Long-Term Trash Load Reduction Plan and Assessment Strategy

Submitted by:

City of Millbrae

621 Magnolia Avenue

Millbrae, CA 94030

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

December 20, 2013

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CITY OF MILLBRAE
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:

Khee Lim 1/28/2014
City Engineer, City of Millbrae

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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
FY	Fiscal Year
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 Device
TMA	Trash Management Area
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
USW-1	United Stormwater Full Capture Connector Pipe Screen Treatment Device
USW-2	United Stormwater Partial Capture Clean Screen III Curb Inlet Screen
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 Millbrae'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 Millbrae 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'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 Adverse Impact") by July 1, 2022.

This Long-Term Plan is submitted by the City of Millbrae 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 Millbrae'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 City of Millbrae'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).

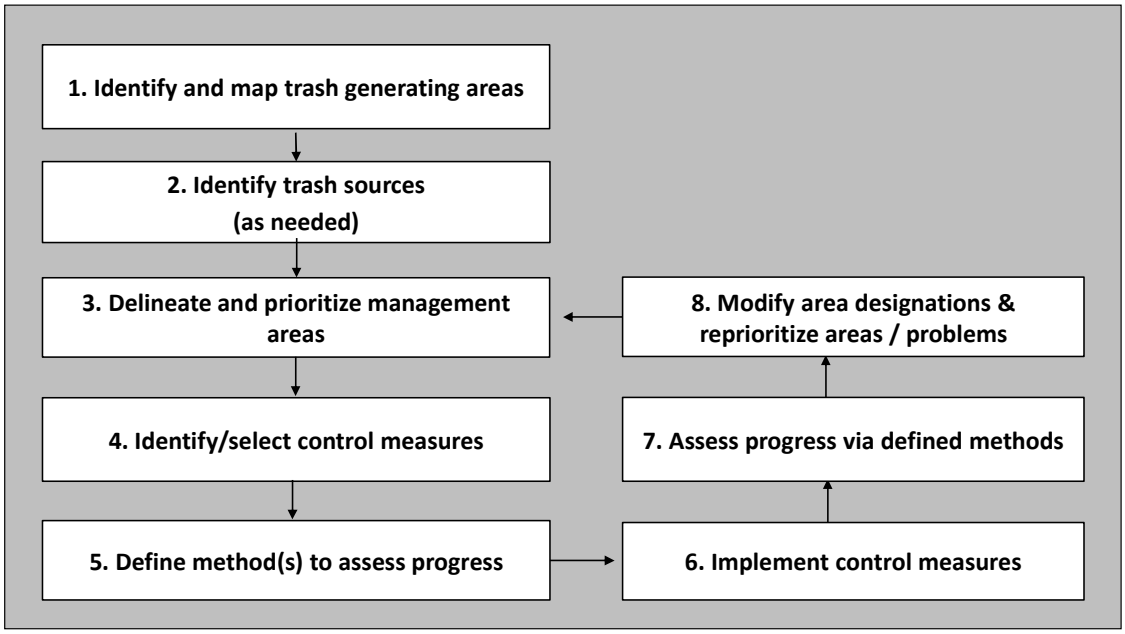

Figure 1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

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 the 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. 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 Millbrae 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 Millbrae has begun to implement its short-term plan. Control measures implemented to date via the short-term trash reduction plan are:

- **Single-Use Carryout Plastic Bag Ordinance**
  The Single-Use Carryout Bag Ordinance (No 742), adding section 6.50 to the Millbrae Municipal Code, was adopted at the February 14, 2012 City Council meeting. The Ordinance, which became effective on September 1, 2012, prohibits the use of single-use carryout plastic bags and the distribution of free paper bags at retail stores, including grocery stores, supermarkets, convenience stores, drug stores, clothing stores, and other retail stores. Stores are allowed to distribute paper bags that contain a minimum of 40 percent post-consumer recycled content for a minimum charge of $0.10 for each point-of-sale paper bag. The stores retain the charge for the bags. The Ordinance does not apply to protective types of bags, including for meat, produce, and bakery items. The businesses exempt from the Ordinance include food vendors, such as restaurants and take-out food establishments; dry cleaners; and non-profit charitable reuse organizations. New businesses were informed during the businesses license application process and followed up by staff to ensure compliance. New businesses are required to fill out an Acknowledgement and Verification Form that they understand and will comply with the regulations. One business had a site visit inspection and was provided information for complying with the regulations; the business switched to compliant bags. No citations were issued. Businesses are required to maintain records for three years for the charge on paper bags. The City continued to distribute reusable cloth shopping bags made from 100 percent post-consumer recycled plastic bottles to Millbrae residents and has distributed over 8,500 reusable bags to date.

