resulted in a measurable pollutant load reduction (Outcome Level 4) during the reporting period.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The 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 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

- 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

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

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
ILACSD CREEK TO BAY CLEANUP SPONSORSHIP		
Assess the Efficiency and Effectiveness of Sponsoring ILACSD Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	<ul style="list-style-type: none"> • What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? (\$/person or \$/ton collected) 	
Targeted Measurable Outcome(s)	Load reduction due to reduction of trash (any amount) due to trash cleanup sponsorship	
Assessment Method(s)	<ul style="list-style-type: none"> • Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected) 	
Data Recorded	Pounds of trash removed (Outcome Level 4)	211 lbs
	Pounds of trash recycled (Outcome Level 4)	36 lbs
	Total pounds of trash removed and recycled (Outcome Level 4)	247 lbs
	Number of participants (Outcome Level 1)	50
	Amount of money spent on cleanups for all watersheds (Outcome Level 1)	\$30,000
	Estimated Amount of money spent on cleanups for the Mission Bay and La Jolla watershed management area (Outcome Level 1)	\$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	\$20.24/lb

*Calculated by dividing total sponsorship cost by six watersheds.

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 24, 2010, 50 participants removed approximately 211 pounds of trash and debris and recycled approximately 36 pounds of trash and debris from numerous sites in the Mission Bay and La Jolla WMA. The average estimated sponsorship cost was \$5,000 per watershed (\$30,000/6 watersheds). Thus, there was a 247 pound load reduction associated with sponsorship per yearly event, and an efficiency of \$20.24 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled.

Conclusions

Implementation and assessment of load reduction and efficiency for the ILACSD Creek to Bay Cleanup will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

TITLE: 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. Coastkeeper 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 19, 2009. The City of San Diego (City) sponsored the Rose Creek Corridor, Pacific Beach site in the Mission Bay and La Jolla Watershed Management Area (WMA). Approximately 94 volunteers removed 1,560 pounds of trash and debris and recycled 100 pounds of trash and debris over a three-mile area. Volunteers were asked to track the debris collected by filling out data cards provided by the Ocean Conservancy.

Think Blue also set up an outreach, education booth at Mission Beach where participants gathered before and after the clean-up for the press conference, breakfast, and activities. With more than 15 other booths present, the layout provided volunteers an opportunity to visit each booth during the event. Informational materials distributed at this event include: *Think Blue* brochures, *Think Blue* laminated tip cards, magnetic notepads, pencils, pet trash bag containers, pet trash bag refills, eco-friendly pens, and backpacks.

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, this trash cleanup activity fulfills credit as a watershed water quality activity for FY 2010.

TMDL APPLICABILITY

- None

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 Coastkeeper staff to ensure that sites within the Mission 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

- San Diego Coastkeeper
- 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

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA, and recommend 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

Watershed: Mission Bay and La Jolla		
SDCK COASTAL CLEANUP DAY SPONSORSHIP		
Assess the Efficiency and Effectiveness of Sponsoring SDKC's Cleanup Efforts to Remove Litter from Public Areas and Waterways		
Management Questions	<ul style="list-style-type: none"> • What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? (\$/person or \$/pound collected) 	
Targeted Measurable Outcome(s)	Achieve load reduction due to reduction of trash due to trash cleanup sponsorship	
Assessment Method(s)	<ul style="list-style-type: none"> • Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected) 	
Data Recorded	Pounds of trash removed (Outcome Level 4)	1,460 lbs
	Pounds of trash recycled (Outcome Level 4)	100 lbs
	Total pounds of trash removed (Outcome Level 4)	1,560 lbs
	Number of participants (Outcome Level 1)	94
	Amount of money spent on cleanups for all six watersheds (Outcome Level 1)	\$30,000
	Estimated Amount of money spent on cleanups for the Mission Bay and La Jolla watershed management area (Outcome Level 1)	\$5,000*
	Activity Efficiency (Total Cost/ Total Pounds of Trash Removed and Recycled)	\$3.21/lbs

*Calculated by dividing total sponsorship cost by six watersheds.

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 the Ocean Conservancy; 94 participants removed 1,460 pounds of trash and debris and recycled 100 lbs of trash and debris. The average estimated sponsorship cost was \$5,000 per watershed (\$30,000/6 watersheds); thus, there was a 1,560 pound load reduction and an efficiency of \$3.21 per pound collected. The efficiency was calculated by dividing the sponsorship cost for the Mission Bay and La Jolla WMA by the total pounds of trash removed and recycled. It is anticipated that the sponsorship fee at that level would remain the same for subsequent years.

Conclusions

Implementation and assessment of load reduction and efficiency for the Coastal Cleanup Day sponsorship will occur again in FY 2011. Future results may be used to compare various types of trash cleanups completed and their associated costs as well as comparing the same types of trash cleanups that are sponsored each year over time.

Based on the total amount of trash removed leading to a load reduction of bacteria, a high priority water quality problem, this trash cleanup activity fulfills a watershed water quality activity for FY 2010.

TITLE: Mission Bay Targeted Automotive Facility Inspections
ID NUMBER: MB-1005

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the Mission Bay and La Jolla, San Diego Bay and Tijuana River Watershed Management Areas (WMA). The City of San Diego developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

- 1) What is the optimal frequency (within resource limitations) of inspections for Automotive Repair Facilities?
- 2) Does type of business ownership change the required inspection frequencies?
- 3) Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized?

This activity included three rounds of inspections and spanned both FY 2009 and FY 2010. In FY 2009, this activity was developed and implemented Round 1 inspections to establish the baseline data for future inspections. All automotive facilities selected to be part of this activity were inspected. In FY 2010, Round 2 and Round 3 inspections were performed. Round 2 inspections occurred at approximately half of the sites selected for inspection. The sites inspected in Round 2 were selected via random number generation. These sites received two inspections in FY 2010 (Round 2 and Round 3). Round 3 inspections occurred at all automotive facilities selected to be part of this activity. These sites received one inspection in FY 2010 (Round 3 only). Inspections under this activity were not counted toward the Jurisdictional Urban Runoff Management Program (JURMP) inspection requirements unless inspected facilities were high threat to water quality sites that the Permit requires be inspected annually.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY 2010. Assessment and final reporting for this activity concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity* Implementation and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identifies metals 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 them. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with metals.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay/La Jolla		
TARGETED FACILITY INSPECTIONS		
Assess the Efficiency and Effectiveness of Automotive Inspections		
Management Questions	<ul style="list-style-type: none"> • What is the optimal frequency of inspections for Automotive Repair Facilities? • Does type of business ownership change the required inspection frequencies? • Based on information collected during inspections, can the inventory of specific source types, in this case automotive facilities, be feasibly prioritized? 	
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Identification of sources of constituents of concern in the Mission Bay/La Jolla Watershed • Source abatement due to inspections • Increased BMP implementation due to inspections 	
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from data) 	
Data Recorded	Automotive Inspections (Round 2)	
	Number of full inspections (Outcome Level 1)	27
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	10
	Number of sites needing corrective action (Outcome Level 1)	100
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	0
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	N/A
	Total IC/IDs observed (Outcome Level 1)	0
	Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A
	Automotive Inspections (Round 3)	
	Number of full inspections (Outcome Level 1)	57
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	18
	Number of sites needing corrective action (Outcome Level 1)	56
	Number of sites that implemented some corrective action during inspection (Outcome Level 3)	1
	Number of sites with source abatement (based on corrective actions taken) (Outcome Level 4)	1
	Total IC/IDs observed (Outcome Level 1)	0
Total IC/IDs eliminated during inspection (Outcome Level 4)	N/A	

Objectives

The goal of this focused inspection activity on automotive facilities was to determine the most efficient frequency to ensure proper BMP implementation and reduce pollutant loads.

Analysis and Results

For all rounds of inspections, facility BMP implementation was evaluated for 27 different BMPs at each inspected facility. Inspected facilities were assigned a rating to reflect the level of BMP implementation 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 the inspected facilities during each period of implementation.

Table 2 Breakdown of Average Knowledge and BMP Implementation Scores by Area (Automotive Inspections)

Average Knowledge Round 1	Average BMP Implementation Score Round 1	Average Knowledge Score Round 2	Average BMP Implementation Score Round 2	Average Knowledge Score Round 3	Average BMP Implementation Score Round 3
1.2	2.7	2.0	2.7	2.4	2.8

There was no significant change in BMP implementation rates observed with increased inspections when comparing the facilities that received one inspection to facilities receiving two inspections in one fiscal year, or three inspections from FY 2009 data. In general, the violations for poor BMP implementation were related to outdoor activities, materials/parts storage and lack of good-housekeeping practices. Many of the issues would be resolved if the facilities had structural changes to cover the outdoor operations and activities. These changes would likely be economically infeasible for the businesses to implement.

Each inspected facility was evaluated for their potential to discharge specific pollutant types, such as sediment, metals, and trash. Results of the pollutant discharge potential assessment (PDPA) performed during each inspection were also compared; there were no significant differences in any PDPA constituents assessed during this activity.

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

The increased inspection frequency did not yield improved compliance behavior at the inspected facilities. However, the inspection process is a viable mechanism for identifying non-compliance issues and potential discharge conditions at inspected facilities. Inspections have also proven to be an effective mechanism for identifying and prioritizing follow-up inspections, and contact necessary to further evaluate compliance and non-compliance issues at facilities. Inspections can be enhanced by having enforcement, with an option for an incentive, for achieving change in compliance behavior.

As a result of this activity, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 84 sites. The increased inspections at the facilities increased knowledge and it was determined during a focus group study for automotive businesses that one of their sources of storm water knowledge came through inspections; thus, this activity raised awareness, Level Two. Additionally, the City noted 28 sites that needed follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify that at one location, corrective actions were immediately taken. This demonstrates both a Level Three (change in behavior/BMP implementation) and Level Four (source abatement/load reduction) outcome was achieved as a direct result of this activity.

TITLE: Geographically Based Business Property and Facility Inspections
ID NUMBER: MB-1006

ACTIVITY IMPLEMENTATION

This activity is part of a larger study in the San Dieguito River, Los Peñasquitos, Mission Bay and La Jolla, and San Diego River watershed management areas (WMAs). The City of San Diego (City) developed and implemented a focused inspection activity designed and implemented to answer the following management questions related to the implementation of commercial/industrial inspection programs:

- 1) What activities and locations at businesses should be targeted during the inspection based on the severity of observed/report issues?
- 2) Does the City's commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)?
- 3) Based on information collected during inspections, can the inventory of specific source types, be feasibly prioritized based on site specific characteristics?

The City delineated a specific area within the Mission Bay and La Jolla WMA. Inspections were conducted within this geographic area, both inspecting properties as a whole, and evaluating and inspecting individual businesses regardless of whether they were included in the City's commercial/industrial inventory. A mixture of individual businesses and multi-suite complexes, such as industrial parks and shopping centers, were located in this selected geographic area. Two types of data collection were performed at the overall property level: geographic property evaluations and property inspections. Two types of additional data collection at the individual business level on these properties were also conducted: pre-contact and post-contact inspections. Details of these evaluations and inspections are included below:

- Property level data collection:
 - Geographic property evaluations, referred to as "geographic evaluations" for short, recorded detailed information about landscaping, trash/disposal areas, and storm drains within a given property. The purpose of the property evaluations was to characterize the area and collect data additional data beyond the scope of a typical inspection to be used for assessment purposes. For example, a typical inspection answers the question of whether trash areas at a site are clean enough to meet the City's BMP requirements. During property evaluations, more detailed information was recorded: the number of trash areas at a property and the type(s) and quantities of trash observed in them (outside the dumpsters) were recorded.
 - Property inspections were performed at shopping centers and industrial parks. Property inspections gathered information about shared areas such as landscaping, trash/dumpster areas, parking lots, outdoor material storage, and high threat to water quality activities. Typically, these areas are the responsibility of the property owner or property management company. These inspections were based solely on information gathered through observations and focused mainly on compliance evaluation.

