# Baseline Trash Load and Short-Term Trash Load Reduction Plan

**Submitted by:**

**City of Campbell**
**70 N. First Street**
**Campbell, CA 95008**

*In compliance with Provisions C.10.a(i) and C.10.a(ii) of Order R2-2009-0074*

**February 1, 2012**

Baseline and Short-Term Trash Load Reduction Plan

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CITY OF CAMPBELL
Public Works Department

# City of Campbell
# SHORT-TERM TRASH LOAD REDUCTION PLAN

## CERTIFICATION STATEMENT

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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# ABBREVIATIONS

| | |
|---|---|
| BASMAA | Bay Area Stormwater Management Agencies Association |
| BID | Business Improvement District |
| CalRecycle | California Department of Resources Recycling and Recovery |
| Caltrans | California Department of Transportation |
| CASQA | California Stormwater Quality Association |
| CDS | Continuous Deflection Separator |
| CEQA | California Environmental Quality Act |
| CY | Cubic Yards |
| EIR | Environmental Impact Report |
| EPA | Environmental Protection Agency |
| GIS | Geographic Information System |
| IDDE | Illicit Discharge Detection and Elimination |
| JPA | Joint Powers Authority |
| MRP | Municipal Regional Stormwater NPDES Permit |
| MS4 | Municipal Separate Storm Sewer System |
| NGO | Non-Governmental Organization |
| NPDES | National Pollutant Discharge Elimination System |
| Q | Flow |
| SFRWQCB | San Francisco Regional Water Quality Control Board |
| SOP | Standard Operating Procedure |
| SWRCB | State Water Resource Control Board |
| TMDL | Total Maximum Daily Load |
| USEPA | United States Environmental Protection Agency |
| Water Board | San Francisco Regional Water Quality Control Board |
| WDR | Waste Discharge Requirements |
| WVCWP | West Valley Clean Water Program |

# PREFACE

This Baseline Trash Load and Short-Term Trash Load Reduction Plan (Plan) is submitted in compliance with provision C.10.a(i) and C.10.a(ii) of the Municipal Regional Stormwater NPDES Permit (MRP) for Phase I communities in the San Francisco Bay Region (Order R2-2009-0074). This Plan was developed using a regionally consistent format developed by the Bay Area Stormwater Management Agencies Association (BASMAA). Based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of Campbell may chose to amend or revise this Plan. If revisions or amendments are necessary, a revised Short-Term Plan will be submitted to the Water Board via the City of Campbell's annual reporting process.

# ACKNOWLEDGEMENTS

The *West Valley Communities would like to acknowledge the comments, suggestions, and guidance provided by each of the participating members at regional, county-wide, and local working groups to complete the Bay-Area wide, MRP Trash Short-Term Plan Template. Additionally, the West Valley Communities are thankful for the dedication and hard work of local county-wide SCVURPPP Staff, West Valley Clean Water Program Staff, and the SCVURPPP Trash Ad Hoc Task Group, who took up the challenge to collect, categorize and characterize the MS4 trash, and lead the way in countless hours of discussion, review, and dissection of the topic of trash.*

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# 1.0 INTRODUCTION

The Municipal Regional Stormwater NPDES Permit for Phase I communities in the San Francisco Bay Region (Order R2-2009-0074), also known as the Municipal Regional Permit (MRP), became effective on December 1, 2009. The MRP applies to 76 large, medium, and small municipalities (cities, towns, and counties) and flood control agencies in the San Francisco Bay Region, collectively referred to as Permittees. Provision C.10 of the MRP (Trash Load Reduction) requires Permittees to reduce trash from their Municipal Separate Storm Sewer Systems (MS4s) by 40 percent before July 1, 2014.

Required submittals to the San Francisco Bay Regional Water Quality Control Board (Water Board) by February 1, 2012 under MRP provision C.10.a (Short-Term Trash Loading Reduction Plan) include:

1. (a) Baseline trash load estimate, and (b) description of the methodology used to determine the load level.
2. A description of the Trash Load Reduction Tracking Method that will be used to account for trash load reduction actions and to demonstrate progress and attainment of trash load reduction levels.
3. A Short-Term Trash Loading Reduction Plan that describes control measures and best management practices that will be implemented to attain a 40 percent trash load reduction from the Permittee's MS4 by July 1, 2014.

This Short-Term Trash Load Reduction Plan (Short-Term Plan) is submitted by the City of Campbell in compliance with the portions of MRP provision C.10.a.i listed as 1a and 3 above. In compliance with 1b, BASMAA submitted a progress report on behalf of Permittees that briefly describes the methodologies used to develop trash baseline loads (BASMAA 2011a). These methods are more fully described in BASMAA 2011b, 2011c. Lastly, the *Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011d) was submitted by BASMAA on behalf of Permittees in compliance with submittal 2 described above. The Baseline Loading Rates and Tracking Method projects are briefly described below.

## Baseline Trash Generation Rates Project

Through approval of a BASMAA regional project, Permittees agreed to work collaboratively to develop a regionally consistent method to establish baseline trash loads from their MS4s. The project, also known as the *BASMAA Baseline Trash Generation Rates Project,* assists Permittees in establishing a baseline to demonstrate progress towards MRP trash load reduction goals (i.e., 40 percent). The intent of the project was to provide a scientifically-sound method for developing (default) baseline trash generation rates that can be adjusted, based on Permittee site specific conditions, and used to develop baseline loading rates and loads. Baseline loads form the reference point for comparing trash load reductions achieved through control measure implementation.

Baseline trash loading rates are quantified on a volume per unit area basis and based on factors that significantly affect trash generation (e.g., land use, population density, and economic profile). The method used to establish the baseline trash loads for each Permittee builds off of "lessons learned" from previous trash loading studies conducted in urban areas (Allison and Chiew 1995; Allison et al. 1998; Armitage et al. 1998; Armitage and Rooseboom 2000; Lippner et al. 2001; Armitage 2003; Kim et al. 2004; County of Los Angeles 2002, 2004a, 2004b; Armitage 2007). The method is based on a conceptual model developed as an outgrowth of these studies (BASMAA 2011b). Baseline trash loading rates were developed through the quantification and characterization of trash captured in Water Board recognized full-capture treatment devices installed in the San Francisco Bay Area. Methods used to develop trash baseline loading rates are more fully described in BASMAA 2011b, 2011c, and 2012b.

## Trash Load Reduction Tracking Method Summary

The trash load reduction tracking method, described in the *Trash Load Reduction Tracking Method Technical Report,* assists Permittees in demonstrating progress towards reaching trash load reduction goals defined in the MRP (e.g., 40 percent). The tracking method is based on information gained through an extensive literature review and Permittee experiences in implementing stormwater control measures in the San Francisco Bay Area. The literature review was conducted to evaluate quantification methods used by other agencies to assess control measure effectiveness or progress towards quantitative goals. Results are documented in the *Trash Load Reduction Tracking Method: Technical Memorandum # 1 – Literature Review* (BASMAA 2011d).

Methods attributable to specific trash control measures fall into two categories: 1) trash load reduction quantification formulas; and 2) load reduction credits (BASMAA 2012a). Quantification formulas were developed for those trash control measures that were deemed feasible and practical to quantify load reductions at this time. Load reduction credits were developed for all other control measures included in the methodology development. Both categories of methods assume that as new or enhanced trash control measures are implemented by Permittees, a commensurate trash load reduction will occur. Progress towards load reduction goals will be demonstrated through comparisons to established trash baseline load estimates developed through the BASMAA *Baseline Generation Rates Project*.

## Short-Term Trash Load Reduction Plan

The purpose of this Short-Term Plan is to describe the current level of implementation of control measures and best management practices, and identify the type and extent to which new or enhanced control measures and best management practices will be implemented to attain a 40 percent trash load reduction from their MS4 by July 1, 2014. The Short-Term Plan was developed using a template created by BASMAA through a regional project. New and enhanced trash control measures that Permittees may implement to demonstrate trash load reduction goals are included in Table 1.1. This list was developed collaboratively through the BASMAA Trash Committee, which included participation from Permittees, stormwater programs, Water Board, and non-governmental organization (NGO) staff. The list of control measures is based on: 1) the potential for Permittees to implement; 2) the availability of information required to populate formulas and develop credits; and 3) the expected benefit of implementation. Load reductions associated with each control measure are demonstrated either through a quantification formula (QF) or credit (CR) as described in the *Trash Load Reduction Tracking Method Technical Report* (BASMAA 2012a).

