

Long-Term Trash Load Reduction Plan and Assessment Strategy

Submitted by:



**City of Burlingame
1361 N. Carolan Ave.
Burlingame, CA 94010**

In compliance with Provisions C.10.c of Order R2-2009-0074

January 29, 2014

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**City of Burlingame
LONG-TERM TRASH LOAD REDUCTION PLAN AND
ASSESSMENT STRATEGY**

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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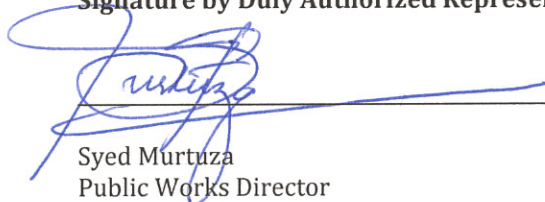
 _____ 1-29-14
Syed Murtuza Date
Public Works Director

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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
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
SWRCB	State Water Resource Control Board
TCD	Trash Capture Devices
TMA	Trash Management Area
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
Water Board	San Francisco Regional Water Quality Control Board
WDR	Waste Discharge Requirements

PREFACE

This Long-Term Trash Load Reduction Plan and Assessment Strategy (Long-Term Plan) is submitted in compliance with provision C.10.c of the Municipal Regional Stormwater NPDES Permit (MRP) for Phase I communities in the San Francisco Bay (Order R2-2009-0074). The Long-Term Plan was developed using a regionally consistent outline and guidance developed by the Bay Area Stormwater Management Agencies Association (BASMAA) and reviewed by San Francisco Bay Regional Water Quality Control Board staff. The Long-Term Plan is consistent with the Long-Term Trash Load Reduction Framework developed in collaboration with Water Board staff. Its content is based on the *City of Burlingame's* current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with Municipal Separate Storm Sewer (MS4) discharges. This Long-Term Plan is intended to be iterative and may be modified in the future based on information gained through the implementation of trash control measures. The *City of Burlingame* therefore reserves the right to revise or amend this Long-Term Plan at its discretion. If significant revisions or amendments are made by the City, a revised Long-Term Plan will be submitted to the Water Board through the City annual reporting process.

Please Note: This document and associated guidance was prepared to assist cities, towns and counties (i.e., Permittees) subject to requirements in provision C.10.c of the Municipal Regional Stormwater NPDES Permit (MRP) for Phase I communities in the San Francisco Bay (Order R2-2009-0074). It is intended to provide Permittees with a format for developing their Long-Term Plans due to the San Francisco Bay Regional Water Quality Control Board by February 1, 2014 in compliance with MRP provision C.10.c. The use of this document and associated guidance are done so under the discretion of each Permittee.

1.0 INTRODUCTION

1.1 Purpose of Long-Term Trash Reduction Plan

The Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit for Phase I communities in the San Francisco Bay (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.c of the MRP requires Permittees to submit a *Long-Term Trash Load Reduction Plan* (Long-Term Plan) by February 1, 2014. Long-Term Plans must describe control measures that are currently being implemented, including the level of implementation, and additional control measures that will be implemented and/or increased level of implementation designed to attain a 70% trash load reduction by July 1, 2017, and 100% (i.e., “No Visual Impact”) by July 1, 2022.

This Long-Term Plan is submitted by the *City of Burlingame* in compliance with MRP provision C.10.c. Consistent with provision C.10 requirements, the goal of the Long-Term Plan is to solve trash problems in receiving waters by reducing the impacts associated with trash in discharges from the *City of Burlingame* municipal separate storm sewer system (MS4) that are regulated by NPDES Permit requirements. The Long-Term Plan includes:

1. Descriptions the current level of implementation of trash control measures, and the type and extent to which new or enhanced control measures will be implemented to achieve a target of 100% (i.e. full) trash reduction from MS4s by July 1, 2022, with an interim milestone of 70% reduction by July 1, 2017;
2. A description of the *Trash Assessment Strategy* that will be used assess progress towards trash reduction targets achieved as a result of control measure implementation; and,
3. Time schedules for implementing control measures and the assessment strategy.

The Long-Term Plan was developed using a regionally consistent outline and guidance developed by the Bay Area Stormwater Management Agencies Association (BASMAA) and reviewed by the San Francisco Bay Regional Water Quality Control Board (Water Board) staff. The Long-Term Plan is consistent with the Long-Term Trash Load Reduction Framework (see section 1.2.1) developed in collaboration with Water Board staff. Its content is based on the *City of Burlingame's* current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with Municipal Separate Storm Sewer (MS4) discharges. The Long-Term Plan builds upon trash control measures implemented by the City prior to the adoption of the MRP and during the implementation of the Short-Term Trash Load Reduction Plan submitted to the Water Board on February 1, 2012.

1.2 Background

1.2.1 Long-Term Trash Load Reduction Plan Framework

A workgroup of MRP Permittee, Bay Area countywide stormwater program staff and Water Board staff met between October 2012 and March 2013 to better define the process for developing and implementing Long-Term Plans, methods for assessing progress toward reduction goals, and tracking and reporting requirements associated with provision C.10. Through these discussions, an eight-step framework for developing and implementing Long-Term Plans was created by the workgroup (Figure 1).

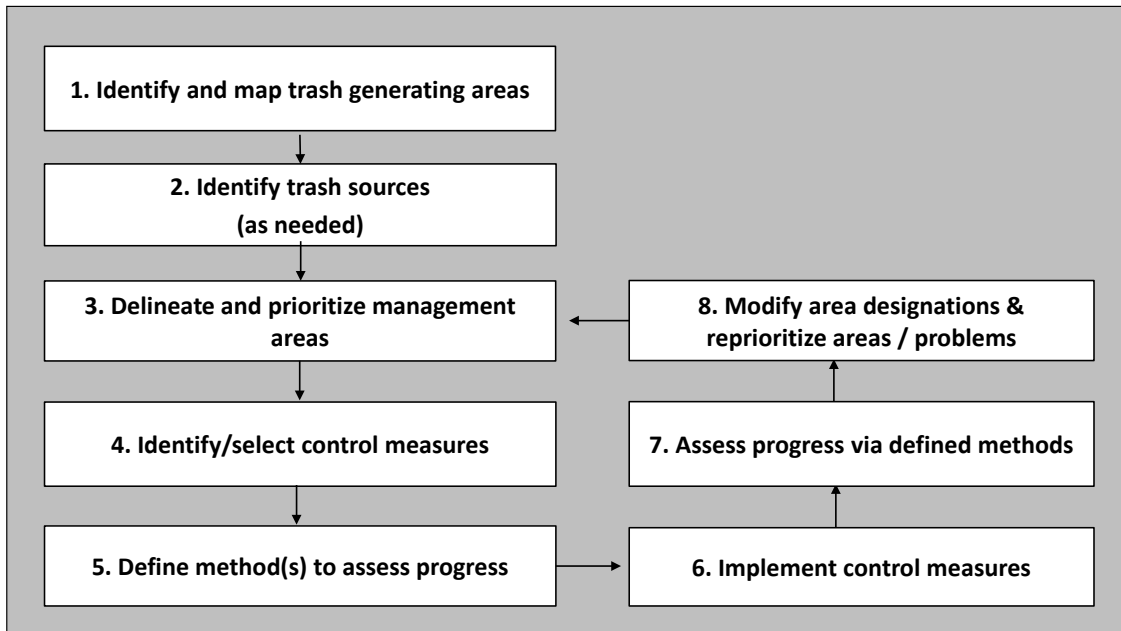


Figure 1. **Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.**

The workgroup agreed that as the first step in the framework, Permittees would identify very high, high, moderate, and low trash generating areas in their jurisdictional areas. Trash generation rates developed through the *BASMAA Baseline Trash Generation Rates Project* (as discussed below) were used as a starting point for differentiating and delineating land areas with varying levels of trash generation. Permittees would then use local knowledge and field and/or desktop assessments to confirm or refine the level of trash generation for specific areas within their jurisdiction. Each Permittee would then develop a map depicting trash generation categories within their jurisdiction.

As a next step, Permittees would then delineate and prioritize Trash Management Areas (TMAs) where specific control measures exist or are planned for implementation. TMAs delineated by Permittees are intended to serve as reporting units in the future. Reporting at the management area level provides the level of detail necessary to demonstrate implementation and progress towards trash reduction targets.

Once control measures are selected and implemented, Permittees will evaluate progress toward trash reduction targets using outcome-based assessment methods. As the results of the progress

assessments are available, Permittees may choose to reprioritize trash management areas and associated control measures designed to improve trash reduction within their jurisdictions.

1.2.2 BASMAA Generation Rates Project

Through approval of a BASMAA regional project in 2010, Permittees agreed to work collaboratively to develop a regionally consistent method to establish trash generation rates within their jurisdictions. The project, also known as the *BASMAA Trash Generation Rates Project* (Generation Rates Project) assisted Permittees in establishing the rates of trash generation and identifying very high, high, moderate and low trash generating areas.

The term “trash generation” refers to the rate at which trash is produced or generated onto the surface of the watershed and is potentially available for transport via MS4s to receiving waters. Generation rates do not explicitly take into account existing control measures that intercept trash prior to transport. Generation rates are expressed as trash volume/acre/year and were established via the Generation Rates Project.

In contrast to trash generation, the term “trash loading” refers to the rate at which trash from MS4s enters receiving waters. Trash loading rates are also expressed as trash volume/acre/year and are equal to or less than trash generation rates because they account for the effects of control measures that intercept trash generated in an area before it is discharged to a receiving water. Trash loading rates are specific to particular areas because they are dependent upon the effectiveness of control measures implemented within an area. Figure 2 illustrates the difference between trash generation and loading.

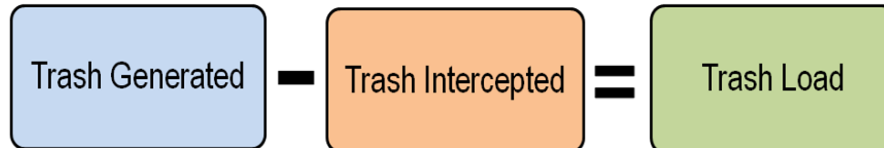


Figure 2. Conceptual model of trash generation, interception and load.

Trash generation rates were estimated based on factors that significantly affect trash generation (i.e., land use and income). The method used to establish trash generation rates for each Permittee builds off “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).

Trash generation 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. Trash generation rates estimated from this study are listed for each land use type in Table 1. Methods used to develop trash generation rates are more fully described in BASMAA (2011b, 2011c, and 2012).

Table 1. San Francisco Bay Area trash generation rates by land use (gallons/acre/year).

Land Use	Low^b	Best^b	High^b
Commercial & Services	0.7	6.2	17.3
Industrial	2.8	8.4	17.8
Residential ^a	0.3 - 30.2	0.5 - 87.1	1.0 - 257.0
Retail ^a	0.7 - 109.7	1.8 - 150.0	4.6 - 389.1
K-12 Schools	3	6.2	11.5
Urban Parks	0.5	5.0	11.4

^a For residential and retail land uses, trash generation rates are provided as a range that takes into account the correlation between rates and household median income.

^b For residential and retail land uses: Low = 5% confidence interval; Best = best fit regression line between generation rates and household median income; and, High = 95% confidence interval. For all other land use categories: High = 90th percentile; Best = mean generation rate; and, Low = 10th percentile.

1.2.3 Short-Term Trash Load Reduction Plan

In February 2012, the City of Burlingame developed a Short-Term Plan that described the current level of control measures implementation and identified the type and extent to which new or enhanced control measures would be implemented to attain a 40% trash load reduction from its MS4 by July 1, 2014. Since that time, the City of Burlingame has begun to implement its short-term plan. Control measures implemented to date via the short-term trash reduction plan are:

- **Control Measure #1 - Polystyrene Foam Food Service Ware Policy**
 - *The City adopted an ordinance on January 1, 2012 which prohibits food vendors from using polystyrene based disposable food service ware.*
- **Control Measure #2 - Public Education and Outreach Programs**
 - *The City implemented several public education and outreach control measures prior to the effective date of the MRP and has continued to implement these measures since the MRP adoption.*
- **Control Measure #3 - Reduction of Trash from Uncovered Loads**
 - *The City is planning to adopt revisions to municipal ordinance which addresses all solid waste and recyclable materials hauled to be securely tied and covered. Staff is currently drafting the proposed ordinance language and staff report for legal review in preparation for a City Council hearing. The current process, if successful, is expected to be implemented by July 2014.*
- **Control Measure #4 - Anti-Littering and Illegal Dumping Enforcement Activities**
 - *The City provided after-hours Point of Contact information for posting in the SMCWPPP website as added measure to provide timely response and investigation activities.*
- **Control Measure #5 - Improved Trash Bin/Container Management**
 - *In FY 10-11, the City began to require specialized bins/containers at major public events in Burlingame. In FY 11-12, the City identified high trash generating areas in public right of ways and installed trash bins along with selected specialty bins (e.g. for cigarette butts, recycling) in specific locations.*
- **Control Measure #6 - Enhanced Street Sweeping**
 - *Prior to the MRP effective date of December 2009, the City of Burlingame was sweeping residential and arterial streets once per week. The downtown areas (Broadway and Burlingame Avenues) were swept six days. In addition, parking enforcement signs are posted on residential streets south of Broadway, with additional enforcement occurring in commercial areas west of the railroad tracks as well as some adjacent streets.*
- **Control Measure #7 - Full-Capture Treatment Devices**
 - **Full Capture Devices** - *Thirty-nine (39) full trash capture devices were installed after the December 2009 MRP effective date, but prior to July 1, 2014.*
 - **Partial Capture Devices** - *One (1) partial trash capture device was installed after the December 2009 MRP effective date, but prior to July 1, 2014.*
- **Control Measure #8 - Creek/Channel/Shoreline Cleanups**
 - *The City conducted its 15th Annual Bayfront (shoreline) Cleanup on September 15, 2013 which resulted in the removal of 1,038 gallons of trash and litter, and collection of 300 gallons of recyclables. City crews maintain and conduct cleaning activities on creeks and channels as part of its stormwater conveyance maintenance program.*

Control measures described in this Long-Term Plan build upon actions taken to-date via the City of Burlingame's Short-Term Plan. A full description of control measures implemented via short and long-term plans is included in section 3.2. Outcomes associated with short-term plan implementation will be reported in the City of Burlingame's FY 2013-14 Annual Report, scheduled for submittal to the Water Board by September 15, 2014.