- **Public Education and Outreach Programs**
  The City of Millbrae participates in the regional *Be the Street Campaign* geared toward youth and has posted the information to the City's website. In addition, County staff conducted the Campaign at the fall 2013 Coastal Cleanup Day. Efforts are planned to have the Campaign conducted at the local high school and middle school in 2014. Classroom presentations are conducted throughout the school year and include litter prevention and water pollution prevention. Assemblies at the grade schools

incorporate picking up litter and address water pollution prevention. Community wide and school outreach is conducted twice a year for volunteer litter cleanups.

- **Improved Trash Bin/Container Management**
  In an effort to decrease the amount of litter in the downtown and northern management areas, the City revised the collection schedule to increase the collection frequency for identified public trash bins and decrease collection for trash bins in other areas that do not need as much service. In addition, tenants identified as not having trash service within the Downtown area were contacted and informed to start service. Additional outreach is planned for tenants in the downtown area to encourage them to recycle and use trash bins allocated for their apartments and to not use the public trash bins. In addition, the City installed a large solar-operated trash compacting container next to a coffee shop where the public trash bin was continually overflowing with paper cups. To reduce the amount of paper placed in a public trash bin at the Millbrae Post Office, City staff worked with the Post Office to place an additional recycling container inside for the collection of unwanted mail/mixed paper. Outreach is also being done to identify companies who distribute bundles of newspapers in front of stores to reduce the potential for the newspapers to end up as litter. The City is also looking at placing a garbage enclosure in a parking lot behind a busy section of the downtown to accommodate waste from two restaurants and other businesses.

- **On-Land Trash Clean-Ups**

  Beginning in 2012, the City of Millbrae began an annual citywide Earth/Arbor day trash clean-up effort that addresses 12 sites throughout the City, including Trash Management Areas 1, 3, 4, 5 and 6. This year, the clean-up took place on April 27, 2013 and included 125 community volunteers and 5 City staff members. Their collaborative efforts resulted in the collection of a total of 2 ¾ yards of trash and 96 gallons of cans/bottles/containers and 2 yards (404 gallons) of paper/cardboard that were collected separately and recycled.

- **Partial Capture Treatment Devices**
  The City installed a total of 19 partial-capture treatment devices with funding provided through the San Francisco Bay-area Wide Trash Capture Demonstration Project administered by San Francisco Estuary Partnership (SFEP). Devices are currently maintained at a frequency of two times per year with additional inspections and maintenance conducted, as necessary, after storms. To date, the City has not experienced any issues or problems with these devices.

- **Full Capture Treatment Devices**
  The City installed 27 United Stormwater "USW-1" full-capture treatment devices at various locations in Trash Management Areas 1, 3, 5 and 7 during August 2012. The total area treated by these devices is 27.24 acres. The City also installed 11 additional full-capture devices (two in TMA #2; four in TMA #3; and five in TMA#5) in November 2013. The total drainage acreage associated with these devices has not yet been calculated.

Control measures described in this Long-Term Plan build upon actions taken to-date via the City of Millbrae'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 Millbrae's FY 2013-2014 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 Millbrae's Control measures that will be implemented by the City of Millbrae 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 1948, the City of Millbrae covers 2,086 acres in Santa Mateo County, and has a jurisdictional area of 1,650 acres. According to the 2010 Census, it has a population of 21,532, with a population density of 6,606.9 people per square mile, and average household size of 2.65. Of the 21,532 who call the City of Millbrae home, 20.1% are under the age of 18, 7.1% are between 18 and 24, 23.0% are between 25 and 44, 30.1% are between 45 and 65, and 19.7% are 65 or older.

