

Appendix A

Carlsbad Watershed Activity Sheets

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Water Quality Activity Sheets

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TITLE: Residential Irrigation Runoff Reduction
ID #: CHU-WQA1

ACTIVITY DESCRIPTION

The Carlsbad watershed has seen exceedances for various high priority pollutants during the Dry Weather Monitoring Program. A pilot single family residential area in a sub-watershed will be selected to evaluate the load reduction potential related to reducing irrigation runoff. The expected results include reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in pilot area, and reduction in irrigation runoff flow in the pilot area. Planned activities include:

- Use Dry Weather Monitoring Program results, BLTEA info, and field knowledge to select pilot area
- Collect pre-pilot flow data in pilot drainage area, and calculate estimated pollutant loads
- Work with volunteer residences and sites with irrigation runoff to review water usage, conduct water assessment and leak detection as necessary.
- Field reconnaissance to check for corrective action completion
- Collect post-pilot flow measurements in pilot drainage area, and calculate estimated pollutant loads
- Measure effectiveness of overall program by calculating any reduction in pollutant loading through reduction in over-irrigation.
- Education to be coordinated through CHU-WQEA1

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning – FY 2008

Implementation and Effectiveness Assessment – FY 2009

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad

All watershed Copermittees will participate during planning and measuring phases of this pilot. City of Carlsbad personnel will participate in the implementation phase of the activity.

OTHER PARTICIPATING ENTITIES

- Carlsbad Municipal Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity

addresses high priority water quality problems and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Expected benefits include educating residents about pollution prevention and water conservation, load reduction and/or source abatement of high priority pollutants, and reduction of water usage.

EFFECTIVENESS MEASUREMENTS

A reduction of flow after working with applicable residents is the targeted outcome of this activity and will be assessed by measuring irrigation runoff flow after the pilot is completed. Implementation effectiveness will be measured by evaluating pre and post-flow surveys (Level 4 Outcome). Since the pilot will be completed prior to the start of the 2009 dry season, the results will be analyzed within nine months following completion of the pilot.

TITLE: Loma Alta Creek Ultraviolet Radiation Storm Water Treatment Facility
ID #: CHU-WQA2

ACTIVITY DESCRIPTION

This project involves the construction of a filtration and ultraviolet radiation storm water treatment facility to be located adjacent to the Loma Alta Creek outlet in the City of Oceanside. One hundred percent of the dry weather creek flows (averaging 90 gallons per minute) will be intercepted at the outlet and diverted to the UV storm water treatment facility. Once treated, water will discharge through a pipe that will extend along the existing section of rip-rap that runs along the north side of the Loma Alta Creek outlet at Buccaneer Beach. During wet weather months, the lagoon would be opened to allow free flow to the ocean and the UV system would be bypassed.

The Loma Alta Creek and its discharge location to the Pacific Ocean at Buccaneer Beach are located mostly in the City of Oceanside with the headwaters within the City of Vista. Buccaneer Beach is a family beach adjacent to a park that is heavily used during dry months. The City determined that key source of bacteria and nutrients are urban runoff from the 6,400 acre Loma Alta Watershed, which is densely developed with residential, commercial and industrial land uses. With a great task at hand to eliminate the pollutants from these multiple sources, it was determined that action needed to be taken in a short period of time to divert the bacteria laden waters to reduce the numerous beach postings and closures at this popular beach. The City submitted and was awarded a grant to construct and operate the UV Treatment facility.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which includes Loma Alta Creek slough. This project will assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Loma Alta Creek slough.

TIME SCHEDULE FOR IMPLEMENTATION

A contractor was selected for construction in 2007. Construction completion is expected in June 2008 with operation beginning immediately thereafter.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

The Loma Alta Creek watershed is listed as impaired on the 303(d) list for bacterial indicators and eutrophication within the slough and 1.1 miles along the shoreline at the creek outlet at Buccaneer Beach

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential, commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality

problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The increased presence of bacteria and pathogens in the watershed poses a threat to REC-1 and REC-2 beneficial uses and results in increased number of beach closures at the Loma Alta Creek outlet at Buccaneer Beach. This project will address the bacterial issue through filtration and UV disinfection

EFFECTIVENESS MEASUREMENTS

This water quality activity will result in changes in discharge quality (Level 5) and changes in receiving water quality. (Level 6) A monitoring plan will be designed to measure water quality prior to and during facility implementation. The expectation is that there will be no future beach postings and closures to due to bacterial exceedances. Monitoring will be conducted at three locations: In the lagoon prior to water entering the UV facility, within the plant prior to and after UV treatment, and at the shoreline at the discharge point and in the coastal missing zone.

