

Long-Term Trash Load Reduction Plan and Assessment Strategy

February 1, 2014

Submitted by:



TOWN OF COLMA

1188 El Camino Real
Colma, CA 94014

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

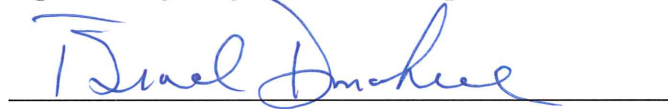
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**TOWN OF COLMA
LONG-TERM TRASH LOAD REDUCTION PLAN AND
ASSESSMENT STRATEGY**

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."

Signature by Duly Authorized Representative:



Brad Donohue
Director of Public Works

01/28/2014

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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
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
Water Board	San Francisco Regional Water Quality Control Board
WDR	Waste Discharge Requirements
TMA	Trash Management Area
ROW	Right-of-Way

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 Town of Colma'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 Town of Colma therefore reserves the right to revise or amend this Long-Term Plan at its discretion. If significant revisions or amendments are made by the Town, a revised Long-Term Plan will be submitted to the Water Board through the Town's annual reporting process.

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 Town of Colma in compliance with provision C.10.c. of the MRP. 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 Town of Colma’s municipal separate storm sewer system (MS4) that are regulated by NPDES Permit requirements. The Long-Term Plan includes:

1. Descriptions of 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 to 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 Town of Colma’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 Town of Colma 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.

The Long-Term Plan was reviewed and discussed by the Town’s Executive Staff comprised of the City Manager and all Department Heads.

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).

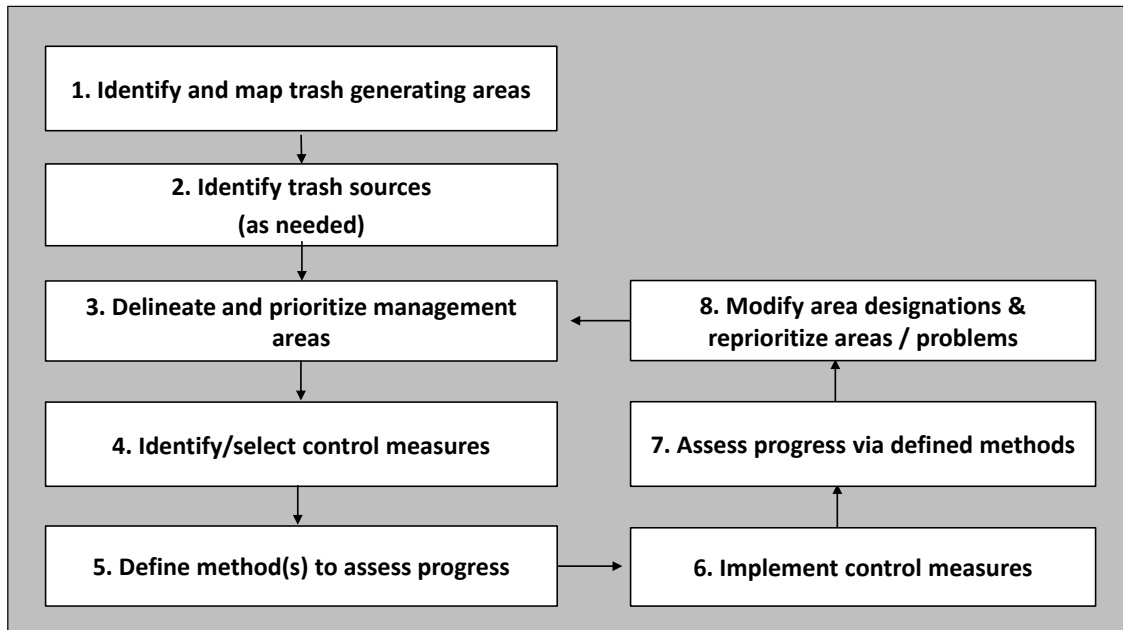


Figure 1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

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.

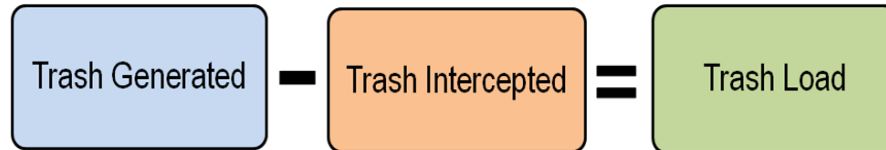


Figure 2. Conceptual model of trash generation, interception and load.

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 January 2012, the Town of Colma 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 Town of Colma has begun to implement its short-term plan. Control measures implemented to date via the short-term trash reduction plan are:

- Installation of Full Trash Capture Devices

The Town installed fourteen (14) full-trash capture devices in the commercial and retail areas of Town, as shown on Figure 7; areas with a potential of high/medium trash generation. The installed trash capture devices treat approximately 25 acres. These devices are regularly inspected and cleaned.

- Adoption and Implementation of Single Use Bag Ban and Polystyrene Ban Policies

The Town adopted the Single Use Bag Ban Policy on Jan 9th 2013 and the Polystyrene Ban Policy on March 13th 2013. Town Staff met with business owners and restaurant operators and provided program outreach. Outreach was also provided through the “Colma Works” newsletter that’s sent to all business in Town.

- Creek Cleanups

The entire section of the Colma Creek concrete channel that runs through the Town is annually cleaned as part of the Town’s maintenance activities. In addition, the Town established Annual Hot Spots in 2010 and these areas are cleaned and monitored.

- On Land Trash Cleanups

A Town-wide annual on-land cleanup was initiated in 2011. This event is hosted by the Town and volunteers participate in this Town-wide trash pickup in the right-of-way.

- Street Sweeping

All public streets in the Town are swept twice a month. A majority of the streets have parking restrictions or equivalents that allow Town's maintenance crew to sweep the curb areas.