Top employers in the City of Millbrae include City and County of San Francisco, Millbrae School District, Starwood Hotels & Resorts Worldwide, Best Western El Rancho Inn & Suites, and the City of Millbrae. The median household income was $68,404 in 2000[1].

Land uses within the City of Millbrae depicted in ABAG (2005) are provided in Table 2. The City of Millbrae is primary comprised of 6 land uses. These include: Commercial, Industrial, Residential, Retail, K-12 Schools, and Urban Parks.

Table 2. Percentages of the City of Millbrae's jurisdictional area[2] within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (Acres)	% of Jurisdictional Area
Commercial and Services	100.2	5.1%
Industrial	20.5	1.0%
Residential	1,339.5	68.4%
Retail	84.8	4.3%
K-12 Schools	94.0	4.8%
Urban Parks	51.6	2.6%

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,

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

[2] 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).

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.

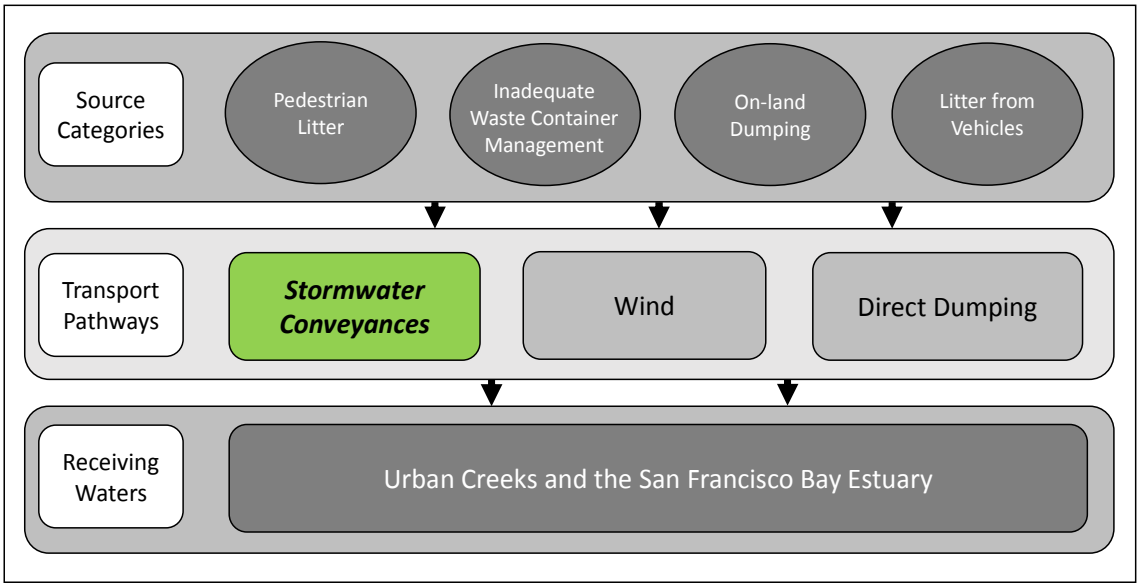

Figure 3. Trash sources categories and transport pathways to urban creeks.

The City of Millbrae clears all of the creek beds within the Millbrae city limits of trash, debris and overgrowth biannually and during inclement weather events. The work is completed by city staff and usually is completed within one working day per cleaning event, per creek bed. The total creek bed length cleaned is approximately 1.5 miles and approximately 10 gallons (total) of non-compacted trash is gathered from each biannual occurrence.

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 Millbrae are described in this section and illustrated in Figure 4.