TITLE: Eternal Hills Cemetery BMPs
ID #: CHU-WQA3

ACTIVITY DESCRIPTION

The Eternal Hills Cemetery has a 2006 Urban Runoff Management Plan (URMP) that recommends various BMPs to minimize the introduction of fertilizers, pesticides, herbicides, fossil fuels, and soil alluvium into the Loma Alta Creek. Some components of that plan have not been implemented and Oceanside has issued enforcement notices to require correction of the problems and to implement and maintain the BMPs proposed in the plan. With the facility proposing expansion, the city will require the implementation of all components of their current URMP and to develop a new URMP relative to the proposed expansion. This new URMP will require the use of detention basins and additional BMPs to reduce peak flows and eliminate sedimentation, bacteria, and nutrients from the leaving the property and reaching the Loma Alta Creek.

TMDL APPLICABILITY

This activity is not being implemented for compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The current URMP is to be fully implemented during FY 2007-08 and beyond. The EIR for expansion is anticipated to be finalized in 2008. Because the facility's internment capacity is quickly being reduced, expansion is anticipated to be started as soon as final approval is received from the City of Oceanside.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

OTHER PARTICIPATING ENTITIES

No other entities are participating on this project.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Commercial, and industrial land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefit from this project is the implementation of recommend BMPs in the facility's URMP which will ultimately eliminate bacteria, nutrients, and sediment from leaving the cemetery property and reaching Loma Alta Creek.

EFFECTIVENESS MEASUREMENTS

The cemetery operators are knowledgeable of the lack of BMPs associated with their facility and the need to implement them according to their URMP (Level 2). The goal of this project is to implement BMPs (Level 3), and ultimately reduce the sediment load leaving the property (Level 4). Photo documentation will be used to determine implementation of required BMPs according to the RMP. During expansion of the facility, photo documentation will continue in to determine proper installation of BMPs and proper maintenance of already installed BMPs.

TITLE: Myers Property Restoration Assessment
ID #: CHU-WQA4

ACTIVITY DESCRIPTION

The Myers Property and Adjacent Creek Habitat Restoration project was completed in March 2007. The goal of the project was restoration and erosion control of the 35-acre parcel. This property was identified as a significant source of bacteria and sediment load into Loma Alta Creek due to off-road vehicle use and illegal access to the site coupled with frangible, erodible soils, as well as spoil storage along the tributary by the Eternal Hills Cemetery, which surrounds the property on all sides. The City applied for and received funding through a Proposition 13 grant for restoration and erosion control of the 256 acre parcel. Annually, an on-site inspection will be conducted, photo documentation and identification of any remedial restoration that needs to be done. The City will then conduct any remediation needed. An annual assessment report will be developed that will describe biological values, site assessment, and management measures.

TMDL APPLICABILITY

This activity is not being implemented for compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The implementation of BMPs was completed in March 2007 with monitoring scheduled to be conducted in subsequent years. The assessment will be conducted annually and the corresponding report is anticipated to be completed each June.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Loma Alta Creek Hydrologic Area (904.1). Residential land uses have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

This water quality activity will reduce the bacteria and sediment load from reaching Loma Alta Creek. This activity will preserve in perpetuity this 35 acre parcel near Loma Alta Creek.

EFFECTIVENESS MEASUREMENTS

This water quality activity implemented erosion control BMPs (Level 3). Now it is to be determined if the restoration project provided any load reductions (Level 4), changes in discharge quality (Level 5), or changes in receiving water quality (Level 6).

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TITLE: Septic Tank Source identification – Fire Mountain
ID #: CHU-WQA5

ACTIVITY DESCRIPTION

One of four isolated areas of Oceanside has over 20 homes that utilize on-site sewage treatment facilities to handle wastewater, even though a sewer system was installed in nearby neighborhoods. High bacteria levels within storm drain outlets from this neighborhood drain into Buena Vista Creek which created the need to determine the source of the bacteria. This project will assist in identifying if the source is from the neighborhood utilizing on-site waste water treatment systems. A detergent indicator test known as the optical brightener method will be utilized within neighborhood storm water vaults to detect a specific type of detergent in runoff water. This type of detergent is utilized in laundry detergents and can determine if the septic systems are leaking into the storm drain system. If this detergent is detected, the County of San Diego, Department of Environmental Health, will be requested to have home owners test the integrity of their septic system. If problems are detected, property owners will be offered the option to correct the problem or hook up to the city sewer system.

TMDL APPLICABILITY

The RWQCB and Copermittees are developing a Bacteria-Impaired Waters TMDL Project II for Lagoons and adjacent beaches and creeks, which include Buena Vista Lagoon. This project will assist in the implementation of this TMDL by reducing bacterial contamination in the impaired segment of Buena Vista Lagoon.