- Public Education and Outreach

In addition to the control measures continued post-MRP adoption, the Town participates in the countywide and regional public education programs, and promotes outreach events through the Town's newsletter and website.

Control measures described in this Long-Term Plan build upon actions taken to-date via Town of Colma'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 Town of Colma's Fiscal Year 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 Town of Colma. Control measures that will be implemented by Town of Colma 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 1924, the Town of Colma is located in San Mateo County, and has a jurisdictional area of 1,225 acres. According to the 2010 Census, it has a population of 1572, with a population density of 827.3 people per square mile and average household size of 3.13. Of the 1572 residents who call Town of Colma home, 21.8% are under the age of 18, 9.9% are between 18 and 24, 29.7% are between 25 and 44, 27.2% are between 45 and 64, and 11.4% are 65 or older. The median household income was \$58,750 in 2010.

The Town of Colma was founded as a necropolis and includes cemeteries such as Cypress Lawn Memorial Park, Hills of Eternity, Holy Cross Cemetery and Woodlawn Cemetery. Approximately 80% of the land use in the incorporated limits of the Town is dedicated for open space/cemetery use.

The Town also has a vibrant commercial base that includes Colma Auto Row, Serra Center, and the Metro Mall. Residential area is mostly situated in the Sterling Park neighborhood, near Daly City. There are no schools within the Town's jurisdictional limits.

Land uses within Town of Colma depicted in ABAG (2005) are provided in Table 2. The Town of Colma is primarily comprised of 6 types of land uses.

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

Land Use Category	Jurisdictional Area (Acres)	% of Jurisdictional Area
Commercial and Services	99.1	8.1%
Industrial	18.9	1.5%
Residential	36.0	2.9%
Retail	94.5	7.7%
Urban Parks (<i>primarily cemetery use</i>)	976.5	79.8%

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

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).

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.

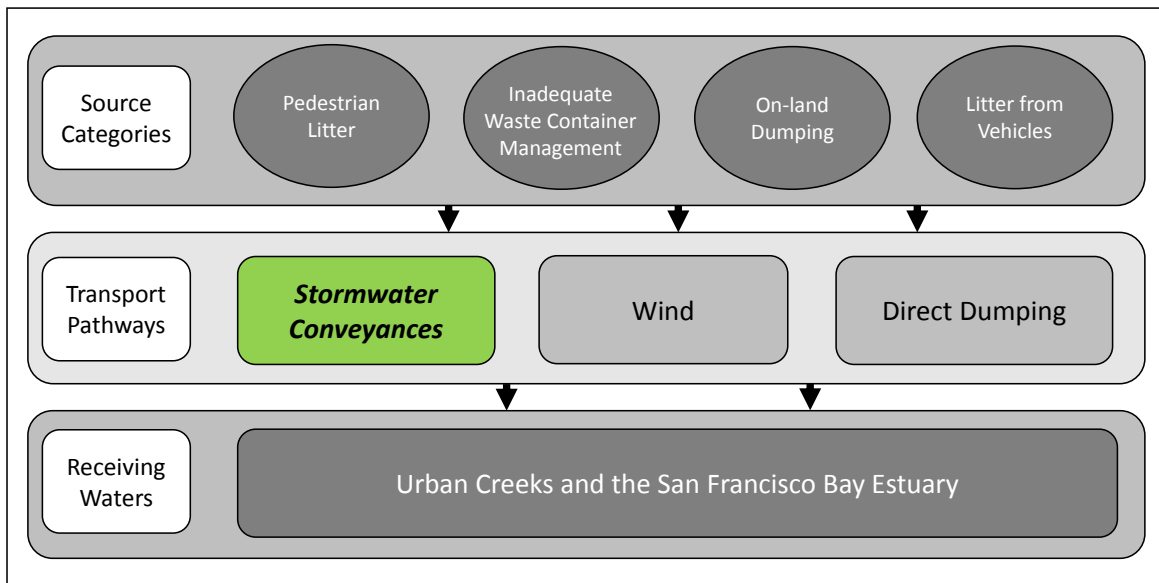


Figure 3. Trash sources categories and transport pathways to urban creeks.

Town of Colma plans to address removal of trash accumulated by wind on Junipero Serra Blvd (that runs parallel to Freeway 280) by installing additional trash capture devices at specific locations and through on-land cleanups. The Town does not have problems with homeless encampments and direct dumping. Public Works Staff keeps an eye on these activities, and if found is promptly addressed through coordination with the Police Department.

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 Town of Colma are described in this section and illustrated in Figure 4.

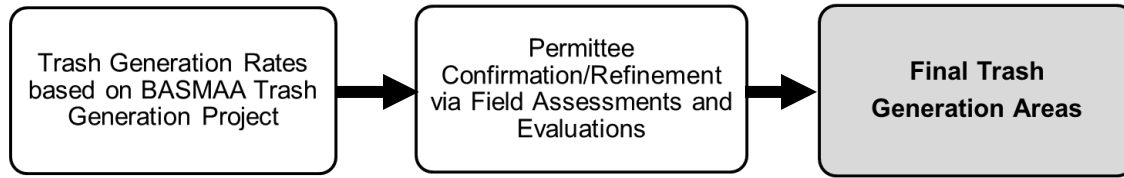


Figure 4. Trash sources categories and transport pathways to urban creeks.

As a first step, trash generation rates developed through *the BASMAA Trash Generation Rates Project* were applied to parcels within the Town of Colma 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 Town of Colma 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 Town of Colma then reviewed and refined the draft trash generation map to ensure that trash generation categories were correctly assigned to parcels or groups of parcels. Town staff refined maps using the following process:

1. Based on maintenance staff's knowledge of trash generation/removal within the Town of Colma, 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 assessed and refined by Town Staff using the on-land visual assessment, more specifically as described 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 Town staff assessed a total of Nine (9) 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

Public Works Maintenance Staff provided their input on trash generation and cleanup from their day to day activities. This input was also used in making a determination of trash generation categories and refining the trash management areas.