- Individual business level data collection:
 - Pre-contact business inspections were performed based on the inspectors' observations only and before speaking with facility representatives. These inspections were performed at all types of businesses on the City's industrial and commercial inventory. Pre-contact business inspections were not conducted at facilities for which site access required contact with site personnel or for facilities that appeared likely not to be inventoried.
 - Post-contact business compliance inspections were conducted at businesses that inspectors determined were or would likely need to be included on the City's industrial and commercial inventory based on pre-contact inspection results and were completed after the pre-contact inspections. The post-contact business inspection involved the same steps as a standard industrial and commercial inspection under the City's JURMP industrial and commercial inspection program. A post-inspection was only conducted if a pre-contact inspection was completed. Educational material was distributed, as applicable, during post-contact inspections.

In FY 2010, 42 geographic evaluations, 27 property inspections, 39 pre-contact business inspections and 31 post-contact industrial/commercial inspections, were conducted in the area selected in the Mission Bay/La Jolla WMA.

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

This project was implemented in FY 2009 and FY2010. Assessment and reporting on this activity were completed in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load

reduction/source abatement activities to address it. Implementation of this targeted inspection activity would contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria at a variety of business types.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay/La Jolla		
TARGETED FACILITY INSPECTIONS Assess the Efficiency and Effectiveness of Facility Inspections		
Management Questions	<ul style="list-style-type: none"> • What activities and locations at businesses should be targeted during the inspection based on the severity of observed/reported issues? • Can the City increase its commercial/industrial program efficiency by using a tiered inspection process (variable inspection forms & procedures) based on site specific characteristics of the businesses? • Does the City’s commercial/industrial inventory need to be reevaluated (additions of business types or modifications to prioritization process)? 	
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Identification of sources of constituents of concern in the Mission Bay/La Jolla Watershed 	
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to estimate source abatement) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of source abatement for BMPs from 3rd party data) 	
Data Recorded	Geographic Evaluations	
	Number of geographic evaluations (Outcome Level 1)	42
	Percent of landscaped areas with evidence of over-irrigation (Outcome Level 1)	18%
	Percent of trash areas with observed trash, debris, and/or sediment (Outcome Level 1)	52%
	Percent of storm drains with observed trash, debris, and/or sediment (Outcome Level 1)	48%
	Property Inspections	
	Number of property inspections (Outcome Level 1)	27
	Percent of facilities recommended for follow-up inspection (Outcome Level 1)	22%
	Percent of sites needing corrective action (Outcome Level 1)	100%
	Percent of properties identified of sources of bacteria (Outcome Level 1)	7%
	Percent of properties identified of sources of nutrients (Outcome Level 1)	0%
	Percent of properties identified of sources of heavy metals (Outcome Level 1)	0%
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A
	Pre-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	39
Number of facilities recommended for follow-up inspection (Outcome Level 1)	9	
Number of sites needing corrective action (Outcome Level 1)	37	
Number of sites identified of sources of bacteria (Outcome Level 1)	2	

Data Recorded (continued)	Pre-Contact Business Inspections (continued)	
	Number of sites identified of sources of nutrients (Outcome Level 1)	0
	Number of sites identified of sources of heavy metals (Outcome Level 1)	0
	Total IC/IDs Observed (Outcome Level 1)	1
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	1
	Post-Contact Business Inspections	
	Number of full inspections (Outcome Level 1)	31
	Number of facilities recommended for follow-up inspection (Outcome Level 1)	10
	Number of sites needing corrective action (Outcome Level 1)	31
	Number of sites identified of sources of bacteria (Outcome Level 1)	4
	Number of sites identified of sources of nutrients (Outcome Level 1)	0
	Number of sites identified of sources of heavy metals (Outcome Level 1)	0
	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
	Total IC/IDs Observed (Outcome Level 1)	0
	Total IC/IDs Eliminated During Inspection (Outcome Level 4)	N/A

Objectives

The goal of this assessment is to determine if evaluating facilities based on observation only is an effective and efficient method for identifying and eliminating storm water pollution sources generated on industrial/commercial sites. Furthermore, this program aimed to identify potential sources of constituents of concern in the Mission Bay/La Jolla watershed by assessing industrial and commercial areas, businesses, and activities in the selected geographic areas.

Analysis and Results

A total of 52% properties evaluated during geographic evaluations were observed to have trash areas observed with accumulated trash, debris, and/or sediment. Additionally, 48% of storm drains were observed to have some level of accumulated trash, litter, and/or sediment. Lastly, 18% of landscaped areas were observed to have some evidence of over-irrigation.

All of the properties that received property inspections had at least one corrective action. Most were relatively minor corrections, but 22% of the properties that received property inspections had corrective actions requiring further follow-up. Based on the inspections performed and the recorded time for each inspection, it appears that a property inspection is an effective and efficient method for identifying major outdoor activities and storage that contribute to storm water pollutant runoff. Overall property inspections do not provide much ability to assess BMPs for activities outside accessible common areas, but at shopping centers and industrial parks, it is very rare for activities with potential to influence storm water quality to occur outside areas that can be accessed without first contacting a business representative. Occasionally, it was difficult for the inspectors to clearly delineate a property. Different parcels located close to one another can appear to be part of the same property complex, but may actually have different parcel owners.

As previously mentioned, business inspections were conducted in two parts, the pre-contact inspection and the post-contact inspection. Pre-contact inspections are faster and were effective at identifying outdoor BMP implementation deficiencies at properties, such as shopping centers

and industrial parks with accessible areas. Pre-contact inspections were not as effective at identifying BMP deficiencies at sites that are more difficult to access or where potentially pollutant-generating activities are conducted in areas closed off to the general public, such as auto repair shops. It should be noted that during pre-contact inspections BMP implementation problems could be identified, but it was often not possible to identify the responsible party without talking to personnel at the site. The number of pre-contact inspections is greater than the number of post-contact inspections because in several instances the pre-contact inspection was performed, but after talking with facility personnel during the post-contact inspection the inspector determined that the facility was not conducting activities for which inclusion on the industrial/commercial inventory was required. The percentage of sites that required corrective actions increased slightly between the pre-contact and post-contact inspections, 95% and 100% respectively.

Conclusions

This activity fulfills the requirement of one of the two required watershed water quality activities for this watershed management area.

Based on the gathered information, pre-contact inspections of an overall complex assessment with shared areas is an efficient and effective in identifying BMP implementation deficiencies in outdoor areas for shopping centers and industrial parks, but less so for individual businesses that are more difficult to access or areas closed to the public, such as contractor storage yards or automotive repair shops.

Based upon the two year inspections results, the primary areas and activities that should be focused on during inspections are: 1) Over-Irrigation; 2) Trash Areas; and 3) Storm Drains. In addition, there were no other businesses warranted to be on the industrial/commercial inventory.

As a result of this activity during the post-contact business inspections, the City noted deficiencies at the facilities and made recommendations to the responsible parties at 31 sites. Additionally, the City noted 10 sites that needed to follow-up to verify that corrective actions/BMPs were implemented. However, the City can verify at three locations, corrective actions were immediately taken. This demonstrates both Level 3 (change in behavior/BMP implementation) and Level 4 (source abatement/load reduction) outcomes were achieved as a direct result of this activity. Also during the pre-contact inspections, the City confirms one IC/ID was observed and called into the City's hotline for response and follow-up for abatement.

TITLE: Targeted Aggressive Street Sweeping Pilot Project
ID NUMBER: MB-1010

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) completed a 24-month street sweeping pilot study in the Mission Bay and La Jolla Watershed Management Area (WMA). The pilot study is part of an ongoing effort to reduce water pollution and maintain the City's compliance with water quality regulations. The goal of the pilot study was to determine the optimal street sweeping frequencies and sweeper machinery that will help the City better comply with local, state and federal Clean Water regulations. Specifically, the study investigated the effectiveness of using vacuum-assisted street sweepers in place of conventional mechanical sweepers and increasing sweeping frequencies to reduce the accumulation of debris containing metals on City streets. The pilot study included the purchase of two types of vacuum-assisted sweepers; the training of sweeper operators; the assignment of sweepers to designated routes within the WMA; and a wet-weather monitoring program to assess the effectiveness of the pilot study.

In order to select the appropriate routes, the City of San Diego used 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 three selected routes (MB-1, MB-2 and MB-3)¹ were in the highest priority sectors of the Mission Bay and La Jolla WMA for potential metals loading.

In anticipation of the start of pilot study, 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 pilot study routes in Clairemont (MB-2) in April 2008. In May 2008, the City began sweeping MB-2 at a once a week frequency (one time per week on each side of the street) to determine the amount of debris containing metals that could be removed by increasing the frequency of the City's

¹ Three pilot routes were selected in the Mission Bay and La Jolla WMA. MB-1 consisted of a primarily residential route in the La Jolla Shores area; MB-2 consisted of two small residential routes in the Clairemont area; and MB-3 consisted of a primarily commercial route in the La Jolla/Clairemont area.

conventional street sweeping program. Implementation of the once a week frequency concluded in June 2010. Pollutant load reduction data from this portion of the pilot study is included in the effectiveness assessment section of this activity sheet.

The City installed “no parking” signs along the pilot study routes in the La Jolla Shores (MB-1) and La Jolla/Clairemont (MB-3) areas in the fall of 2008. In October 2008, the City began sweeping MB-1 and MB-3 at an increased frequency (one time per week on each side of the street) to collect additional debris data. Implementation of this frequency also concluded in June 2010. Pollutant load reduction data for these pilot study routes is included in the effectiveness assessment section of this activity sheet.

This phase of the pilot study also included a comparative analysis of the performance of the City’s conventional mechanical street sweepers and the newly acquired vacuum-assisted sweepers. Comparative debris data was collected for each machine type for all three pilot study routes (MB-1, MB-2 and MB-3) in the Mission Bay and La Jolla WMA. The results of this comparative analysis are included in the effectiveness assessment section of this activity sheet.

Based on results presented in 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 WMA), the City requests credit for the street sweeping activity as a watershed water quality activity in FY 2010.