TIME SCHEDULE FOR IMPLEMENTATION

Source identification will begin in 2008 with the use of the optical brightener method to determine if there are detergents present in the storm water vaults. If detergents are detected then source identification will ensue. The County of San Diego will be requested to require a check of the septic systems and require proper corrections. This could take several years for corrections to be implemented. After corrections are made, the city will conduct the optical brightener activity to determine additional and ongoing problems. Additional detection methods may be utilized to confirm results from the optical brightener method.

PARTICIPATING WATERSHED COPERMITTEES

- City of Oceanside
- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, as a high priority water quality pollutant in the Buena Vista Hydrologic Area (904.2). Sewage treatment facilities have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefits from this project are to determine if on-site sewage treatment facilities in an isolated neighborhood of Oceanside are contributing to high bacteria levels in discharge water. If they are determined to be a source then the installation of septic system improvements or hooking up to the sewer system will eliminate this bacteria source.

EFFECTIVENESS MEASUREMENTS

If the on-site sewage treatment facilities in this isolated neighborhood are determined to be a bacteria source, then homeowners will be notified of the problems associated with their treatment system (Level 2). The City will require the homeowners to implement BMPs to eliminate the bacteria source (Level 3). This in turn will create a bacteria load reduction (Level 4), and hopefully a change in discharge water quality (Level 5), and a change in receiving water quality (Level 6).

TITLE: Escondido Creek Restoration
ID #: CHU-WQA6

ACTIVITY DESCRIPTION

This proposed restoration project is designed to improve water quality associated with Escondido Creek. The effort will focus on a segment of Escondido Creek located off Harmony Grove Road within unincorporated County of San Diego lands. The intent of the project is to implement bioengineering solutions to help correct stream bank and bed erosion on a segment of the creek known to exhibit severe erosion by installing gabion baskets and live plant material to stabilize the eroded bank.

TMDL APPLICABILITY

This activity is planned for implementation in compliance with the TMDLs established for sediment associated with Escondido Creek.

TIME SCHEDULE FOR IMPLEMENTATION

The Escondido Creek Restoration effort will occur between spring 2008 and winter 2008.

PARTICIPATING WATERSHED COPERMITTEES

- City of Escondido.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment is a high-priority pollutant of concern within the Carlsbad Watershed. Implementation of this restoration effort will help reduce this pollutant through bank stabilization.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies sediment, as a high priority water quality pollutant in the Escondido Creek Hydrologic Area (904.6). Stream bank and bed erosion have been identified as potential discharges of sediment. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Copermittees expect that implementation of this restoration effort will result in the reduction of sediment in Escondido Creek and improve the overall condition of the habitat and waters of the creek.

EFFECTIVENESS MEASUREMENTS

This restoration effort is designed to improve the condition of the habitat and waters of Escondido Creek and improve the water quality of downstream water bodies (Level 6).

The effectiveness of the effort will be assessed through the evaluation of data from continuing water quality monitoring efforts. Data collected after implementation of the restoration project will be compared with data from previous monitoring efforts and analyzed to determine potential reduction in associated pollutant loads.

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TITLE: Stormwater Quality Master Plans for Special Drainage Fee Areas
ID #: CHU-WQA7

ACTIVITY DESCRIPTION

The County of San Diego is in the process of preparing Storm Water Quality Master Plans (SWQMPs) for ten Special Drainage Fee Areas (SDAs). The SWQMPs address water quality impacts within each area, and are being prepared concurrently with a GIS-based Drainage Facilities Master Plan (DFMP). The County has identified a need to replace or upgrade portions of the drainage systems within its SDAs to meet current drainage design standards. In the process of planning for the proposed drainage facility improvements, the County is seizing the opportunity to identify potential regional BMPs that would assist in improving watershed water quality and minimize associated drainage facility maintenance costs.

Ultimately, the SWQMPs will identify and prioritize for implementation a list of potential regional BMPs. BMPs could include extended detention basins, hydrodynamic separators, or other BMP types. Prioritization criteria will include considerations of cost, BMP type, location, land use, and funding. Construction of recommended BMPs is contingent upon the approval of SDA fee increases by the County Board of Supervisors.

SWQMPs with the potential to propose BMPs in the Carlsbad Watershed include:

- SDA 9 (San Dieguito)
- SDA 10 (North County Metro)

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

SWQMPs are in various stages of completion. Construction of recommended BMPs is contingent upon approval of SDA fee increases by the County Board of Supervisors. The Board is likely to consider fee increases in 2009. Construction is therefore unlikely to occur before FY 2009-10.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- To be determined

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

To be determined

EXPECTED BENEFITS

The SWQMPs will recommend regional structures or devices intended to improve watershed water quality. Regional BMPs address large mixed-use watershed areas, rather than smaller watersheds from individual development projects.