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

Table 5. Percentage of jurisdictional area within the City/County of [insert municipality name] 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 / Very High	3.5	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
High	16.6	9.6%	0.0%	0.0%	90.4%	0.0%	0.0%	0.0%
Medium / High	57.8	0.0%	0.0%	0.0%	91.3%	0.0%	0.0%	8.7%
Medium	106.2	81.2%	16.9%	1.9%	0.0%	0.0%	0.0%	0.0%
Low / Medium	15.7	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Low	1,025.5	1.1%	0.1%	3.3%	0.7%	0.0%	0.0%	94.7%

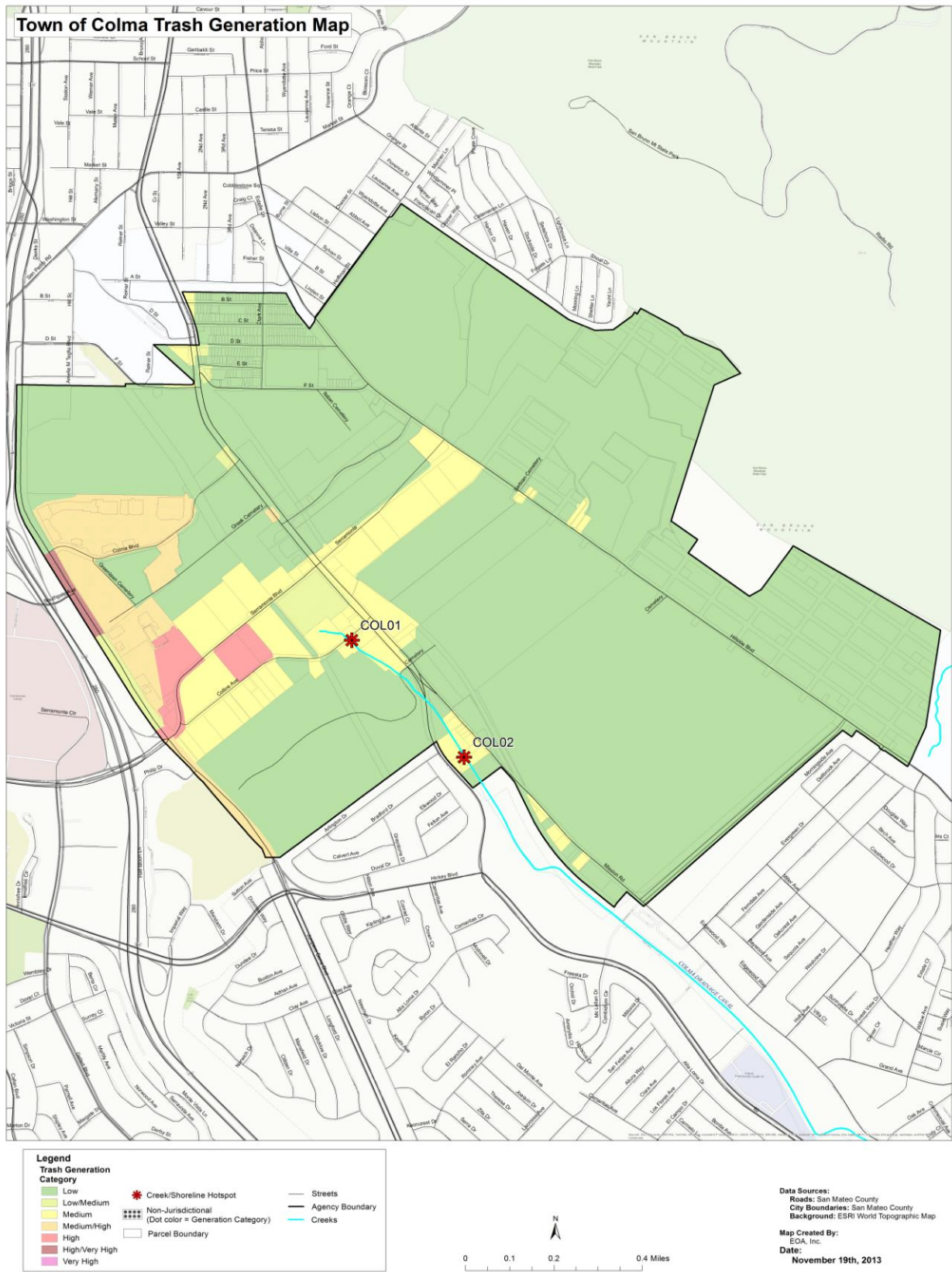


Figure 5. Final Trash Generation Map for the Town of Colma

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3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES

This section describes the control measures that the Town of Colma 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 Town of Colma'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 Town 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 Town 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 Town of Colma's annual reporting process.

3.1 Management Area Delineation and Prioritization

Consistent with the long-term plan framework, the Town of Colma 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 Town of Colma'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 the Town's jurisdiction. Town staff designated all areas in Town into the following TMAs:

The boundaries of Trash Management Areas (TMAs) were based on drainage/watershed areas; and the logistics of implementation and maintenance of various planned trash control measures.

TMA#1 is predominantly a commercial-retail area that includes Serramonte Blvd (between Junipero Serra Blvd and El Camino Real) and the adjacent businesses that include Serra Center shopping complex, auto dealerships, Babies-R-U's, Dollar Tree Store, and a few restaurants. These areas are classified as High, Medium/High, and Medium for trash generation.

TMA #2 includes Colma Blvd and adjacent businesses that include Home Depot, Best Buy, and the Metro Mall shopping complex. These areas are classified as Medium/High trash generation.

TMA #3 includes Junipero Serra Boulevard and this management area is subdivided into A and B subcategories. TMA 3A fronts the Serra Center shopping complex and also includes high/very high trash generation area near Southgate Ave. The predominant source of trash in this TMA is windblown from Interstate 280 and SamTrans bus stops. Areas designated in 3B do not have any commercial properties fronting the street. Primary source of trash is windblown from the freeway.