In efforts to reduce trash discharged from MS4s, Permittees may choose to implement control measures that are not included in Table 1.1 or described more fully in BASMAA 2012a. If a Permittee chooses to do so, methods specific to calculating trash load reductions for that control measure would need to be developed. Additionally, at that point, consideration should be given to updating this Short-Term Plan.

Based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of Campbell may amend or revise this Plan. If revisions or amendments are necessary, a revised Short-Term Plan will be submitted to the Water Board via the City of Campbell's annual reporting process.

**Table 1-1. Trash control measures for which load reduction quantification credits or formulas were developed to track progress towards trash load reduction goals.**

| Load Reduction Credits |
|---|
| CR-1 Single-Use Carryout Plastic Bag Ordinances |
| CR-2 Polystyrene Foam Food Service Ware Ordinances |
| CR-3 Public Education and Outreach Programs |
| CR-4 Activities to Reduce Trash from Uncovered Loads |
| CR-5 Anti-Littering and Illegal Dumping Enforcement Activities |
| CR-6Improved Trash Bin/Container Management Activities |
| CR-7 Single-Use Food and Beverage Ware Ordinances |
| Quantification Formulas |
| QF-1 On-Land Trash Pickup (Volunteer and/or Municipal) |
| QF-2 Enhanced Street Sweeping |
| QF-3 Partial-Capture Treatment Devices |
| QF-4 Enhanced Storm Drain Inlet Maintenance |
| QF-5 Full-Capture Treatment Devices |
| QF-6 Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) |

This Short-Term Plan is organized into the following sections:

- Introduction;
- Trash Baseline Load Estimate;
- Load Reduction Calculation Process;
- Planned Implementation of New or Enhanced Control Measures;
- Summary of Trash Control Measure Enhancements;
- Implementation Schedule; and
- References.

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# 2.0 BASELINE TRASH LOADING ESTIMATE

***Note:*** *In this section, a set of default trash generation rates and estimated trash baseline loads are presented. Generation rates were developed via a BASMAA regional collaborative project and should be considered preliminary. Although to-date BASMAA has attempted to develop rates that are applicable to all municipalities in the San Francisco Bay Area, preliminary rates and baseline loads presented within this section are not believed to be fully representative of trash discharged from the City of Campbell's municipal separate storm sewer system (MS4). It is our understanding that BASMAA will continue to refine trash generation rates during the completion of its Trash Baseline Generation Rates Project in 2012 and attempt to develop refined generation rates that may be more applicable to the City of Campbell. If the City deems that these refined generation rates are applicable, these refined rates will be used to revise trash baseline loads presented in this section. If BASMAA is unable to develop refined generation rates that are applicable to the City of Campbell, then the City may individually or in collaboration with other similar cities, develop city-specific generation rates and revise baseline load estimates presented in this section accordingly.*

This section provides the estimated annual trash baseline load from the City of Campbell's Municipal Separate Storm Sewer System (MS4). In compliance with Provision C.10.a.ii of the MRP, the City of Campbell worked collaboratively with other MRP Permittees through BASMAA to develop data and the process necessary to establish baseline trash loading estimate from the City's MS4. The collaborative project was managed through the BASMAA Trash Committee and included a series of steps described in BASMAA (2012b) and listed below. The approach was intended to be cost-effective and consistent to provide an adequate level of confidence in trash loads from MS4s, while acknowledging that uncertainty in trash loads still exists. The approach entailed the following steps:

1. Conduct literature review;
2. Develop conceptual model;
3. Develop and implement sampling and analysis plan;
4. Test conceptual model;
5. Develop and apply default trash **generation rates** to Permittee effective loading areas;
6. Adjust default trash generation rates based on baseline levels of control measure implementation by the Permittee to develop trash **baseline loading rates**; and,
7. Calculate Permittee-specific annual trash **baseline load**.

Through the collaborative BASMAA project, default baseline trash generation rates (volume per area) were developed for a finite set of categories, based on factors that significantly affect trash loads (e.g., land use). These trash generation rates were then applied to effective loading areas in applicable jurisdictional areas within the City of Campbell. Trash generation rates were then adjusted based on baseline street sweeping, storm drain inlet maintenance, and stormwater pump station maintenance conducted in each applicable area. The sum of the trash loads (i.e., rate multiplied by area) from each effective loading area represents the City of Campbell's baseline trash load from its MS4. A full description of the methods by which trash baseline loads were developed is included in BASMAA 2012a and is summarized below.

## Permittee Characteristics

Incorporated in 1952, the City of Campbell is located in Santa Clara County, and has a jurisdictional area of 3,772 acres. According to the 2010 Census, it has a population of 39,349, with a population density of 6,685.2 people per square mile and average household size of 2.42. Of the 39,349 who call the City of

Campbell home, 21% are under the age of 18, 7.6% are between 18 and 24, 32.6% are between 25 and 44, 27.6% are between 45 and 64, and 11.2% are 65 or older. The median household income was $67,214 in 2000[1]. The City of Campbell is home to The Pruneyard Shopping Center, a variety of retail and light Industrial businesses and mixed residential densities.

## Default Trash Generation Rates (Regional Approach)

A set of default trash generation rates was developed via the BASMAA regional collaborative project (BASMAA 2012a). Default generation rates were developed based on a comparison between trash characterization monitoring results, land uses, economic profiles, and other factors that were believed to possibly affect trash generation. Three trash characterization monitoring events were scheduled via the *Trash Generation Rates Project*. Due to the compliance timeline in the MRP, only two of three trash characterization monitoring events were used to develop trash generation rates described in BASMAA (2012a) and presented in this section. Following the completion of the third characterization event (Winter 2012), this section of the Short-Term Plan may be updated to reflect the most up-to-date trash generation and loading rates available. Trash generation rates based on the results of two of the three characterization events are shown in Table 2-1 for each trash loading category.

**Table 2-1: Regional Default Annual Trash Generation Rates by Land Use Category.**

| Land Use Category | Generation Rates (Gallons/Acre) |
|---|---|
| Retail and Wholesale | 29.99 |
| High Density Residential | 17.04 |
| K-12 Schools | 13.14 |
| Commercial and Services/ Heavy, Light and Other Industrial | 7.08 |
| Urban Parks | 2.14 |
| Low Density Residential | 1.25 |
| Rural Residential | 0.17 |

## Jurisdictional and Effective Loading Areas

Default trash baseline generation rates presented in Table 2-1 were applied to effective loading areas within jurisdictional areas of the City of Campbell. The City of Campbell's jurisdictional areas include all urban land areas within the City of Campbell's boundaries that are subject to the requirements in the MRP. Land use areas identified by a combination of the ABAG 2005 land use dataset and Permittee knowledge that were not included within the City's jurisdictional areas include:

- Federal and State of California Facilities and Roads (e.g., interstates, state highways, military bases, prisons);
- Roads Owned and Maintained by Santa Clara County;
- Colleges and Universities (private or public);

[1] From the 2000 Census. The median household income for the City of Campbell from the 2010 Census is not currently available.

- Non-Urban Land Uses (e.g., agriculture, forest, rangeland, open space, wetlands, water);
- Communication or Power Facilities (e.g., PG & E substations);
- Water and Wastewater Treatment Facilities; and
- Other Transportation Facilities (e.g., airports, railroads, and maritime shipping ports).

Once the City of Campbell's jurisdictional area was delineated, an effective trash loading area was developed by creating a 200-foot buffer on each side of the streets within the City's jurisdictional area. The purpose of the effective loading area is to eliminate land areas not directly contributing trash to the City's MS4 (e.g., large backyards and rooftops). Both the jurisdictional and the effective loading areas for the City of Campbell are presented in Table 2-2.