EFFECTIVENESS MEASUREMENTS

To be determined

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Title: Nitrate Source Identification and Abatement: Buena Creek
ID #: CHU-WQA8

Activity Description

The County of San Diego Departments of Public Works (DPW) and Agriculture, Weights, and Measures (AWM) will collaborate on a project to identify and abate the source(s) of elevated nitrate levels in Buena Creek. Nitrate concentrations have been observed to exceed dry weather action levels at the County’s CAR 05 dry weather monitoring station (Buena Creek at Robelini Drive). The State of California, which collected data from a nearby location in 2002 as part of its Surface Water Ambient Monitoring Program (SWAMP), also identified nitrates as an issue of concern¹. Buena Creek is listed as impaired for nitrates/nitrites on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. To date, follow up investigations conducted as part of the County’s illicit discharge detection and elimination program have yielded little definitive information about the source(s) of this problem. This activity will consist of intensified water quality monitoring, source identification, inspection, education, and enforcement as determined necessary.

Planned tasks include:

- Compile an inventory and map of potential nitrate sources in the CAR 05 drainage area.
- Compile baseline information on BMP implementation and compliance history for nurseries within the Buena Creek drainage area.
- Perform frequent water quality screenings for nitrate, dissolved oxygen, and other parameters at CAR 05.
- Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.
- Conduct targeted inspections as necessary to abate sources of nitrates.
- Conduct targeted education activities as necessary to abate sources of nitrates.
- Conduct enforcement activities as necessary to abate sources of nitrates.

TMDL Applicability

This activity is not specifically implemented in compliance with a TMDL. However, Buena Creek is listed as impaired for nitrate/nitrite on the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. A TMDL is currently scheduled for development by 2019.

Time Schedule for Implementation

The proposed implementation schedule below is tentative subject to changes based on results obtained over the course of the project or unforeseen changes in departmental staffing or budgets.

Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
Compile an inventory and map of potential nitrate sources in the CAR 05 drainage area.	X				

¹ Southern California Coastal Water Research Project, *Surface Water Ambient Monitoring Program (SWAMP), Report on the Carlsbad Hydrologic Unit*, July 2007

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Planned Tasks	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	X				
Perform frequent water quality screenings for nitrate other parameters at CAR 05, the County's dry weather monitoring location along Buena Creek at Robelini Drive.	X	X	TBD	TBD	TBD
Perform additional upstream water quality monitoring and source investigations as appropriate to identify potential sources of the elevated nitrate levels.	X	X	TBD	TBD	TBD
Conduct targeted inspection activities as necessary to abate identified sources of nitrates.	X	X	TBD	TBD	TBD
Conduct targeted education activities as necessary to abate identified sources of nitrates.	X	X	TBD	TBD	TBD
Conduct targeted enforcement activities as necessary to abate identified sources of nitrates.	X	X	TBD	TBD	TBD

Participating Watershed Copermittees

- County of San Diego

High Priority Watershed Water Quality Problems Addressed

- Nutrients

Consistency with the Collective Watershed Strategy

The Carlsbad WURMP identifies nutrients as a high priority water quality problem in the Agua Hedionda Hydrologic Area (HA 904.3). This activity addresses nutrient discharges and is therefore consistent with the collective watershed strategy.

Expected Benefits

This project is expected to provide a better understanding of the source(s) of nitrates entering Buena Creek upstream of the CAR 05 dry weather monitoring station. If it is determined that the contributing sources are subject to the County's Watershed Protection Ordinance, this activity is expected to improve BMP implementation and eliminate illicit discharges through a combination of inspection, education, and enforcement actions. It is possible that non-point sources, including resurfacing groundwater, are responsible for the elevated nitrate levels observed at CAR 05. If this is found to be the case, the County may be limited in its ability to address the nitrate problem at this location. Regardless, this activity will provide useful information for the purpose of developing future program activities.