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 concluded in June 2010. Sweeping in the La Jolla area began in October 2008. Use of vacuum-assisted street sweepers began in FY 2009 for these pilot study routes. Debris testing and water quality monitoring was conducted during FY 2010 to assess effectiveness in removing metals from City streets. This project is complete, and will no longer be included in future reporting updates.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

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

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
TARGETED AGGRESSIVE STREET SWEEPING PILOT STUDY		
Assess the Efficiency of Street Sweeping Frequencies and Methods		
Management Questions	<ul style="list-style-type: none"> • Which street sweeping machine is most effective in removing metal contaminants (mechanical or vacuum-assisted)? • Is sweeping more frequently more effective than less frequent street sweeping in debris removal? • What is the optimal street sweeping frequency/method? • What is the impact of street sweeping on COCs in storm water runoff? 	
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction for metals based on monitoring information • Observe receiving water quality improvement 	
Assessment Method(s)	<ul style="list-style-type: none"> • Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to buy vacuum assisted street sweepers) • Quantification (e.g., load estimate comparison between sweeping methods) 	
Data Recorded	Total lbs of debris removed by mechanical sweeper:	233,820 lbs
	Total lbs of debris removed by regenerative-air sweeper:	257,980 lbs
	<u>Total lbs of debris removed by vacuum sweeper:</u>	<u>69,240 lbs</u>
	Total lbs of debris removed:	561,040 lbs
Data Recorded	Total broom miles swept by mechanical sweeper:*	3,230 mi
	Total broom miles swept by regenerative-air sweeper:	2,528 mi
	<u>Total broom miles swept by vacuum sweeper:</u>	<u>745 mi</u>
	Total broom miles swept:	6,503 mi
Data Recorded	Total lbs of debris removed by mechanical sweeper/mile swept:	72 lbs/mile
	Total lbs of debris removed by regenerative-air sweeper/mile swept:	102 lbs/mile
	<u>Total lbs of debris removed by vacuum sweeper/mile swept:</u>	<u>93 lbs/mile</u>
	Average lbs of debris removed /mile swept:	89 lbs/mile
Recommended Data	<ul style="list-style-type: none"> • Cost of sweeper repairs/maintenance (Outcome Level 1) • Total pounds of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4) • Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) • Post-sweeping COC concentrations in runoff (Outcome Level 4) • Cost of vacuum-assisted sweepers (Outcome Level 1) • Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1) 	

*"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 was to investigate the effectiveness of vacuum-assisted street sweepers versus mechanical sweepers, based on data and information collected throughout the project. The data was also 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 and training of sweeper 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 561,040 lbs of debris was removed by all three sweeper types during the two-year study in the Mission Bay and La Jolla WMA, over a total of 6,503 miles swept. This resulted in an average of 89 lbs of debris removed per mile swept.

Conclusions

The results of the study concluded that the vacuum-assisted sweepers are generally more effective at removing both debris and heavy metals from road surfaces, especially on flat routes. However, the vacuum sweepers performed equally as well as the City's conventional mechanical sweepers on hilly routes. Furthermore, it was determined that the vacuum sweepers are more effective at removing debris and metals with aggressive (i.e., twice per week) sweeping. Specifically, data collected during the pilot study indicated that the mechanical sweepers did not remove as much debris or metals when operated at an increased frequency. Finally, wet weather monitoring indicated that street sweeping is an effective BMP for improving water quality as the data showed direct improvements to runoff collected at inlets along swept roads versus those roads that were not swept. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

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

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) completed a municipal rain barrel installation and downspout disconnect project that reduced pollutant loading at municipal facilities. The municipal rain barrel installation and downspout disconnect project consisted 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. The project included site evaluations and selections, the purchase of rain barrel/downspout disconnect systems and planter boxes, system installation, wet-weather monitoring and effectiveness assessments.

In order to select appropriate sites for this pilot project, the City used the prioritization process outlined in its *Strategic Plan for Watershed Activity Implementation* to target high priority areas within the Mission Bay and La Jolla WMA. The site selection process was long and iterative. Field reconnaissance was required to identify sites within the Mission Bay and La Jolla WMA with adequate roof gutters, downspouts, and locations where rain barrels would be installed to capture flow. Sites were 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 education/outreach opportunities.

Based on the prioritization plan and field reconnaissance, a service building at the Rose Canyon Operations Yard was selected because it is located in one of the highest priority sectors of the Mission Bay and La Jolla WMA for potential pollutant loading. Through a partnership with USCD, a second site was selected at the Scripps Institute for Oceanography because of its location within the La Jolla Area of Special Biological Significance (ASBS).

In April 2009, a City-approved contractor installed four rain barrel systems at the operations yard. One 75-gallon rain box and concrete planer system was installed and connected to an existing downspout at four locations around the main service building. Each system utilizes an automated timer and pump to release captured runoff from the rain box to the concrete planter.

At the Scripps Institute for Oceanography, one 75-gallon rain box and concrete planer was installed and connected to an existing downspout of a service building near the pier. This system also utilizes an automated timer and pump to release captured runoff from the rain box to the concrete planter.



Rain Box and Planter at Scripps site

A one page informational flyer regarding the rain barrel pilot project was developed in June 2009. The flyer was distributed to all participating municipal sites to be made available to the public. In addition, a brief description of the pilot project and a PDF version of the informational flyer were posted on the City's *Think Blue* website during the first quarter of FY 2010.

During FY 2010 the City assessed the effectiveness of the rain barrel/rain harvesting systems at the Scripps Institute of Oceanography. Assessment could not be completed for the Rose Canyon site because access issues prevented the collection of the necessary data. Ultimately, the City would like to incorporate the use of these LID techniques into a residential program that may include incentives for implementing these systems on a larger scale. However, this phase of the project is now complete, and will no longer be included in future reporting updates.

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 was completed by the first quarter of FY 2008. Initially, the project was scheduled for completed by the fourth quarter of FY 2008. However, planning, site selection, and procurement of the rain barrels took longer than expected. Product screening for the rain barrels and concrete planters was completed in the first quarter of 2008. Procurement of rain barrels, planter boxes and rain chains concluded by the second quarter of 2009. The installation contract was awarded and approved by City Council during the second quarter of FY 2009. A pre-construction meeting was held with the contractor in March 2009. Installation of all systems occurred in April 2009. Wet-weather monitoring was performed from October

2009 to April 2010. Assessment and final reporting for this program concluded in June 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals
- 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 addressed these high priority water quality problems by reducing runoff volume via capture, retention and infiltration.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla		
MUNICIPAL RAIN BARREL INSTALLATION AND DOWNSPOUT DISCONNECT PROGRAM		
Assess the Efficiency and Effectiveness of Rain Barrel Water Collection Containers at Reducing Runoff		
Management Questions	<ul style="list-style-type: none"> • What is the effectiveness of rain barrel/downspout disconnect systems in reducing pollutant loads and storm water runoff volume? • What are the potential pollutant load and volume reductions for the three system configurations tested? • Which system configuration is the most cost-efficient? 	
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Pollutant load reductions due to rain barrel/downspout disconnect installation • Runoff reduction due to rain barrel/downspout disconnect installation 	
Cost Data¹	Cost of site preparation, installation and start-up for Scripps site	\$4,720
	Cost of operation and maintenance evaluation for Scripps site	\$125

¹ The data recorded does not include information for the Rose Canyon site.

	Cost of effectiveness monitoring for Scripps site	\$3,421
Data Collected At Scripps Site	Number/type of barrels installed (Outcome Level 1)	1 system
	Volume of storm water captured/attenuated (Outcome Level 4)	67.8 cu ft over two storm events
	Average concentrations of metals in rainwater or runoff ($\mu\text{g/L}$) (Outcome Level 4)	11 $\mu\text{g/L}$ Cu 1 $\mu\text{g/L}$ Pb 5,693 $\mu\text{g/L}$ Zn
	Pollutant load reductions for metals for each system configuration (grams) (Outcome Level 4)	0.2 grams of zinc

Objectives

The goal of the rain barrel and rain harvesting assessment was 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

The pilot project was assessed in FY 2010 based on monitoring data from two storm events collected over one wet-weather season. The one system at Scripps captured and attenuated 67.8 cu ft of rainwater over the two monitored storm events. The average pollutant concentrations of the runoff from corrugated metal roof were 11 $\mu\text{g/L}$ for copper, 1 $\mu\text{g/L}$ for lead, and 5,693 $\mu\text{g/L}$ for zinc. Over the two monitored storm events, the 75-gallon capacity gravity-flow planter box system at Scripps (UCSD-1) resulted in load reduction of 0.2 grams of zinc and no measurable reductions of copper.

The total cost of installation, operation, maintenance, and effectiveness assessment for the system at Scripps was approximately \$8,266.

Assessment data at this site shows that the gravity-flow system configuration, consisting of a rain barrel and/or downspout disconnect that discharges to adjacent landscaping, is more effective and reducing pollutant loads and attenuating wet weather flows than other systems tested. Overall, the study found that gravity-flow systems can attenuate and infiltrate up to six times their capacity in storm water runoff, in addition to capturing and redirecting pollutants away from the MS4. Furthermore, this configuration was the least expensive of the three tested, which makes it the most cost-efficient. Water quality monitoring data also confirmed that buildings with copper or galvanized metal roofs represent significant sources of copper and zinc, respectively.

Conclusions

Assessment data shows that rain barrels and downspout disconnects are a low-cost, effective BMP for both attenuating storm water flows and reducing pollutant loads. Although less effective than gravity-flow systems at addressing pollutant loads, rain barrel and/or downspout disconnect systems with planter boxes are a viable option for sites lacking adjacent pervious areas. Based on an analysis that demonstrates that the

activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

TITLE: Osler Street Hydrodynamic Separator Installation Project
ID NUMBER: MB-1012

ACTIVITY IMPLEMENTATION

Osler Street is located on the Northern end of Linda Vista Park in the Mission Bay and La Jolla 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 hydrodynamic separator will be used to reduce the amount of trash, sediment, oils and grease that makes its way into the storm drain system. 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.

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. Design began February 2010 and is anticipated to continue through FY 2011. Construction is expected to be completed in FY 2013. 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

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem, and recommend 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

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

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, which includes a total of 11 locations from La Jolla Point to Ocean Beach, will be operational in August 2009.

Phase IV focuses on the La Jolla Area of Special Biological Significance (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 by the Storm Water Department's General Fund contributions. The State suspended many grant programs including the Consolidated Grants Program. The State has since been received federal American Recovery and Reinvestment Act (ARRA) stimulus funds and has contacted UCSD regarding restarting the projects with ARRA funds.

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

Design was completed in November 2009. The project began the process for advertising for construction bids in June 2010. It is anticipated that a contractor will be awarded the project in March 2011. Construction will follow but is expected to pause in May 2011 due to the summer beach moratorium. It is anticipated that construction will be completed in FY12.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City’s *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy metals and nutrients as high priority water quality problems in the WMA, and recommend 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

Watershed: Mission Bay and La Jolla	
LA JOLLA SHORES ASBS POLLUTION CONTROL PROGRAM (AKA LOW FLOW DIVERSIONS PHASE IV)	
Assess the Efficiency and Effectiveness of the Dry Weather Flow Diversions	
Management Questions	<ul style="list-style-type: none"> • What is the load reduction efficiency of the flow diversions? • How effective are these diversions at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reduction in priority pollutant loads
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., ensure the system upgrades are working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	<ul style="list-style-type: none"> • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1)

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

Design was completed in FY11. Construction is expected to begin in FY 2011 and finish in FY2012. 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 a portion of the conventional asphalt of the Kellogg Park parking lot with porous pavers 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 concept design for the western half of the parking lot was worked on in FY 2008. An additional conceptual design, showing pervious pavers installed in the north and south ends of the lot, was completed in FY 2009. The middle of the lot will be resurfaced with conventional asphalt. 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 Mission Bay and La Jolla Watershed Management Area (WMA).