1.3 Organization of Long-Term Plan

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

- 1.0 Introduction;
- 2.0 Scope of the Trash Problem;
- 3.0 Trash Management Areas and Control Measures;
- 4.0 Progress Assessment Strategies; and
- 5.0 References

Section 2.0 is intended to provide a description of the extent and magnitude of the trash problem in the City of Burlingame. Control measures that will be implemented by the City of Burlingame as a result of this Long-Term Plan are described in section 3.0. Section 4.0 describes the methods that will be used to assess progress toward trash reduction targets.

2.0 SCOPE OF THE TRASH PROBLEM

2.1 Permittee Characteristics

Incorporated in 1908, the City of Burlingame is located in San Mateo County, and has a jurisdictional area of 2,654 acres. According to the 2010 Census, it has a population of 28,806, with a population density of 4,755.8 people per square mile and average household size of 2.29. Of the 28,806 residents who call Burlingame home, 21.7% are under the age of 18, 5.2% are between 18 and 24, 30.8% are between 25 and 44, 28.2% are between 45 and 64, and 14% are 65 or older. The median household income was \$91,309 in 2010. The City of Burlingame is home to top employers including Hyatt Regency San Francisco Airport, ECC, Critchfield Mechanical, San Francisco Marriott, and LSG Sky Chefs.

The City of Burlingame has two state-owned thoroughfares (Highways 101 & 82) that run through its city boundaries from north to south. Two (2) Caltrain stations are located within the city boundaries near the two downtown business districts. Consistent with the geographical layout of most San Mateo County agencies, most businesses are concentrated east of Highway 82 and along Highway 101 and shoreline areas. The city is built-out and construction is comprised mostly of redevelopment activities. Seven creeks dissect the city from west to east direction towards the San Francisco Bay. In contrast to many Permittees, at least ninety percent of the creek side areas are on private property and the length of most creeks spans less than two miles. Hospitality-oriented businesses are primarily located along the bayside due to its proximity to the San Francisco International Airport. Burlingame shoreline is part of the San Francisco (SF) Bay Trail. The shoreline spans about 2 miles from a north to south direction. Consistent with the overall mission of Bay Trail Plan, this "green-belt corridor" is open to the general public to provide easily accessible recreational opportunities, serve as a commute alternative, and encourage the public's appreciation to the beauty and importance of SF Bay. While there currently are no structural controls that limit public access along the area, the presence of homelessness and/or encampments is relatively infrequent in contrast to other neighboring agencies.

Land uses within City of Burlingame as depicted in ABAG (2005) are provided in Table 2. The City of Burlingame is primarily comprised of six (6) land uses. These include commercial, industrial, residential, retail, schools (K-12), urban parks and other.

Table 2. Percentages of the City of Burlingame's jurisdictional area¹ within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (acres)	% of Jurisdictional Area
Commercial and Services	321.5	12.1%
Industrial	284.1	10.7%
Residential	1,570.7	59.2%
Retail	152.1	5.7%
K-12 Schools	85.4	3.2%
Urban Parks	100.7	3.8%
Other	139.5	5.3%

2.2 Trash Sources and Pathways

Trash in San Francisco Bay Area creeks and shorelines originates from a variety of sources and is transported to receiving waters by a number of pathways (Figure 3). Of the four source categories, pedestrian litter includes trash sources from high traffic areas near businesses and schools, transitional areas where food/drinks are not permitted (e.g. bus stops), and from public or private special events with high volumes of people. Trash from vehicles occurs due to littering from automobiles and uncovered loads. Inadequate waste container management includes sources such as overflowing or uncovered containers and dumpsters as well as the dispersion of household and business-related trash and recycling materials before, during, and after collection. On-land illegal dumping of trash is the final source category.

Trash is transported to receiving waters through three main pathways: 1) Stormwater Conveyances; 2) Wind; and, 3) Direct Dumping. Stormwater or urban runoff conveyance systems (e.g., MS4s) consist of curbs/gutters, and pipes and channels that discharge to urban creeks and the San Francisco Bay shorelines. Wind can also blow trash directly into creeks or the Bay. Lastly, trash in receiving waters can also originate from direct dumping into urban creeks and shorelines.

This Long-term Plan and associated trash control measures described in Section 3.0 are focused on reducing trash from one of the transport pathways illustrated in Figure 3– **stormwater conveyances**. Specifically, the Long-term Plan is focused on reducing the impacts of discharges from MS4s to San Francisco Area receiving waters and the protection of associated beneficial uses.

¹ A Permittee's jurisdictional area is defined as the urban land area within a Permittee's boundary that is not subject to stormwater NPDES Permit requirements for traditional and non-traditional small MS4s (i.e. Phase II MS4s) or the California Department of Transportation, or owned and maintained by the State of California, the U.S. federal government or other municipal agency or special district (e.g., flood control district).

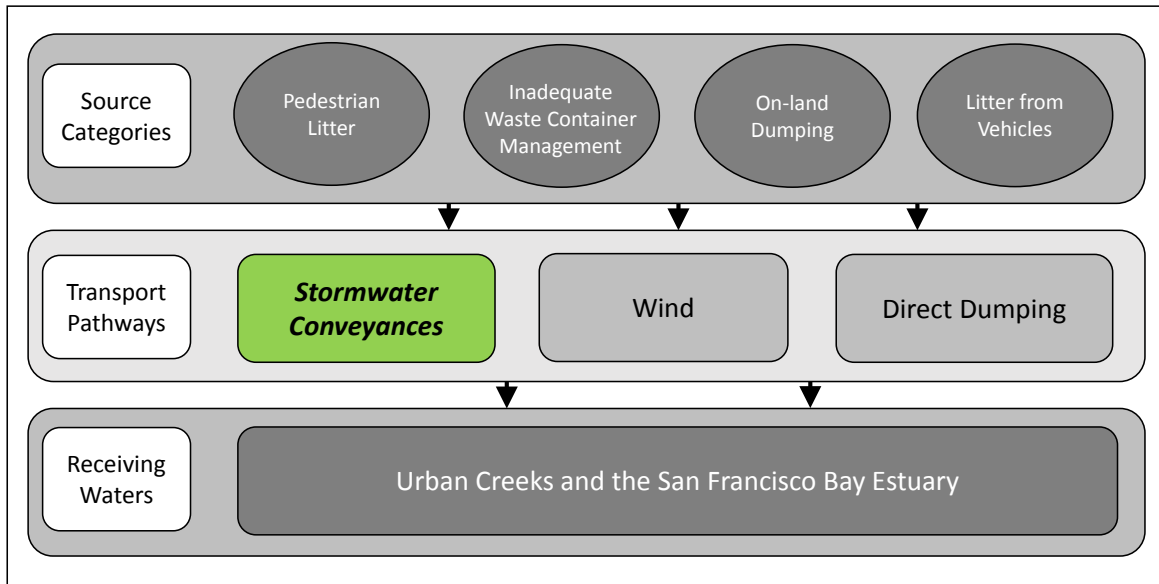


Figure 3. Trash sources categories and transport pathways to urban creeks.

The city does not have a problem with direct dumping within the city boundaries, nor is there a severe issue with homeless encampments. We continue to maintain the original hot spot along the waterfront due to the public access shoreline recreational activities (trail) and high velocity of wind (open area along bay front).

2.3 Trash Generating Areas

2.3.1 Generation Categories and Designation of Areas

The process and methods used to identify the level of trash generation within the City of Burlingame are described in this section and illustrated in Figure 4.

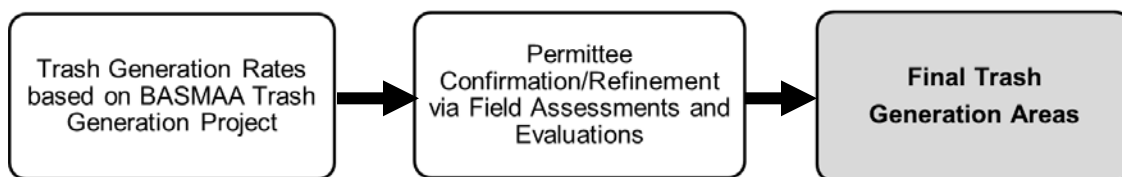


Figure 4. Trash sources categories and transport pathways to urban creeks.

As a first step, trash generation rates developed through the *BASMAA Trash Generation Rates Project* were applied to parcels within the City of Burlingame based on current land uses and 2010 household median incomes. A Draft Trash Generation Map was created as a result of this application. The draft map served as a starting point for the City of Burlingame to identify trash generating levels. Levels of trash generation are depicted on the map using four trash generation rate (gallons/acre/year) categories that are symbolized by four different colors illustrated in Table 3.

Table 3. Trash generation categories and associated generation rates (gallons/acre/year).

Category	Very High	High	Moderate	Low
Generation Rate (gallons/acre/year)	> 50	10-50	5-10	< 5

The City of Burlingame then reviewed and refined the draft trash generation map to ensure that trash generation categories were correctly assigned to parcels or groups of parcels. City staff refined maps using the following process:

1. Based upon our knowledge of trash generation and problem areas within the city, staff identified areas on the draft map that potentially had incorrect trash generation category designations.
2. Trash generation category designations initially assigned to areas identified in step #1 were then re-assessed and confirmed/re-categorized by the city using the methods listed below:

a. On-Land Visual Assessments

To assist Permittees with developing their trash generation maps, BASMAA developed a *Draft On-land Visual Trash Assessment Protocol (Draft Protocol)*. The Draft Protocol entails walking a street segment and visually observing the level of trash present on the roadway, curb and gutter, sidewalk, and other areas adjacent to the street that could potentially contribute trash to the MS4. Based on the level of trash observed, each segment (i.e., assessment area) was placed into one of four on-land assessment condition categories that are summarized in Table 4. Using the Draft Protocol the city assessed a total of six (6) areas to assist in conducting/refining trash generating area designations.

Table 4. Definitions of on-land trash assessment condition categories.

On-land Assessment Condition Category	Summary Definition
A (Low)	Effectively no trash is observed in the assessment area.
B (Moderate)	Predominantly free of trash except for a few pieces that are easily observed.
C (High)	Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
D (Very High)	Trash is continuously seen throughout the assessment area, with large piles and a strong impression of lack of concern for litter in the area.

b. Querying Municipal Staff or Members of the Public

Management utilized specific staff, the street sweepers and the dedicated downtown maintenance worker to obtain additional feedback on potential trash generation and

problem areas within the city. The management staff compared information to the draft map to ensure correct trash generation category designations.

3. Based on assessments conducted to confirm/refine trash generation category designations, the city created a final trash generation map that depicts the most current understanding of trash generation within its jurisdictional boundaries. The city documented this process by tracking the information collected through the assessments and subsequent refinements to the Draft Trash Generation Map. The City of Burlingame's Final Trash Generation Map is included Figure 5.

2.3.2 Summary of Trash Generating Areas and Sources

Summary statistics for land use and trash generation categories generated through the mapping and assessment process are presented in Table 5.

Table 5. Percentage of jurisdictional area within the City of Burlingame assigned to each trash generation category.