**Table 2-2: Jurisdictional areas and effective loading areas in the City of Campbell by land use classes identified by ABAG (2005).**

| Land Use Category | Jurisdictional Area (Acres) | Effective Loading Area (Acres) | % of Effective Loading Area |
|---|---|---|---|
| High Density Residential | 230 | 209 | 7 |
| Low Density Residential | 1,881 | 1,787 | 61 |
| Rural Residential | 77 | 67 | 2 |
| Commercial and Services/ Heavy, Light and Other Industrial | 587 | 476 | 16 |
| Retail and Wholesale | 297 | 228 | 8 |
| K-12 Schools | 129 | 78 | 3 |
| Urban Parks | 226 | 68 | 2 |
| **TOTAL** | **3,426** | **2,913** | **100%** |

## Permittee-Specific Baseline Trash Loading Rates

Regional default trash generation rates developed through the BASMAA regional collaborative project were applied to effective loading areas within the City of Campbell based on identified land uses. These generation rates were then adjusted based on the calculated effectiveness of baseline street sweeping, storm drain inlet maintenance, and pump station maintenance implemented by the City. These adjustments were conducted in GIS due to the site specificity of baseline generation rates and baseline control measure implementation. The following sections describe the baseline level of implementation for these three control measures. A summary of trash baseline generation and loading rates for the City of Campbell are provided in Table 2-3 and areas associated with these rates are illustrated in Figure 2-1.

### *Baseline Street Sweeping*

A "baseline" street sweeping program is defined as the sweeping frequency and parking enforcement implemented by the City of Campbell prior to effective date of the MRP. Baseline street sweeping differs from "enhanced" street sweeping, which includes increased parking enforcement and/or sweeping conducted at a frequency greater than the baseline ceiling (set at once per week for retail land uses and twice per month for all other land uses). The baseline ceiling was created to not penalize implementers

of enhanced street sweeping programs prior to the effective date of the MRP. For those Permittees that sweep less frequently than the baseline ceiling, their current sweeping frequency serves as their baseline.

The City of Campbell's baseline and current street sweeping program includes sweeping streets in most residential areas once per month, and most arterial roads and the downtown area twice per month. Parking enforcement signs for street sweeping are not posted in the City. However, parking enforcement equivalent exists on some arterial roads. The estimated trash load reduced via baseline street sweeping is presented in Table 2-3.

### *Baseline Storm Drain Inlet Maintenance*

Within the City of Campbell, prior to the effective date of the MRP, storm drain inlets were cleaned at a baseline level of one time every two years. Based on this baseline frequency and the effectiveness rating developed in BASMAA 2012b, the baseline storm drain maintenance program in the City of Campbell has an annual effectiveness rating of 2.5 percent. The estimated trash load reduced via baseline storm drain inlet maintenance is presented in Table 2-3.

### *Baseline Stormwater Pump Station Maintenance*

The City of Campbell does not own stormwater pump stations.

## Baseline Trash Loading Estimate

The estimated baseline trash load from the City of Campbell is calculated as the sum of the loads from the City's effective loading area, adjusted for baseline implementation of street sweeping, storm drain inlet maintenance, and pump station maintenance. The preliminary annual trash baseline load for the City of Campbell is presented in Table 2-3. Preliminary baseline trash loading rates are presented in Figure 2-1 to provide a geographical illustration of areas with estimated low, moderate, and, high trash loading rates.

**Table 2-3: Preliminary annual trash baseline load for the City of Campbell.**

| Category | Annual Load (gallons) |
|---|---|
| Preliminary Generation Trash Load | 17,186 |
| Load Removed via Baseline Street Sweeping | 5,836 |
| Load Removed via Baseline Storm Drain Inlet Maintenance | 284 |
| Load Removed via Baseline Stormwater Pump Station Maintenance | 0 |
| **Preliminary Trash Baseline Load** | 11,066 |

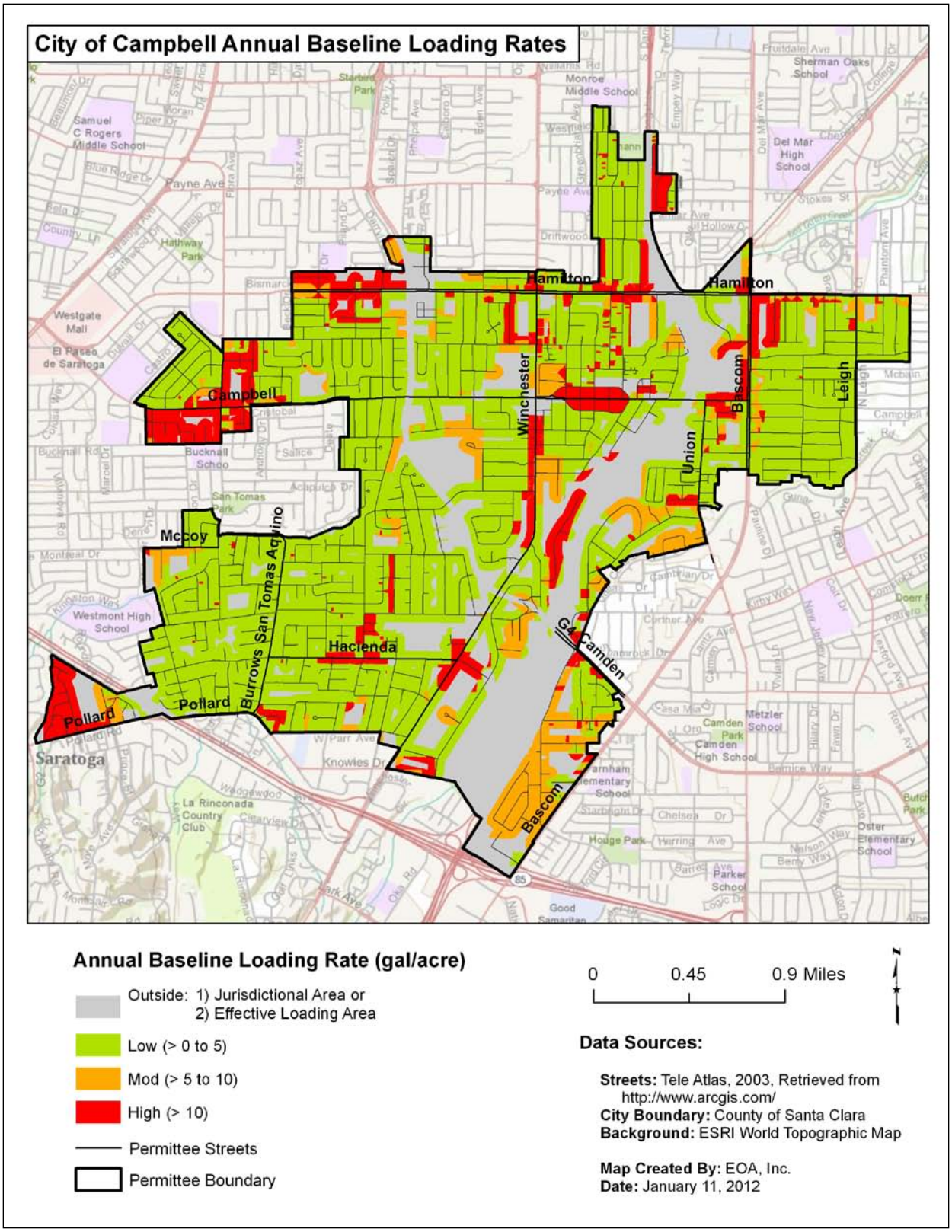


**Figure 2-1: Estimated trash baseline loading rates for geographical areas in the City of Campbell.**

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# 3.0 LOAD REDUCTION CALCULATION PROCESS

Using the guiding principles and assumptions described in BASMAA (2012a), a stepwise process for calculating trash load reductions was developed collaboratively through BASMAA. This process is fully described in the Trash Load Reduction Tracking Method Technical Report (BASMAA 2012a) and is briefly summarized in this section. The process takes into account at what point in the trash generation and transport process a trash control measure: 1) prevents trash generation, 2) intercepts trash in the environment prior to reaching a water body, or 3) removes trash that has reached a water body. In doing so, the process avoids double-counting trash load reductions associated with specific control measures.

To demonstrate trash load reductions, baseline trash loading rates will be adjusted using the following process:

**Step #1:** Existing Enhanced Street Sweeping

**Step#2:** Trash Generation Reduction

**Step #3:** On-Land Interception

**Step #4:** Trash Interception in the Stormwater Conveyance System

**Step #5:** Trash Interception in Waterways

**Step #6:** Comparison to Baseline Trash Load

Reductions calculated in Steps 2 and 5 are assumed to be implemented at a constant rate on an "area-wide" basis. For example, if a new region-wide public education strategy is implemented within the San Francisco Bay Area, all Permittees can apply load reduction credits associated with this control measure. In contrast, Steps 1, 3, and 4 are "area-specific" reductions that only apply to specific areas within a Permittee's jurisdiction. Area-specific control measures include full-capture treatment devices and enhanced street sweeping. Area-specific reductions may require the use of a Geographic Information System (GIS) to calculate.