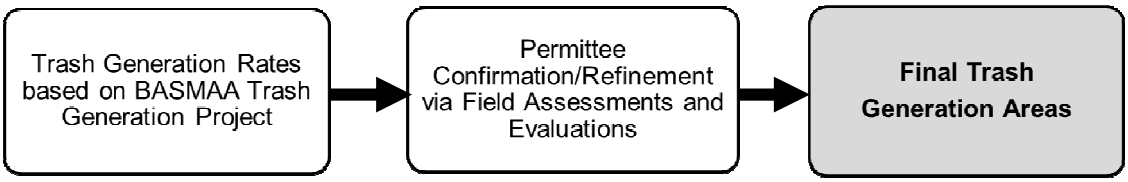

Figure 4. Trash sources categories and transport pathways to urban creeks.

As a first step, trash generation rates developed through *the BASMAA Trash Generation Rates Project* were applied to parcels within the City of Millbrae 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 Millbrae 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 Millbrae 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 assessed and confirmed/refined 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 6 areas to assist in conducting/refining trash generating area designations. Photos were taken at these locations and On-Land Visual Assessment Forms were utilized, and are retained by city staff, to provide proof of these low generation assessments.

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

The City of Millbrae used a preliminary map of the city depicting trash generation rates, based on land usage and median income, to survey the trash loads associated with various areas of the city. Long-time, highly knowledgeable City staff used institutional knowledge and ground-truthing methods to verify or disprove the initial rates depicted by the preliminary map. Six (6) areas that were delineated as being medium or high trash generating areas were proved, in fact, to be low trash generating areas after field verifications were performed based upon the recommendations made by our most informed and experienced field staff.

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 the City of Millbrae. 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 Millbrae'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.

Table 5. Percentage of jurisdictional area within the City of Millbrae 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	78.7	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Medium	368.6	27.0%	5.6%	26.8%	1.3%	25.4%	14.0%	0.0%
Low	1,512.1	0.0%	0.0%	82.0%	0.1%	0.0%	0.0%	17.8%