Trash Generation Category	Jurisdictional Area (Acres)	Commercial and Services	Industrial	Residential	Retail	K-12 Schools	Urban Parks	Other
Very High	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High	98.6	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Medium	569.1	34.3%	46.9%	11.1%	7.3%	0.2%	0.0%	0.2%
Low / Medium	22.5	1.5%	0.0%	0.0%	0.0%	98.5%	0.0%	0.0%
Low	1,963.7	6.4%	0.9%	76.8%	0.6%	3.2%	5.1%	7.1%

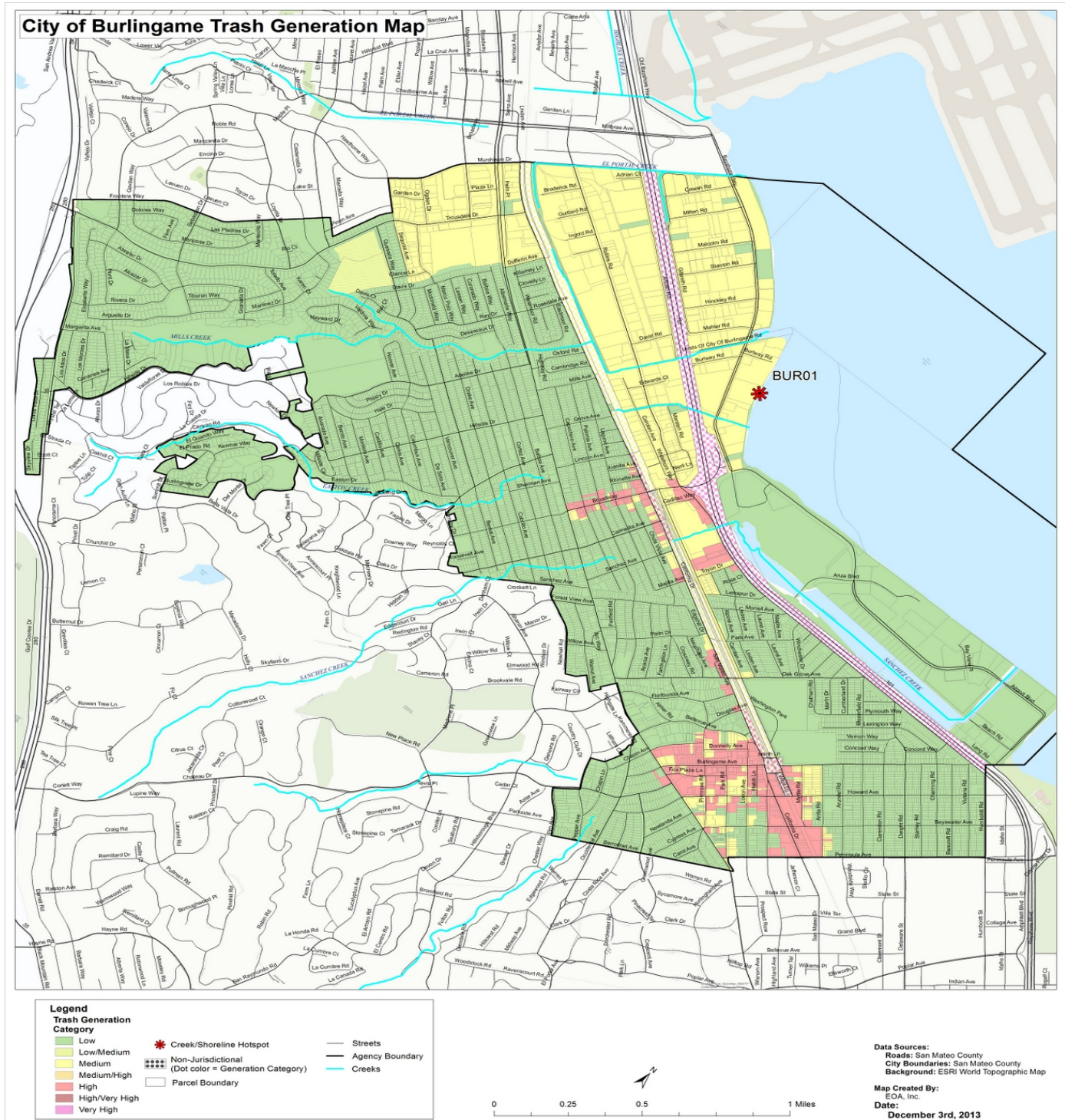


Figure 5. Final Trash Generation Map for the City of Burlingame

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3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES

This section describes the control measures that the City of Burlingame has or plans to implement to solve trash problems and achieve a target of 100% (i.e. full) trash reduction from their MS4 by July 1, 2022. The selection of control measures described in this section is based on the City of Burlingame’s current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with MS4 discharges. Information on the effectiveness of some trash control measures is currently lacking and therefore in the absence of this information, the City based its selection of control measures on existing effectiveness information, their experience in implementing trash controls and knowledge of trash problems, and costs of implementation. As knowledge is gained through the implementation of these control measures, the City may choose to refine their trash control strategy described in this section. If significant revisions or amendments are made, a revised Long-Term Plan will be submitted to the Water Board through the City of Burlingame’s annual reporting process.

3.1 Management Area Delineation and Prioritization

Consistent with the long-term plan framework, the City of Burlingame delineated and prioritized trash management areas (TMAs) based on the geographical distribution of trash generating areas, types of trash sources, and current or planned control measure locations. TMAs are intended to form the management units by which trash control measure implementation can be tracked and assessed for progress towards trash reduction targets. Once delineated, TMAs were also prioritized for control measure implementation. The City of Burlingame’s primary management areas were selected based on the spatial distribution of trash generating areas and the location of specific existing or planned management actions within City’s jurisdiction. City staff used the following procedure to designate TMAs:

The management staff first obtained information from specific field personnel (street sweepers & the downtown maintenance worker) with institutional knowledge on trash issues throughout the city. They took this information and compiled with their own knowledge. Visual observations followed to field verify the accuracy of all information.

A map depicting the City’s TMAs is included as Figure 6. All jurisdictional areas within the city are included within a TMA. The amount of jurisdictional land area and associated trash condition categories for each TMA are included in Table 6.

Table 6. Jurisdictional area and percentage of each Trash Management Area (TMA) comprised of trash generation categories

TMA	Jurisdictional Area (Acres)	Trash Generation Rate				
		Very High	High	Medium	Low / Medium	Low
1	156.4	0.0%	47.7%	21.6%	0.0%	30.7%
2	64.1	0.0%	37.3%	49.8%	0.5%	12.4%
3	143.7	0.0%	0.0%	76.6%	15.4%	7.9%
4	226.8	0.0%	0.0%	95.5%	0.0%	4.5%
5	191.4	0.0%	0.0%	91.8%	0.0%	8.2%
6	1871.5	0.0%	0.0%	0.0%	0.0%	100.0%

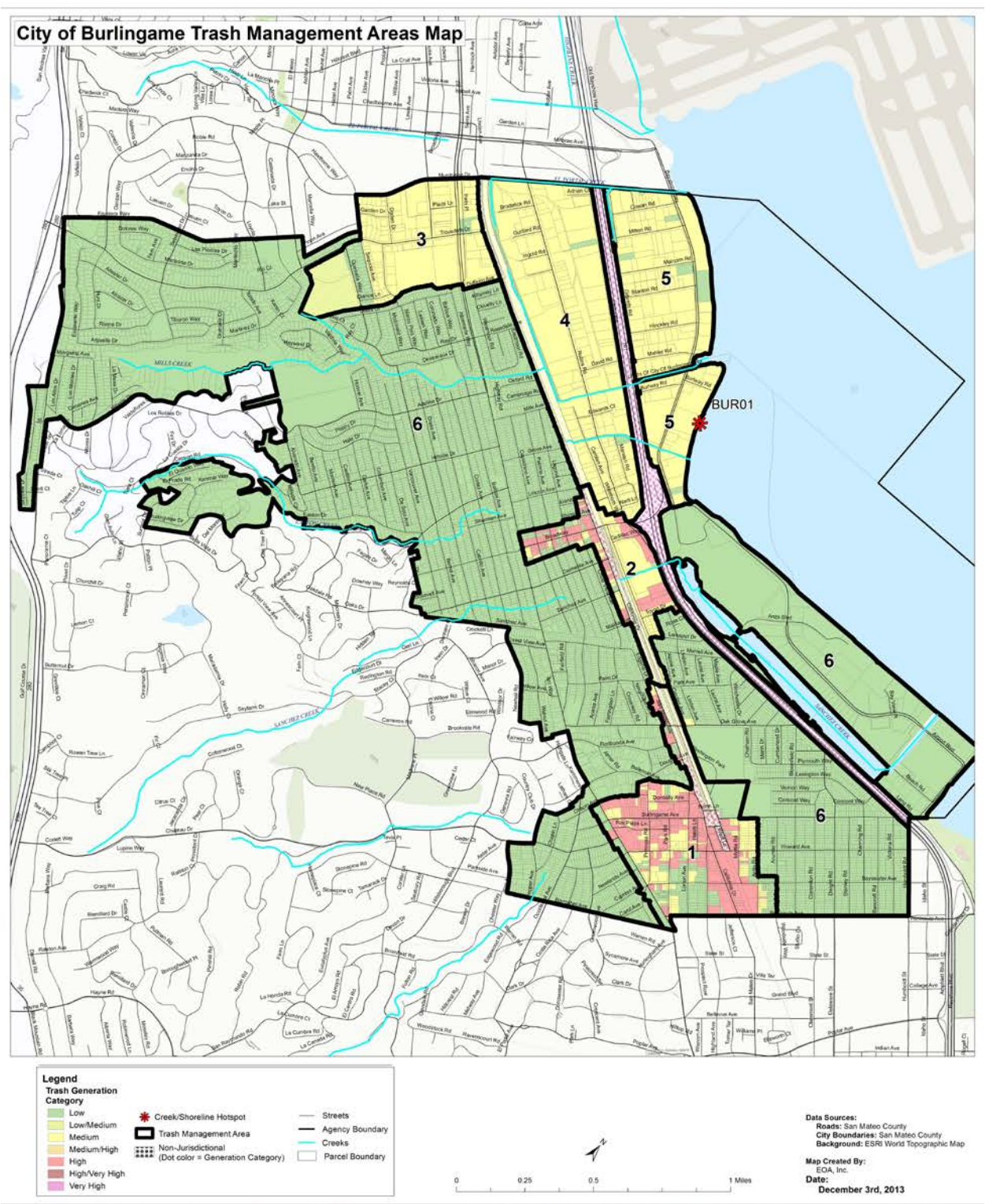


Figure 6. Trash Management Area Map for the City of Burlingame.

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3.2 Current and Planned Trash Control Measures

The City of Burlingame's current and planned trash control measures are selected based on the technical background information and guidance provided to SMCWPPP since the inception of the MRP, building on the lessons learned from the development and submittal of our Short Reduction Plan and its subsequent review, feedback, and agreed directions from various stakeholders to re-focus our trash reduction management efforts and strategies in a more systematic fashion that will achieve trash reduction to a no adverse level impact while providing a solid foundation from which to effectively base compliance metric with the MRP's trash reduction requirement.

The following trash control measures are selected to complement and augment trash reduction measures that were in effect prior to the adoption of the MRP. Enhanced or new measures are subsequently implemented based on the fact that it is impossible for one best management practice (BMP) to achieve trash reduction to a no adverse impact level. In reality, multiple BMPs in varying combinations, working in parallel, are required to control and mitigate trash at each specific trash management area. Control measures which are planned to be implemented are chosen due to other agencies' report as being an effective trash reduction BMP.

As illustrated in Figure 6, there are six (6) trash management areas (TMA) within the city limits. Numerical map identification and designation of each TMA begins first with the identification of high trash generating areas (1-2), followed by medium trash generating areas (2-5) and lastly low generating area (6). Discussion of each TMA and associated control measures will follow in this order.

3.2.1 Trash Management Area #1

TMA #1 has been designated as a high trash generating area due to its location and land use designation. Area coverage is 156.4 acres. This is the location of the main downtown business district (Burlingame Avenue). It also represents the core area of commercial and retail activities where the highest density of restaurants, national and locally-based retail stores, personal service, commercial, financial and real estate businesses are located. It is centrally located and within walking distance from public parks, public buildings (Public Library and City Hall), schools, religious facilities and the auto-row district. It's transit accessible via Caltrain, Sam Trans and Highways 82 and 101. The majority of city parking lots are located in this area along with private/shared parking facilities. Hi-density, multifamily and lower intensity multifamily homes are clustered near this area as well. It is active during both day and evening hours. The area serves as a main venue for city or private sponsored events such as fairs, farmers market and various seasonal events. Due to aforementioned characteristics, staff has prioritized this area as needing the most trash management control actions.

TMA 1	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
Trash Management Area 1 Selected/Specific Control Measures				
Full-Capture Treatment Devices	Prior to December of 2009, there was no full capture devices installed in the City of Burlingame.			
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014 consisted of the installation of nineteen (19) full trash capture devices in October of 2011. The MRP requires installation of full trash capture devices at a minimum of 30% of the total acres of retail/wholesale commercial areas in the city based on 2005 ABAG Existing Land Use. The permit further specifies that Burlingame provide a minimum trash capture catchment area of 37 acres. As indicated above, coverage of TMA # 1 is 156.4 acres with 47.7% designated as a high generating trash area. Collectively, these devices provide a total effective trash capture catchment area of 50.69 acres or 68.5% of the total high trash generating area which satisfies the permit provision of the MRP.</p> <p>Actions planned for future implementation between July 2014 and July 2022 consist of ensuring these devices remain effective as designed through implementation of an established Operation and Maintenance (O&M) schedule. Currently these devices are inspected at a frequency of two (2) to three (3) times per year. Staff has not encountered any performance issues related to device failure, flooding or vandalism. In-house preventive maintenance (PM) schedule includes cleaning in the fall (October), followed by a bi-monthly inspection and/or cleaning in the spring (April). City maintenance crews provide these activities.</p> <p>Additionally, the city has installed a separate identifier marker on each of the catch basins that contain a trash capture device to aid staff in quickly locating and identifying these devices.</p> <p>City staff will monitor BASMAA's proposal to develop a robust O&M best management practices addressing full capture devices to augment and improve its existing in-house O&M procedures. The location of the installed full capture devices specific to this TMA is provided in Figure 7.</p>	High	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
Partial-Capture Treatment	Prior to December of 2009, there was no partial-capture devices installed in the City of Burlingame.			