Reductions are generally applied in the sequence described below, although some reductions may be applied "in-parallel" and calculated during the same sub-step in the process.

## Step #1: Existing Enhanced Street Sweeping

Trash load reductions due to existing enhanced street sweeping implemented prior to the effective date of the MRP and conducted at levels above baseline levels are not incorporated into each Permittee's trash baseline load. Therefore, load reductions associated with existing enhanced street sweeping are accounted for first in the trash load reduction calculation process. Existing enhanced street sweeping includes street sweeping conducted at a frequency greater than **1x/week** for streets within retail land use areas or greater than **2x/month** for streets in all other land use areas. The result of adjustments made to trash baseline loads due to the implementation of existing enhanced street sweeping is a set of **current baseline loading rates** and a **current baseline load**.

## Step #2: Trash Generation Reduction Control Measures

Trash generation reduction control measures prevent or greatly reduce the likelihood that trash will be deposited onto the urban landscape. They include the following area-wide control measures:

CR-1: Single-Use Carryout Plastic Bag Ordinances

CR-2: Polystyrene Foam Food Service Ware Ordinances

CR-3: Public Education and Outreach Programs

CR-4: Reduction of Trash from Uncovered Loads

CR-5: Anti-Littering and Illegal Dumping Enforcement

CR-6: Improved Trash Bin/Container Management

CR-7: Single-Use Food and Beverage Ware Ordinances

Load reductions associated with trash generation reduction control measures are applied on an area-wide basis.[2] Therefore, reductions in current baseline loading rates are adjusted uniformly based on the implementation of the control measure and the associated credit claimed.

Baseline loading rate adjustments for all generation reduction control measures implemented may be applied in-parallel, but should be applied prior to calculating on-land interception measures discussed in Step #3. The result of adjustments to trash baseline loading rates due to the implementation of these enhanced control measures will be a set of **street loading rates**. The **street load** is the volume of trash estimated to enter the environment and available for transport to the MS4 if not intercepted via on-land control measures described in Step #3.

## Step #3: On-Land Interception Control Measures

Once trash enters the environment, it may be intercepted and removed through the following control measures prior to reaching the stormwater conveyance system:

QF-1: On-Land Trash Cleanups (Volunteer and/or Municipal) (Area-wide)

QF-2: Enhanced Street Sweeping (Area-specific)

Since on-land trash cleanups can affect the amount of trash available to street sweepers, load reductions associated with their implementation will be quantified first, followed by street sweeping enhancements. On-land trash cleanups will be applied as an area-wide reduction and all effective loading rates will be adjusted equally. Enhanced street sweeping, however, is an area-specific control measure and only those effective loading rates associated with areas receiving enhancements will be adjusted. Due to the spatial nature of enhanced street sweeping, GIS may be needed to conduct this step.

The result of adjustments to effective loading rates due to the implementation of these enhanced control measures will be a set of **conveyance system loading rates**. The **conveyance load** is the volume of trash estimated to enter the stormwater conveyance system (e.g., storm drains).

[2] The only exception to this statement are load reductions associated with the establishment of Business Improvement Districts (BIDs) or equivalent, which are specific to geographic areas and considered “area-specific.”

## Step #4: Control Measures that Intercept Trash in the MS4

Control measures that intercept trash in the stormwater conveyance system are area-specific. Therefore, they only apply to land areas and associated trash loads reduced. Conveyance system loading rates developed as a result of Step #3 should be adjusted in-parallel for the following control measures:

- QF-3a: Partial-Capture Treatment Device: Curb Inlet Screens (Area-specific)
- QF-3b: Partial-Capture Treatment Device: Stormwater Pump Station Trash Racks Enhancements (Area-specific)
- QF-4: Enhanced Storm Drain Inlet Maintenance (Area-specific)
- QF-5: Full-Capture Treatment Devices (Area-specific)

Load reductions for these control measures are calculated in-parallel because they are applied to independent geographical areas. Reductions from all control measures described in this step are area-specific and may require the use of GIS to calculate a set of **waterway loading rates**. Once waterway loading rates have been determined, a **waterway load** will be developed and used as a starting point for calculating load reductions associated with trash interception in waterways discussed in Step #5.

## Step #5: Control Measures that Intercept Trash in Waterways

The load of trash that passes through the stormwater conveyance system without being intercepted may still be removed through interception in waterways. There are two control measures associated with interception in waterways:

- QF-3c: Partial-Capture Treatment Device: Litter Booms/Curtains (Area-wide)
- QF-6: Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (Area-wide)

As these control measures are implemented, load reduction estimates can be calculated in-parallel for these two measures.

## Step #6: Comparison to Baseline Trash Load

Applying the five steps described in the processes above will provide an estimated trash load (volume) remaining after trash control measures are implemented. As depicted in the following equation, the relative percent difference between the baseline load and the load remaining after control measures are implemented is the percent reduction that will be used to assess progress towards MRP trash load reduction goals.

$$\frac{\text{Baseline Load} - \text{Remaining Load}}{\text{Baseline Load}} \bullet 100 = \% \text{ Reduction}$$

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# 4.0 ENHANCED TRASH CONTROL MEASURES

This section describes the new or enhanced trash control measures planned for implementation by the City of Campbell. The enhanced control measures described are designed to reach a 40 percent reduction by July 1, 2014. New and enhanced control measures that will be implemented by City of Campbell include those listed in Table 4.1.

**Table 4-1. Trash control measures that will be implemented by the City of Campbell to reach the 40 percent trash load reduction.**

| Control Measure |
|---|
| CR-2 Polystyrene Foam Food Service Ware Ordinances |
| CR-3 Public Education and Outreach Programs |
| CR-4 Activities to Reduce Trash from Uncovered Loads |
| CR-5 Anti-Littering and Illegal Dumping Enforcement Activities |
| CR-6 Improved Trash Bin/Container Management (Municipally or Privately-Controlled) |
| QF-1 On-Land Trash Pickup (Volunteer and/or Municipal) |
| QF-4 Enhanced Storm Drain Inlet Maintenance |
| QF-5 Full-Capture Treatment Devices |
| QF-6 Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) |

# CR-2: Polystyrene Foam Food Service Ware Policy

Polystyrene foam is used as food ware in the food service industry. According to the USEPA, products made of polystyrene can become floatable debris in waterways, are persistent in the environment, and have physical properties that can have serious impacts on human health, wildlife, the aquatic environment, and the economy (USEPA 2002). Due to its properties, polystyrene foam used as food ware is typically not recycled. Since 1990, over 100 government agencies within the United States, including over twenty within the Bay Area, have enacted full or partial bans on polystyrene foam food service ware.

## Baseline Level of Implementation

Prior to adoption of the MRP, over twenty agencies within the Bay Area enacted full or partial bans on polystyrene foam food service ware. To avoid penalizing these early implementers, an applicable control measure implemented by a Permittee prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is not applicable for this control measure.

## Enhanced Level of Implementation

The City of Campbell plans to adopt policies limiting the distribution of polystyrene foam food service ware at City-sponsored events and on City-owned property. Language prohibiting the distribution and purchase of polystyrene foam food and beverage ware will be incorporated into the City's internal policies (e.g., purchasing policies and event and facility use permits and agreements) by December 31, 2012. The percent trash reduction from MS4s as a result of implementing polystyrene foam food service ware policies will be reported in the Annual Report submitted each September.

## Percent Reduction from Enhancements

The City of Campbell will receive a 2 percent reduction credit for implementing specific enhanced control measures described in the *Enhanced Level of Implementation* section above. The 2 percent reduction credit will be applied to the City of Campbell's baseline trash load. This percent reduction credit is consistent with methods presented in BASMAA (2012a). A summary of all load reductions anticipated through the implementation of this plan are included in Section 5.

# CR-3: Public Education and Outreach Programs

Permittees in the San Francisco Bay Area have implemented public education and outreach programs to inform residents about stormwater issues relating to pollutants of concern, watershed awareness, and pollution prevention. Public education and outreach efforts include developing and distributing brochures and other print media; posting messages on websites and social networking media (Facebook, Twitter, etc.); attending community outreach events; and conducting media advertising. In recent years, some municipal agencies have implemented anti-litter campaigns to increase public awareness about the impacts of litter on their communities and water quality, and to encourage the public to stop littering.