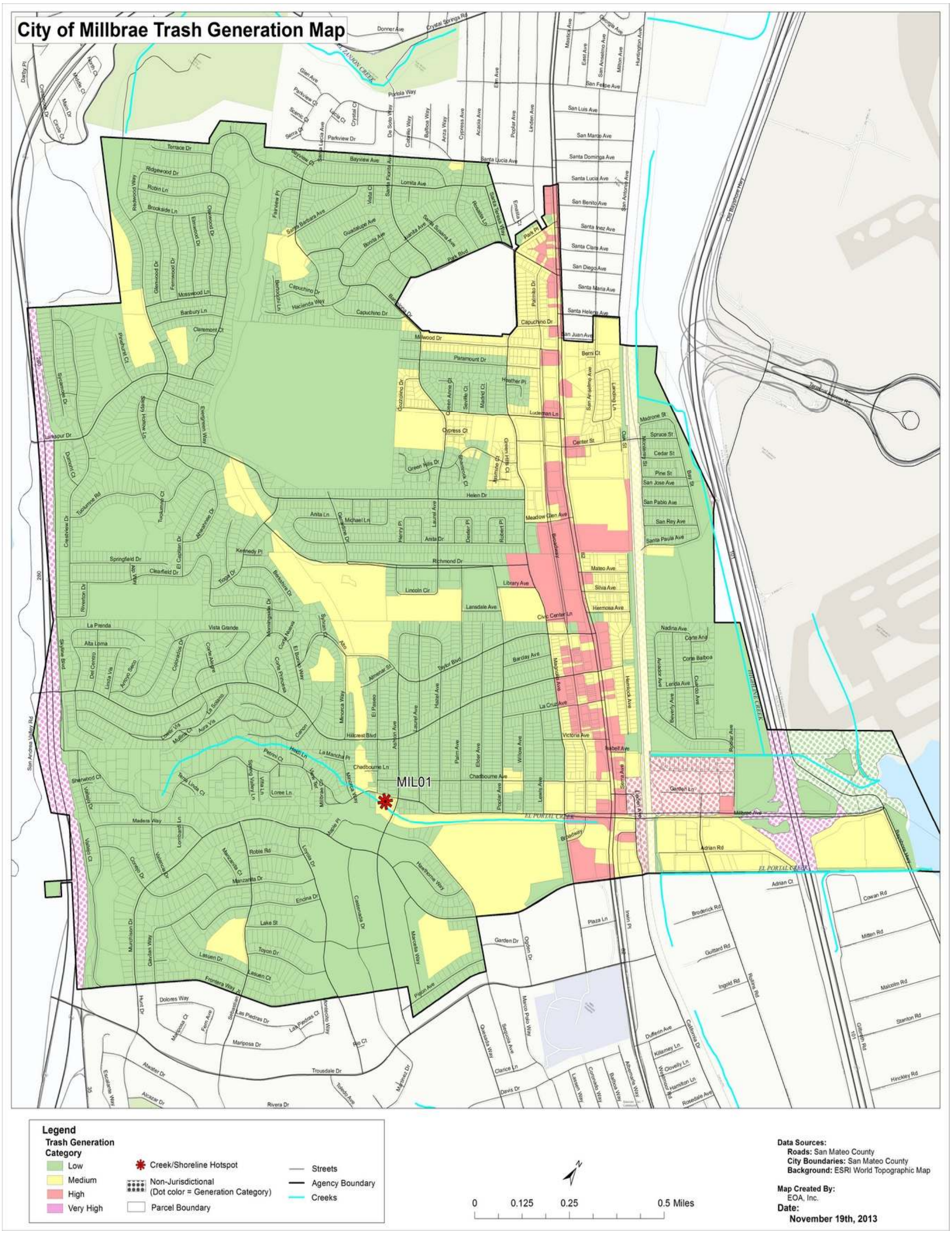

Figure 5. Final Trash Generation Map for the City of Millbrae

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3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES

This section describes the control measures that the City of Millbrae 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 Millbrae'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 Millbrae's annual reporting process.

3.1 Management Area Delineation and Prioritization

Consistent with the long-term plan framework, the City of Millbrae 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 Millbrae'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:

City of Millbrae staff delineated 6 Trash Management Areas based on a combination of land usage, boundaries created by topography, and trash generation rates. The most high traffic areas, which are the areas most immediately surrounding El Camino Real (CA State Highway 82) were divided into 3 areas based on divisions created by roads and thoroughfares. This resulted in 2 areas on the West side of El Camino (divided into a Northern section and a Southern section) and 1 area bordering El Camino to the East. Another TMA was created to encompass all of the medium and high trash generating areas that exist off of Millbrae Avenue and its cross streets that are situated East of El Camino Real and West of the San Francisco Bay. Parks, schools and churches were compiled into a single TMA based on similar land usage and trash generation rates, while the remaining area, consisting of all "Low Trash Generating" areas, was compiled into a final group.

Staff has prioritized the five (5) trash generation areas that contain medium and high generation rates based upon factors that include trash generation rate, land usage, public presence, trash sources and applicable control measures that could be utilized in each respective area. We deemed that areas that were considered to be high trash generating areas would take precedence over those with lower rates and that areas that were high-traffic with a large public presence would take precedence over lower traffic areas. This was decided based on the need to quickly enact control measures in higher generation and higher usage areas to avoid any further negative effects of trash accumulation and to begin what we assume will be a more intensive effort to remediate higher trash levels. Furthermore, applicable trash control measures were taken into account in order to determine the prioritization as the timeliness of those actions planned for specific areas will affect

the timeline for implementation. For instance, installing trash capture devices will require budgetary actions and coordination with outside contractors and will, therefore, take more time to accomplish than in-house measures, such as on-land trash clean-ups, which can be implemented relatively quickly.