TMA #4 includes the KOHL's shopping center and the lower end of Collins Ave. Some of the businesses in this TMA include Enterprise Rent-A-Car, Auto Detail Business and a Bank's office. The upper tributary of the Colma creek channel from Daly City intersects in this TMA near Collins Ave and El Camino Real, and this is the location of our designated Trash Hot Spot (COL 01). This area is classified as a medium and low trash generation category.

TMA#5 includes the upper end of Collins Ave and the adjacent properties that include auto service centers and secured parking areas for auto dealerships overflow inventory. This area is classified as a medium trash generator.

TMA#6 includes Mission Road area and the adjacent properties that are predominantly light-industrial (auto service), and residential. This area is classified into a medium and low trash generation category. Our designated Trash Hot Spot (COL 02) is located in this TMA.

TMA#7 includes Serramonte Blvd (between El Camino Real and Hillside Blvd) and the adjacent businesses that include auto dealerships, Colma PD and Lucky Chances Card Room. A few commercial businesses on Hillside Blvd (auto service, monument shop, etc) are also included in this TMA. This area is classified as Medium for trash generation.

TMA # 8 includes a few commercial properties on El Camino Real, north of the F St intersection. This area is classified as Medium and Low for trash generation.

TMA # 9 includes the residential area of Town (near the north end) and Cemeteries. This area is classified as Low for trash generation.

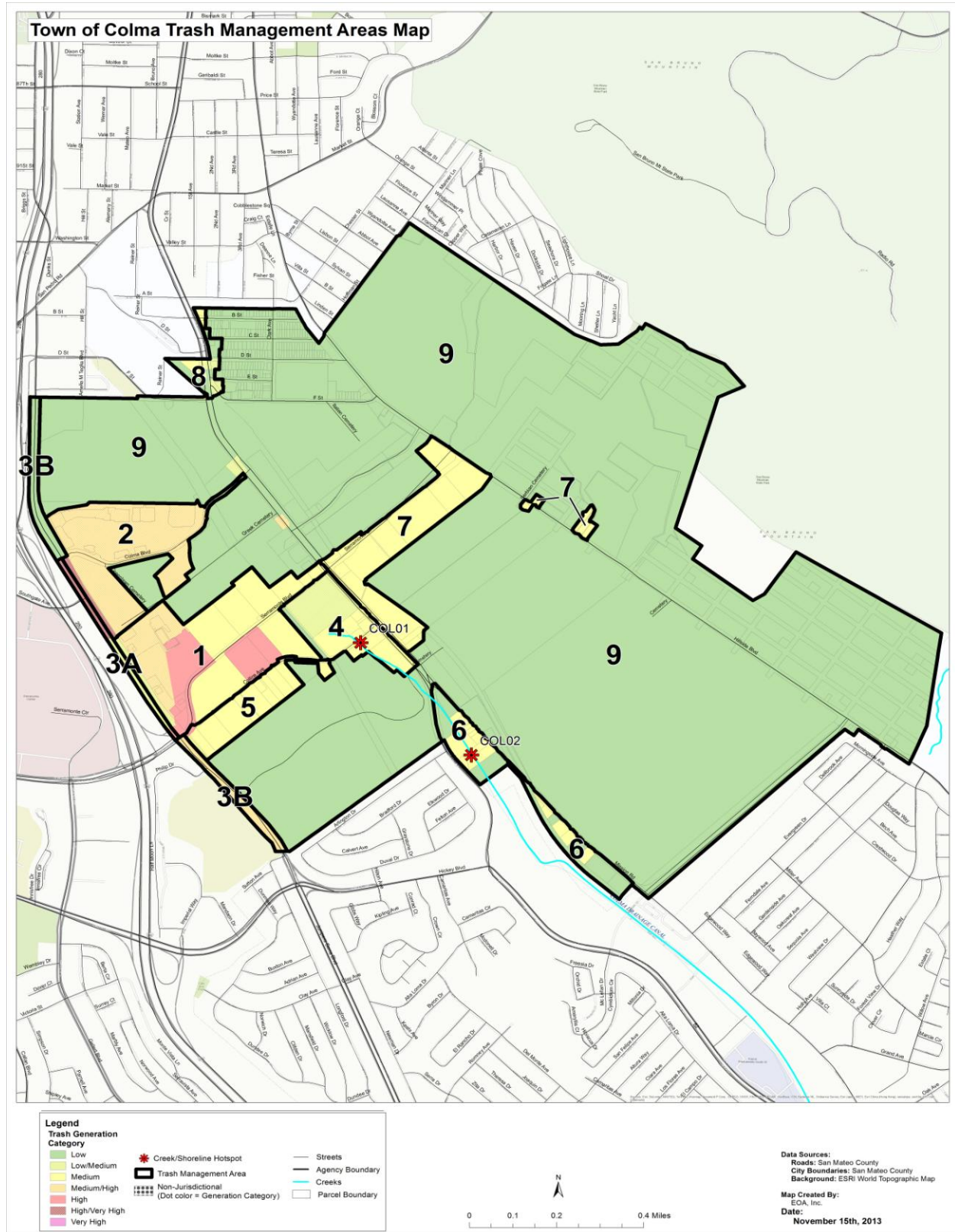
Prioritization of Trash Management Areas (TMAs) was based on condition assessment of trash generation areas, e.g.: high trash generation areas were prioritized by giving them a higher number.