Effectiveness Measurements

Planned Tasks	Level	Targeted Outcome	Assessment Measures
Compile an inventory and map of potential nitrate sources in the Buena Creek drainage area.	1	Completion	Yes / No
Compile baseline information on BMP implementation and compliance history for facilities and other sources within the CAR 05 drainage area (for the purposes of tracking improvements over time).	1	Completion	Yes / No
Perform frequent water quality screenings for nitrate and other parameters at CAR 05, the County's dry weather monitoring location along Buena Creek at Robelini Drive.	1	4 field screenings / yr at CAR 05	# field screenings / yr at CAR 05
	6	Reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012	% reduction in exceedances of dry weather action level for nitrates measured at CAR 05 by 2012
Conduct targeted inspection activities as necessary to abate identified sources of nitrates.	1	Inspection of 100% of nurseries in the Buena Creek drainage area by June 2009	% of nurseries inspected in the Buena Creek drainage area by June 2009
	3	Reduction in nursery BMP violations observed during nursery inspections in the Buena Creek drainage area by 2010	% change in nursery BMP violations observed during nursery inspections in the Buena Creek drainage area by 2010
Conduct targeted education activities as necessary to abate identified sources of nitrates	2	Improvement in stormwater knowledge assessment scores administered to nursery staff in the Buena Creek drainage area by 2010	% change in stormwater knowledge assessment surveys administered to nursery staff in the Buena Creek drainage area by 2010

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TITLE: Focused Inspections along San Marcos Creek
ID #: CHU-WQA9

ACTIVITY DESCRIPTION

San Marcos Creek (904.5) was 303(d) listed for nutrients in 2006. As such, the City of San Marcos conducted focused inspections of all properties along San Marcos Creek to identify and abate the potential sources of elevated pollutant levels such as nutrients. This activity consists of targeted inspections, follow-up inspections, and enforcement as determined necessary.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

FY 2008 – Conduct inspections and any necessary enforcement actions

FY 2009 – Conduct follow-up inspections and any necessary enforcement actions

PARTICIPATING WATERSHED COPERMITTEES

- City of San Marcos

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies nutrients, as a high priority water quality pollutant in the San Marcos Creek Hydrologic Area (904.5). Residential, commercial, and industrial land uses have been identified as potential discharges of nutrients. This activity addresses a high priority water quality problem and potential source of the problem within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, correcting behaviors, and abating sources associated with nutrients.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number of inspections completed (Level 1) and assessing changes in knowledge and BMP implementation (Levels 2 and 3).

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TITLE: Pet Waste Bag Dispenser Program in County Parks
ID #: CHU-WQA10

ACTIVITY DESCRIPTION

The County of San Diego maintains an inventory of pet waste bag dispensers in its parks. Two important goals of this program are to reduce the amount of pet waste found in parks and to educate the public on the need to cleanup after their pets. Realization of these goals will result in the reduction of pollutant loads, particularly bacteria and nutrients. In the Carlsbad Watershed, there are currently two dispensers located in one County park:

- San Elijo Lagoon Ecological Reserve (2 dispensers)

The County’s jurisdictional goal for this five-year permit cycle is to increase the total number of parks with pet waste bag dispensers by 100% (i.e., from 26 parks to 52 parks).

TMDL APPLICABILITY

This activity is not specifically planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Maintenance of existing pet waste dispensers – Ongoing
- Addition of new dispensers in County parks – To be determined

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity will result in reductions of bacteria and nutrients from County parks.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number of pet waste bags distributed at each County park on an annual basis (Level 1). Bacteria load reductions (Level 4) will be estimated based on the number of bags distributed and the following assumptions obtained from a 2004 study completed by the County at the San Elijo Lagoon Ecological Reserve:

- Assumption 1: The average weight of pet waste per bag is approximately 0.2 lbs
- Assumption 2: In addition to the bags taken from the County’s dispensers, an additional 30% of pet waste bags are brought to the parks by the pet owners themselves.

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TITLE: Land Acquisitions
ID #: CHU-WQA11

ACTIVITY DESCRIPTION

The San Diego County Board of Supervisors approved the Multiple Species Conservation Program (MSCP) in 1997 as an integral part of the County's efforts to protect parks and open space. The goal of the MSCP (a 50-year program) is to maintain and enhance biological diversity in the region and maintain viable populations of endangered, threatened, and key sensitive species and their habitats. Land acquisition also provides a significant water quality benefit for the watersheds in which it occurs. MSCP acquisition precludes development from occurring and allows land to retain its natural perviousness.

The MSCP is a cooperative effort among the County and other local jurisdictions and the U.S. Fish and Wildlife Service and the California Department of Fish and Game (the Wildlife Agencies). These public partners work with various private landowners, conservation groups, and community planning groups, developers, and other stakeholders. An MSCP currently exists and the County of San Diego is planning for extending the MSCP into both the northern and eastern portion of the County. The northern subarea plan should be approved during the lifetime of the current stormwater permit. While this plan has yet to be approved by the County of San Diego, lands have been and will continue to be acquired from willing sellers.

TMDL APPLICABILITY

While it may be supportive of TMDL goals, this activity is not specifically implemented as part of a TMDL compliance program.