## Baseline Level of Implementation

The City of Campbell will continue public education and outreach control measures that were implemented prior to the effective date of the MRP including outreach via its website, newsletters and its partnership with the West Valley Clean Water Program (WVCWP). These control measures are considered baseline because they were not related to trash reduction specifically, however, they will be enhanced to incorporate litter messaging as a priority pollutant topic. New actions and the actions started prior to the effective date of the MRP that the City of Campbell plans to implement or continue into the future are described in the next section.

## Enhanced Level of Implementation

The City of Campbell will implement the following public education and outreach control measures prior to July 1, 2014:

**Litter Reduction Advertising Campaign(s)**

***BASMAA Youth Outreach Campaign (Regional)***

The City of Campbell through participation in and funding of the regional **BASMAA Youth Outreach Campaign,** the City of Campbell will implement an outreach campaign designed to reduce littering by the youth target audience in the Bay Area. The Youth Outreach Campaign was launched in September 2011 (post-MRP effective date) and aims to increase the awareness of Bay Area youth (ages 16-24) on litter and stormwater pollution issues, and eventually change their littering behaviors. Combining the ideas of community based social marketing with traditional advertising, the Youth Campaign aims to engage youth to enable the peer-to-peer distribution of Campaign messages. The Campaign will at least run from FY 11-12 through FY 13-14. Brief descriptions of the Campaign activities are provided below:

- Raising Awareness: The Campaign will begin by raising awareness among the youth target audience on litter and stormwater pollution issues. Partnerships with youth commissions, high schools, and other youth-focused organizations will be developed to reach the target audience. Messages targeted to youth will be created and distributed via paid advertising, email marketing, the Campaign website, and social networking sites (e.g., Facebook and Twitter).
- Engage the Youth: The advertisements will encourage the audience to participate in the Youth Campaign by joining a Facebook page, entering a contest, taking an online quiz, etc., and providing their contact information. At the beginning of FY 12-13, a video contest will be launched to get Bay Area youth further involved in the Campaign. An online voting system will be used to select the winning entry. Media advertising will be conducted to promote the winning entry.

- Change Behaviors: To move the audience along the behavior change continuum, the Campaign will use electronic platforms such as email marketing and social networking sites to encourage participants to engage in increasingly more difficult behavior changes, such as participating in a clean-up, organizing a clean-up, etc.
- Maintain Engagement: After establishing a connection with the youth target audience, the Campaign will continue to interact with the target audience through email marketing and social media websites.

The Youth Campaign will include a pre- and post-campaign survey of Campaign participants to evaluate the effectiveness of outreach. The pre-campaign survey will be conducted in FY 11-12 and the post campaign survey in FY 13-14. Other evaluation mechanisms, such as website hits, number of youth engaged in the Campaign's social networking website, etc. will also measure the Campaign's effectiveness in increasing awareness and changing behavior.

***Watershed Watch Campaign (Countywide)***

In addition to the BASMAA Youth Outreach Campaign, the City of Campbell will continue to implement the countywide **Watershed Watch Campaign** through active participation and funding of the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). This Campaign develops and distributes media advertising that includes anti-litter messages. Anti-litter advertisements that have been developed for television, print, transit, and radio are used each year, and will continue in the future. The Campaign conducts a telephone survey every five years to measure the effectiveness of outreach and the associated increase in awareness about litter- and stormwater-related messaging.

**Outreach to School-Age Children or Youth**

***ZunZun (Countywide)***

The City of Campbell plans to continue participation in and funding of the SCVURPPP countywide ZunZun Program, to implement litter reduction outreach to elementary school-age children. Up to 50 ZunZun assemblies at elementary schools are conducted in the Santa Clara Valley each year. These bilingual musical assemblies educate elementary school students and their teachers on watersheds and urban runoff pollution prevention, including litter. ZunZun performances use physical comedy, audience participation, and musical instruments to educate teachers and children. Handouts, including teacher and student activity sheets, are distributed following the assembly.

The SCVURPPP Schools and Youth Education and Outreach Work Group provides a list of schools for ZunZun to contact. In addition to schools with high Hispanic populations, the list also targets schools with high Asian/Pacific Islander populations.

ZunZun assemblies are evaluated using postage-paid evaluation cards that are distributed to all teachers present at the performances. Teachers mail the completed evaluation cards to SCVURPPP, and results are compiled by SCVURPPP staff. Based on the teacher feedback, changes are made to future assemblies and/or handouts.

**Media Relations**

***BASMAA Regional Media Relations Project (Regional)***

The City of Campbell plans to continue participation in and funding of the **BASMAA Regional Media Relations Project**, to implement a media relations project partially designed to reduce littering from target audiences in the Bay Area. The goal of the BASMAA Media Relations Project is to generate media

coverage that encourages individuals to adopt behavior changes to prevent water pollution, including littering. At least two of the project's press releases or PSAs focus on litter issues each year (e.g., promoting creek clean-up activities, preventing litter by using reusable containers, etc.).

**Community Outreach Events**

***West Valley Clean Water Program (WVCWP) Sponsored Events (Local)***

The City of Campbell is a member of the WVCWP, which sponsors public outreach events and campaigns on behalf of the West Valley communities, including Campbell, Los Gatos, Monte Sereno, and Saratoga. These events are implemented to provide outreach and volunteer opportunities for all members of the West Valley communities in areas targeted for litter abatement. At the conclusion of each event, the WVCWP completes its standardized event form, which includes an evaluation component to record feedback from staff and event participants in order to gauge the success of an event and make improvements to future events.

Coastal Cleanup Day- This event is hosted by the WVCWP every September at a creek in at least one of the West Valley communities. Volunteers are brought in from the West Valley communities to clean a creek site known to have litter issues. Volunteers are often utilized to assist the communities in performing their MRP-required trash hot spot assessment cleanups during Coastal Cleanup events. Coastal Cleanup Day includes outreach to the volunteers on litter messaging and other stormwater quality issues through verbal presentations, literature distributions, and giveaways such as reusable bags.

High School Student Cleanups- The WVCWP sponsors a cleanup event adjacent to a high school within the West Valley communities at least once per year. Teachers and student volunteers assist in data collection and learn the importance of monitoring sites for litter issues. The event coordinators include litter reduction messaging in the event, and distribute giveaways (e.g., reusable bags) and literature on litter and other stormwater quality issues.

National River Cleanup Day- This event is hosted by the WVCWP every May at a creek location in at least one of the West Valley communities that is known to have a litter issue. Volunteers from all the West Valley communities are invited to participate in the cleaning of several hundred feet to a few miles of creek length, depending on the size and accessibility of the site chosen. Volunteers may also assist in the MRP required trash hot spot assessments if a municipality's hot spot is selected as a National River Cleanup Day site. The WVCWP staff and supporting municipality staff provide messaging on litter issues and distribute outreach materials in the forms of literature and giveaways.

Youth Creek Cleanup Day- WVCWP sponsors this annual cleanup for elementary school students, which may occur at a West Valley community MRP-required hot spot depending on the location selected for the cleanup. Students, parents, and teachers participate in the required monitoring of litter collected (required for the assessment) and learn about litter and other stormwater quality issues from WCVWP staff and supporting municipality staff. Event staff distributes literature on litter and giveaways such as reusable bags.

Enviroscape Presentations and Outreach Events- In addition to creek cleanup events, the WVCWP also sponsors and attends a minimum of four outreach events per year among the four West Valley communities. Messaging at these events through the use of the Enviroscape watershed model and presentations includes discussions on trash and litter and how the watershed and stormdrain system operate. These events include a combination of at least four of the following events per year among the four communities: school on-land litter pickups, school Enviroscape presentations, Arbor Day events, Earth Day events, Wildlife Education Fair (held in the City of Cupertino but advertised in West Valley

communities), Public Works open houses, and the Great American Litter Pickup (held in Campbell annually). These events are rotated among the four West Valley communities unless an event has a standing location, in which case volunteers and attendees are invited from all the communities to participate (e.g. Campbell's Great American Litter Pickup draws volunteers from all the West Valley communities).