A map depicting Town of Colma's TMAs is included as Figure 6. 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 / Very High	High	Medium / High	Medium	Low / Medium	Low
1	61.4	0.0%	0.0%	26.1%	19.9%	50.9%	3.1%	0.0%
2	43.0	0.0%	3.6%	0.0%	93.2%	0.0%	0.2%	2.9%
3A	4.3	0.0%	44.0%	5.1%	0.0%	0.0%	50.9%	0.0%
3B	11.4	0.0%	0.0%	0.0%	44.3%	0.0%	0.0%	55.7%
4	22.1	0.0%	0.0%	0.0%	0.0%	51.2%	42.5%	6.3%
5	16.2	0.0%	0.0%	1.9%	0.0%	96.2%	0.0%	1.9%
6	20.9	0.0%	0.0%	0.0%	0.0%	40.2%	0.0%	59.7%
7	37.4	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
8	6.1	0.0%	0.0%	0.0%	0.0%	29.8%	19.0%	51.3%
9	1,002.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	99.8%

Figure 6. Trash Management Area Map for the Town of Colma



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3.2 Current and Planned Trash Control Measures

The types of trash control measures currently implemented by the Town of Colma include:

- Installation and Maintenance of Full Trash Capture Devices
- Adoption and Implementation of Single Use Bag Ban and Polystyrene Ban Policies
- Creek Cleanups
- On Land Trash Cleanups
- Street Sweeping
- Citizen Involvement and Public Outreach

The Town plans to continue and expand on the above mentioned trash control measures to meet the full trash capture goal. Additional full-trash capture devices will be installed in high and medium trash generation areas. The Town plans to implement additional on-land trash cleanups; enhanced street sweeping is planned for a selected high trash generation area; and bin/container management will be implemented at commercial properties.

Figure 7, Full Trash Capture Device Map shows the areas where full trash capture devices have already been installed in the Town. Additional trash capture devices are planned and budgeted for installation in FY 13-14. The Town plans to continue installation of additional full-trash capture devices in future years. The goal is to install additional full trash capture inlet devices starting in FY 13-14 and in future years to cover all the commercial and retail areas of Town. Combines with other activities described above, the Town's goal is to achieve the no trash impact goal by 2022.

3.2.1 Trash Management Area #1

TMA-1 includes the street ROW and adjoining properties along Serramonte Boulevard between Junipero Serra Blvd. and El Camino Real. Commercial and retail properties in TMA-1 along the Colma auto row include Serra Center (Target), Dollar Tree, Babies R Us, Restaurants, and Auto Dealerships. Potential trash sources include pedestrian and automotive sources, trash containers, and windblown trash.

The following Trash Control Measures are planned for TMA-1.

Full-Capture Treatment Devices

Three (3) Full Trash capture devices were installed in 2011-12 near the intersection of Serramonte Blvd and Serra Center Drive. Trash accumulation is from pedestrians, vehicles, and windblown. The installed trash capture devices are regularly inspected and cleaned and trash volume data is collected. Additional trash capture devices are planned and budgeted for installation in FY 2013-14 in this TMA. The siting of these devices is currently being finalized. Figure 7 below shows the areas where full trash capture devices have already been installed in the Town.

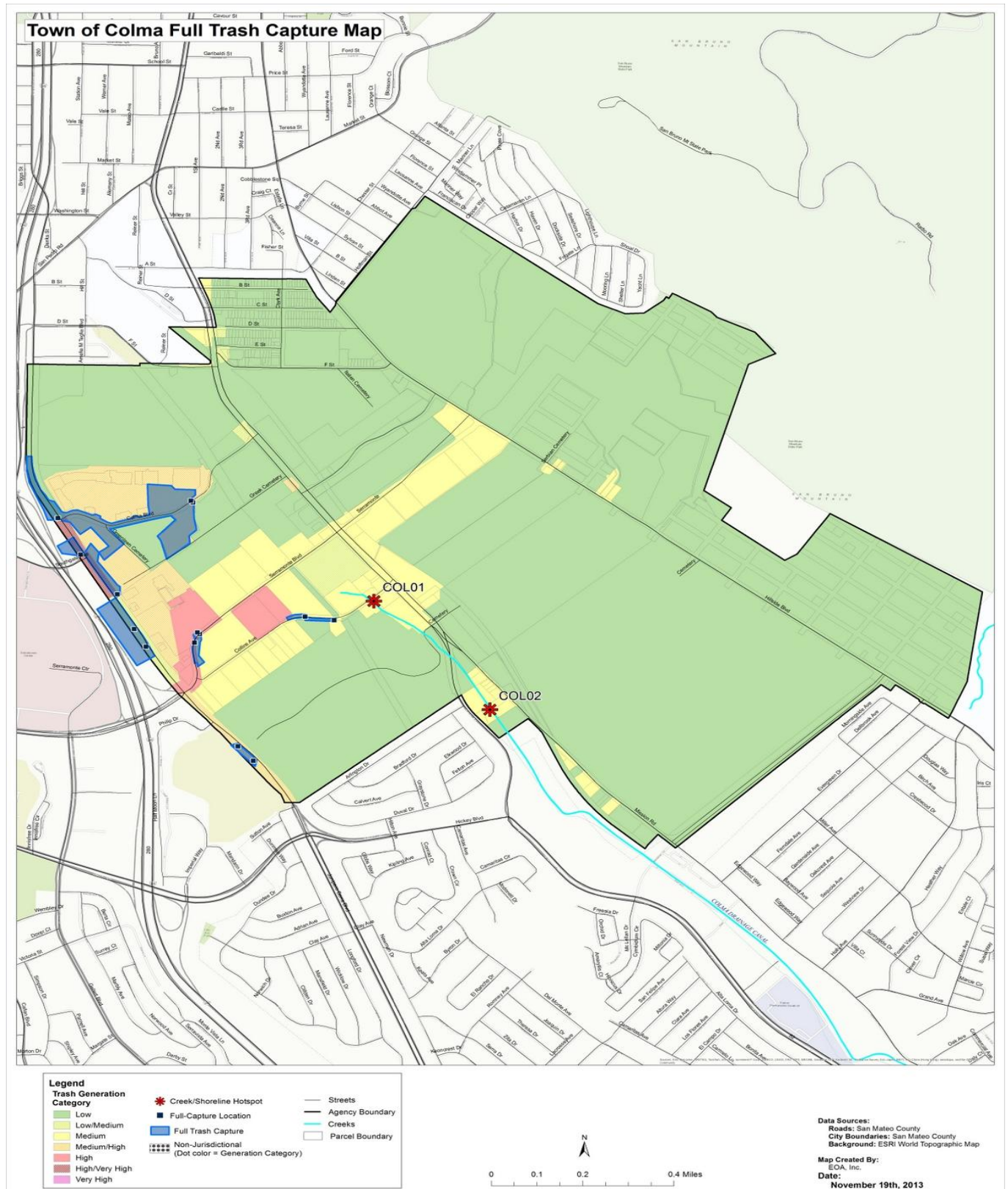


Figure 7. Trash Full Capture Device Map for the Town of Colma

Street Sweeping

The ROW in TMA-1 is currently swept twice a month. Since a few properties in this area are designated as retail land use, the Town plans to increase the street sweeping frequency on this street to once per week starting in FY 2014-15.