TMA 1	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
Devices	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014 consisted of the installation of one (1) partial trash capture device during October of 2011. Combined with other trash reduction control measures as described below, this device contributes to a total effective trash capture catchment area of 50.69 acres, or 68.5% of the total 74 acres designated as high trash generating area.</p> <p>Action planned for future implementation between July 2014 and July 2022 includes the city considering the installation of additional partial trash capture devices. During the FY 2014-15, the city will evaluate and determine if additional installation within this area provides significant trash reduction benefits. A final decision and the purchases of these devices would occur during the FY 2015-16.</p>	High	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
Street Sweeping	<p>Prior to December of 2009, the city provided sweeping in the downtown/retail areas on a weekly basis. Most residential and arterial streets are swept at an enhanced frequency of once per week from October to March and twice per month from April to September.</p> <p>Actions initiated after December of 2009 and implemented prior to July 1, 2014 included enhancements to sweeping activities. In FY 2010-11, sweeping frequency and sweeping area coverage in the retail/downtown areas were increased. Additionally, a mini street sweeper was procured to enable staff to sweep the surrounding downtown parking lots. A dedicated downtown maintenance worker currently provides trash monitoring and removal at a frequency of five (5) days a week, plus an additional three (3) labor hours of clean-up activities on Sunday mornings.</p> <p>Actions planned for future implementation between July 2014 and July 2022. Although there is no plan to increase the current level of sweeping frequency, in the coming FY 2014-15, the city is planning to re-evaluate the effectiveness of the current sweeping schedule (start times, routes, etc.). Additionally, the city is pursuing the installation and use of GPS in sweepers to improve the current curb sweeping efficiency. Data collected will be evaluated by staff to identify improvements to the sweeping removal efficiency and move forward with implementation in fiscal year 2015-16.</p>	High	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items

TMA 1	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
On-land Trash Cleanups	Prior to December of 2009, the city promoted and supported volunteer-led, on-land trash cleanup events targeting the downtown retail area. As included in the previous section under Street Sweeping, a dedicated downtown maintenance worker provided trash removal and monitoring activities in this area. In the past report submittals, this activity was only included and reported under the Street Sweeping Control Measure Section.	High	Pedestrian – local businesses, vehicular traffic.	Cigarette butts
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. At the Bay Area Trash Summit held in November 2013, city staff learned of on-land trash cleanup activities that are primarily used to provide and complement existing programmatic or region-wide litter public education and outreach campaign to focus on managing a specific litter item such as cigarette butts. This strategy may be useful as statewide data compiled by the California Coastal Commission has shown that it remains as the most frequently item picked up and removed during Coastal Cleanup Day. Surveys conducted by SMCWPPP prior to the MRP regarding cigarette litter indicated that most people did not consider this as litter, which might explain why cigarette butts end up in the ground, MS4s and waterways and not in the trash or cigarette butt receptacles. Behavior change as it relates to trash generating activities remains challenging but recent increases in social behavior marketing, when used in conjunction with public outreach education campaign, could play a pivotal role in providing a unique solution to this obstacle. The city will review these opportunities to increase on-land trash cleanups that will maximize and provide meaningful trash reduction efforts during the next few fiscal years, 2014/15 & 2015/16.</p> <p>Actions planned for future implementation between July 2014 and July 2022. This aforementioned issue with behavior change may be explored in coordination with the Burlingame Avenue Business Improvement District, City staff and community volunteers during FY 14-15 to increase the public's awareness and recognition of cigarette butts as a litter problem, promote the availability of cigarette butt receptacles, and encourage positive permanent behavior changes.</p>	High		
Enhanced Storm Drain Inlet Maintenance	Prior to December of 2009, the city's storm drain maintenance program included manual and hydraulic cleaning and inspection of 1,440 catch basins, 42 linear miles of stormwater conveyance pipelines and 5 stormwater pump stations which all have trash racks that capture trash and allow for removal during maintenance. The program also includes routine replacement or maintenance of storm drain markings	High	Pedestrian – local businesses,	Paper, cigarette butts, plastic

TMA 1	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	Actions initiated after December of 2009 and implemented prior to July 1, 2014. Storm drain inlet maintenance is adequate for this particular area as on-going implementation of area specific and jurisdictional-wide management control measures are believed to provide effective trash interception and reduction of trash generating activities. On-going evaluation of specific source reduction opportunities will be coordinated with internal staff to determine the most appropriate management control strategy to employ on a case-by-case basis.		vehicular traffic.	items
Improved Trash Bins/Container Management	Prior to December of 2009, the City of Burlingame enforced the municipal code through the authorized franchise agreement set forth by the city Council to ensure proper collection.	High	All types of trash sources	All types of trash
	Actions initiated after December of 2009 and implemented prior to July 1, 2014. In FY 10-11, the city begun to require specialized bins/containers at major public events in Burlingame, including those held in downtown retail areas, to properly manage cardboard, paper, recyclables and organic materials generated during the event. The city also required event sponsors to provide staffing to oversee and ensure that adequate supply and management of trash/recycling bins and clean-up trash generating activities are enforced during and after the event. In FY 11-12, the city identified high trash generating areas in public right of ways and installed trash bins along with selected specialty bins (e.g. for cigarette butts, recycling) in specific locations. The bins are serviced weekly through the franchise agreement. Monitoring is provided by a dedicated city maintenance staff to ensure proper trash removal. Refer to Appendix A for map with bin type and exact location Actions planned for future implementation between July 2014 and July 2022. The city will evaluate trash complaints from the computer assisted dispatch (CAD) data over the next two fiscal years 2014-15 & 2015-16. If these data identifies value for additional trash management bins, the city would consider purchasing additional bins in FY 2017-18.	High		

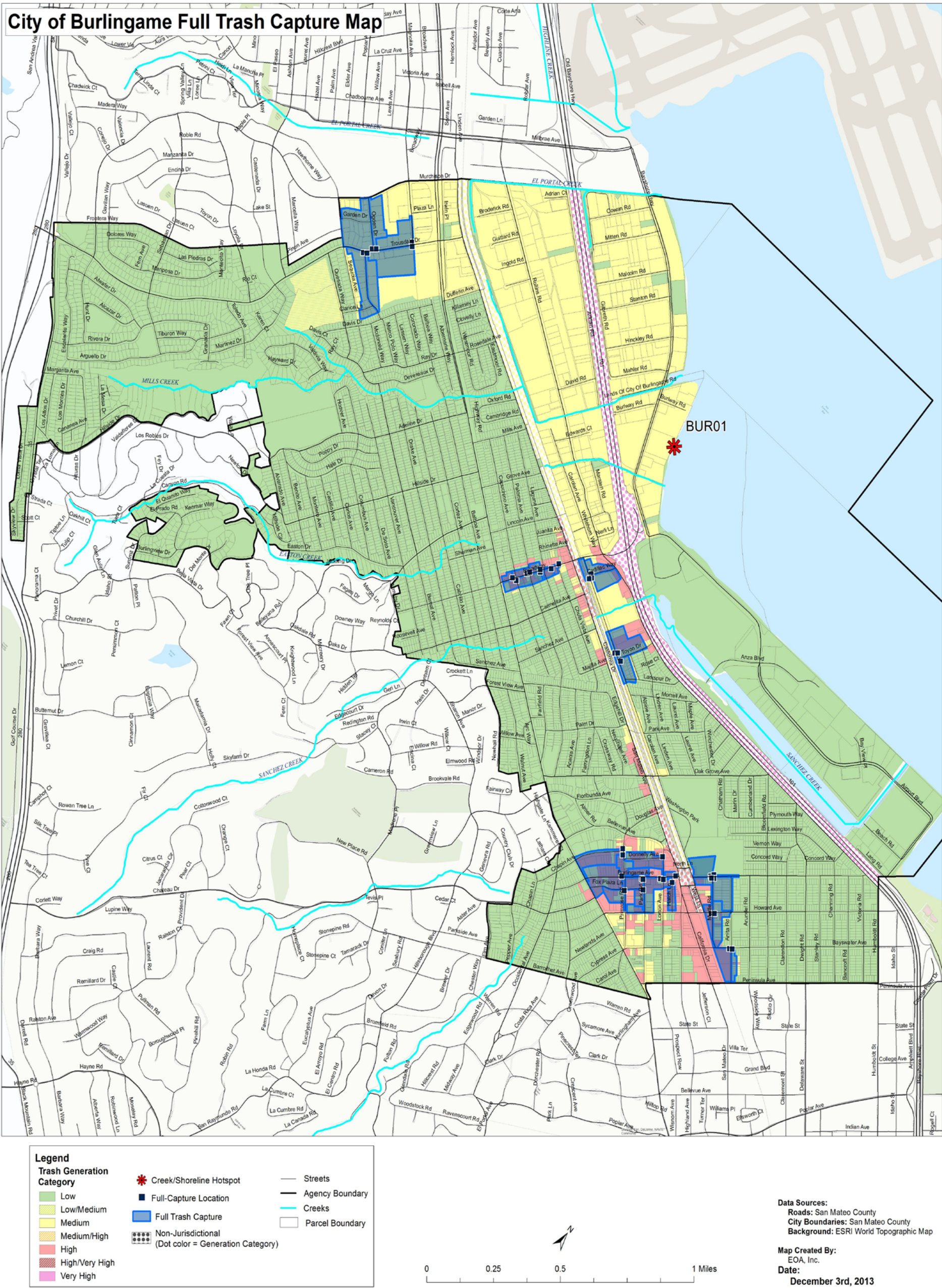


Figure 7. Trash Full Capture Device Map for the City of Burlingame

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3.2.2 Trash Management Area #2

TMA #2 has been designated as high trash generating area due to its location and land use designation. It is the location of the other downtown business district (Broadway). While smaller in size as compared to TMA#1, it shares the same characteristics as TMA#1. While fewer in numbers, a higher density of retail and commercial businesses are concentrated here. Similar to TMA#1, it is a pedestrian-oriented corridor. It is easily accessible via state highways (101 & 82) and Caltrain. It is also closer to the Bart Station located in Millbrae. In contrast to TMA#1, higher density multi-family dwellings and single-family homes are in immediate proximity to the main corridor. City parking lots and private/shared parking lots can also be found here. It is active during both day and evening hours but a little less due to its close proximity to the residential sector. The area is also used as an event venue for city or private sponsored events. Due to aforementioned characteristics, staff has prioritized this area as needing the most trash management control actions.

TMA 2	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
Trash Management Area (TMA) #2 Selected/Specific Control Measures				
Full-Capture Treatment Devices	Prior to December of 2009, there was no full capture devices installed in the City of Burlingame.		Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014 consisted of the installation of a total of fourteen (14) full trash capture devices. Installed between 2010 and 2012 providing a total effective trash capture area of 21.77 acres or 34% of the total jurisdictional size of the TMA #2. Similar to the logic employed in TMA #1, full capture devices were installed to meet the permit requirement of providing trash control devices to meet the minimum trash capture catchment area associated with the retail/commercial land use categories.</p> <p>Actions planned for future implementation between July 2014 and July 2022 consist of ensuring these devices remain effective as designed through implementation of an established Operation and Maintenance (O&M) schedule. Currently these devices are inspected at a frequency of two (2) to three (3) times per year. Staff has not encountered any performance issues related to device failure, flooding or vandalism. In-house preventive maintenance (PM) schedule includes cleaning in the fall (October), followed by a bi-monthly inspection and/or cleaning in the spring (April). City maintenance crew provides these activities. Additionally, the city has installed a separate identifier marker on each of the catch basins that contain a trash capture device to aid staff in quickly locating and identifying these devices.</p>	High and Medium		

TMA 2	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	City staff will monitor BASMAA's proposal to develop a robust O&M best management practices addressing full capture devices to augment and improve its existing in-house O&M procedures. The location of the installed full capture devices specific to this TMA is provided in Figure 7.			
Partial-Capture Treatment Devices	Prior to December of 2009, there was no partial capture devices installed in the City of Burlingame.		Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. There was no partial capture devices installed in the City of Burlingame during this time period.</p> <p>Action planned for future implementation between July 2014 and July 2022 includes the city considering the installation of additional partial trash capture devices. In FY 2014-15, the city will evaluate and determine if additional installation within this area provide significant trash reduction benefits. A final decision and the purchases of these devices would occur during the FY 2015-16</p>	High and Medium		
Street Sweeping	Prior to December of 2009, the city provided weekly sweeping in the downtown/retail areas on a weekly basis. Most residential and arterial streets are swept at an enhanced frequency of once per week from October to March and twice per month from April to September.	High and Medium	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014 included enhancements to sweeping activities. In FY 2010-11, sweeping frequency and sweeping area coverage in the retail/downtown areas were increased. Additionally, a mini street sweeper was procured to enable staff to sweep the surrounding downtown parking lots. A dedicated downtown maintenance worker currently provides trash monitoring and removal at a frequency of five (5) days a week, plus an additional three (3) labor hours of clean-up activities on Sunday mornings.</p> <p>Actions planned for future implementation between July 2014 and July 2022. Although there is no plan to increase the current level of sweeping frequency, in the coming FY 2014-15, the city is planning to re-evaluate the effectiveness of the current sweeping schedule (start times, routes, etc.). Additionally, the city is pursuing the installation and use of GPS in sweepers to improve the current curb sweeping efficiency. Data collected will be evaluated by staff to identify improvements to the sweeping removal efficiency and move forward with implementation in fiscal year 2015-16.</p>	High and Medium		