## Percent Reduction from Enhancements

The City of Campbell will receive a total of 8 percent reduction credit for implementing specific enhanced control measures described in the *Enhanced Level of Implementation* section above. This percent reduction is comprised of the following credits, consistent with the *Load Reduction Tracking Method*:

- Litter Reduction Advertising Campaigns – 3%
- Outreach to School-Age Children or Youth – 2%
- Media Relations – 1%
- Community Outreach Events - 2%

These 8 percent reduction credits will be applied against the City of Campbell's baseline trash load. This percent reduction credit is consistent with methods presented in BASMAA (2012a). A summary of all load reductions anticipated through the implementation of this plan are included in Section 5.

# CR-4: Reduction of Trash from Uncovered Loads

Although it is currently illegal to operate a vehicle that is improperly covered so its contents escape[3], vehicles remain a significant trash source to MS4s and local waterways. Specifically, vehicles that do not secure or cover their loads when transporting trash and debris have a high risk of contributing trash to MS4s. Land areas that generate trash from vehicles include roads, highways (on/off ramps, shoulders, or median strips), and parking lots. To help address the dispersion of trash from unsecured or uncovered vehicles destined for landfills and transfer stations, Permittees may require municipally-contracted trash haulers to cover or secure loads or work with municipal staff or private landfill and transfer station operators to enhance enforcement of existing regulations and/or to educate waste haulers on securing loads.

## Baseline Level of Implementation

The baseline trash load described in Section 2.0 assumes that prior to adoption of the MRP, the City of Campbell has not adopted control measures to reduce trash from vehicles with uncovered loads. Therefore, implementation of any of the control measures described in this section is considered to be enhanced implementation.

## Enhanced Level of Implementation

The City of Campbell has or will implement the following enhanced control measures to reduce trash from vehicles with uncovered loads prior to July 1, 2014:

**Require Municipal Trash Haulers to Cover Loads** – The City of Campbell's Joint Powers Authority (JPA) contract with its franchised waste hauler requires the hauler to cover loads when transporting trash and debris to the disposal site. Amendments to the 2006 hauler agreement required the hauler to switch to enclosed trucks. . Additionally, the City's hauler is the exclusive roll-off and debris box provider for the City, which prevents private haulers that may not be regulated to have covered loads from entering the City.

The City of Campbell will require language specifying the requirement of covered loads in the City's contracts with private contractors (e.g. landscape contractors) by July 30, 2012.

**Implement an Enhanced Enforcement Program for Vehicles with Uncovered Loads** – The City of Campbell's municipal ordinance requires that all conveyances used to haul waste and other materials be covered and enclosed to prevent the contents from entering the public right-of-way and adjacent lands.

Additionally, the City of Campbell Police Department actively enforces the CA Vehicle Code Sections 23114 and 23115, and monitors for vehicles with uncovered loads and would issue a monetary fine, as needed, to vehicles observed with uncovered loads in the City of Campbell.

## Percent Reduction from Enhancements

The City of Campbell will receive a 5 percent reduction credit for implementing specific enhanced control measures described in the *Description of Enhanced Level of Implementation* section above. The 5 percent reduction credit will be applied to the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Campbell. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a) and is presented in the Trash Load Reduction Summary Table included in Section 5.

[3] In accordance with the California Vehicle Code Sections 23114 and 23115, it is against the law to operate a vehicle on the highway which is improperly covered, constructed, or loaded so that any part of its contents or load spills, drops, leaks, blows, or otherwise escapes from the vehicle. Exempted materials include hay and straw, clear water, and feathers from live birds. Additionally, any vehicle transporting garbage, trash, or rubbish, used cans or bottles, waste papers, waste cardboard, etc. must have the load covered to prevent any part of the load from spilling on the highway (CVC 2011). Significant fines are possible for non-compliance.

# CR-5: Anti-Littering and Illegal Dumping Enforcement Activities

Successful anti-littering and illegal dumping enforcement activities include laws or ordinances that make littering or dumping of trash illegal. Laws are enforced by various municipal agency staff (e.g., police, sheriff, and public works department staff) who issue citations in response to citizen complaints or other enforcement methods (e.g., surveillance cameras, signage, and/or physical barriers installed at illegal dumping hot spots). In some California jurisdictions, the minimum fine for littering is $500 and the maximum penalty for highway littering is $1000 (City of San Francisco 2001). However, it is difficult to enforce small littering events unless they are witnessed or solid proof exists linking the offender to the litter. As a result, enforcement tends to focus on larger scale illegal dumping activities.

## Baseline Level of Implementation

The baseline trash load described in Section 2.0 assumes that the City of Campbell has adopted a basic anti-littering and illegal dumping enforcement program that entails receiving and responding to complaints from citizens as resources allow. Prior to the MRP and following its adoption, the City of Campbell's Streets and Parks staff has an informal program in place to respond to complaints from the public regarding illegal dumping. If illegal dumping sites are found in response to complaints, staff picks up the materials and provides outreach to the violator (if identifiable) but there was no enforcement.

## Enhanced Level of Implementation

The City of Campbell will implement or has already implemented the following enhanced anti-littering and illegal dumping enforcement control measures prior to July 1, 2014:

**Anti-Littering and Illegal Dumping Enforcement Program –** The City of Campbell will specify in its Illicit Discharge Detection and Elimination (IDDE) Enforcement Response Program (ERP) for litter and illegal dumping are types of stormwater violations that can be met with a citation (as warranted). The IDDE reporting program will allow for the City's IDDE responder to investigate complaints received regarding litter and illegal dumping in order to identify violators, in addition to ongoing surveillance by staff of illegal dump sites. The City of Campbell's IDDE ERP will be reviewed and updated, as needed, by December 31, 2012 to include litter and illegal dumping violations.

**Use of Physical Barriers or Improvements** – The City of Campbell has installed physical barriers in the form of chain link fences and gates at an area the City identified as a hot spot for illegal dumping. This site is monitored by the City's Streets and Parks Maintenance staff to deter future illegal dumping.

## Percent Reduction from Enhancements

The City of Campbell will receive a 4 percent reduction credit for implementing specific enhanced control measures described in the *Description of Enhanced Level of Implementation* section above. The 4 percent reduction credit will be applied to the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Campbell. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a) and is presented in the Trash Load Reduction Summary Table included in Section 5.

# CR-6: Improved Trash Bin/Container Management

Receptacles used to place/store trash or recyclables prior to collection by a public agency or private waste hauler reduce the potential for littering and trash loading to stormwater conveyance systems and receiving waters (City of Los Angeles 2004). For the purposes of assigning trash load reduction credits, receptacles fall into the following two categories:

- **Private Trash/Recycling Bins**: A receptacle for placing trash or recyclables generated from a household, business, or other location that is serviced by a trash hauler. Bins are specifically-designed, heavy-duty plastic wheeled containers with hinged lids, or large multi-yard metal or plastic containers rectangular in shape.
- **Public Area Trash Containers**: A receptacle that provides people with a convenient and appropriate place to dispose of incidental trash generated in public spaces. The design and size of public area trash containers vary widely, depending on their setting and use.

The effectiveness of containers and bins in reducing trash in the environment is likely dependent upon: the location and density of the receptacles, size of the bin/container in relationship to the size needed to service users, frequency of maintenance, and the ability of the bin/container to capture and contain the trash deposited.

## Baseline Level of Implementation

The baseline trash load described in Section 2.0 assumes that the City of Campbell has not implemented enhanced trash bin/container management practices prior to effective date of the MRP. Prior to the MRP, control measures included in the 2006 hauler agreement were the change to carts with lids, including the switch from three open bins for residential recycling to a mixed recyclables, closed-lid cart. In addition, collection containers have to be issued by the hauler, therefore not allowing waste generators to place private containers (e.g. inadequately sized or open top containers) out for collection by the hauler.

## Enhanced Level of Implementation

The City of Campbell has implemented the following improved trash bin/container management practices prior to July 1, 2014:

**Ensuring Adequate Private Trash Service** – The City of Campbell has a municipal ordinance in place that requires all commercial and residential properties to have the minimum of once-a-week waste collection service. The municipal ordinance prohibits the accumulation of waste on any property in the City and the hauler may require changes to service levels or container types in order to prevent the accumulation of excess waste. The City of Campbell utilizes its waste hauler to ensure all businesses and households within the City have adequate trash service (i.e., sufficient trash collection or use of bins of the appropriate size) through its JPA agreement with the hauler.