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

Design for this project was initiated in January 2009. Design was completed in February 2010. The process of advertising the project for construction began in March 2010 and the award of the project is expected in November 2010. Construction is anticipated to finish before the end of FY 2011. 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

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, heavy

metals and nutrients as high priority water quality problems, and recommend 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

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

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 Low Impact Development (LID) Best Management Practice (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 heavy 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 Mission Bay and La Jolla WMA.

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 a bacteria treatment system. From this system, 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 85th 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 Best Management Practice (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 85th 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 and La Jolla WURMP. In the latter half of FY 2008, a site was selected and conceptual design was completed.

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the City’s Engineering and Capital Projects Department in September 2008 for the purpose of managing the project through final design, construction and project closeout. The project completed preliminary engineering and transferred to design in February 2010. The project is currently in the process of hiring a design consultant. Construction is anticipated to be completed in FY 2014.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both 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* identify bacteria as a high priority water quality problem, and recommend 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

Watershed: Mission Bay and La Jolla BANNOCK AVENUE STREETScape ENHANCEMENT & BACTERIA TREATMENT PROJECT Assess the Efficiency and Effectiveness of the Design and Construction of the Enhancement and Bacteria Treatment Project	
Management Questions:	<ul style="list-style-type: none"> • What is the bacteria load reduction efficiency? • How effective are the catch basin, storm drain and trash segregation unit installations at reducing loads of priority pollutants?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reduction in priority pollutant loads
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., ensure the treatment is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Recommended Data	<ul style="list-style-type: none"> • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on implementation and maintenance (Outcome Level 1) • Dataset of load contributions for specific activities (Outcome Level 4)

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 preliminary engineering phase and has not been implemented; 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 Mission Bay and La Jolla WMA.

The project did not advance in FY 2009. It is currently on hold due to limited resources that have been allocated to other watershed activities which are moving forward.

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, but the project was almost immediately put on hold because staff time and resources were allocated to other high-priority projects and significant activities as outlined in the City’s *Strategic Plan for Watershed Activity Implementation*. This project will begin moving forward again in FY11 and staff is currently researching sites; however, a suitable location may or may not be located in this WMA.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City’s *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) identify bacteria, metals and nutrients as high priority water quality problems, and recommend implementing load reduction/source abatement activities to address them. 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

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

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: 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 became operational in August 2009. The warranty period on the construction will expire in August 2010.

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 operational and are expected to be out of the warranty period in early FY 2010.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend 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

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

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

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. An effectiveness assessment will be conducted.

Conclusions

Phase III projects have been operational since early FY 2010. 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: 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 (Area of Special Biological Significance (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 FY 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.

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

The project was transferred to the Preliminary Engineering section of the Engineering & Capital Projects Department in September 2008 for the purpose of managing the project through design, construction and project close out. Preliminary engineering was completed in April 2009 and the project was transferred to design in June 2009. A design consultant was hired and the project is currently working on 30% design. Design is anticipated to finish in April 2011 with construction finishing in November 2012.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Heavy Metals
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the City’s *Strategic Plan for Watershed Activity Implementation* identify bacteria, metals and nutrients as high priority water quality problems in the WMA, and recommend 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

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

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. 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 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) as well as the design and environmental costs for MBSIS. 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. The matching funds for the grant are being paid by the Deferred Maintenance Bond (Bond).

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

Upon receiving enough funding to move forward, the project advertised for construction bids in November 2009. The project was awarded to the lowest responsible bidder in June 2009. Construction is anticipated to begin in August 2010 and continue until May 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

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

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

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

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: Lindbergh Park Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment
ID #: MB-1022

ACTIVITY IMPLEMENTATION

This project will implement a proprietary inlet treatment device at Lindbergh Park. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

- None

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in late FY 2011. Construction is anticipated in FY 2015.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City’s *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area identify bacteria and nutrients as high priority water quality problems throughout the Mission Bay and La Jolla WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
<i>Lindbergh Park Limited Low Flow Storm Drain Inlet</i>	
Management Questions	<ul style="list-style-type: none"> • What is the bacteria and nutrient load reduction efficiency?

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

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis and Results

This project is still in the preliminary engineering phase and has not been implemented; 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: La Jolla Shores Lane Limited Low Flow Storm Drain Inlet Multi-Pollutant Treatment

ID #: MB- 1023

ACTIVITY IMPLEMENTATION

This project will implement a proprietary inlet treatment device at the La Jolla Shores Lane. This inlet device is a modular wetland filtration device which uses a combination of biological and engineered media to treat multiple pollutants in storm water runoff. The runoff enters the device through the storm drain inlet, flows through the filtration media, and discharges back into the storm drain.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks TMDL
- ASBS Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

The concept design for this project was completed in June 2010. Transfer to the Engineering & Capital Projects Department for design and construction is anticipated in late FY 2011. Construction is anticipated in FY 2015.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify heavy metals, nutrient, and bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla

LA JOLLA SHORES LANE LIMITED LOW FLOW STORM DRAIN INLET

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

Objectives

The goal of this assessment is to determine the project's effectiveness and efficiency for reducing pollutant loads with the installation of proprietary devices such as engineered wetlands.

Analysis and Results

This project is still in the preliminary engineering phase and has not been implemented; 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: Median Sweeping Pilot Study
ID NUMBER: MB-1024

ACTIVITY IMPLEMENTATION

During FY 2010, the City of San Diego (City) implemented a one-year pilot study to assess the effectiveness of modifying its street sweeping program to include roadway medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. The pilot study specifically focused on assessing the potential water quality benefits, cost-efficiency, logistical constraints, and public outreach requirements associated with this proposed programmatic change to the City's street sweeping program.

The pilot study specifically looked at expanding current street sweeping operations to include medians and other non-traditionally swept thoroughfares adjacent to high traffic roadways. Implementation of this programmatic change allowed calculation of potential pollutant removal efficiency afforded by sweeper access to what was found to be heavily polluted areas.

The overall pilot study was designed to answer the following management questions:

- What is the relative cost-efficiency of integrating additional median sweeping into the City street sweeping program?
- What level and type of debris can be removed by sweeping high volume median areas?
- What level of metals removal benefit does median sweeping provide?
- What type of sweeping equipment optimizes debris removal in or on high volume median areas?

This pilot study was used to determine whether sweeping medians improves the effectiveness of street sweeping activities. Water quality monitoring and/or debris volume monitoring was conducted to allow for assessment. This activity took place in multiple watersheds, including La Jolla Village Drive in the Mission Bay and La Jolla WMA.

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 providing a phased approach. The Median Sweeping Pilot Study was piloted first to determine whether median sweeping improves the effectiveness of street sweeping activities before being considered for broad scale implementation.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Planning began in FY 2009 and continued into the first quarter of FY 2010. Implementation and assessment took place during FY 2010. This project is complete, and will no longer be included in future reporting updates.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* identify heavy metals as a high priority water quality problem, and recommend implementing load reduction/source abatement activities to address it. Median sweeping targets metals on City streets.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MEDIAN SWEEPING PILOT STUDY	
Assess the Effectiveness of Sweeping Medians on Improving Street Sweeping Activities	
Management Questions	<ul style="list-style-type: none"> • What is the relative cost-efficiency of integrating median sweeping into the City street sweeping program? • What level and type of debris can be removed by sweeping high volume median areas? • What level of metals removal benefit does median sweeping provide? • What type of sweeping equipment optimizes debris removal in or on high volume median areas?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction for bacteria and sediment based on monitoring information
Assessment Method(s)	<ul style="list-style-type: none"> • Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff) • Tabulation (e.g., amount of money to post additional signage and sweep medians) • Quantification (e.g., load estimate comparison pre and post-signage)

Data Collected¹	<ul style="list-style-type: none"> Total pounds of debris removed (Outcome Level 4) 	<ul style="list-style-type: none"> 32,000 lbs
	<ul style="list-style-type: none"> Total broom miles swept (Outcome Level 4) 	<ul style="list-style-type: none"> 30.5 miles
	<ul style="list-style-type: none"> Frequency of removal correlated to pounds of debris removed (Outcome Level 1 and 4) 	<ul style="list-style-type: none"> 568 lbs/mile swept²
	<ul style="list-style-type: none"> COC concentrations in debris collected (Outcome Level 4) 	<ul style="list-style-type: none"> See report posted at http://www.sandiego.gov/thinkblue/special-projects/streetsweeping.shtml

¹Data, except as noted, is from two routes partially within the WMA.

² As calculated per combined route data for baseline sweeping.

Objectives

The goal of the assessment was to investigate whether sweeping medians improves the effectiveness of the City’s current street sweeping activities.

Analysis and Results

A baseline sweep of the four pilot median areas, which included two routes in the Mission Bay and La Jolla WMA, along La Jolla Village Drive, Balboa Ave, Clairemont Mesa Blvd, and Morena Blvd,, resulted in the removal of 32,460 lbs of debris over a total of 58 miles with an average of 560 lbs of debris removed per mile swept. After the initial baseline sweep, each route was swept four more times over an approximate three month period (with roughly three weeks between sweeps). A total of 32,560 lbs of debris was removed over these three months over all four routes. Along one route, with approximately half of the 14.6 mile route in the Mission Bay and La Jolla WMA, over 19,000 lbs of debris was removed during the entire study period. Along the second route, with approximately three-fourths of the 15.9 mile route in the WMA, over 13,000 lbs of debris was removed. The remaining routes were not in the WMA.

Conclusions

The study results indicate that median sweeping has the potential to remove significant amounts of street debris from high-traffic City roadways. The initial baseline median sweep collected 3-5 times more debris than the subsequent 3-week interval sweeps. This suggests that there is a significant buildup of debris adjacent to median areas. Furthermore, debris sampling confirmed the presence of heavy metals, nutrients and hydrocarbons in the debris collected. This leads the City to believe that median sweeping may provide a significant benefit for controlling the input of high priority water quality problems from impacting receiving waters. Based on an analysis that demonstrates that the activity resulted in a measureable pollutant load reduction (Outcome Level 4) during the reporting period, the Copermittees request that the Regional Board accept this activity as a watershed water quality activity for FY 2010.

TITLE: Pet Waste Bag Dispenser Program
ID NUMBER: MB-1025

ACTIVITY IMPLEMENTATION

This activity will target areas frequented by pet owners such as apartment complexes, condominiums, mixed-use locations, and public right of way in the Mission Bay and La Jolla Watershed Management Area (WMA). When pet waste bags are available, pet owners are more apt to pick up pet wastes and dispose of it properly, thereby eliminating pollutants from the environment and potentially from receiving waters. Pet waste bag dispensers will be installed in areas lacking them or in need of additional ones.