TMA 2	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
On-land Trash Cleanups	Prior to December of 2009, the city promoted and supported volunteer-led, on-land trash cleanup events targeting the downtown retail area. As included in the previous section under Street Sweeping, a dedicated downtown maintenance worker provided trash removal and monitoring activities in this area. In the past report submittals, this activity was only included and reported under the Street Sweeping Control Measure Section.	High and Medium	Pedestrian – local businesses, vehicular traffic.	Cigarette butts
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. On-land trash cleanups were spearheaded in TMA#2 by volunteer groups in coordination with the Broadway Business Improvement District. The Business District also utilized Community GatePath, a non-profit organization dedicated to providing cleaning services to businesses using adults with disability to gain work-related experience for future professional endeavors.</p> <p>At the Bay Area Trash Summit held in November 2013, city staff learned of on-land trash cleanup activities that are primarily used to provide and complement existing programmatic or region-wide litter public education and outreach campaign to aid in managing a specific litter items such as cigarette butts. This strategy may be useful as statewide data compiled by the California Coastal Commission has shown that cigarette butts remain as the most frequently item picked up and removed during Coastal Cleanup Day. Surveys conducted by SMCWPPP prior to the MRP on cigarette litter indicated that most people did not consider this as litter, which might explain why cigarette butts end up in the ground, MS4s and waterways and not in the trash or cigarette butt receptacles. Behavior change as it relates to trash generating activities remains a work in progress but recent increases in social behavior marketing, when used in conjunction with public outreach education campaign, could play a pivotal role in providing a unique solution to this challenging obstacle. The city will evaluate if this activity could be expanded on its jurisdiction and assess its potential to provide significant trash reduction levels during the next few fiscal years, 2014-15 & 2015-16.</p> <p>Actions planned for future implementation between July 2014 and July 2022. This aforementioned issue with behavior change would be explored in coordination with the Burlingame Avenue Business Improvement District, city staff and community volunteers during FY 14-15 to increase the public's awareness and recognition of cigarette butts as a litter problem, promote the availability of cigarette butt receptacles, and encourage positive permanent behavior changes.</p>	High and Medium		
Enhanced Storm Drain Inlet	Prior to December of 2009, the city's storm drain maintenance program included manual and hydraulic cleaning and inspection of 1,440 catch basins, 42 linear miles of stormwater conveyance pipelines and 5	Medium	Pedestrian –	Paper,

TMA 2	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
Maintenance	stormwater pump stations which all have trash racks that capture trash and allow for removal during maintenance. The program also includes routine replacement or maintenance of storm drain markings.		local businesses, vehicular traffic.	cigarette butts, plastic items
	Actions initiated after December of 2009 and implemented prior to July 1, 2014. Storm drain inlet maintenance is adequate for this particular area as on-going implementation of area specific and jurisdictional-wide management control measures are believed to provide effective trash interception and reduction of trash generating activities. On-going evaluation of specific source reduction opportunities will be coordinated with internal staff to determine the most appropriate management control strategy to employ on a case-by-case basis.	Medium		
Improved Trash Bins/Container Management	Prior to December of 2009, the City of Burlingame enforced the municipal code through the authorized franchise agreement set forth by the City Council to ensure proper collection.	High and Medium	All types of trash sources	All types of trash
	Actions initiated after December of 2009 and implemented prior to July 1, 2014. In FY 10-11, the city begun to require specialized bins/containers at major public events in Burlingame, including those held in downtown retail areas, to properly manage cardboard, paper, recyclables and organic materials generated during the event. The city also required event sponsors to provide staffing to oversee and ensure that adequate supply and management of trash/recycling bins and clean-up trash generating activities are enforced during and after the event. In FY 11-12, the city identified high trash generating areas in public right of ways and installed trash bins along with selected specialty bins (e.g. for cigarette butts, recycling) in specific locations. The bins are serviced weekly through the franchise agreement. Monitoring is provided by a dedicated city maintenance staff to ensure proper trash removal. Refer to Appendix A for map with bin type and exact location Actions planned for future implementation between July 2014 and July 2022. The city will evaluate trash complaints from the computer assisted dispatch (CAD) data over the next two fiscal years 2014-15 & 2015-16. If these data identifies value for additional trash management bins, the city would consider purchasing additional bins in FY 2017-18.	High and Medium		

3.2.3 Trash Management Areas #3, #4, and #5

Trash Management Areas (TMA) #3, #4 & #5 has a primary land use category of light commercial and hotel service. The jurisdictional area spans roughly 562 acres with the highest trash generation rate falling under a medium rating.

TMA#s #3, #4, #5	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
Trash Management Areas (TMAs) #3, #4, #5 Selected/Specific Control Measures				
Full-Capture Treatment Devices	Prior to December of 2009, there was no full capture devices installed in the City of Burlingame.			
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014 consisted of the installation of total of six (6) full trash capture devices in TMA#3. Installation occurred in FY 2012-2013. Collectively, these devices provide a total effective trash capture area of 39.85 acres or 28% of the total size of the TMA#3. TMA #3 spans 143.7 acres of jurisdictional area. Full capture devices were not installed in TMAs #4 and #5.</p> <p>Actions planned for future implementation between July 2014 and July 2022 consist of ensuring these devices remain effective as designed through the implementation of an established Operation and Maintenance (O&M) schedule. Currently these devices are inspected at a frequency of two (2) to three (3) times per year. Staff has not encountered any performance issues related to device failure, flooding or vandalism. In-house preventive maintenance (PM) schedule includes cleaning in the fall (October), followed by a bi-monthly inspection and/or cleaning in the spring (April). City maintenance crew provides these activities. Additionally, the city has installed a separate identifier marker on each of the catch basins that contain a trash capture device to aid staff in quickly locating and identifying these devices.</p> <p>City staff will monitor BASMAA's proposal to develop a robust O&M best management practices addressing full capture devices to augment and improve its existing in-house O&M procedures. The location of the installed full capture devices specific to this TMA is provided in Figure 7.</p>	Medium	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
Partial-Capture Treatment Devices	Prior to December of 2009, there was no partial capture devices installed in the City of Burlingame.			

TMAs #3 , #4, #5	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. There was no partial capture devices installed in the City of Burlingame during this time period.</p> <p>Actions planned for future implementation between July 2014 and July 2022. The city is considering the installation of additional partial trash capture devices within TMAs #3, #4 & #5. During the 2014-15 fiscal year, the city will assess and determine if additional locations within this area are feasible to meet the goal of reducing trash. A final decision and the purchases of these devices would occur during FY 2015-16.</p>	Medium	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
Street Sweeping	Prior to December of 2009, the city provided residential and arterial street sweeping at an enhanced frequency of once per week from October to March and twice per month from April to September.	Medium	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. The city continued to maintain sweeping of residential and arterial streets at an enhanced frequency of once per week from October to March and twice per month from April to September.</p> <p>Actions planned for future implementation between July 2014 and July 2022. Although there is no plan to increase the current level of sweeping frequency, in the coming FY 2014-15, the city is planning to re-evaluate the effectiveness of the current sweeping schedule (start times, routes, etc.). Additionally, the city is pursuing the installation and use of GPS in sweepers to improve the current curb sweeping efficiency. Data collected will be evaluated by staff to identify improvements to the sweeping removal efficiency and move forward with implementation in fiscal year 2015-16.</p>	Medium		
Enhanced Storm Drain Inlet Maintenance	Prior to December of 2009, the city's storm drain maintenance program included manual and hydraulic cleaning and inspection of 1,440 catch basins, 42 linear miles of stormwater conveyance pipelines and 5 stormwater pump stations which all have trash racks that capture trash and allow for removal during maintenance. The program also includes routine replacement or maintenance of storm drain markings.	Medium	Pedestrian – local businesses,	Paper, cigarette butts, plastic

TMAs #3 , #4, #5	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. The city continued to implement its maintenance programs to the stormwater catch basins, conveyance pipelines and pump stations.</p> <p>Actions planned for future implementation between July 2014 and July 2022. There is no immediate plan to implement enhanced storm drain inlet maintenance at TMAs #3, #4, and #5. The city believes implementing a maintenance schedule based on area-specific needs obtained during routine maintenance activities conserves limited resources. The city will continue to evaluate routine O&M activities to assist with identifying, developing or implementing new or enhanced control measures.</p>		vehicular traffic.	items
Improved Trash Bins/Container Management	Prior to December of 2009, the City of Burlingame enforced the municipal code through the authorized franchise agreement set forth by the City Council to ensure proper collection.	Medium	All types of trash sources	All types of trash
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. In FY 10-11, the city begun to require specialized bins/containers at major public events in Burlingame, including those held in downtown retail areas, to properly manage cardboard, paper, recyclables and organic materials generated during the event. The city also required event sponsors to provide staffing to oversee and ensure that adequate supply and management of trash/recycling bins and clean-up trash generating activities are enforced during and after the event. In FY 11-12, the city identified high trash generating areas in public right of ways and installed trash bins along with selected specialty bins (e.g. for cigarette butts, recycling) in specific locations. The bins are serviced weekly through the franchise agreement. Monitoring is provided by a dedicated city maintenance staff to ensure proper trash removal. Refer to Appendix A for map with bin type and exact location.</p> <p>Actions planned for future implementation between July 2014 and July 2022. The city will evaluate trash complaints from the computer assisted dispatch (CAD) data over the next two fiscal years 2014-15 & 2015-16. If these data identifies value for additional trash management bins, the city would consider purchasing additional bins in FY 2017-18.</p>	Medium		

3.2.4 Trash Management Area #6

Trash Management Area (TMA) #6 has been designated as the lowest priority trash management area within the city limits. Residential is the primary land use category, followed by light commercial and service. The jurisdictional area spans 1,871.5 acres which represents 70% of the total jurisdictional areas within the city limits. Consistent with the trash definition of on-land trash assessment condition categories in Table 4, staff has determined that there is effectively no trash observed. Staff recognizes that conditions may change in certain areas within the TMA which cannot be appropriately addressed by any of the jurisdictional control measure listed below. The city will decide to employ the most effective and appropriate case management control best suited to address that particular situation.

3.2.5 Jurisdiction-wide Control Measures

Jurisdiction-wide control measures are those measures that reduce the likelihood of trash from being deposited on land. The table below provides implementation of two product-related ordinances that restricts or limits specific use of certain product that do not biodegrade in the environment and the other measure provides public education and outreach to the public. This table also reflects those jurisdiction-wide control measures for section 3.2.4, trash management area #6. It is anticipated that there will be added trash reduction benefits from the implementation of Jurisdictional-wide control measures such as the Styrofoam Prohibition and Single-Use Plastic Ban and continued public outreach education campaign targeting trash reduction, all of which are in effect. Furthermore, the city has or will consider a plan of enhanced action(s) aimed at controlling trash-generating activities from uncovered loads, anti-littering and illegal dumping activities which would have a similar positive effect on reducing trash.

ALL TMAs	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
ALL Trash Management Areas (TMAs) Selected Jurisdictional-wide Actions				
Single-Use Carryout Bag Policies	Prior to December of 2009, the City had no Single-Use Carryout Bag Policies.	Jurisdiction-wide	Restaurants with to-go service, grocery stores.	Single-use carry out bags
	Actions initiated after December of 2009 and implemented prior to July 1, 2014. In April 2013, the city Council added Chapter 8.12.012 to the Burlingame Municipal Code which restricts the use of single-use carry-out bags by retailers. The San Mateo County Bag Ordinance was adopted by reference and took effect on April 22, 2013. The County of San Mateo Environmental Health Division (CEH) will enforce the ordinance within the City limits. At this time CEH staff has not provided a status result of any enforcement activities. Additional information about the Countywide Bag Ban is available on the San Mateo County website at www.smchealth.org/ban . Burlingame Municipal Code can be viewed on line at http://qcode.us/codes/burlingame/ .			

ALL TMAs	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	Actions planned for future implementation between July 2014 and July 2022. The city will continue to support the restrictions for the single-use carry out bags the aforementioned ordinances.			
Polystyrene Foam Food Service Ware Policies	<p>Prior to December of 2009, the City had no polystyrene policy.</p> <p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. On May 16, 2011, the City adopted ordinance 1861 and added Chapter 8.10 to the Burlingame Municipal Code which prohibits food vendors from using polystyrene based disposable food service ware. The ordinance took effect on January 1, 2012. The County of San Mateo Environmental Health (CEH) Division enforces the ordinance within the city limits. Enforcement and outreach activities by CEH staff begun during FY 12-13. Burlingame Municipal Code can be viewed on line at http://qcode.us/codes/burlingame/.</p> <p>Actions planned for future implementation between July 2014 and July 2022. The city will continue to support restrictions on the use of polystyrene based disposable food service ware as stated in the aforementioned ordinance.</p>	Jurisdiction-wide	Restaurants with to-go service, grocery stores.	Polystyrene Foam Food Service Ware
Public Education and Outreach Programs	<p>Prior to December of 2009, the City implemented the following public education and outreach control measures.</p> <p>SMCWPPP Public Information and Participation Program (Countywide)</p> <p>Through participation and funding of the San Mateo Countywide Water Pollution Prevention Program's (SMCWPPP) Public Information and Participation program (PIP), the City plans to continue implementing litter reduction outreach to school-age children and youth. SMCWPPP currently oversees a contract to provide direct outreach to grades K-5 in a school setting on behalf of all permittees. The contract is currently held by the Banana Slug String Band, which performs a presentation called "We All Live Downstream." Through songs and interactive exercises, the message of not putting anything in the stormdrains (including trash) is delivered, along with basic concepts of the water cycle and the impact of pollution on aquatic life. In addition, SMCWPPP has developed a presentation entitled "Water Pollution Prevention: Problems and Solutions" that is delivered to high school students. This presentation is dedicated to watershed and stormdrain education, and the impact of litter on local creeks and waterways. Both efforts are managed to ensure that schools in each community in the County are reached. For communities without High Schools, the feeder schools in neighboring communities are specifically targeted for presentations.</p>	Jurisdiction-wide	All trash types.	All trash types.