## Percent Reduction from Enhancements

The City of Campbell will receive a 3 percent reduction credit for implementing specific enhanced control measures described in the *Description of Enhanced Level of Implementation* section above. The 3 percent reduction credit will be applied to the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Campbell. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a) and is presented in the Trash Load Reduction Summary Table included in Section 5.

# QF-1: Enhanced On-Land Trash Cleanups (Volunteers and/or Municipal)

On-land cleanups conducted by Permittees and volunteers have been successful in removing trash from identified trash hot spots and engaging local citizenry in improving their communities. Permittees have several programs in place to address on-land trash. Municipal efforts relate to ongoing beautification of impacted areas and coordination of cleanup events. Volunteer on-land cleanups involve the meeting of individuals, creek and watershed groups, civic organizations, businesses, and others at designated or adopted on-land sites to remove trash. On-land trash cleanups are conducted as single-day events or as ongoing events throughout the year.

## Baseline Level of Implementation

The City of Campbell has had ongoing on-land cleanup activities through the work of the City's Streets and Parks Maintenance staff to maintain the medians, landscaped areas, roads, and parks prior to the effective date of the MRP. These control measures are considered baseline because they were accounted for in the preliminary trash generation rates established through the BASMAA *Baseline Trash Loading Rates Project*. New or enhanced actions that began or are planned to begin after to the effective date of the MRP are described under the next section.

## Enhanced Level of Implementation

Prior to July 1, 2014, the City of Campbell will be conducting or coordinating the following new or enhanced on-land trash cleanup activities listed below. These on-land cleanups will be conducted or coordinated each year and the volume of trash removed will be tracked to demonstrate trash loads reduced.

Great American Litter Pickup

The City of Campbell began participating in the Great American Litter Pickup in 2003. Although this event began prior to the MRP, it was implemented in preparation for the Los Angeles Trash TMDLs and MRP trash reduction requirements that were going to require significant actions to reduce trash by the Permittees. Campbell's annual participation in this event following the MRP has resulted in yearly increases in the amount of volunteers in attendance and the level of litter outreach conducted.

Please note that **only trash that has the potential of entering the MS4 will be tracked**. As a result, large items (e.g., appliances, shopping carts, furniture, mattresses, televisions, tires, lumber, etc.) that will be removed during on-land trash cleanups are not part of the volume determination since they do not have the potential of entering the MS4.

## Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing on-land trash cleanups is 1,446 gallons. This volume is equal to approximately a 13.1 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Campbell. This volume is a conservative estimate based on the averages of the data collected from Campbell's last four annual Great American Litter Pickups as lower collection rates were assumed (e.g., smaller bag sizes were used to calculate volume) than historical data demonstrates. Both values provided within this section are included in the Trash Load Reduction Summary Table included in Section 5.

# QF-4: Enhanced Storm Drain Inlet Maintenance

In accordance with countywide Stormwater Conveyance System Operation and Maintenance Performance Standards (tier 2), storm drain inlets may be maintained at least every other per year by Permittees. Permittees who have enhanced storm drain inlet maintenance by increasing the frequency of cleanouts may use the reduction in the load of trash going to the MS4s to demonstrate attainment of trash load reduction goals required by the MRP.

## Baseline Level of Implementation

The baseline trash load described in Section 2.0 assumes that the City of Campbell currently maintains and removes material from storm drain inlets at least every other year. This baseline frequency is consistent with the frequency of storm drain inlet maintenance in the City of Campbell prior to the effective date of the MRP.

## Enhanced Level of Implementation

A total of 1,148 storm drain inlets will be maintained in the City of Campbell at higher-than-current frequencies prior to July 1, 2014. All storm drain inlets in the City of Campbell, which were previously cleaned once every two years, will be inspected and cleaned, as needed, on an annual basis beginning July 1, 2012. The enhanced frequency of maintenance and associated effectiveness ratings will be used to calculate loads reduced from enhanced maintenance. This load reduction calculation method is consistent with the trash load reduction tracking method (BASMAA 2012a).

## Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing enhanced storm drain inlet maintenance is 180 gallons. This volume is equal to approximately a 1.6 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Campbell. Both values provided within this section are included in the Trash Load Reduction Summary Table included in Section 5.

# QF-5: Full-Capture Treatment Devices

As defined by the Municipal Regional Stormwater Permit (MRP), a full-capture system or device is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. A list of the full-capture systems and devices recognized by the San Francisco Bay Regional Water Quality Control Board (Water Board) is included in the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a). Trash loads reduced via publically or privately owned and operated devices within a Permittee's jurisdictional area that have been recognized by the Water Board as full-capture may be used to demonstrate attainment of trash load reduction goals.

## Baseline Level of Implementation

Prior to adoption of the MRP, some Pemittees installed and maintained full-capture devices. To avoid penalizing these early implementers, an applicable control measure implemented within a Permittee's jurisdictional area prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is having no trash full-capture devices installed.

## Enhanced Level of Implementation

A total of 26 trash full-capture treatment devices have been or will be installed in the City of Campbell prior to July 1, 2014. A list of these full-capture devices is included in Table QF-5-1. All devices listed within this table are enhanced trash control measures. Table QF-5-1 also includes the area treated and the calculated trash load reduced from the full-capture treatment devices. These calculations are consistent with the approach described in the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a).

## Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing full capture devices is 537 gallons. This volume is equal to approximately a 4.8 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Campbell. Both values provided within this section are included in the Trash Load Reduction Summary Table included in Section 5.

**Table QF-5-1. Trash full-capture treatment devices within the jurisdictional boundaries of the City of Campbell that are planned for installation by July 1, 2014.**

| Number of Devices | Public or Private | Device Name | Location (Cross Streets) | Installation Date/Anticipated Installation Date | Total Area Treated (acres) | Trash Load Reduced (gals/year) |
|---|---|---|---|---|---|---|
| 1 | Private | Continuous Deflective Separator (Contech) | 710 E McGlincy Lane (Commercial) | Existing Building Permit final 1/3/2007 | 4.5 | 10 |
| 1 | Private | Continuous Deflective Separator (Contech) | 655 Creekside (Marriott Hotel) (Retail) | Existing Building Permit final 7/6/2010 | 3.13 | 30 |
| 1 | Private | Continuous Deflective Separator (Contech) | 452 Salmar (Retail) | Existing Building Permit final 10/20/2009 | 1.27 | 12 |
| 1 | Private | Continuous Deflective Separator (Contech) | 1691 and 1711 Bucknall (High Density Residential) | Existing Building Permit final 8/28/2008 | 0.56 | 3 |
| 22 | Public | StormTek Inlet Device (Advanced Solutions) | Various locations throughout City (59% retail/wholesale; 41% commercial/industrial) | By Nov 2012 | 72.3 | 481 |

# QF-6: Creek/Channel/Shoreline Cleanups

Creek/channel/shoreline cleanups have been successful in removing large amounts of trash from San Francisco Bay Area creeks and waterways, and in increasing citizens' awareness of trash issues within their communities. Creek/channel/shoreline cleanups are conducted as single-day events or throughout the year by volunteers and municipal agencies. Since volunteers and municipal agencies have the common goal of clean creeks and waterways, their efforts sometimes overlap. For example, some municipal agencies use volunteers to help assess and clean designated trash hot spots during single-day volunteer events.

## Baseline Level of Implementation

Trash reduced via creek/channel/shoreline cleanups was not accounted for in the City of Campbell's baseline trash load described in Section 2.0. Therefore, implementation of any of the control measures described in this section is considered to be an enhancement and can be used to demonstrate progress towards load reduction goals.

## Enhanced Level of Implementation

Prior to July 1, 2014, the City of Campbell will conduct MRP-required[4] and the following non-MRP-required creek/channel/shoreline cleanups[5] listed below. Both types of cleanups will be conducted each year and the volume of trash removed will be tracked to demonstrate trash loads reduced.