This project was in its planning stage during FY 2010. Watershed maps were developed and utilized to assist in the selection of potential installation locations. Criteria used were:

- a) Canine related activity, e.g. dogs being walked
- b) Cleanliness (observed pet waste)
- c) Presence of trash receptacles
- d) Presence of pet waste bag dispensers
- e) Areas draining to a water body impaired for bacteria, phosphorus or nitrogen
- f) Potential for Partnership
- g) Areas of Complaints/Chronic Pet Waste Observations

Three watershed management areas (WMAs) were selected for implementation in FY 2011: Mission Bay and La Jolla, San Diego Bay, and San Diego River.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning and design started in FY 2010. Program implementation is anticipated to occur in FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City’s *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria 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 exposed pet waste carrying bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
PET WASTE BAG DISPENSER PROGRAM	
Assess the Effectiveness of Pet Waste Bag Dispensers	
Management Questions	<ul style="list-style-type: none"> • Does the implementation of dog waste bag dispenser stations help reduce bacteria? • What is the estimated load reduction efficiency of implementing dog waste bag dispenser stations? • Can the number of pet waste bags dispensed be related to a reduction in bacteria in run-off from the park?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Number of pet waste bags distributed • Reduction in bacteria in run-off from the park
Assessment Method(s)	<ul style="list-style-type: none"> • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Quantification (e.g., use number of pet waste disposal bags and their average weight to calculate estimated load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials, amount of money spent on pet waste disposal bags)
Recommended Data	<ul style="list-style-type: none"> • Change (%) in load reduction pre and post implementation (Outcome Level 4) • How much money spent on implementation and maintenance • Dataset of load contributions for specific activities (Outcome Level 4) • Change in use of pet waste disposal bags (Outcome Level 3)

Objectives

The goal of this assessment is to determine the effectiveness and efficiency of installing pet waste bag dispensers to reduce bacteria loading and improve water quality.

Analysis and Results

The pilot project was not in active implementation during FY 2010. Program launch is anticipated to occur in FY 2011.

Conclusions

Effectiveness and efficiency will be determined by comparing load reduction values (determined via monitoring efforts) to the cost of installing and maintaining the pet waste bag dispensers. Conclusions will be made after the assessment is complete.

TITLE: Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials

ID #: MB-1026

ACTIVITY IMPLEMENTATION

Previous City of San Diego (City) investigations determined that copper from automotive brake pads was a major contributor of dissolved copper, a high priority water quality pollutant, to San Diego waterways within City jurisdiction. Because the regulation of automotive brake pads is beyond the authority of any local government, the City collaborated with other California local governments, through California Stormwater Quality Association, to achieve true source control by reducing copper at its source. It was determined that the best way to achieve this goal was through the development of legislation, mandating reductions and then replacement of copper in automotive brake pads.

During this reporting period, the City of San Diego assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage. Due to the automobile manufacturers renewed interest in this bill, negotiations were re-initiated to obtain support from all stakeholders, as required by the governor. The bill was rewritten multiple times and discussed by all parties before it was presented to Assembly subcommittees for review and approval. After the reporting period, SB346 was passed by both houses, signed into legislation by the governor on September 25, 2010, and incorporated into the California Health and Safety Code, Article 13.5, commencing with Section 25250.50.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

SB346 calls for reductions of copper down to 5% by weight by 2021 and 0.05% by 2025. It is anticipated that copper loads from automotive brake pads will decline after the first reduction date in 2021.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- CASQA - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development, participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill's passage.
- Coalition for Practical Regulation - assisted with writing the proposed Senate Bill, provided financial resources for technical experts to assist with its development,

participated in negotiations with the automobile and brake pad manufacturers, and provided lobbyist assistance to Senator Kehoe to obtain political support for the bill’s passage.

- Alameda County - provided financial resources for experts to assist with the bill’s development, and provided lobbyist assistance to obtain political support for the bill’s passage.
- Contra Costa County - provided financial resources for experts to assist with the bill’s development, and provided lobbyist assistance to obtain political support for the bill’s passage.
- Many San Diego Regional Copermittees provided letters in support of the legislation.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY The City’s *Strategic Plan for Watershed Activity Implementation* for the Mission Bay and La Jolla WMA identifies metals as a high priority water quality problem throughout the Chollas Creek WMA, and recommends implementing source control activities to address it. This activity’s objective is to reduce the amount of copper that reaches our storm drains and receiving waters to improve and restore water quality for our citizens.

EFFECTIVENESS ASSESSMENT

Watershed: San Diego Bay	
Source Control of Copper Water Pollutants, Senate Bill 346: Motor Vehicle Brake Friction Materials Removal of Copper in Automotive Brake Pads	
Targeted Measurable Outcome(s)	Evidence of reductions of copper starting in 2022.

Objectives

The goal of this legislation is to reduce the amount of copper released into the environment from automotive brake pads.

Analysis and Results/Conclusions

The authorization of this proposed legislation is expected to result in long-term reductions of copper from automotive brake pads to the environment.

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

ACTIVITY IMPLEMENTATION

The City of San Diego (City) retained a contract with a film production company to create three Think Blue Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled *Karma*, *Karma Second Chance*, and *Karma Tourist* and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change.

These PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Mission Bay Watershed Management Area (WMA) in FY 2009 and FY 2010. The PSA used humor to convey the importance of the public's part in the proper disposal of trash and the impacts litter and pollution have on our waterways and beaches. The PSAs were broadcast in both English and Spanish.

The City will continue to run the *Karma* public service announcements; however, this activity will no longer be included in future reporting updates.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

The PSAs were developed in FY 2007 and FY 2008 and were broadcast on several TV and radio stations throughout the Mission Bay WMA in FY 2009 and FY 2010.

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

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay WMA identify bacteria as high priority water quality problems in the WMA. The *Karma*, *Karma Second Chance*, and *Karma Tourist* Public Service Announcements 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

The City will continue to run the *Karma* public service announcements to educate the public, but no longer plans to use television advertising as part of its watershed program, therefore no assessment was conducted in FY 2010.

TITLE: Genesee Commercial CBSM Efforts
ID NUMBER: MB-2004

ACTIVITY IMPLEMENTATION

The City of San Diego's Storm Water Department, Pollution Prevention Division (City) has been using Community Based Social Marketing (CBSM) strategies since FY 2008 in attempt to increase knowledge and change behaviors among various target audiences. CBSM is an environmental social science method of outreach which includes comprehensive research, data gathering, and assessment measures to develop more effective outreach strategies. The City has implemented several pilot projects in various communities, and assessment has confirmed success in achieving pollution prevention awareness and behavioral change.

In FY 2010, the City conducted focus group research with three business types found along the Genesee Ave. corridor; restaurants, automotive shops and landscapers. The research planned for the Genesee area is currently on hold based on the focus group feedback and the creation of an implementation plan. If and when the project moves forward, research and outreach in the Genesee area will be initiated. Outreach interventions and assessment methods will then be developed based on the research findings.

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

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla Watershed Management Area (WMA) and the *Strategic Plan for Watershed Activity Implementation* identify bacteria and trash 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

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

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 and La Jolla Watershed Management Area (WMA). Construction may 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 may include public participation and outreach, education regarding structural interventions, 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 occurred in FY 2009 and FY 2010, with implementation, outreach, and evaluation planned for FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the *Strategic Plan for Watershed Activity Implementation* (Strategic Plan) identify bacteria and trash 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

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

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: Clean Construction Poster and Brochure Distribution
ID NUMBER: MB-2006

ACTIVITY IMPLEMENTATION

The City of San Diego (City) printed an internally produced bilingual (English/Spanish) erosion and sediment control brochure and poster that are generally handed out to development applicants receiving a grading or public improvement permit from the City. The brochures and posters are also distributed by Storm Water Code Enforcement staff and Development Services inspectors when they inspect development or construction sites. The brochure is a tri-fold that provides information about storm water regulations, creating and maintaining a SWPPP and proper BMPs. The poster contains the same information, and is large and laminated so that it can be posted outdoors or indoors. The brochure and poster serve as constant reminders to construction managers and workers about storm water issues and Best Management Practices (BMPs) for construction. Photos on the brochure and poster 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 erosion and sediment control poster 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 internally with Development Services Department staff to distribute the poster in FY 2010 to development applicants receiving a grading or public improvement permit from the City, as well as facilities that were subject to inspections. The total number of posters distributed in the Mission Bay and La Jolla Watershed Management Area (WMA) was 68. The number of posters distributed by Storm Water inspectors was 9 (7 in English and 2 in Spanish).

At the current time, this activity 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 have been distributed over a number of years with positive feedback from users, so the City plans to continue their distribution. The City will discontinue reporting on this activity after FY 2010.

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 2011, but will not be reporting on it in the future.

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

The City distributed approximately 68 erosion and sediment control brochures and posters in FY 2010. After FY 2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

TITLE: Restaurant Best Management Practices Booklet Distribution
ID NUMBER: 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 2010, and continue to be distributed.

Storm Water Pollution Prevention Division staff coordinated with Food Establishment Wastewater Discharge (FEWD) Program staff for the continued distribution of the booklet in FY 2010 to City-permitted facilities. The City distributed 576 booklets in the Mission Bay and La Jolla WMA.

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. The booklets will continue to be distributed in the future; however, the City will not be reporting on this activity.

TMDL APPLICABILITY

- 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 2011 to City-permitted facilities but will discontinue the reporting of this activity.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the Collective Watershed Strategy for the Mission Bay and La Jolla WMA and the City's *Strategic Plan for Watershed Activity Implementation* identify bacteria as a high priority water quality problem throughout the WMA, and recommend 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

In FY 2010, the City distributed 576 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. After FY2010, the City will no longer report on the distribution of the booklet, and is not requesting credit as a watershed education activity due to the strict assessment requirements in the Municipal Permit for education activities.

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

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in Mission Bay, the City of San Diego's (City's) *Think Blue* program implemented a summer outreach campaign in FY 2007 that targeted key sources of bacteria pollution in Mission Bay. In FY 2010, the campaign provided direct outreach during the major summer holidays (Independence Day 2009, Labor Day 2009 and Memorial Day 2010) to Mission Bay visitors, specifically recreational vehicle (RV) users and boaters. The outreach program is held according to the summer holidays in a calendar year, but reported according to Fiscal Years. The education focused on reducing pollution and bay closures as a result of contamination due to bacteria sources. In addition, direct outreach and materials distribution were conducted to marinas located in Mission Bay as an additional way to reach the target audience.

During the summers of 2009 and 2010, education and outreach included:

- An outreach greeter station (booth) was staffed with *Think Blue* / Storm Water Department 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 Memorial Day, 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.
- Specific on-site outreach was conducted with marinas and boating businesses located in and around Mission Bay. Each operator was offered pollution prevention postcards and posters that targeted BMP specific to sources of pollution generated by boats.
- Specialized postcards targeting each Mission Bay user group (RV users, boaters, and general visitors) were developed and available in both English and Spanish.
- Mobile ad display was visible at the entrance of Mission Bay East during each of the three Holiday weekends (Memorial Day, Independence Day and Labor Day).

TMDL APPLICABILITY

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

TIME SCHEDULE FOR IMPLEMENTATION

Independence Day 2009, Labor Day 2009 and Memorial Day 2010: An outreach greeter station staffed with *Think Blue* staff, consultants and representatives from San Diego Coastkeeper was located in East Mission Bay, just north of the Visitor's Center and adjacent to the De Anza boat launch. Public education materials were distributed, including *Think Blue* pollution prevention education materials (such as brochures and tip

cards), along with BMP giveaways, such as brooms and dustpans. A Mobile ad was also displayed at the entrance of Mission Bay East during the holiday weekends.

July 2009 – October 2009: Direct contact was made with marinas operating in and serving Mission Bay. Collaboration was established in order to distribute specialized pollution prevention BMP postcards and posters targeting boaters/boat owners.

This activity is scheduled to continue in FY 2011 (summers of 2010 and 2011).