TIME SCHEDULE FOR IMPLEMENTATION

The County of San Diego acquires land on an ongoing basis from willing sellers.

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

OTHER PARTICIPATING ENTITIES

- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- Private land owners
- Conservation groups
- Community planning groups
- Developers

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Land acquisition is consistent with the collective watershed strategy in that it averts development, thereby eliminating the possibility of future sources in need of abatement or future pollutant loads in need of reduction.

EXPECTED BENEFITS

Acquisition preserves the land's perviousness and natural filtering capabilities. In this sense, it is preferable to either source abatement or pollutant load reduction because it avoids entirely the introduction of pollutant-generating activities to the watershed.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by tracking the number and total acreage of land acquisitions within the watershed on an annual basis (Level 1). It may also be possible to estimate pollutant loadings avoided as a result of these acquisitions (Level 4). The County will consider presenting load reduction estimations in WURMP Annual Reports if it determines that they are helpful for the purposes of assessing overall program effectiveness.

Education Activity Sheets

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TITLE: Residential Irrigation Runoff Reduction Education
ID #: CHU-WQA1

ACTIVITY DESCRIPTION

The Carlsbad watershed has seen exceedances for various High Priority pollutants during the Dry Weather Monitoring Program. A pilot single family residential area in a sub-watershed will be selected to evaluate the load reduction potential related to reducing irrigation runoff – please refer to CHU-WQA1. The expected results include reduction of any existing leaks or overspray at applicable residences, one-on-one education of residents in pilot area, and reduction in irrigation runoff flow in the pilot area. This activity will focus on education of area residents related to water quality impacts of irrigation runoff. Planned activities include:

- mailer to residents to let them know of our pilot work, ask for voluntary participation, and notify that if over-irrigation or leaks suspected we will contact them directly,
- fact sheet/water use report issued to homeowner with results of assessment and recommendations for improvement,
- mailer to residents to thank them and invite them to participate in a website survey, and
- website survey to measure educational program effectiveness

TMDL APPLICABILITY

This activity is not related to an existing TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

Project planning – FY 2008

Implementation and Effectiveness Assessment – FY 2009

PARTICIPATING WATERSHED COPERMITTEES

- City of Carlsbad

All watershed Copermittees will participate during planning and measuring phases of this pilot. City of Carlsbad personnel will participate in the implementation phase of the activity.

OTHER PARTICIPATING ENTITIES

- Carlsbad Municipal Water District

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Sediment
- Nutrients

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment, and nutrients as high priority water quality pollutants in the Agua Hedionda (904.3 – bacteria and sediment), Buena Vista (904.2 – bacteria), and San Marcos Creek (904.5 – nutrients) Hydrologic Areas. Bacteria, sediment, and nutrients have been identified as potential discharges from over-irrigation. This activity addresses high priority water quality problems and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

Expected benefits include educating residents about pollution prevention and water conservation, load reduction and/or source abatement of high priority pollutants, and reduction of water usage.

EFFECTIVENESS MEASUREMENTS

Targeted outcomes for this activity include increased awareness of irrigation runoff impacts to water quality, and the reduction of flow after working with applicable residents. Implementation effectiveness will be measured by evaluating survey results (Level 2 Outcome) and reviewing any water use changes (Level 3 Outcome). Since the pilot will be completed prior to the start of the 2009 dry season, the results will be analyzed within nine months following completion of the pilot.

TITLE: Pilot Restaurant Binder/CD Distribution
ID #: CAR-WQEA2

ACTIVITY DESCRIPTION

The Restaurant Binder/CD Distribution activity aims to increase the implementation of BMPs at eating establishments by distributing a binder of educational stormwater materials and organizational tools for restaurant managers and their staff. The binder also includes a short instructional video (CD-ROM) of the most common Best Management Practices for restaurants. The goal of this activity is to improve water quality through increased awareness of stormwater issues and increased implementation of BMPs at eating and drinking establishments.

The City of Encinitas initiated a pilot distribution of the Restaurant Binder and CD during FY06-07 restaurant inspections. The City of Encinitas plans to conduct a follow-up survey during regular annual restaurant inspections. This survey will be used to 1) determine if and how the binder was utilized at each restaurant and 2) get feed back from the restaurants about the usefulness of the binder and CD.