No on-street parking is allowed on Serramonte Blvd. and the maintenance crew is able to sweep all curb and gutter areas.

Improved Trash Bins/Container Management

During On-land visual assessments, Town staff noticed that improper bin/container management may also contribute to trash generation in this area. The Town plans to direct efforts towards outreach and enforcement to address these issues. The program of improved container management is planned for implementation starting in FY 2014-15 along with the mandatory commercial recycling program currently in place.

On-land Trash Cleanups

Annual on-land trash cleanups were started by the Town in 2011 and the Town plans to continue this cleanup to reduce/remove trash along the shoulders and landscaped areas of the ROW.

In addition, The Town plans to start once a month on-land cleanup by the Town's maintenance crew beginning in FY 2014-15.

Partial-Capture Treatment Devices

Additional partial trash capture devices may also be installed at a few curb cut inlets along the downhill end of Serramonte Blvd. Combined with enhanced street sweeping and other measures detailed above, no adverse impacts from trash will be achieved.

3.2.2 Trash Management Area #2

TMA-2 includes the street ROW and adjoining properties along Colma Boulevard between Junipero Serra Blvd. and El Camino Real. Commercial and retail properties in TMA-2 include Metro Mall, Home Depot, and Best Buy. Potential trash sources include pedestrian and automotive sources, and trash containers.

The following Trash Control Measures are planned for TMA-2.

Full-Capture Treatment Devices

Two (2) Full Trash capture devices were installed in 2011-12 on Colma Blvd. The area sited had problems with trash accumulation from pedestrian and vehicle sources. The installed trash capture devices are regularly inspected and cleaned and trash volume data is collected. Additional trash capture devices are planned for installation in FY 2013-14 and future years. The siting of these devices is currently being finalized.

Figure 7 shows the areas where full trash capture devices have already been installed in the Town.

On-land Trash Cleanups

On-land trash cleanups were started by the Town in 2011 and the Town plans to continue these cleanups and possibly increase the frequency if needed to reduce/remove trash along the shoulders of the ROW. The Town plans to start once a month on-land cleanup by the Town's maintenance crew beginning in FY 2014-15.

Improved Trash Bins/Container Management

During On-land visual assessments, Town staff noticed that improper bin/container management may also contribute to trash generation in this area. The Town plans to direct efforts towards outreach and enforcement to address these issues. The program of improved container management is planned for implementation along with the mandatory commercial recycling program currently in place.

Street Sweeping

The ROW in TMA-2 is currently swept twice a month and the Town plans to continue this program.

Partial-Capture Treatment Devices

Additional partial trash capture devices may also be installed at a few curb cut inlets along the Colma Blvd ROW.

3.2.3 Trash Management Area #3

TMA-3 is subdivided into TMA-3A and TMA-3B.

TMA-3A

TMA-3A includes the street ROW of Junipero Serra Blvd between Colma Blvd and Serramonte Blvd. Businesses in Serra Center commercial complex front this portion of Junipero Serra Blvd. The primary source of trash is windblown from the 280 Freeway and the overflowing bins at a few SamTrans Bus Stops.

The following Trash Control Measures are planned for TMA-3A.

Full-Capture Treatment Devices

Five (5) Full Trash capture devices were installed in 2011-12 on Colma Blvd. shown on Figure 7 above. The installed trash capture devices are regularly inspected and cleaned and trash volume data is collected. Additional trash capture devices are planned for installation starting in FY 2013-14 and continued installation in future years. The siting of these devices is currently being finalized.

On-land Trash Cleanups

A majority of trash along this roadway is located behind the curb in the landscaped areas along the western curb line. Trash sources are windblown from the 280 freeway and Sam Trans Bus Stops. Annual On-land trash cleanups were started by the Town in 2011 and this will be continued. In addition, the Town plans once a month on-land cleanup by the Town's maintenance crew starting in FY 2014-15.

Improved Trash Bins/Container Management

During On-land visual assessments, Town staff noticed that improper bin/container management may also contribute to trash generation in this area. The Town plans to direct efforts towards outreach and enforcement to address these issues. The program of improved container management is planned for implementation along with the mandatory commercial recycling program currently in place.

Coordination with SamTrans for enhanced bin management at their bus stops will be initiated.

Street Sweeping

The ROW in TMA-3A is currently swept twice a month and the Town plans to continue this program.

TMA-3B

TMA-3B includes the street ROW sections of Junipero Serra Blvd (a) between Colma Blvd and the Town's northern limits with the City of Daly City, and (b) between Serramonte Blvd and the Town's southern limits with the City of South San Francisco. There are no commercial properties fronting this section of Junipero Serra Blvd. The primary source of trash is windblown from the 280 Freeway.

The following Trash Control Measures are planned for TMA-3B.

Full-Capture Treatment Devices

Two (2) Full Trash capture devices were installed in 2011-12 on Colma Blvd. shown on Figure 7 above. The installed trash capture devices are regularly inspected and cleaned and trash volume data is collected. Additional trash capture devices will be installed in future years.