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

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 potentially result in both increased direct knowledge and awareness regarding bacteria and trash as a vector, and indirect future load reduction of trash and debris as they relate to bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla	
MISSION BAY FOCUSED OUTREACH	
Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness	
Management Questions	<ul style="list-style-type: none"> • What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys
Assessment Method(s)	<ul style="list-style-type: none"> • Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed)

Watershed: Mission Bay and La Jolla							
MISSION BAY FOCUSED OUTREACH							
Assess the Efficiency and Effectiveness of Using Transit Shelter and Billboard Advertisements to Raise Awareness							
Data Recorded	<i>Think Blue</i> FY 2009 Mission Bay Outreach Studies						
	<i>Holiday</i>	<i>Number of Visitors to Outreach Booth</i>	<i>Number of passers-by Observed</i>	<i>Number of Visitors Approached</i>	<i>Observed Boat Launches</i>	<i>Observed Parked RVs</i>	<i>Total Materials Distributed</i>
	Independence Day 2009	213	2,500	71	102	117	636
	Labor Day 2009	171	1,900	102	122	75	519
	Memorial Day 2010	198	2,000	85	48	80	598
	Estimated total visitors (impressions) exposed to the <i>Think Blue</i> Booth in Mission Bay in FY 2010 (Outcome Level 1)						6,500
	Estimated total visitors (impressions) exposed to the <i>Think Blue</i> Mobile Ad during Mission Bay Focused outreach (9 days) in FY 2010 (Outcome Level 1)						209,249
	Number of marinas and boating businesses who participated in Mission Bay Outreach Campaign in FY2010 (Outcome Level 2)						42
	Number of boating outreach materials distributed to businesses (Outcome Level 1)						1750
	Number of Surveys administered in FY 2010 (Outcome Level 1)						251
	Percentage of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3)						80%
Percent increase from FY 2009 to FY 2010 of individuals surveyed who reported engaging in a behavior that would prevent pollution (Outcome Level 3)						10%	

*Includes walkups, visitors approached by staff and materials given to park rangers and lifeguards to distribute.

Objectives

The goal of this activity is increasing knowledge and awareness in the target audience (Marinas, RVers, boaters and visitors in Mission Bay) in order create positive behavioral change that will reduce the presence of bacteria and gross pollutants in Mission Bay. Assessment was conducted to determine the effectiveness of the FY 2010 outreach campaign on creating increases in knowledge and changes in behavior.

Analysis and Results

The City's *Think Blue* campaign implemented an on-going summer outreach campaign in FY 2010 that targeted key areas of concern for pollution in Mission Bay. The campaign was conducted during the major summer holidays (Independence Day 2009, Labor Day 2009 and Memorial Day 2010) 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 beach closures in Mission Bay. Examples of outreach activities included educational material distribution at the *Think Blue* booth, mobile ad display at the entrance of East Mission Bay, direct outreach to boaters and RV users in the area, and direct outreach to local marinas and boating businesses located in Mission Bay.

During FY 2010, approximately 6,500 visitors to East Mission Bay were exposed to *Think Blue's* Focused Mission Bay Outreach, which was promoting the message, "Help Keep Mission Bay Clean and Safe." Over 582 individuals approached the booth to speak with staff; over 258 Bay users were approached by staff, with over 1,700 people receiving pollution prevention outreach materials and items. The *Think Blue* Mobile Ad that was parked in the Mission Bay area at the entrance of East Mission Bay during the three holidays (9 days total) is estimated to have been viewed by 209,249 individuals based on traffic and pedestrians counts.

FY 2010 was the fourth year that *Think Blue* conducted Focused Mission Bay Outreach. *Think Blue* engaged in 9 days of direct outreach due to the fact that all three holidays in FY 2010 encompassed 3-day weekends. The alcohol beach ban that was approved during FY 2009, seems to continue to impact beach attendance, with decreased levels shown across City beaches. FY 2010 was the third year that *Think Blue* performed survey assessments. Of the 251 individuals who completed the assessment survey, 80% reported taking steps to prevent pollution. This is an increase from 70% in FY 2009. This result can be considered an indicator of a Level 3 Outcome.

Conclusions

Mission Bay Focused Outreach is an effective way to reach visitors in East Mission Bay during the major summer holidays. The large numbers of impressions (over 6,500 exposed to *Think Blue* booth, and 209,249 exposed to mobile advertising), direct contacts (approx 600 persons), educational materials distributed (1,742 items) and survey participation in FY 2010 support the assertion that the focused outreach program is effective at 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 2011, to include hosting the outreach booth and continued distribution of the specialized informational postcards tailored to RV users, boaters, and general visitors. Assessment surveys will continue and increased effort to gather statistically valid information regarding knowledge, attitudes and pollution prevention behavior of Mission Bay visitors. Outreach in FY 2011 will continue with expanded 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: San Diego Crew Classic
ID NUMBER: MB-2011

ACTIVITY IMPLEMENTATION

In order to prevent bacteria pollution in the Mission Bay Management Area (WMA) in FY 2010, the City of San Diego's *Think Blue* program participated in the San Diego Crew Classic, a rowing regatta held in Crown Point Shores in Mission Bay. The outreach campaign provided direct outreach dedicated to preserving water quality in San Diego, primarily targeting key sources of bacteria in Mission Bay. The goal was to encourage everyone to take positive steps in preventing pollution from entering the storm drain system and ultimately Mission Bay. With more than 15,000 people in attendance, our presence provided a great opportunity to increase direct public education and interact with citizens and visitors about the benefits of pollution prevention.

Think Blue participated in the event by hosting a booth during both days of the event. Think Blue once again served as the official Program Sponsor in FY 2010, as well as the Trophy Sponsor of the City of San Diego Cup, also known as the Men's Club Championship. The outreach booth provided direct education and materials regarding water quality protection. Materials distributed included brochures and tip cards, along with best management practice (BMP) items such as dust pans, pet trash bag containers and pet trash bag refills that help promote behavior change. Promotional giveaways included eco-friendly pens, Frisbees, backpacks, and rally towels.

Other outreach items and activities included:

- Specialized postcards targeting Mission Bay RV users and boaters, which were available in both English and Spanish
- Placement of a 10 foot Think Blue banner at the official race finish line which was visible on camera on national TV
- A Think Blue PSA was broadcast multiple times on the JumboTron screen which was broadcasting live coverage of the event
- Over 50 recycling bins at the event were marked with Think Blue stickers that indicated, "Recycle Here"
- Think Blue donated the Think Blue Hospitality tent for use by several local non-profits such as Coastkeeper and San Diego Ocean's Foundation so that they could provide education and information to spectators at no charge
- Event surveys were collected from over 250 booth visitors to gather assessment information about knowledge, awareness, attitudes and behaviors regarding storm water pollution prevention

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Think Blue plans to participate in the Crew Classic during FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Mission Bay stakeholder groups (OMBAC, ZLAC Rowing Club, Mission Bay Planning Committee, etc.)
- Several local non-profit corporations (San Diego Coastkeeper, San Diego Ocean’s Foundation, I Love A Clean San Diego, etc.)

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City’s *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the WMA, and recommend implementing load reduction/source abatement activities to address them. Implementation of this outreach effort will result in both increased knowledge and awareness regarding bacteria and trash as a vector and future load reduction of trash, debris and bacteria.

EFFECTIVENESS ASSESSMENT

Watershed: Mission Bay and La Jolla							
SAN DIEGO CREW CLASSIC							
Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.							
Management Questions	<ul style="list-style-type: none"> • What change in awareness /attitude regarding bacteria and trash pollutants was achieved after implementation? • How efficient is this education activity based on total cost versus number of people (targeted audience) reached? 						
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reach pre-set percentage of residents within target watershed • Increased level of knowledge/attitude based on post-activity surveys 						
Assessment Method(s)	<ul style="list-style-type: none"> • Survey (e.g., administer survey to assess knowledge, attitude and willingness to prevent pollution of participants) • Quantification (e.g., number of residents/ visitors reached and number of materials distributed) 						
Data Recorded	Think Blue FY 2010 Crew Classic Event						
		<i>Number of Booth Visitors</i>	<i>Gender</i>	<i>Number of Surveys Given</i>	<i>How have you heard about Think Blue?</i>	<i>Is storm water treated?</i>	<i>Total # of Materials Distributed</i>
	Crew Classic, 2010	1,000+	Approx 40% Male 60% Female	8 General (Span) 135 Pet <u>117 Auto</u> 260 Total	30% TV/radio 41% Events 29% Other	51% No 11% Yes 38% DK	2,429
	Estimated total visitors exposed to the <i>Think Blue</i> Booth at the Crew Classic in FY 2010						15,000

Watershed: Mission Bay and La Jolla		
SAN DIEGO CREW CLASSIC		
Assess the effectiveness of direct public outreach to increase awareness about storm drain pollution and prevention.		
	(Outcome Level 1)	
	Number of surveys administered in FY 2010 (Outcome Level 1)	260
	Percentage of individuals surveyed that believed that pet waste contributes to storm water pollution (Outcome Level 2)	95%
	Percentage of individuals surveyed that believed that automotive fluids contribute to storm water pollution (Outcome Level 2)	100%
	Percentage of individuals able to name a concrete action (either general or automotive) to prevent storm water pollution (Outcome Level 3)	80%
	Percentage of individuals surveyed who reported picking up after their dog (always or sometimes) to prevent pollution (Outcome Level 3)	95%
	Percentage of individuals surveyed who reported that they would take steps (such as maintain their car, drive less and use drip pans) to prevent automotive pollution (Outcome Level 3)	77%

Objectives

The goal of this assessment was to determine community knowledge and awareness about storm water issues and whether or not residents and visitors would adopt non-polluting behaviors. Another goal was to create positive behavior change that will reduce bacteria and gross sediment in water bodies in the Mission Bay and La Jolla WMA.

Analysis and Results

The campaign targeted key audiences and areas of concern for pollutants in the Mission Bay WMA. The event provided direct outreach to residents living within the Mission Bay area as well as visitors to the event. It should be noted that this event is an international collegiate regatta (rowing competition), therefore although this event attracts a local crowd, many attendees are from other areas outside of San Diego.

A total of 260 Think Blue booth visitors completed the event survey assessment cards, comprised of general surveys, and surveys specific to pet waste and automotive pollution. Of the 260 surveys conducted, 8 were in Spanish by individuals who live in Mexico. Of the remaining 252 survey participants, 166 (66%) were from San Diego County, and the rest were from outside of San Diego County. Fifty percent of all survey participants knew that storm water wasn't treated, while 10% said it was treated and 37% stated that they didn't know. A total of 114 survey participants (44%) provided an address, e-mail, or phone number to receive more information and/or future Think Blue promotions.

General Survey Results

Eight participants completed the General Survey. All participants completed the survey in Spanish, and reported their residency as being in Mexico. 88% were male and 12% were female, and the average age was 20 years. Every participant responded to the question "What is the slogan asking you to do?" The most common responses were "General Environmental" (38%), and "Good Slogan/Message Quality" (25%). All of the respondents who answered this question believed that storm water was an important issue (Extremely important =13%= Very important = 75%, Somewhat important=12%).