TMDL APPLICABILITY

This activity is not currently planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

FY 06-07 City of Encinitas Pilot Binder/CD Distribution
FY 07-08 City of Encinitas Follow-up Evaluation Survey

PARTICIPATING WATERSHED COPERMITTEES

- City of Encinitas

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

OTHER WATER QUALITY PROBLEM(S) ADDRESSED

- Other Pollutants: Trash, Oil/Grease

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identified bacteria as a high priority water quality pollutant in the Escondido Creek (904.6) hydrologic area. Eating and drinking establishments have been identified as potential discharges of bacteria. This activity addresses a high priority water quality problem and potential source of the problems within the watershed, therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

1. Increased knowledge and awareness among restaurant employees about storm water quality issues
2. Changes in behavior among restaurant managers and their employees
3. Load reductions of trash and bacteria downstream of restaurants

EFFECTIVENESS MEASUREMENTS

Success of the binder and CD distribution will be assessed through the comparison of FY 07-08 inspection outcomes with FY 06-07 outcomes. In FY 06-07 stormwater inspectors documented the restaurants' 1) knowledge/awareness level and 2) cleanliness, BMP implementation, and orderliness of site. During FY 07-08, stormwater inspectors will use the same assessment questions to evaluate each restaurant. In addition, inspectors will ask additional questions relating to the use of the CD and binder. Success of the binder and CD distribution will be evaluated on a site by site basis and in an overall analysis. The following table describes the assessment levels that will be evaluated for this activity.

Level	Targeted Outcome	Assessment Measure	Assessment Method
Level 1 Compliance with Activity-based Permit Requirements	Distribute 175 binders and CDs	Were 175 binders/CD distributed?	Document the number of binders distributed
Level 2 Changes in Knowledge/Awareness	Increased knowledge and awareness of stormwater issues among restaurant staff	Compare FY07-08 inspection and survey results to FY06-07 inspection and survey results	Inspect and survey restaurants that received binder and CD in FY07-08
Level 3 Behavioral Changes/BMP Implementation	Increased use of BMPs at restaurants	Compare FY07-08 inspection and survey results to FY06-07 inspection and survey results	Inspect and survey restaurants that received binder and CD in FY07-08

**TITLE: Water Quality Runoff Management and Agricultural Waiver
Workshop for Nurseries and Agricultural Businesses**
ID #: CHU-WQEA3

ACTIVITY DESCRIPTION

This free educational workshop will target nurseries and agricultural businesses and will be held in North San Diego County. It will provide owners and operators of a better understanding of water quality runoff management and how the conditional agricultural waiver for discharges will affect their operations. This workshop is being conducted to keep growers and operators updated on runoff regulations, available resources to address any runoff and stormwater related issues, and to share information on how to conduct a site self-assessment prior to inspections. Growers from north San Diego County watersheds are invited to attend, including San Luis Rey, San Dieguito and the Carlsbad Hydrologic Unit. This workshop will typically be held every two years.

Thus, this workshop is designed to provide nursery and agricultural owners and operators with the tools they need to implement BMPs to reduce and eliminate polluted runoff from their operations. This workshop is hopefully the catalyst to implementing structural and operational BMPs at these facilities.

TMDL APPLICABILITY

This activity is not planned for implementation in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

The first educational workshop will be conducted during FY 2008 and bi-annually thereafter.

PARTICIPATING WATERSHED COPERMITTEES

Copermittee participants include Carlsbad, Encinitas, Escondido, Oceanside, Poway, San Marcos and Vista. The City of Oceanside will secure speakers, develop workshop announcement materials and moderate the workshop. Other Copermittees will assist with information dissemination to constituents within their jurisdictions and provide additional support during the workshop.

OTHER PARTICIPATING ENTITIES

The County of San Diego, Agriculture Weights and Measures Division, the Natural Resources Conservation Service, University of California Cooperative Extension and the Regional Water Quality Control Board will provide speakers for the workshop. The San Diego County Farm Bureau and the local Resource Conservation Districts will distribute information to their constituents and provide additional support if resources are available.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

This activity will assist Copermittees in addressing organics, sediment, pesticides, nutrients and bacteria, specific to their watersheds.

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

The Carlsbad Watershed Management Area collective watershed strategy identifies bacteria, sediment and nutrients as a high priority water quality pollutants in various hydrologic areas throughout the watershed. Nursery and agricultural operations have been identified as potential discharges of bacteria, sediment, and nutrients. This activity

addresses high priority water quality problems and potential sources of the problems within the watershed. Therefore the activity is consistent with the Carlsbad WMA strategy.

EXPECTED BENEFITS

The expected benefit of this activity is the installation of structural or operational BMPs to reduce and eliminate irrigation runoff based on information obtained by conducting a site self-assessment and other available resources.