On-land Trash Cleanups

A majority of trash along this roadway is located behind the curb in the landscaped areas along the western curb line. Trash sources are windblown from the 280 freeway. Annual On-land trash cleanups were started by the Town in 2011 and this will be continued.

In addition, the Town plans once a month on-land cleanup by the Town's maintenance crew starting in FY 2014-15.

Street Sweeping

The ROW in TMA-3A is currently swept twice a month and the Town plans to continue this program.

3.2.4 Trash Management Area #4

TMA-4 includes the street ROW and adjoining properties of Kohl's Store and other businesses (1200 ECR) along El Camino Real and the lower section of Colma Boulevard. Potential trash sources include pedestrian and automotive sources, and trash containers.

The following Trash Control Measures are planned for TMA-4.

Shoreline/Creek Cleanups

Colma Creek concrete lined channel runs through this management area. The Town's Trash Hot Spot COL-1 is located in this TMA.

The Town has removed trash from the entire Colma Creek channel that runs through Colma prior to adoption of the MRP and plans to continue this cleanup.

Trash Hot Spot COL-1 was sited after adoption of the MRP. Annual Trash Hot Spot Cleanup is done at this location and data is collected for evaluation of trash trends.

On-land Trash Cleanups

On-land Town-wide trash cleanups were started by the Town in 2011 and the Town plans to continue these cleanups and possibly increase the frequency if needed to reduce/remove trash along the shoulders of the ROW.

Street Sweeping

The ROW in TMA-4 is currently swept twice a month and the Town plans to continue this program.

Improved Trash Bins/Container Management

Improper bin/container management may also contribute to trash generation in this area. The Town plans to direct efforts towards outreach and enforcement to address these issues. The program of improved container management is planned for implementation starting in FY 14-15 along with the mandatory commercial recycling program currently in place. Coordination with SamTrans for enhanced bin management at their bus stops on El Camino Real will be initiated.

3.2.5 Trash Management Area #5

TMA-5 includes the street ROW and adjoining properties along the upper section of Collins Avenue. An auto dealership service center, and a few fenced dealership car lots front this ROW.

The following Trash Control Measures are planned for TMA-5.

Street Sweeping

The ROW in TMA-5 is currently swept twice a month and the Town plans to continue this program.

Full-Capture Treatment Devices

Two (2) Full Trash capture devices were installed in 2011-12 on Colma Blvd. shown on Figure 7 above. The installed trash capture devices are regularly inspected and cleaned and trash volume data is collected. Additional trash capture devices are planned for installation in FY15-16 and in future years.

On-land Trash Cleanups

On-land trash cleanups were started by the Town in 2011 and the Town plans to continue these cleanups and possibly increase the frequency if needed to reduce/remove trash along the shoulders of the ROW.

3.2.6 Trash Management Area #6

TMA-6 includes the street ROW and adjoining properties along Mission Rd in Colma. Auto Service and light industrial facilities are located on this street. Colma Creek concrete lined channel runs through this TMA. The Town's Trash Hot Spot COL-2 is located in this TMA.

The following Trash Control Measures are planned for TMA-6.

Street Sweeping

The ROW in TMA-5 is currently swept twice a month and the Town plans to continue this program.

Shoreline/Creek Cleanups

Colma Creek concrete lined channel runs through this TMA. The Town's Trash Hot Spot COL-2 is located in this TMA.

The Town has removed trash from the entire Colma Creek channel that runs through Colma prior to adoption of the MRP.

Trash Hot Spot COL-2 was sited after adoption of the MRP. Annual Trash Hot Spot Cleanup is done at this location and data is collected for evaluation of trash trends.

On-land Trash Cleanups

Annual On-land trash cleanup was started by the Town in 2011 and the Town plans to continue these cleanups.

Full-Capture Treatment Devices

Full trash capture devices will be installed in this TMA in FY17-18.

3.2.7 Trash Management Area #7

TMA-7 includes the street ROW and adjoining properties along the upper (eastern) section of Serramonte Boulevard, between ECR and Hillside Blvd, properties fronting ECR on the east side, and a few businesses on Hillside Blvd. Potential trash sources include pedestrian and automotive sources, and trash containers.

The following Trash Control Measures are planned for TMA-7.

On-land Trash Cleanups

Annual on-land trash cleanups were started by the Town in 2011 and the Town plans to continue these cleanups. The Town will increase the cleanup frequency to once a month if needed.

Street Sweeping

The ROW in TMA-7 is currently swept twice a month and the Town plans to continue this program.

Improved Trash Bins/Container Management

The Town plans to direct efforts towards outreach and enforcement to address issues related to improper bin management. The program of improved container management is planned for implementation starting in FY 14-15 along with the mandatory commercial recycling program currently in place.

Full-Capture Treatment Devices

Full trash capture devices will be installed along the medium trash generation areas on Serramonte Blvd and Hillside Blvd starting in FY18-19.

3.2.8 Trash Management Area #8

TMA-8 includes the street ROW and adjoining properties along El Camino Real north of F Street. Potential trash sources include pedestrian and automotive sources.

The following Trash Control Measures are planned for TMA-8.

On-land Trash Cleanups

Annual on-land trash cleanups were started by the Town in 2011 and the Town plans to continue these cleanups. The Town will increase the cleanup frequency to once a month if needed.

Improved Trash Bins/Container Management

The Town plans to direct efforts towards outreach and enforcement to address issues related to improper bin management. The program of improved container management is planned for implementation along with the mandatory commercial recycling program currently in place.

Trash Management Area # 9

In low trash generation areas of the Town, designated as TMA #9, which are residential and open/cemetery uses, the Town plans to continue street sweeping of all areas in this TMA twice a month, continue the Town-wide annual on-land trash cleanups, and provide public outreach to educate residents and cemetery managers on ways to help eliminate trash.

3.2.9 Jurisdiction-wide Control Measures

Single-Use Carryout Bag Policies

Town of Colma adopted the single use bag ban policy on January 9th, 2013. The Policy became effective starting April 22nd, 2013. A copy of the Town Ordinance and other details can be found on the Town's website at www.colma.ca.gov. Click the Colma Green Tab.