Eighty-eight percent of respondents said that they were at least somewhat likely to take actions to prevent storm water pollution as a result of attending the event (Extremely Likely=13%, Very Likely=75%). All the participants (N=8) were able to name a concrete action they could take to prevent storm water pollution. The most common actions listed by participants were, “use trash can/don’t litter” (75%) and “keep clean (general)/don’t pollute” (25%).

Pet Waste Survey Results

Of the 135 Pet Waste Survey participants, 100% were completed in English. One hundred and thirty participants reported their gender. Of these, 37% were male and 63% were female, and the average age of participants was 35 years. Fifty-six percent of respondents said they do own a dog, and 132 people responded to the question “How often do you see dog waste in your community that is not cleaned up?” 97% said they do see waste that is not cleaned up (Always=8%, Often=21%, Sometimes=53%, Rarely=15%), and 3% said Never. Ninety-five percent said that dog waste contributes to pollution of local waterways (A lot=29%, Moderate=44%, Small amount=22%).

The largest percentage (88%) of respondents said that a correct method of disposing of pet waste is to put it in the trash can. 14% believe that it is correct to bury it, followed by 7% who said it is correct to leave it to decompose. When asked how often they clean up their own dog’s waste, 82% said always, and 13% said usually or sometimes. 5% said they never clean up their dog’s waste. Fifty-four people provided an answer as to why they didn’t pick up their dog waste in the past. The most common answers were; “Did not have bag/Ran out of bag” (43%), and “Never/I always pick it up” (17%).

Automotive Survey Results

Of the 117 individuals who took the Automotive Survey, 111 participants reported their gender (42% were male and 58% were female), and the average age of participants was 37 years. When asked how much automotive fluids contribute to pollution, 100% of respondents believed they do contribute at least some amount to pollution (A lot=70%, Moderate amount=27%, Small amount=3%). Respondents could check multiple answers when asked “Which of the following are correct methods for cleaning up automotive fluids?” Eighty-seven percent correctly responded that the best method is to soak it up with absorbent material and throw it in the trash, while 9% said a correct method is to hose it off immediately.

Seventy-four percent of respondents said that they do own a car, truck, or SUV, and 77% reported that a mechanic changes the oil in their car, followed by 14% who said they do it themselves. Seven percent reported that a friend or relative changes their oil. When asked “Where do you wash your car?” respondents could check multiple answers. The largest percentage (58%) said they use a carwash, followed by 34% who said they wash it in the street or driveway. Ninety-one respondents provided a concrete action they could take to prevent automotive pollution. The most common responses were “Maintain Auto” (11%), “Drive Less/Walk/Bike/Use Public Transportation” (10%) and “Use Absorbents/Drip Pans” (10%).

Conclusions

The San Diego Crew Classic attracted a large number of residents living in the local watershed areas as well as visitors from outside the area. *Think Blue's* booth provided a mechanism for continued outreach dedicated to preserving water quality in San Diego. The goal was to provide education to increased knowledge and awareness and encourage everyone to take positive steps in preventing pollution from entering the storm drain. With more than 15,000 people in attendance, the event provided a great opportunity to interact with citizens and visitors about the benefits of pollution prevention.

TITLE: Mission Bay and La Jolla Watershed Brochure
ID NUMBER: MB- 2012

ACTIVITY IMPLEMENTATION

The City of San Diego (City) and *Think Blue* will implement a new brochure program for the six (6) watershed management areas (WMAs) assigned to the City. These brochures will be used to inform San Diego residents on the benefits of taking steps to reclaim an environmentally and economically healthy watershed. The education pieces will help address high priority water quality problems in each WMA. It will also be used to make citizens aware of specific pollutants and ways individual action can be used to protect each water source as a way to promote a watershed stewardship (all individual actions within each watershed adds up in a cumulative way to influence the health of the water resource).

The main goals of the brochures are to capture the audience’s attention, enhance the public’s understanding of basic watershed principals, address the high priority water quality problems in each WMA, educate best management practices (BMPs) for future use, and encourage citizens to take positive steps in preventing pollution from entering the storm drain system.

The following WMAs will have a watershed specific brochure created:

- Tijuana River
- San Diego River
- San Diego Bay
- Mission Bay and La Jolla
- San Dieguito River
- Los Peñasquitos

TMDL APPLICABILITY

Brochures will target pollutants associated with TMDLs as applicable.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in FY 2009 and will continue through FY 2011. Implementation and distribution is expected to occur in late FY 2011.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

Watershed High Priority Pollutants of Concern					
Tijuana River	San Diego River	San Diego Bay	Mission Bay & La	San Dieguito	Los Peñasquitos

			Jolla	River	s
Bacteria	Dissolved Oxygen	Bacteria	Heavy Metals	Bacteria	Sediment
Nutrients	Bacteria	Gross Pollutants	Nutrients	Nutrients	Bacteria
Organic Compounds	Phosphorus	Metals	Bacteria		
Trace Metals	Turbidity	Oil/Grease			
Pesticides	Total Dissolved Solids	Pesticides			
Gross Pollutants		Sediment			
Sediment, TSS, Turbidity		Trash			

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

This activity will address the high priority water quality problems identified in both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for each of the Watershed Management Areas.

EFFECTIVENESS ASSESSMENT

Objectives

The goal of this assessment is to determine the effectiveness of the watershed brochure in increasing knowledge and awareness in each watershed to create positive behavioral changes that will reduce bacteria and gross pollutants. The City is planning a figurative assessment of this exercise. Assessment is still being developed for this activity. Potential assessment methods could include a focused evaluation with two target audiences in combination with various event booths (or workshops). Event attendees would be randomly selected to either receive or not receive the brochure, then asked to complete a response card. At a later point, they will be contacted and asked a series of questions about awareness, knowledge, and behavior to determine if the brochure had an impact.

Analysis and Results

An effectiveness assessment of this activity is not possible at this time because the watershed brochure has not yet been distributed.

Conclusions

The City completed two watershed brochures (Tijuana and San Diego River) in FY 2010 and will continue to create brochures for the remaining watersheds in FY 2011. Effectiveness assessments are scheduled to begin in FY 2011. This activity will be used as a watershed education activity as required by the Municipal Permit for education 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 during Phase I. 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. One activity is far enough into planning for a description to be provided, but locations are unknown. The Outdoor Water Conservation Rebate Program involved launching a city wide rebate program to assist residents and businesses conserve water by reducing the volume of irrigation and landscape runoff by incentivizing three irrigation modifications: the installation of irrigation smart controllers, micro-irrigation and turf conversion to low water use plants. Rebates are offered through a State of California grant and are available on a first come first served basis until funds are exhausted. Specific residential and commercial locations will be monitored to assess the efficiency of the program in reducing runoff volume and pollutant loads. Water quantity

monitoring (runoff volume) will be conducted both at the pre and post irrigation modification stage. The rebate program is scheduled to be implemented in FY11.

The remaining activities 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	Status
Outdoor Water Conservation Rebate Program	Smart Irrigation Control Incentive Program	Water Quality	Non-structural	Pesticides, bacteria, nutrients, heavy metals	Planning, Implementation, and assessment is anticipated to be completed in FY2013. WMA: TBD.
County Operations Center Green Roof Project Collaboration	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Erosion & Sediment Control Detention Basin	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment, TSS, Metals, Pesticides & Trash	Pre-planning
Green Roof Project	Roof Rain Harvesting	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Basin Plan Triennial Review	N/A	Monitoring	Non-structural	N/A	As needed
Targeted Mobile Hazardous Household Waste Collection Centers	Hazardous Waste Collection	Water Quality	Non-structural	Metals, Trash, Oil & Grease	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (1)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Residential Rain Barrel, Downspout Disconnect, and Xeriscaping Incentive Program (2)	Downspout Disconnect; Rain Barrel Incentives	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (1)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Rain Garden, Xeriscaping, and Landscape Filtration (2)	Rain Garden, Xeriscaping, and Landscape Filtration	Water Quality	Structural or Non-Structural	Targeted Multiple Pollutants	Pre-planning
Sediment Basin Endowment Fund (1)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning
Sediment Basin Endowment Fund (2)	Sediment Basin Endowment	Water Quality	Non-structural	Sediment	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Commercial Pest Control	Product Sub	Education	Non-Structural	Pesticides	Planning
Residential Pesticide Management	Product Sub	Education	Non-Structural	Pesticides	In progress through JURMP education program.
LID Regulatory Barriers and Solutions	Municipal Code Modification	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Roof Rain Harvesting/Incentives	Roof Rain Harvesting	Water Quality	Structural or Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Storm Drain Cleaning Pilot Project	Storm Drain Maintenance	Water Quality	Non-structural	Targeted Multiple Pollutants	Pre-planning
Targeted Behavioral Training (staff)	Targeted Behavioral Training (staff)	Education	Non-structural	Specific to Activity	Pre-planning
Rose Creek Homeless Reduction Program Sponsorship	Homeless Encampment Removal	Water Quality	Non-structural	Bacteria & Trash	Pre-planning
Enforcement Referrals	Enforcement Referrals	Water Quality	Non-structural	Specific to Activity	Pre-planning
Infiltration Vault/Pit Installation (1)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Infiltration Vault/Pit Installation (2)	Infiltration Vault/Pit	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Small Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (1)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (2)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning
Large Scale Storm Flow Storage and Multi-Pollutant Treatment System (3)	Large Scale Treatment Train	Water Quality	Structural	Targeted Multiple Pollutants	Pre-planning

Activity Description	Activity Type Classification	Type	Class	Primary Target Pollutant	Status
Hydromodification BMP (1)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (2)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Hydromodification BMP (3)	Hydro mod BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Erosion/Sediment Control BMP (2)	Erosion/Sediment Control BMP	Water Quality	Structural	Sediment & TSS	Pre-planning
Home Auto Activities (Metals) Outreach	Outreach	Education	Non-structural	Metals, Oil & Grease & PAHs	In progress through JURMP education program.
Commercial Landscaping Targeted Enforcement	Targeted Enforcement	Water Quality	Non-structural	Nutrients & Pesticides	Pre-planning
Targeting Marinas and Boat Repair as a Pollutant Source	Targeted Source	Water Quality	Structural or Non-Structural	Metals & Bacteria	Pre-planning
Construction Contractors - Home and Commercial Improvements Inspection Generated Enforcement	Inspection Generated Enforcement	Water Quality	Non-structural	Metals, Sediment, Gross Solids & Oil & Grease	Pre-planning

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks 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 Annual Report.

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.

TITLE: La Jolla ASBS Compliance Monitoring
ID NUMBER: MB-3009

ACTIVITY IMPLEMENTATION

This study is designed to assess potential impacts to the ASBS from storm water runoff generated from the watershed and in compliance with the Regional Areas of Special Biological Significance (ASBS) Work Plan. The model provided in the report serves as an initial, predictive tool that can be built on in the future as additional data become available and can be used to test the effectiveness of best management practices (BMPs) that may be used to address impacts to the ASBS.

The goal of the ASBS program is to answer the following questions; how do receiving water conditions compare to natural conditions during storm events, how drain discharges compare during storm events to California Ocean Plan water quality objectives (WQOs), range of natural conditions compared to conditions at ASBS sites, potential sources of toxicity to endemic marine organisms from storm water runoff and dry weather seep discharges along the rocky intertidal area of La Jolla Caves.