The City of Campbell is a member of the West Valley Clean Water Program (WVCWP) which sponsors creek cleanup events on behalf of the West Valley communities, including Campbell, Los Gatos, Monte Sereno, and Saratoga These events are implemented to gather volunteers from all the West Valley communities to assist in completing the MRP-required trash hot spot assessments as well as other non-MRP-required creek cleanups at selected sites among all four communities. The WVCWP allows the West Valley communities to operate as a group that benefits from events held in any of the communities as they serve the same population. These creek cleanups are held annually in a minimum of one of the four West Valley communities. The WVCWP sponsors Coastal Cleanup Day every September on behalf of the City of Campbell in conjunction with the City's MRP-required trash hot spot assessment.

In addition to the WVCWP creek cleanup events, there are several volunteer-led creek cleanup sites adopted in the West Valley communities every Coastal Cleanup Day and National River Day. Conservatively, as there are multiple sites among the West Valley communities for each annual event, these events will continue to occur annually at at least one site in the City of Campbell per year, and the volume of trash removed from these events will be tracked to demonstrate trash loads reduced.

## Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing creek/channel/shoreline cleanups is 843 gallons. This volume is equal to approximately a 7.7 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of Campbell. This volume is a conservative estimate based on the averages of the data collected from multiple creek cleanup sites and events over

[4] Creek/channel/shoreline cleanups conducted in accordance with Permit Provision C.10.b.
[6]All "other" creek/channel/shoreline cleanups conducted by a municipality that are not required by Provision C.10.b.

the past three years, including MRP-required and non-MRP-required Permittee-led and volunteer-led events. In addition, to maintain a conservative estimate of the volumes of trash collected through these events over time, lower frequencies of events and number of sites, as well as smaller bag sizes were assumed, despite historical data demonstrating higher collection rates. Both values provided within this section are included in the Trash Load Reduction Summary Table included in Section 5.

Baseline and Short-Term Trash Load Reduction Plan

West Valley Community

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# 5.0 SUMMARY OF TRASH CONTROL MEASURE ENHANCEMENTS

The City of Campbell is committed to reducing the potential for trash impacts in local water bodies in the San Francisco Bay Area. The planned enhanced trash control measures described in Section 4.0 are also listed in Table 5-1. The enhancements are intended to comply with the 40 percent trash load reduction goal in MRP provision C.10.

The City of Campbell has selected control measures based on their effectiveness in preventing the generation of trash and removing trash once it has entered the environment.

Control measures that will prevent the generation of trash and litter that the City of Campbell has or will implement include: the adoption of a polystyrene policy that will prohibit the purchase and distribution of polystyrene at City-sponsored events and on City property; the continued implementation of local and regional public education and outreach campaigns that will have improved focus on litter messaging and evaluation components; the enhanced implementation of programs to prevent uncovered loads, littering, and illegal dumping through improved enforcement, monitoring, and physical improvements to the City; and the improved trash bin/container management for private and public areas through continued partnerships with the City's franchised waste hauler.

Additional control measures to intercept trash once it has entered the environment that have or will be implemented by the City of Campbell include: on-land litter pickups through the City's sponsoring of Great American Litter Pickup Day; enhanced storm drain inlet maintenance from one time every other year to annual inspections, with cleaning as needed; the installation and utilization of full-capture devices to intercept trash that has entered the MS4; and the collection of trash from creek cleanups through volunteer and staff efforts.

**Table 5-1. Planned enhanced trash control measure implementation within the jurisdictional boundaries of the City of Campbell and associated trash loads reduced.**

| Trash Control Measure | Summary Description of Control Measure | % Reduction (Credits) | Trash Load Reduced | Cumulative % Reduction (Compared to Baseline) |
|---|---|---|---|---|
| Polystyrene Foam Food Service Ware Ban (CR-2) | Adopt policies to prohibit the distribution and purchase of polystyrene at City-sponsored events and on City property. | 2.0% | 221 | 2.0% |
| Public Education and Outreach Programs (CR-3) | Regional, county, and local advertising campaigns, youth outreach, media relations, and community events to promote litter messaging that will include evaluation components. | 8.0% | 885 | 10.0% |
| Activities to Reduce Trash from Uncovered Loads (CR-4) | Waste hauler agreement, municipal code, and future private contract agreements require covered loads with enforcement of uncovered loads in the City covered by the Police Department. | 5.0% | 553 | 15.0% |
| Anti-Littering and Illegal Dumping Enforcement Activities (CR-5) | Enforcement of littering and illegal dumping violations through the IDDE program and installation of physical barriers as deterrents. | 4.0% | 443 | 19.0% |
| Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6) | Municipal ordinance and hauler agreement which require adequate service levels and bin types for garbage collection. | 3.0% | 332 | 22.0% |
| Enhanced On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1) | Campbell's continued participation in Great American Litter Pickup. | NA | 1,446 | 35.1% |
| Enhanced Storm Drain Inlet Maintenance (QF-4) | Enhanced frequency of storm drain inlet maintenance from once every other year to annual. | NA | 180 | 36.7% |
| Full-Capture Treatment Devices (QF-5) | The installation of Full-Capture Devices to intercept trash in the MS4. | NA | 537 | 41.5% |
| Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6) | MRP-required and non-MRP-required creek cleanup events. | NA | 843 | 49.2% |

## 5.1 Annual Reporting and Progress Towards Trash Load Reduction Goal(s)

Consistent with MRP Provision C.10.d (i), the City of Campbell intends to report on progress towards MRP trash load reduction goals on an annual basis beginning with the Fiscal Year 2011-2012 Annual Report. Annual reports will include:

1. A brief summary of all enhanced trash load reduction control measures implemented to-date;
2. The dominant types of trash likely removed via these control measures;
3. Total trash loads removed (credits and quantifications) via each control measure implementation; and
4. A summary and quantification of progress towards trash load reduction goals.

Similar to other MRP provisions, annual reporting formats will be consistent region-wide. Annual reports are intended to provide a summary of control measure implementation and demonstrate progress toward MRP trash reduction goals. For more detailed information on specific control measures, the City of Campbell will retain supporting documentation on trash load reduction control measure implementation. These records should have a level of specificity consistent with the trash load reduction tracking methods described in the *BASMAA Trash Load Reduction Tracking Method Technical Report* (BASMAA 2012a).

## 5.2 Considerations of Uncertainties

Baseline trash loading and load reduction estimates are based on the best available information at the time this Short-Term Plan was developed. As with any stormwater loading and reduction estimate, a number of assumptions were used during calculations and therefore uncertainty is inherent in the baseline trash load estimate presented in Section 2.0 and the load reduction estimate presented in this section. For these reasons, the baseline loading estimates presented in this plan should be considered first-order estimates. During the implementation of this Short-Term Plan and subsequent plans, additional information may become available to allow the calculation of a more accurate baseline load.

Baseline and Short-Term Trash Load Reduction Plan

West Valley Community

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# 6.0 IMPLEMENTATION SCHEDULE

Implementation of enhanced trash control measures by the City of Campbell is currently planned to occur in a timeframe consistent with MRP requirements. A preliminary implementation schedule for all planned enhancements is described in Table 5-1. This schedule provides a timeframe for reducing trash discharged from the City of Campbell's MS4 by 40 percent.

Based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of Campbell may choose to amend or revise this Plan and/or the associated implementation schedule. If revisions or amendments occur, a revised Short-Term Plan and implementation schedule will be submitted to the Water Board via the City of Campbell's annual reporting process.

**Table 6-1. Preliminary implementation schedule for enhanced trash control measures in the City of Campbell.**

| Trash Control Measure | Beginning Date of Implementation |
|---|---|
| Polystyrene Foam Food Service Ware Ban (CR-2) | December 31, 2012 |
| Public Education and Outreach Programs (CR-3) | Already Implemented<br><br>Will incorporate evaluation component into Community Outreach Events by December 31, 2012. |
| Activities to Reduce Trash from Uncovered Loads (CR-4) | Language already implemented in JPA Agreement, municipal code, and enforcement in place by Police Department.<br>Contracts with private contractors will be updated by July 30, 2012. |
| Anti-Littering and Illegal Dumping Enforcement Activities (CR-5) | Addition of enforcement language to IDDE ERP by December 31, 2012.<br><br>Physical barriers implemented at hot spots. |
| Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6) | Already implemented in municipal code and JPA agreement with hauler. |
| On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1) | Already implemented |
| Enhanced Storm Drain Inlet Maintenance (QF-4) | July 1, 2012 with new vendor contract. |
| Full-Capture Treatment Devices (QF-5) | Some Full-Capture Devices already installed with remainder to be installed by November 2012. |
| Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6) | Already Implemented |

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