ALL TMAs	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	<p>In addition to outreach at the school sites, a number of student activity guides and coloring books related to watershed health and littering are provided to children who attend outreach events. Schools are also directly targeted in promotion of Coastal Cleanup Day.</p> <p>PIP also participates in a regional anti-littering campaign developed by BASMAA targeted at youth ages 14 to 24. As acting chair of the BASMAA PIP committee, SMCWPPP PIP has participated in the development and dissemination of campaign materials, and has conducted local events on behalf of all jurisdictions to promote the campaign. The campaign, entitled “Be The Street You Want to See”, will soon transition from building a community of youth dedicated to not littering to engaging that community in action.</p> <p>SMCWPPP, through its PIP program, plans to continue to conduct community outreach events on behalf of Permittees who request support. Outreach materials related to litter that are distributed include, in addition to the children’s materials listed above under Outreach to School-age Children or Youth, a promotional sign for cigarette smokers to discourage cigarette litter, and pocket ashtrays are given out. A general stormwater pollution prevention flyer in English and Spanish that includes litter reduction in its messaging is distributed. In addition to table outreach events conducted for specific Permittees, PIP also conducts a Countywide Event aimed to reach residents from throughout the County. PIP manages an online calendar which promotes cleanup events by non-profit organizations throughout the County. In FY 2012, PIP completed its 7th year acting as the county coordinator for Coastal Cleanup Day, increasing volunteer participation by 400% in that time, and trash removal increased by 300%.</p>			
	<p>During the term of the MRP, new outreach materials have been disseminated to the public, including reusable shopping bags to encourage reduction in use of plastic carryout bags PIP has supported a countywide ban on carryout bags that began implementation on April 22, 2013. In addition, spring cleanups taking place in individual jurisdictions are promoted under one theme by PIP, entitled Spring Cleaning SMC. PIP assists in directing volunteers to cleanup events in their communities. SMCWPPP conducted a total of 11 outreach events on behalf of various jurisdictions within the County in the 2012-13 fiscal year. SMCWPPP will also continue maintaining an online calendar of cleanups on a monthly basis. In addition to using the SMCWPPP website, flowstobay.org, to promote cleanups, PIP is actively involved in social media platforms such as Facebook, Twitter, You Tube, and Instagram to deliver anti-littering and cleanup messages.</p> <p><i>Coastal Cleanup Day Promotion (Countywide)</i></p>			

ALL TMAs	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	On the countywide level, SMCWPPP also conducts annual press releases for Coastal Cleanup Day, and uses Twitter to promote cleanup events. These releases are intended to gain support and assistance for cleanup events conducted each September in local water bodies.			
	<p><i>BASMAA Regional Media Relations Project (Regional)</i></p> <p>Through participation and funding of the BASMAA Regional Media Relations Project, the City is continuing 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 press releases or PSAs focus on litter issues each year (e.g., creek clean-up activities, preventing litter by using reusable containers, etc.). In FY 12-13, the Media Relations project developed a press release new and recent bag bans in cities around the region. The pitch included information on the litter caused by plastic bags. Information ran on KBAY, KCBS and on eight Bay Area Patch.com sites.</p>			
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. The City implemented the following public education and outreach control measures.</p> <p><i>BASMAA Youth Outreach Campaign (Regional)</i></p> <p>Through participation and funding of the regional BASMAA Youth Outreach Campaign, the City is implementing an outreach campaign designed to reduce littering from the target audience in the Bay Area. The Youth Outreach Campaign was launched in September 2011 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 through FY 13-14. A brief description of the Campaign activities is provided below:</p> <ul style="list-style-type: none"> ○ <u>Raising Awareness</u>: The Campaign is raising awareness of the target audience on litter and stormwater pollution issues. Partnerships with youth commissions, high schools, and other youth focused organizations have been developed to reach the target audience. Messages targeted to youth have been created and distributed via paid advertising, email marketing, Campaign website and social networking sites (e.g., Facebook and Twitter). ○ Engage the Youth - The advertisements encourage the audience to participate in the Youth 			

ALL TMAs	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	Campaign by joining a Facebook page, entering a contest, taking			
	<ul style="list-style-type: none"> an online quiz, etc., and providing their contact information. At the beginning of FY 12-13, a video contest was launched to get Bay Area youth further involved in the Campaign. An online voting system was used to select the winning entry. Media advertising was conducted to promote the winning entry. <u>Change Behaviors</u>: To move the audience along the behavior change continuum, the Campaign is using 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. <u>Maintain Engagement</u>: The Campaign continues to interact with the target audience through email marketing and social media websites. <p>The Youth Campaign includes a pre and post campaign survey to evaluate the effectiveness of outreach. The pre-campaign survey was conducted in FY 11-12 and the post campaign survey will begin in FY 13-14. Other evaluation mechanisms, such as website hits, number of youth engaged in the Campaign's social networking website, etc. are also being used to evaluate its effectiveness in increasing awareness and changing behavior.</p> <p>Activities in FY 12-13 included maintaining the website www.BetheStreet.org, Facebook page, and Instagram account. A video contest asking participants to submit their best anti-litter video was also conducted. The "Be the Street" campaign received 52 entries in response to the contest. The winning video was promoted on television, Pandora (online music site), YouTube, Google, and Facebook.</p> <p>Actions planned for future implementation between July 2014 and July 2022. The City will continue its efforts to explore new avenues in public education and outreach control measures.</p>			
Activities to Reduce Trash from Uncovered Loads	Prior to December of 2009, the City did not have any control measures that specifically addressed activities to reduce trash from uncovered loads.			
	Actions initiated after December of 2009 and implemented prior to July 1, 2014. The city did not have any control measures that specifically addressed activities to reduce trash from uncovered loads.	Jurisdiction-wide	Pedestrian – local businesses,	Paper, cigarette butts, plastic

ALL TMAs	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
	Actions planned for future implementation between July 2014 and July 2022. The city is planning to adopt revisions to their municipal ordinance which addresses all solid waste and recyclable materials hauled to be securely tied and covered. Staff is currently drafting the proposed ordinance language and staff report for legal review in preparation for a City Council hearing. The current process, if successful, is expected to be implemented by July 2014.		vehicular traffic.	items
Anti-littering and Illegal Dumping Enforcement Activities	Prior to December of 2009, the city continued to enforce anti-littering and illegal dumping activities through timely and thorough investigations of complaints received.	Jurisdiction-wide	Pedestrian – local businesses, vehicular traffic.	Paper, cigarette butts, plastic items
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. The city provided for after-hours Point of Contact information for publication in the SMCWPPP website as added measure to provide timely response and investigation activities.</p> <p>Actions planned for future implementation between July 2014 and July 2022. The city plans on strengthening the enforcement of anti-littering and illegal dumping by empowering key staff members in the public works department to assist in enforcing against these activities. This measure will be implemented by the end of FY 2015-16.</p>	Jurisdiction-wide		

3.2.6 Creek and Shoreline Hot Spot Cleanups

The Hot Spot is cleaned annually on California Coastal Cleanup Day. Mapped location of the Hot Spot is illustrated in Figures 6 and 7.

The City of Burlingame has participated in the Annual California Coastal Cleanup Day since 1998. Trash collected has decreased over time and overall cleanliness of the area has improved over time. The city will continue to participate in this annual trash cleanup event as a worthy educational tool to teach the community about the importance of keeping trash out of the SF Bay.

TMA #5	Description of Implementation	Trash Generating Area by Category Within TMA	Dominant Sources	Dominant Types
Trash Management Areas (TMAs) #5				
Creek, Channel, Shoreline Cleanups	Prior to December of 2009, the city has been conducting annual Bayfront (shoreline) cleanups since 1998.	Medium	Pedestrian – local businesses, wind	Paper, cigarette butts, plastic items
	<p>Actions initiated after December of 2009 and implemented prior to July 1, 2014. On September 15, 2013, the city held it' 15th Annual Bayfront (shoreline) Cleanup in TMA#5, which resulted in the removal of 1,038 gallons of trash and litter, and collection of 300 gallons of recyclables. In addition, city crews maintain and conduct cleaning activities on creeks and channels as part of its stormwater conveyance maintenance program.</p> <p>Actions planned for future implementation between July 2014 and July 2022. The city will continue to have staff maintain and conduct cleaning activities on creeks and channels as part of its stormwater conveyance maintenance program. However, due to existing permit requirements, city staff has had limited success in identifying an appropriate replacement for the current hot spot due to lack of public access.</p>	Medium		

3.2.7 Summary of Trash Control Measures

Trash Management Area 1

- Installation of full-capture treatment devices and development and implementation of O&M maintenance schedule to maintain trash interception capabilities as originally designed.
- Potential consideration for installation of additional partial trash captures devices. Will evaluate during the 2014-15 fiscal year, to determine if additional locations within this area are feasible to meet the goal of reducing trash. A final decision and the purchases of these devices would occur during the 2015-16 fiscal year.
- Continued Pre-MRP enhanced street sweeping schedule at a frequency of six times a week in most of the high priority areas
- Planned new/enhanced on-land trash cleanups targeting problematic litter items with emphasis on increasing the public's awareness of associated problems with litter, encourage proper disposal of problem litter items and change the behavior to use appropriate receptacles
- Planned ordinance amendment to enforce all solid waste and recyclable materials hauled to be securely covered
- Installation of trash bins in high trash generating areas and specialty bins for cigarette butts and recycling containers
- Continued implementation of routine storm drain maintenance program
- Jurisdictional control measures instituting product-related prohibition and restriction; participation in countywide, regional and local public outreach activities

Trash Management Area 2

- Installation of full-capture treatment devices and development and implementation of O&M maintenance schedule to maintain trash interception capabilities as originally designed.
- Potential consideration for installation of additional partial trash captures devices. Will evaluate during the 2014-15 fiscal year, to determine if additional locations within this area are feasible to meet the goal of reducing trash. A final decision and the purchases of these devices would occur during the 2015-16 fiscal year.
- Continued Pre-MRP enhanced street sweeping schedule at a frequency of six times a week in most of the high priority areas
- Planned new/enhanced on-land trash cleanups targeting problematic litter items with emphasis on increasing the public's awareness of associated problems with litter, encourage proper disposal of problem litter items and change the behavior to use appropriate receptacles
- Planned ordinance amendment to enforce all solid waste and recyclable materials hauled to be securely covered
- Installation of trash bins in high trash generating areas and specialty bins for cigarette butts and recycling containers
- Continued implementation of routine storm drain maintenance program
- Jurisdictional control measures instituting product-related prohibition and restriction; participation in countywide, regional and local public outreach activities on litter education

Trash Management Area 3

- Installation of full-capture treatment devices and development and implementation of O&M maintenance schedule to maintain trash interception capabilities as originally designed.

- Potential consideration for installation of additional partial trash captures devices. Will evaluate during the 2014-15 fiscal year, to determine if additional locations within this area are feasible to meet the goal of reducing trash. A final decision and the purchases of these devices would occur during the 2015-16 fiscal year.
- Planned ordinance amendment to enforce all solid waste and recyclable materials hauled to be securely covered
- Continued enforcement of municipal code through authorized franchise agreement
- Continued timely and thorough investigation of complaints on littering and illegal dumping
- Continued enhanced sweeping frequency with a plan in the future to re-direct increase sweeping at targeted/problematic areas; proposed improvement to curb sweeping activities through GIS installation
- Implementation of jurisdictional control measures instituting product-related prohibition and restriction; continued participation in countywide, regional and local outreach activities on litter
- Continued implementation of routine storm drain maintenance program

Trash Management Area 4

- Potential consideration for installation of additional partial trash captures devices. Will evaluate during the 2014-15 fiscal year, to determine if additional locations within this area are feasible to meet the goal of reducing trash. A final decision and the purchases of these devices would occur during the 2015-16 fiscal year.
- Planned ordinance amendment to enforce all solid waste and recyclable materials hauled to be securely covered
- Continued enforcement of municipal code through authorized franchise agreement
- Continued timely and thorough investigation of complaints on littering and illegal dumping
- Continued enhanced sweeping frequency with a plan in the future to re-direct increase sweeping at targeted/problematic areas; proposed improvement to curb sweeping activities through GIS installation
- Implementation of jurisdictional control measures instituting product-related prohibition and restriction; continued participation in countywide, regional and local outreach activities on litter
- Continued implementation of routine storm drain maintenance program

Trash Management Area 5

- Potential consideration for installation of additional partial trash captures devices. Will evaluate during the 2014-15 fiscal year, to determine if additional locations within this area are feasible to meet the goal of reducing trash. A final decision and the purchases of these devices would occur during the 2015-16 fiscal year.
- Planned ordinance amendment to enforce all solid waste and recyclable materials hauled to be securely covered
- Continued enforcement of municipal code through authorized franchise agreement
- Continued timely and thorough investigation of complaints on littering and illegal dumping
- Continued enhanced sweeping frequency with a plan in the future to re-direct increase sweeping at targeted/problematic areas; proposed improvement to curb sweeping activities through GIS installation
- Implementation of jurisdictional control measures instituting product-related prohibition and restriction; continued participation in countywide, regional and local outreach activities on litter
- Continued implementation of routine storm drain maintenance program

Trash Management Area 6

- Implementation of jurisdictional control measures instituting product-related prohibition and restriction; continued participation in countywide, regional and local outreach activities on litter and all existing and planned improvements below that continue to provide additional control measures to address trash generating activities. (not listed on 3.2.4)
- Planned ordinance amendment to enforce all solid waste and recyclable materials hauled to be securely covered
- Continued enforcement of municipal code through authorized franchise agreement
- Continued timely and thorough investigation of complaints on littering and illegal dumping
- Continued enhanced sweeping frequency with a plan in the future to re-direct increase sweeping at targeted/problematic areas; proposed improvement to curb sweeping activities through GIS installation
- Continued implementation of routine storm drain maintenance program

The City of Burlingame is confident that the selected management control measures listed above are the most appropriate strategy to implement in its jurisdiction to meet the targeted level of trash reduction. As discussed in the next section, the city may change its selection based on subsequent development of an assessment strategy that could provide the desired level of environmental indicators that could easily be used to determine whether the current employed strategy is successful at meeting the required trash reduction level.