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
1	77.5	0.0%	56.6%	42.7%	0.6%
2	89.6	0.0%	15.6%	84.0%	0.4%
3	104.1	0.0%	18.8%	74.4%	6.8%
4	141.7	0.0%	0.0%	100.0%	0.0%
5	44.5	0.0%	2.7%	91.4%	5.9%
6	1,502.0	0.0%	0.0%	0.0%	100.0%

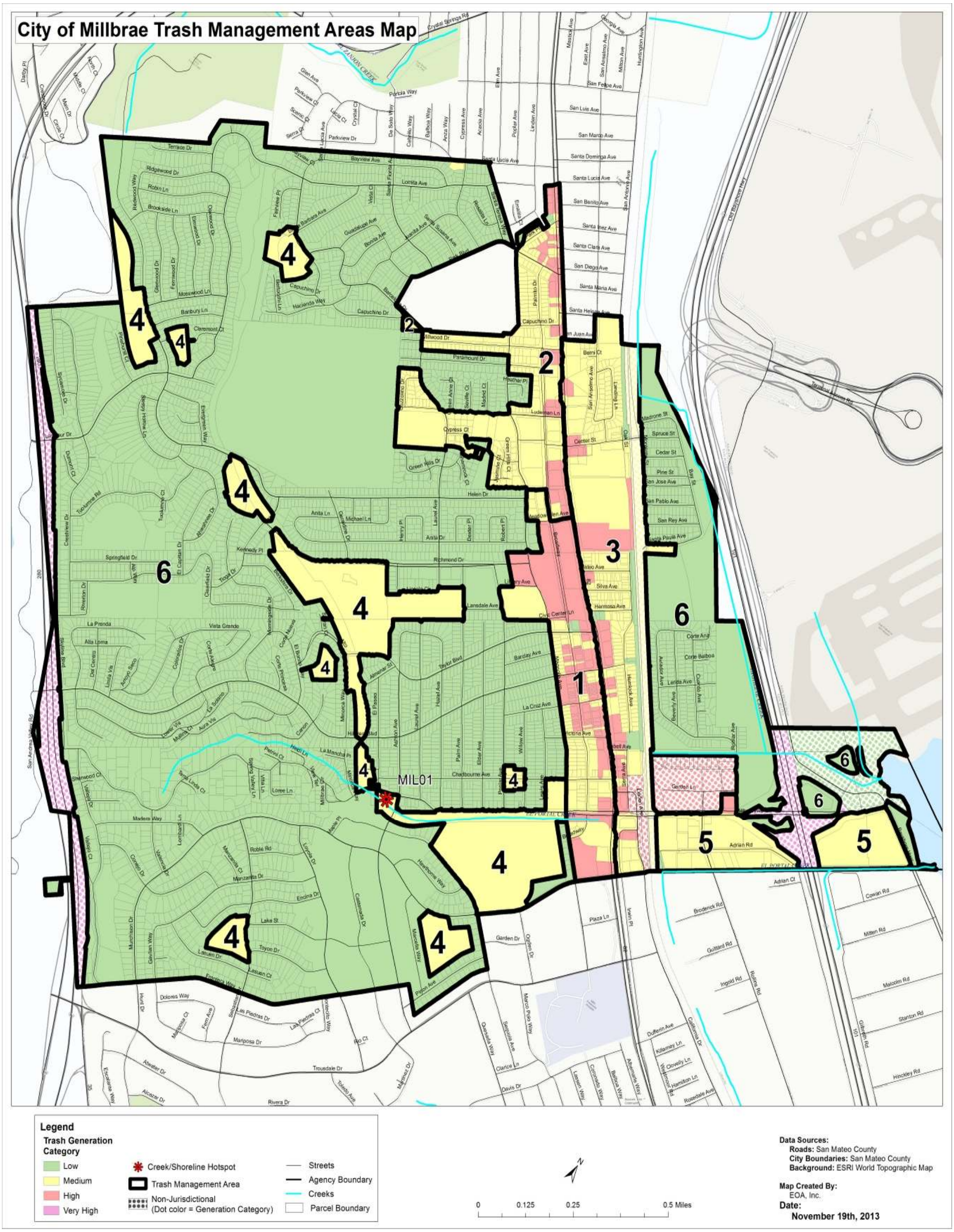

Figure 6. Trash Management Area Map for the City of Millbrae.