Polystyrene Foam Food Service Ware Policies

Town of Colma adopted the polystyrene foam food service ware ban policy on March 13th, 2013. The Policy became effective starting August 1st, 2013. A copy of the Town Ordinance and other program details can be found on the Town's website at www.colma.ca.gov. Click the Colma Green Tab.

Public Education and Outreach Programs

The Town of Colma participates in and promotes outreach of the regional and countywide public education programs (e.g.: Be the Street, Coastal Cleanup Day, etc) by distributing outreach materials, through the Town's newsletter and the website.

SMCWPPP Public Information and Participation Program (Countywide)

Through participation and funding of the San Mateo Countywide Water Pollution Prevention Program's (SMCWPPP) Public Information and Participation program (PIP), the Town 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 storm drains (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 storm drain 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. 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.

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.

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%. 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.

Coastal Cleanup Day Promotion (Countywide)

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.

BASMAA Regional Media Relations Project (Regional)

Through participation and funding of the **BASMAA Regional Media Relations Project**, the Town 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.

3.2.10 Creek and Shoreline Hot Spot Cleanups

Colma Creek concrete lined channel runs through the Town of Colma. The Town has removed trash from the entire Colma Creek channel that runs through Colma prior to adoption of the MRP and plans to continue this cleanup.

After adoption of the MRP in 2010, the Town selected two (2) trash hot spots, COL-1 and COL-2 along sections of Colma Creek Channel which has a potential of trash accumulation from upstream sources. Annual Trash Hot Spot Cleanup is done at these locations and data is collected for evaluation of trash trends.

3.2.11 Summary of Trash Control Measures

A summary of the proposed trash control measures is tabulated as follows:

Primary TMA	Secondary TMA	Trash Control Measure 1	Trash Control Measure 2	Trash Control Measure 3	Trash Control Measure 4	Trash Control Measure 5
1		Full Trash Capture	Street Sweeping (Enhanced)	Bin Management	On-Land Cleanup	Partial Trash Capture
2		Full Trash Capture	On-Land Cleanup	Bin Management	Street Sweeping	Partial Trash Capture
3	A	Full Trash Capture	On-Land Cleanup	Bin Management	Street Sweeping	
3	B	Full Trash Capture	On-Land Cleanup	Street Sweeping		
4		Creek, Channel, Shoreline Cleanups	On-Land Cleanup	Street Sweeping	Bin Management	
5		Street Sweeping	Full Trash Capture	On-Land Cleanup		
6		Street Sweeping	Creek, Channel, Shoreline Cleanups	On-Land Cleanup	Full Trash Capture	
7		On-Land Cleanup	Street Sweeping	Bin Management	Full Trash Capture	
8		On-Land Cleanup	Bin Management	Street Sweeping		
9		Street Sweeping	On-Land Cleanup	Public Outreach		

Implementation of these various trash control measures will help the Town achieve full trash reduction in all TMA's.

3.3 Control Measure Implementation Schedule

Town of Colma's trash control measure implementation schedule is detailed in Table 7 below. The intent of the Town's Plan and this schedule is to meet the MRP mandated 2022's no adverse impact trash reduction goal.

Table 7. Town of Colma's 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														
Full Trash Capture			X	X		X	X	X	X					
Street Sweeping	X	X	X	X	X	X	XX	XX	XX	XX	XX	XX	XX	XX
Bin/Container Management							X	X	X	X	X	X	X	X
On-Land Cleanups				X	X	X	XX	XX	XX	XX	XX	XX	XX	XX
Partial Trash Capture											X	X	X	X
TMA #2														
Full Trash Capture			X			X	X	X	X					
On-Land Cleanups				X	X	X	XX	XX	XX	XX	XX	XX	XX	XX
Bin/Container Management							X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Partial Trash Capture												X	X	X
TMA #3 A														
Full Trash Capture			X			X				X	X	X		
On-Land Cleanups				X	X	X	XX	XX	XX	XX	XX	XX	XX	XX
Bin/Container Management							X	X	X	X	X	X	X	X
Street Sweeping	X													
TMA #3 B														
Full Trash Capture			X									X	X	X
On-Land Cleanups				X	X	X	XX	XX	XX	XX	XX	XX	XX	XX
Street Sweeping	X													

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 #4														
Creek Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-Land Cleanups				X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X													
Bin/Container Management							X	X	X	X	X	X	X	X
TMA #5														
Full Trash Capture								X	X					
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-Land Cleanups				X	X	X	X	X	X	X	X	X	X	X
TMA #6														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Creek Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-Land Cleanups				X	X	X	X	X	X	X	X	X	X	X
Full Trash Capture										X				
TMA #7														
On-Land Cleanups				X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bin/Container Management							X	X	X	X	X	X	X	X
Full Trash Capture											X			
TMA #8														
On-Land Cleanups				X	X	X	X	X	X	X	X	X	X	X
Bin/Container Management							X	X	X	X	X	X	X	X
TMA #9														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Town of Colma

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
Public Outreach														
On land Cleanups				X	X	X	X	X	X	X	X	X	X	X
Jurisdiction-wide Control Measures														
Single-Use Carryout Bag Policies					X	X	X	X	X	X	X	X	X	X
Polystyrene Foam Food Service Ware Policies					X	X	X	X	X	X	X	X	X	X
Public Outreach	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Creek and Shoreline Hot Spot Cleanups														
Creek Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trash Hot Spots Siting and Cleanups			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

XX: One a week street sweeping, once a month on-land cleanups

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 Town of Colma. The Town 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 Town 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 Town of Colma 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 Town of Colma.

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 Town of Colma 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 Town 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 Town of Colma 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 Town of Colma.

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 Town of Colma 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 Town 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 Town of Colma 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 Town 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 Town of Colma 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 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 Town of Colma 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. Town of Colma 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

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