Results and Findings

The results of the pre-storm and post-storm monitoring indicated that, for three storm events, there were no exceedances of any Ocean Plan WQOs, and there was no toxicity associated with any sample. Constituent concentrations in compliance samples and reference samples were generally similar. Thus, water quality in the ocean receiving waters of the ASBS before and after storm events was similar to that defined in the Ocean Plan as protective of coastal marine resources. Grab samples were collected from the five major storm drain outfalls in the La Jolla Shores Coastal Watershed during three storm events. The results indicated that most metal concentrations were below or only slightly above California Ocean Plan WQOs.

Synthetic pyrethroids were detected in all core discharge samples at concentrations greater than published LC₅₀ values for marine invertebrates. Aside from Malathion, no other OP pesticides were detected and PCB concentrations were below reporting limits. PAH compounds were detected in all storm drain samples, but were more than two orders of magnitude below the most conservative LC₅₀ values found in the literature for marine invertebrates. Bacteria samples collected from each of the five monitored storm drain outfalls during a storm event were above California Ocean Plan WQOs for total coliforms, fecal coliforms, and enterococci.

To determine potential sources of toxicity to endemic marine organisms, purple sea urchins were exposed to seawater taken from post-storm samples following three storm events and blue mussels were exposed to storm drain effluent collected during two storm events for this monitoring element. Since no toxicity was detected in sea urchin exposures to post-storm seawater samples. Bivalve development tests indicated toxicity associated with normal shell development in bivalve larvae exposures to storm water from three storm drains during the February 27, 2010, storm event and five storm drains during the April 1, 2010 storm event. TIE results were site-specific and suggested more than one potential source of toxicity.

Dry weather seep samples did not have detectable levels of PAHs, chlorinated herbicides, chlorinated pesticides, OP pesticides, PAHs, Aroclors, or synthetic pyrethroids. Although all of the seep samples did contain detectable concentrations of heavy metals, only selenium in Seep 4 was measured above the California Ocean Plan WQO. Seep 4 appears to be a natural groundwater seep and may pick up selenium as it flows over selenium-rich deposits in natural geologic formations. Other seeps that are close to Seep 4 appear to receive most of their flow as a result of surface runoff from storm drain outfalls. Thus, except for selenium, which may leach naturally from local geological formations, seep discharges appear to be predominantly free of contamination and would not be expected to impact water quality within the ASBS.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- La Jolla Shores ASBS Regional Compliance Monitoring

TIME SCHEDULE FOR IMPLEMENTATION

This report presents and summarizes data collected from sampling events that occurred during the 2009–2010 Wet Weather Monitoring Season.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment source investigation and ocean receiving water monitoring

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify sediment as a high priority water quality problem in the WMA, and recommend implementing load reduction/source abatement activities to address it. Implementation of this activity will identify the potential sources or areas that are impacting water quality within the WMA, and provide specific management and Best Management Practices (BMPs) recommendations and implementation strategies to reduce bacterial loading from the identified sources.

EFFECTIVENESS ASSESSMENT

Effectiveness of this activity 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: Bioassessment Monitoring of the Tecolote Creek Watershed
ID #: MB-3010

ACTIVITY IMPLEMENTATION

Historical bioassessment studies in Tecolote Creek have shown consistently impaired benthic macro-invertebrate (BMI) communities and there are several constituents on the State Water Resources Control Board (State Board) 303(d) list of impaired waterbodies. Objectives, findings, and recommendations based on bioassessment monitoring conducted in Tecolote Creek are summarized below.

Objectives

1. Comprehensively document biological conditions and community structure of BMI throughout the Tecolote Creek Watershed and its tributaries.
2. Assess possible stressors to the BMI communities by analyzing the physical habitat conditions as well as water quality constituents that could prevent the establishment of sensitive BMI taxa and non-impaired BMI communities.
3. Determine the most important limiting factors for achieving potential biological objectives.

Key Findings

1. Analysis of seven bioassessment sites in the Tecolote Watershed indicated that there was biological impairment throughout the watershed.
2. Physical habitat ratings were good to very good for BMI colonization. TDS (Total Dissolved Solids) exceeded the water quality objectives (as described in the Basin Plan) throughout the watershed. Specific conductivity and salinity were also very high at six of the seven sites (relative to reference conditions in San Diego County).
3. The most important limiting factors for achieving potential biological objectives were high levels of TDS, specific conductivity, and salinity.

Recommendations

1. Determine the source(s) of elevated TDS specific conductivity and salinity in the Tecolote Watershed.
2. Assess the potential efforts and costs required for addressing water quality limitations which are impacting the biological integrity in the creek.

TMDL APPLICABILITY

- Tecolote Creek Integrated TMDL; demonstrates a proactive approach to the anticipated enforcement of biological objectives by the State and Regional Boards.
- Potentially provides a model to apply to other biologically impaired water bodies for determining which limiting factors may or may not be mitigable.

TIME SCHEDULE FOR IMPLEMENTATION

The initial study was completed in FY2010 and provides a strong basis for a focused follow-up study to provide specific recommendations for TMDL implementation planning. Future studies will be implemented as funding is available.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify metals, nutrients, and bacteria as high priority water quality problems throughout Tecolote Creek and the Mission Bay and La Jolla WMA.

EFFECTIVENESS ASSESSMENT

Due to the nature of this monitoring study, an activity effectiveness assessment has not been conducted.

TITLE: Tecolote Creek Microbial Source Tracking Study
ID #: MB-3011

ACTIVITY IMPLEMENTATION

This study was conducted from 2007 through 2010 in three phases throughout the watershed to investigate and identify bacterial sources, origins, and loads in the Tecolote Creek Watershed and to assess and characterize specific priority activity contributions. The results provide background for the City of San Diego (City) to address bacterial load and concentration reduction strategies to comply with the *Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Bacterial Project I – Twenty Beaches and Creeks in San Diego Region, Including Tecolote Creek* (Bacterial Project I TMDL) recently adopted by the San Diego Regional Water Quality Control Board (Regional Board).

The Tecolote Creek Microbial Source Tracking Study aimed to identify sources of specific bacterial pollutants in the watershed. Objectives and findings are summarized below.

Objectives

1. Gather further information for the refinement of the Bacterial Project I TMDL and State Board §303(d) list documentation.
2. Verify Priority Sectors identified in the Strategic Plan through characterization of bacterial loadings to Tecolote Creek Watershed by targeting primary sources of high bacterial loading (e.g., anthropogenic and non-anthropogenic sources).
3. Determine the presence or absence of human contamination within the watershed and pinpoint any sources of human contamination.
4. Determine the relative contribution and origin of bacterial regrowth to bacterial loading in the creek during wet weather and dry weather.
5. Further develop bacterial load and concentration reduction strategies for Tecolote Creek based on the results of study elements designed around the four previous objectives.

Key Findings

1. An evaluation of all historical data indicated that a number of State Board §303(d)-listed pollutants could be removed from the list based on the number of exceedances observed. The results indicate that dissolved cadmium, copper, lead, and zinc are eligible for delisting from the State Board §303(d) list. However total selenium, bacteria, nutrients, and turbidity did not meet delisting requirements.
2. Sector prioritization—undertaken both through the Baseline Long-Term Effectiveness Assessment and Strategic Planning process—suggested that Sectors 1 and 2 presented the highest threat to water quality with a higher presence of potential pollutant sources through specific land use activities. Assessments of pollutant loads during both dry weather and wet weather indicated that these two sectors discharge higher loads of pollutants when compared with Sectors 3 and 4. During dry weather, Sector 1 was found to contribute the highest loads of copper, zinc, and total dissolved solids (TDS). During wet weather, Sector 2 was found to contribute some of the highest loads of bacteria, zinc, lead, and total suspended solids (TSS). Management of land use activities in Sectors 1 and 2 should be the focus of any comprehensive load reduction strategies.

Wet weather bacteria loads from individual land uses indicated that there were no significant differences between different land uses with flows merging and combining throughout drainage areas. There was some indication that higher loads were attributable to transportation corridors, commercial areas, and industrial land uses.

Dry weather bacteria loads were higher in residential and commercial areas with specific activities identified, particularly poorly maintained dumpsters and catch basins. Over-irrigation was a key transport mechanism that was prominent in commercial and industrial areas.

3. A comprehensive assessment of water quality throughout Tecolote Creek was undertaken to assess the presence of human fecal contamination. The assessment was performed using human-specific *Bacteroides* and quantitative polymerase chain reaction (Q-PCR). During dry weather, five positive samples were obtained. Each follow-up investigation failed to locate a point source and in every instance there was evidence of transient human activity. During wet weather, only one sample (of a total of 37 samples collected during nine storms) was found to be positive for *Bacteroides*. This sample was collected during the early phase of the storm flows in an area known to be a transient area.
4. A number of investigations were undertaken in Tecolote Creek to assess the presence of environmental species of fecal indicator bacteria. Ponds were not found to be a significant reservoir for environmental indicator species. However, sediments and biofilms within the creek and MS4 system were found to be significant bacterial reservoirs.

Biofilms on the walls of the MS4 system in particular were found to grow rapidly and contain high numbers of enterococci. Speciation of these enterococci determined that the origins were most likely environmental rather than fecal. Further investigation determined that the storm water, with high numbers of enterococci of fecal origin, was the primary inoculation mechanism, and that biofilms matured rapidly into complex communities with a variety of species present. The high flows generated during wet weather caused significant biofilm sloughing. The impact of biofilms on wet weather loads of indicator bacteria into receiving waters appeared to be significant.

5. Load and concentration reduction strategies are currently being developed through the Tecolote Creek Implementation Framework.

TMDL APPLICABILITY

- Total Maximum Daily Loads for Indicator Bacteria, Bacteria Project I – Twenty Beaches and Creeks in the San Diego Region, Including Tecolote Creek.

TIME SCHEDULE FOR IMPLEMENTATION

The data collected in Tecolote Creek are being used to develop an implementation planning framework. Once the framework is completed, the framework will be considered for use as a management tool in developing a comprehensive load reduction plan for the Bacteria Project I TMDL. The framework may also be considered as a

guidance document for developing implementation plans for other TMDLs with similar characteristics.

Data collected during the three phases of the investigation are currently being compiled with all available historical data for submittal to the Regional Board for inclusion in the State Board §303(d)-list database. This submittal will ensure that revisions to the State Board §303(d) list will be made using the most recent and relevant data available.

During the initial sampling of catchbasins in commercial and industrial land use areas, specific locations were found to have elevated concentrations of some pollutants. Follow-up inspections at these locations are recommended to assess potential sources and impact of these discharges on the receiving environment.

Compliance monitoring for indicator bacteria will be continued in Tecolote Creek to support the Bacterial Project I TMDL as well as other constituents of concern.

PARTICIPATING WATERSHED COPERMITTEES

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Heavy Metals
- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Both the City's *Strategic Plan for Watershed Activity Implementation* and the Collective Watershed Strategy for the Mission Bay and La Jolla WMA identify bacteria as a high priority water quality problem throughout the Mission Bay and La Jolla WMA, and recommend implementing specific management and Best Management Practices (BMPs) strategies to reduce the identified sources.

EFFECTIVENESS ASSESSMENT

This study supports other Storm Water Department programs and cost-effectiveness efforts including the *San Diego River Phase I and Phase II Microbial Source Identification Study*. The results of this program complement results collated under the 2009 and 2010 San Diego River Study.