EFFECTIVENESS MEASUREMENTS

This workshop will increase knowledge of growers by providing updated runoff regulations, information about the new agricultural waiver that became effective in 2008, how to conduct a site self-assessment to determine any runoff issues, and the financial resources available to implement best management practices applicable to their operations (Level 2 Outcome). This workshop is designed to create behavioral changes and BMP implementation at agricultural operations (Level 3 Outcome), thereby reducing nutrient loads to receiving waters (Level 4 Outcome). To determine the effectiveness of the workshop, attendees will be polled after six months to determine if they conducted a site self-assessment, if any BMPs were implemented (structural and/or operational), and if they utilized any outside financial resources to implement the BMPs.

TITLE: LID and Watershed Planning for Community Planning and Sponsor Groups
ID #: CHU-WQEA4

ACTIVITY DESCRIPTION

This activity involves educating local planning and sponsor groups throughout the unincorporated County on low impact development (LID) and watershed planning principles, practices, and requirements. These groups act in an advisory capacity to local decision makers on a variety of issues, primarily discretionary planning projects. Because their input is valuable to the discretionary process, it is important that they have a strong understanding of regulations and guidelines that may affect the way watersheds are developed. Ultimately, the recommendations of local planning and sponsor groups have some influence over whether, and under what conditions, development projects are approved. LID and watershed planning education will aid local planning and sponsor groups in making informed recommendations on aspects of development projects that would affect watershed water quality.

Local planning and sponsor groups within the Carlsbad Watershed include:

- Hidden Meadows (North County Metro)
- Twin Oaks (North County Metro)
- San Dieguito
- Valley Center
- Bonsall

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

- Develop Education Program – FY 2007-08
- Begin Education Efforts – FY 2007-08
- Complete Education Efforts – FY 2008-09

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- All

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

New development has been identified as having potentially significant impacts on watershed health. As such, this activity is consistent with the collective watershed strategy.

EXPECTED BENEFITS

This activity is expected to result in better decision-making through increased understanding of watershed planning and LID principles, practices, and requirements.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be assessed by tracking the number of presentations conducted, the number of participants in attendance, and the number and type of materials distributed (Level 1 Outcomes). The County will also consider distributing post-presentation evaluation forms that ask attendees to assess whether they learned something valuable (Level 2 Outcome).

TITLE: LID Features in San Elijo Nature Center
ID #: CHU-WQEA5

ACTIVITY DESCRIPTION

In November 2007, construction began on a two-storey, 5525 square foot, state-of-the-art nature center that will replace the former visitor center located at the San Elijo Lagoon Ecological Reserve in Encinitas. The new facility, which will open in early 2009, is designed to be constructed and commissioned in accordance with the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) program and is expected to achieve Gold or Platinum certification. LEED credit 6 is specific to stormwater management and is achieved by maintaining the pre-development 24-hour peak discharge rate in the post-development environment if existing impervious surfaces are 50% or less. The building design incorporates Low Impact Development (LID) techniques which include a green roof with low water use native plants and a bioswale to aid in infiltration of runoff from the site and extraordinary efforts to significantly minimize area of disturbance to aid in erosion prevention and pollutant filtration during and after construction. In addition to the many “Green” qualities built into the building, the Nature Center’s exhibits will showcase a series of high quality professional photographs and high-tech, interactive, educational kiosks for visitors of all ages. A section of the exhibits will educate visitors on what and where watersheds are, the causes of water pollution and its destructive impact on habitat and endangerment and extinction of species, clean drinking water, water conservation, water reuse, etc.

TMDL APPLICABILITY

This activity is not specifically implemented in compliance with a TMDL.

TIME SCHEDULE FOR IMPLEMENTATION

November 2007 – Groundbreaking
December 2007 – Establish minimized area of disturbance, begin demolition of existing facilities
October 2008 – Installation of Exhibits
December 2008/January 2009 – Building Commissioning
January 2009 – Grand Opening

PARTICIPATING WATERSHED COPERMITTEES

- County of San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Sediment
- Nutrients
- Bacteria

CONSISTENCY WITH THE COLLECTIVE WATERSHED STRATEGY

Bacteria, sediment, and nutrients have been identified as priority water quality problems in the Carlsbad Watershed. Parks have been identified as potential sources of bacteria and nutrients. Since this activity addresses a priority water quality problem and a priority source, it is consistent with the collective watershed strategy.

EXPECTED BENEFITS

The LID techniques applied in this project will reduce the rate and volume of runoff and aid in the reduction of sediment, bacteria, and nutrients by increasing natural filtration of stormwater at the source and recharging groundwater through a bioswale. By minimizing disturbed area, the project will reduce the amount of sediment erosion on site. The existing established native plant species absorb stormwater thereby filtering out pollutants while aiding in groundwater recharge.

EFFECTIVENESS MEASUREMENTS

Activity effectiveness will be measured by assessing successful installation of LID features (Level 1). There is no post-construction water quality monitoring specifically planned for this site.