3.3 Control Measure Implementation Schedule

Based on the trash condition categories derived from our on-land visual observations/assessments (refer to Table 7), the City of Burlingame has or plans to continue implementing ways to solve trash problems within our jurisdiction in order to achieve a target of 100% trash reduction. Reducing the trash problems associated within our two business districts, which continuously generates a high level of trash and litter, will be one of our key focuses. Currently, the city is underway with the Burlingame Streetscape Project located in the Burlingame Avenue downtown business district. The project includes a substantial structural and utility improvement and upgrades to the downtown corridor which aims to further enhance its pedestrian-oriented character, vitality and functionality. As such staff has identified and targeted this area as one of the two high priority trash management areas in need of a multi-pronged management control strategies to reduce and eliminate various trash generating activities. This project will establish new locations and collection bins for trash, including cigarettes butts. The city also will review and audit the placement of garbage cans in the Broadway business district to ensure sufficient coverage. In addition, the city is or will plan on performing a limited audit on trash sources with both business districts. Note that there will be added trash reduction benefits from the implementation of Jurisdictional-wide control measures such as the Styrofoam Prohibition and Single-Use Plastic Ban and continued public outreach education campaign targeting trash reduction, all of which are in effect. As discussed in the later section of the report, the city, in coordination with BASMAA and other MRP-permittees are developing assessment methods to determine how these control measures meet the definition of a full capture equivalent.

Table 7. City of Burlingame trash control measure implementation schedule.

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
TMA #1														
CM #1 – Full Capture Treatment Devices		X	X	X	X	X	X	X	X	X	X	X	X	X
CM #2 – Partial Capture Treatment Devices ²				X			X	X	X	X	X	X	X	X
CM #3 – Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #4 – On-land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #5 – Enhanced Storm Drain Inlet Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #8 – Improved Trash Bins/Container Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #2														
CM #1 – Full Capture Treatment Devices			X	X	X	X	X	X	X	X	X	X	X	X
CM #2 – Partial Capture Treatment Devices ³							X	X	X	X	X	X	X	X
CM #3 – Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #4 – On-land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #5 – Enhanced Storm Drain Inlet Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #8 – Improved Trash Bins/Container Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #3, 4 & 5														
CM #1 – Full Capture Treatment Devices					X	X	X	X	X	X	X	X	X	X

² This measure is uncertain with a decision anticipated in FY 2015/16³ This measure is uncertain with a decision anticipated in FY 2015/16

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
CM #2 – Partial Capture Treatment Devices ⁴							X	X	X	X	X	X	X	X
CM #3 – Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #5 – Enhanced Storm Drain Inlet Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #8 – Improved Trash Bins/Container Management	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #6 & Jurisdiction-wide Control Measures														
CM#1 – Single Use Carryout Bag Policy					X		X	X	X	X	X	X	X	X
CM#2 – Polystyrene Foam Food Service Ware Policy				X			X	X	X	X	X	X	X	X
CM#3 – Public Education & Outreach Programs	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CM #6 – Activities to Reduce Trash (Covered Loads)						X	X	X	X	X	X	X	X	X
CM #7 – Anti-littering & Illegal Dumping Enforcement	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Creek and Shoreline Hot Spot Cleanups														
CM #1 - Creek, Channel, Shoreline Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X

^aJuly 1, 2014 - 40% trash reduction target^bJuly 1, 2017 - 70% trash reduction target^cJuly 1, 2022 - 100% trash reduction target

⁴ This measure is uncertain with a decision anticipated in FY 2015/16

4.0 PROGRESS ASSESSMENT STRATEGY

Provision C.10.a.ii of the MRP requires Permittees to develop and implement a 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 targets. Early into the MRP, Permittees decided to work collaboratively to develop a trash load reduction tracking method through the Bay Area Stormwater Management Agencies Association (BASMAA). Permittees, Water Board staff and other stakeholders assisted in developing Version 1.0 of the tracking method. On behalf of all MRP Permittees, the Bay Area Stormwater Management Agencies Association (BASMAA) submitted Version 1.0 to the Water Board on February 1, 2012.

The Trash Assessment Strategy (Strategy) described in this section is intended to serve as Version 2.0 of the trash tracking method and replace version 1.0 previously submitted to the Water Board. The Strategy is specific to Permittees participating in the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), including the City of Burlingame. The City intends to implement the Strategy in phases and at multiple geographical scales (i.e., jurisdiction-wide and trash management area) in collaboration with SMCWPPP. Pilot implementation is scheduled for the near-term and as assessment methods are tested and refined, the Strategy will be adapted into a longer-term approach. The Strategy selected by the City is described in the following sections.

4.1 SMCWPPP Pilot Assessment Strategy

The following SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP Pilot Strategy) was developed by SMCWPPP on behalf of the City and other San Mateo County Permittees. The SMCWPPP Pilot Strategy will be implemented at a pilot scale on a countywide basis and includes measurements and observations in the City of Burlingame.

4.1.1 Management Questions

The SMCWPPP Pilot Strategy is intended to answer the following core management questions over time as trash control measures outlined in section 3.0 are implemented and refined:

- Are the MS4 trash load reduction targets being achieved?
- Have trash problems in receiving waters been resolved?
- If trash problems in receiving waters exist, what are the important sources and transport pathways?

The SMCWPPP Pilot Strategy, including indicators and methods, is summarized in this section and fully described in the SMCWPPP Pilot Trash Assessment Strategy, a compendium document submitted to the Water Board on February 1, 2014 on behalf of all SMCWPPP Permittees (SMCWPPP 2014).

4.1.2 Indicators of Progress and Success

The management questions listed in the previous section will be addressed by tracking information and collecting data needed to report on a set of key environmental indicators. Environmental indicators are simple measures that communicate what is happening in the environment. Since trash in the environment is very complex, indicators provide a more practical and economical way to track the state of the environment than if we attempted to record every possible variable.

With regard to municipal stormwater trash management, indicators are intended to detect progress towards trash load reduction targets and solving trash problems. Ideally, indicators should be robust and able to detect progress that is attributable to multiple types of trash control measure implementation scenarios. Assessment results should also provide Permittees with an adequate level of confidence that trash load reductions from MS4s have occurred, while also assessing whether trash problems in receiving waters have been resolved. Indicators must also be cost effective, relatively easy to generate, and understandable to stakeholders.

Primary and secondary indicators that SMCWPPP Permittees will use to answer core management questions include:

Primary Indicators:

- 1-A Reduction in the level of trash present on-land and available to MS4s
- 1-B Effective full capture device operation and maintenance

Secondary Indicators:

- 2-A Successful levels of trash control measures implementation
- 2-B Reductions in the amount of trash in receiving waters

In selecting the indicators above, the City of Burlingame in collaboration with SMCWPPP and other SMCWPPP Permittees recognize that no one environmental indicator will provide the information necessary to effectively determine progress made in reducing trash discharged from MS4s and improvements in the level of trash in receiving waters. Multiple indicators were therefore selected.

The ultimate goal of municipal stormwater trash reduction strategies is to reduce the impacts of trash associated with MS4s on receiving waters. Indicators selected to assess progress towards this goal should ideally measure outcomes (e.g., reductions in trash discharged). The primary indicators selected by SMCWPPP are outcome-based and include those that are directly related to MS4 discharges. Secondary indicators are outcome or output-based and are intended to provide additional perspective on and evidence of, successful trash control measure implementation and improvements in receiving water condition with regard to trash.

As described in Section 2.2, trash is transported to receiving waters from pathways other than MS4s, which may confound our ability to observe MS4-associated reductions in creeks and shorelines. Due to this challenge of linking MS4 control measure implementation to receiving water conditions, the receiving water based indicator is currently considered a secondary indicator. Evaluations of data on the amount of trash in receiving waters that are conducted over time through the Pilot Assessment Strategy will assist the City in further determinations of the important sources and pathways causing problems in local creeks, rivers and shorelines.

4.1.3 Pilot Assessment Methods

This section briefly summarizes the preliminary assessment methods that the City of Burlingame will implement through the SMCWPPP Pilot Strategy to generate indicator information described in the previous section. Additional information on each method can be found in the SMCWPPP Pilot Trash Assessment Strategy submitted to the Water Board by SMCWPPP on behalf of the City.

1-A. On-land Visual Assessments

As part of the Trash Generation Map assessment and refinement process (see Section 2.3.1), a draft on-land visual assessment method was developed to assist Permittees in confirming and refining trash generating area designations (i.e., very high, high, moderate and low trash generating categories). The draft on-land visual assessment method is intended to be a cost-effective tool and provide Permittees with a viable alternative to quantifying the level of trash discharged from MS4s. As part of BASMAA's *Tracking California's Trash* grant received from the State Water Resources Control Board (see Section 4.2), quantitative relationships between trash loading from MS4s and on-land visual assessment condition categories will be established. Condition categories defined in the draft on-land assessment protocol are listed in Table 8

Table 8. Trash condition categories used in the draft on-land visual assessment protocol.

Trash Condition Category	Summary Definition
A (Low)	Effectively no trash is observed in the assessment area.
B (Moderate)	Predominantly free of trash except for a few pieces that are easily observed.
C (High)	Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
D (Very High)	Trash is continuously seen throughout the assessment area, with large piles and a strong impression of lack of concern for litter in the area.

On-land visual assessments will be conducted in trash management areas within the City of Burlingame as part of the SMCWPPP Pilot Trash Assessment Strategy. On-land assessments are intended to establish initial conditions and detect improvements in the level of trash available to MS4s over time. More specifically, on-land visual assessment methods will be conducted in areas not treated by trash full capture devices in an attempt to evaluate reductions associated with other types of control measures. Assessment methods for areas treated by full capture devices are described in this next section.

Given that the on-land assessment method and associated protocol have not been fully tested and refined, initial assessments will occur at a pilot scale in the City and in parallel to the *Tracking California's Trash* project. The frequency of assessments and number of sites where assessments will occur during the pilot stage are more fully described in the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014).

1-B. Full Capture Operation and Maintenance Verification

Consistent with the MRP, adequate inspection and maintenance of trash full capture devices is required to maintain full capture designation by the Water Board. The City of Burlingame is currently developing an operation and maintenance verification program (Trash O&M Verification Program), via SMCWPPP, to ensure that devices are inspected and maintained at a level that maintains this designation.

The SMCWPPP Trash O&M Verification Program will be modeled on the current O&M verification program for stormwater treatment controls implemented consistent with the Permit new and redevelopment requirements. Additional details regarding the Trash O&M Verification Program can be found in the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014).

2-A. Control Measure Effectiveness Evaluations

In addition to on-land trash assessments and full capture operation and maintenance verification, the City will also conduct assessments of trash control measures implemented within their jurisdictional area. Assessment methods will be selected based on trash sources and the type of control measure being implemented. Control measure effectiveness evaluations are more fully described in the SMCWPPP Pilot Trash Assessment Strategy. The following are example assessment methods that may be used to demonstrate successful control measure implementation and progress towards trash reduction targets:

- Product-related Ordinances – Annually tracking and reporting the % of businesses in compliance with the ordinance and the percentage requiring a response.
- Street Sweeping – Reporting the frequency of sweeping and ability to sweep to the curb in specific areas where enhanced sweeping is implemented; and/or documenting the level of trash on streets directly after street sweeping during wet and dry weather seasons.
- Public/Private Trash Container Management – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and documenting conditions around public trash containers before and after implementing enhanced control measures.
- Targeted Outreach and Enforcement – Reporting the magnitude and extent of enhanced actions; tracking and reporting the % increase in enforcement actions; and/or visually assessing and documenting the conditions in targeted areas before and after implementing control measures.
- Public Outreach Campaigns – Reporting the magnitude and extent of enhanced actions, and/or conducting pre and post campaign surveys.
- On-land Cleanups and Enforcement – Reporting the magnitude and extent of enhanced actions; visually assessing and documenting the conditions in targeted areas before and after control measure implementation; and/or tracking the volumes of trash removed.
- Illegal Dumping Prevention – Reporting the magnitude and extent of enhanced actions; and/or tracking and reporting improvements in the number of incidents.

- Business Improvement Districts – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and documenting the conditions in BID areas before and after implementing control measures.
- Prevention of Uncovered Loads - Reporting the magnitude and extent of enhanced actions; tracking and reporting the decreases in the number of incidents; and/or visually assessing and documenting the conditions in targeted areas before and after implementing control measures.
- Partial Capture Devices – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and the amount of trash in storm drains or downstream of partial capture devices.

2-C. Receiving Water Condition Assessments

The ultimate goal of stormwater trash management in the Bay Area is to significantly reduce the amount of trash found in receiving waters. In the last decade, San Mateo County Permittees and volunteers have collected data on the amounts of trash removed during cleanup events. More recently, Permittees have conducted trash assessments in creek and shoreline hotspots using standardized assessment methods. In an effort to answer the core management question *Have trash problems in receiving waters been resolved?*, the City of Burlingame plans to continue conducting receiving water condition assessments at trash hot spots a minimum of one time per year. Assessment will be conducted consistent with Permit hot spot cleanup and assessment requirements. Additional information on receiving water assessment methods can be found in the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014).

4.2 BASMAA “Tracking California’s Trash” Project

The SMCWPPP Pilot Assessment Strategy described in the previous section recognizes that outcome-based trash assessment methods needed to assess progress toward trash reduction targets are not well established by the scientific community. In an effort to address these information gaps associated with trash assessment methods, the Bay Area Stormwater Management Agencies Association (BASMAA), in collaboration with SMCWPPP, the 5 Gyres Institute, San Francisco Estuary Partnership, the City of Los Angeles, and other stormwater programs in the Bay Area, developed the *Tracking California’s Trash* Project. The Project is funded through a Proposition 84 grant awarded to BASMAA by the State Water Resources Control Board (SWRCB) who recognized the need for standardized trash assessment methods that are robust and cost-effective.

The Project is intended to assist BASMAA member agencies in testing trash assessment and monitoring methods needed to evaluate trash levels in receiving waters, establish control measures that have an equivalent performance to trash full capture devices, and assess progress in trash reduction over time. The following sections provide brief descriptions of tasks that BASMAA will conduct via the three-year Project. Full descriptions of project scopes, deliverables, and outcomes will be developed as part of the task-specific Sampling and Analysis Plans required by the SWRCB during the beginning of the Project. The Project is currently underway and will continue through 2016.

4.2.1 Testing of Trash Monitoring Methods

BASMAA and the 5 Gyres Institute will evaluate the following two types of assessment methods as part of the Project:

- **Trash Flux Monitoring** – Trash flux monitoring is intended to quantify the amount of trash flowing in receiving waters under varying hydrological conditions. Flux monitoring will be tested in up to four receiving water bodies in San Francisco Bay and/or the Los Angeles areas. Methods selected for evaluation and monitoring will be based on a literature review conducted during this task and through input from technical advisors and stakeholders. Monitoring is scheduled to begin in 2014 and will be completed in 2016.
- **On-land Visual Assessments** – As part of the Project, BASMAA will also conduct an evaluation of on-land visual assessment methods that are included in the SMCWPPP Pilot Assessment Strategy. The methods are designed to determine the level of trash on streets and public right-of-ways that may be transported to receiving waters via MS4s. BASMAA plans to conduct field work associated with the evaluation of on-land visual assessment at a number of sites throughout the region. To the extent practical, sites where the on-land methods evaluations take place will be coordinated with trash flux monitoring in receiving waters. On-land assessments will occur in areas that drain to trash full capture devices, and all sites will be assessed during wet and dry weather seasons in order to evaluate on-land methods during varying hydrologic conditions. Monitoring is scheduled to begin in 2014 and will be completed in 2016.

4.2.2 Full Capture Equivalent Studies

Through the implementation of BASMAA's *Tracking California's Trash* grant-funded project, a small set of "Full Capture Equivalent" projects will also be conducted in an attempt to demonstrate that specific combinations of control measures will reduce trash to a level equivalent to full capture devices. Initial BMP combinations include high-frequency street sweeping, and enhanced street sweeping with auto-retractable curb inlet screens. Other combinations will also be considered. Studies are scheduled to begin in 2014 and will be completed in 2016.

4.3 Long-Term Assessment Strategy

The City of Burlingame is committed to implementing standardized assessment methods post-2016 based on the lessons learned from pilot assessments and studies that will occur between 2014 and 2016. Assessment activities described in the previous sections will evaluate the utility of different assessment methods to demonstrate progress towards trash reduction targets and provide recommended approaches for long-term implementation. Lessons learned will be submitted to the Water Board with the FY 2015-2016 Annual Report and a revised Strategy will be developed and submitted, if necessary. The revised Strategy will include agreed upon assessment methods that will be used to demonstrate progress during the remaining term of trash reduction requirements. Reporting using the new/revised methods will begin with the FY 2016-17 Annual Report.

4.4 Implementation Schedule

The implementation schedule for the SMCWPPP Pilot Implementation Strategy, BASMAA's Tracking California's Trash project, and the Long-Term Assessment Strategy are included in Table 9. Load reduction reporting milestones are also denoted in the table. The schedule is consistent with the need for near-term pilot assessment results to demonstrate progress toward short-term targets, while acknowledging the need for testing and evaluation of assessment methods and protocols prior to long-term implementation. For more detailed information on implementation timelines, refer to the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014) and monitoring plans developed as part of BASMAA's Tracking California's Trash project.

Table 9. City of Burlingame trash progress assessment implementation schedule.

Trash Assessment Programs and Methods	Prior to FY 2013-14	Fiscal Year								
		2013-14 ^a	2014-15	2015-16	2016-17 ^b	2017-18	2018-19	2019-20	2020-21	2021-22 ^c
Pilot Trash Assessment Strategy (SMCWPPP)										
On-land Visual Assessments										
Initial (Baseline) Assessments	X									
Pilot Progress Assessments		X	X	X	X					
Full Capture Operation and Maintenance Verification			X	X	X					
Control Measure Effectiveness Evaluations	X	X	X	X	X					
Receiving Water Condition Assessments	X	X	X	X	X					
Tracking California’s Trash Project (BASMAA)										
Testing of Trash Monitoring Methods										
Trash Flux Monitoring Protocol Testing			X	X	X					
On-land Visual Assessment Evaluations			X	X	X					
Full Capture Equivalent Studies			X	X	X					
Long-Term Trash Assessment Strategy (SMCWPPP)						X	X	X	X	X

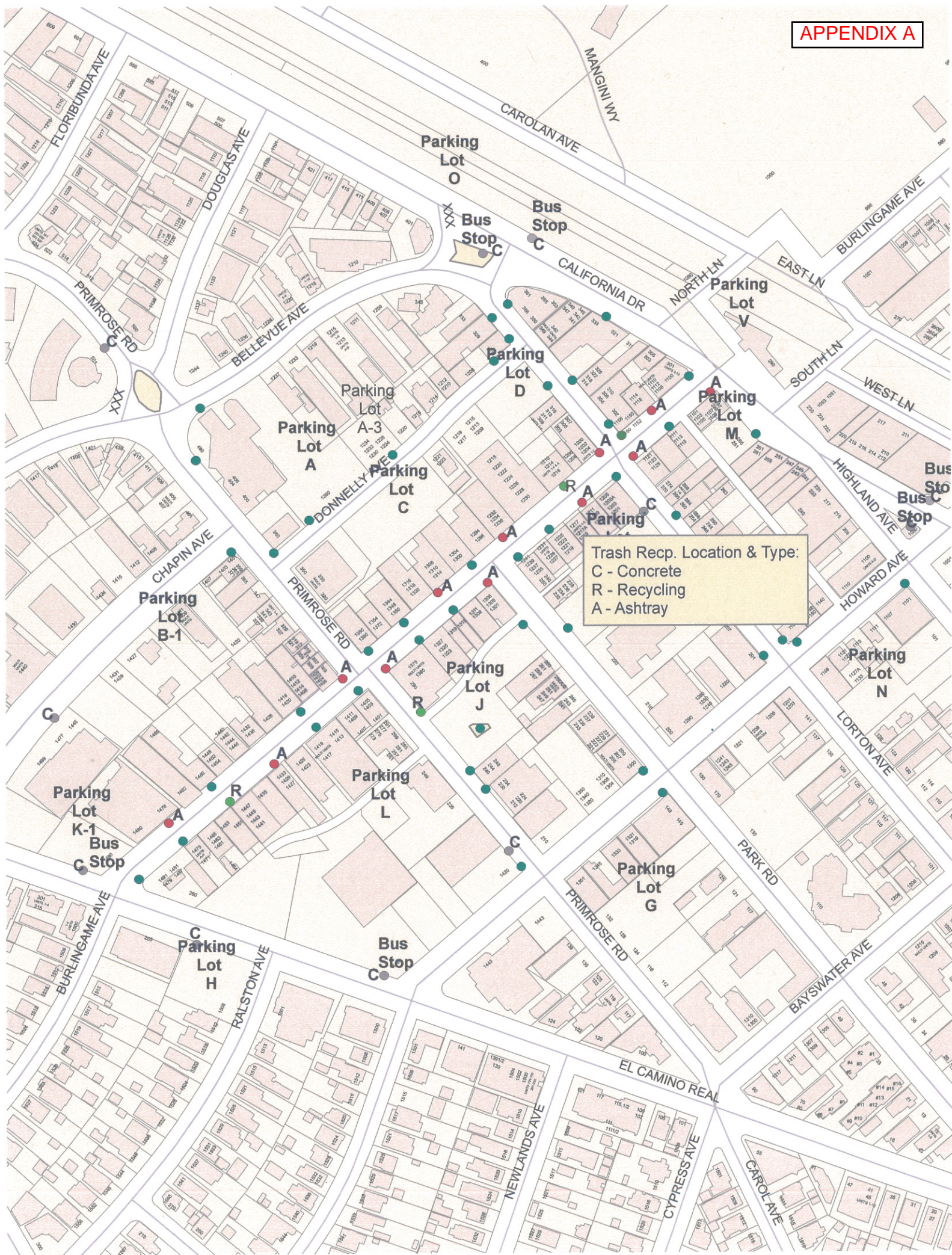
^aJuly 1, 2014 - 40% trash reduction target

^bJuly 1, 2017 - 70% trash reduction target

^cJuly 1, 2022 - 100% trash reduction target

5.0 REFERENCES

- Allison R.A. and F.H.S. Chiew 1995. Monitoring stormwater pollution from various land uses in an urban catchment. Proceedings from the 2nd International Symposium on Urban Stormwater Management, Melbourne, 551-516.
- Allison, R.A., T.A. Walker, F.H.S. Chiew, I.C. O'Neill and T.A McMahon 1998. From Roads to rivers: Gross pollutant removal from urban waterways. Report 98/6. Cooperative Research Centre for Catchment Hydrology. Victoria, Australia. May 1998.
- Armitage, N. 2003. The removal of urban solid waste from stormwater drains. Prepared for the International Workshop on Global Developments in Urban Drainage Management, Indian Institute of Technology, Bombay, Mumbai India. 5-7 February 2003.
- Armitage, N. 2007. The reduction of urban litter in the stormwater drains of South Africa. Urban Water Journal Vol. 4, No. 3: 151-172. September 2007.
- Armitage N., A. Rooseboom, C. Nel, and P. Townshend 1998. "The removal of Urban Litter from Stormwater Conduits and Streams. *Water Research Commission* (South Africa) Report No. TT 95/98, Pretoria.
- Armitage, N. and A. Rooseboom 2000. The removal of urban litter from stormwater conduits and streams: Paper 1 – The quantities involved and catchment litter management options. Water S.A. Vol. 26. No. 2: 181-187.
- ABAG (Association of Bay Area Governments). 2005. Bay Area Land Use Geographical Information Systems Datalayer.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2011a. Progress Report on Methods to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems and Track Loads Reduced. February 2011.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2011b. Method to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems: Technical Memorandum #1. Prepared by EOA, Inc. April 2011.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2011c. Sampling and Analysis Plan. Prepared by EOA, Inc. April 2011.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2012. Trash Baseline Generation Rates: Technical Report. Prepared by EOA, Inc. February 1, 2012.
- County of Los Angeles. 2002. Los Angeles County Litter Monitoring Plan for the Los Angeles River and Ballona Creek Trash Total Maximum Daily Load. May 30, 2002.
- County of Los Angeles. 2004a. Trash Baseline Monitoring Results Los Angeles River and Ballona Creek Watershed. Los Angeles County Department of Public Works. February 17, 2004.
- County of Los Angeles 2004b. Trash Baseline Monitoring for Los Angeles River and Ballona Creek Watersheds. Los Angeles County Department of Public Works. May 6, 2004.
- Kim, L.H, M. Kayhanian, M.K. Stenstrom 2004. Event mean concentration and loading of litter from highways during storms. *Science of the Total Environment* Vol 330: 101-113.
- Lippner, G., R. Churchwell, R. Allison, G. Moeller, and J. Johnston 2001. A Scientific Approach to Evaluating Storm Water Best Management Practices for Litter. *Transportation Research Record*. TTR 1743, 10-15.
- SMCWPPP (San Mateo Countywide Water Pollution Prevention Program). 2014. Pilot Trash Assessment Strategy. Prepared by EOA. February 1.



APPENDIX A