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3.2 Current and Planned Trash Control Measures

The City of Millbrae has taken an aggressive approach to trash reduction and has implemented a variety of trash control measure to aid in the reduction of overall trash loads throughout the City. We have implemented single-use carryout bag and polystyrene foam food service ware policies throughout the City in addition to a comprehensive city-wide street sweeping program that addresses all areas of the City, focusing mainly on high traffic and high trash generating areas. In addition, we conduct daily on-land trash pick-ups in our "Downtown area", biannual on-land clean-ups at our creek sites, annual city-wide trash clean-ups and have recently implemented quarterly on-land clean-ups in 3 of our 6 Trash Management Areas. Furthermore, through our trash-bin container management strategy, the City is reducing the amount of litter observed in its commercial areas by restructuring its trash-bin locations and pick-up frequencies, and reaching out to residences and businesses with inadequate trash containers to help them obtain the appropriate level of service to handle their respective trash loads. All of our storm drain inlets are inspected and cleaned at a minimum annual frequency. The City has also installed full and partial trash-capture devices in 4 of our 6 Trash Management Areas (see Figure 7- Trash Full Capture Treatment Device map). These devices are inspected and maintained biannually, with additional inspection and maintenance conducted, as necessary after large storms.

In the future, the City intends to install 3 large trash capture devices at 3 separate outfall locations prior to the end of 2020. These devices, in conjunction with our on-land and source control efforts, should result in meeting the trash reduction load reduction goal of "No Visual Impact" by July 1, 2022 deadline.

3.2.1 Trash Management Area #1

Trash Management Area #1 (TMA #1) is our "Downtown area" which spans approximately 76 acres along Broadway and its side streets and runs parallel along the west side of El Camino Real. This area is largely retail and commercial land uses with some residential properties existing above and amongst the commercial land uses. It is the most highly trafficked area of the City and consists of trash generated from retail land uses, pedestrians and vehicles. On-land clean-ups, daily street sweeping and full-capture trash devices have been implemented within TMA #1 to address trash that is present due to these sources. The City also maintains a network of public trash bins within this area. The tendency for public bins to become full and overflow has added to the presence of trash. Currently, City staff is addressing this source via trash bin reorganization and working with property owners to ensure adequate trash containers and service levels by each property in the area. The City of Millbrae also has plans to design and install 2 large full capture devices within this TMA in the next 5 years, and to implement no parking restriction during street sweeping hours to increase street sweeping effectiveness on Broadway within the next year.

This Trash Management Area has been identified as the first priority for the City of Millbrae due to being the most highly trafficked area and, subsequently, having the highest density of trash generation and accumulation.

Full-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:

There are currently 2 hydrodynamic separator units installed at the Friendship Plaza, located at 45 South El Camino Real in Millbrae. Both units are installed in the parking lot of Friendship Plaza. The drainage basin is the site of Café Roma/Walgreens' at 45 South El Camino Real. The two units drain the entire site including runoff from the roofs of the two buildings. The property owner maintains and cleans the units annually with inspections provided by the City of Millbrae Building Department.

Implemented after MRP Effective Date and Prior to July 1, 2014:

In August 2012, the City of Millbrae installed 25 United Storm Water connector pipe-screen full-capture devices (USW-1), covering 14.85 acres of land in the downtown area. These devices are inspected and maintained at a biannual frequency with additional inspection and maintenance conducted, as necessary after storms. To date, the City of Millbrae has experienced no failures or other issues with these devices.

Planned for Future Implementation between July 2014 and July 2022:
The City plans to design and install 2 large full-capture treatment devices that will treat TMA #1 within the next 5 years. Currently, the proposed location for the first large device is Cowan Canal, which the City shares maintenance responsibility with the City of Burlingame. The device will serve the drainage area located south of Millbrae Avenue. The proposed location for the second device is Highline Canal. It will serve a large portion of the City's entire drainage area, including TMA #1 between Meadow Glen and Chadbourne, which accounts for approximately ¾ of TMA #1's total drainage area.

Street Sweeping

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae's street sweeping schedule within TMA#1 includes daily sweeping of the Downtown area. Current parking enforcement for sweeping exists along Broadway and surrounding side streets, from Millbrae Avenue to Taylor Blvd, with "No Parking" signage posted for Monday through Friday, 2:00 am through 6:00 am. As a result, the sweeper is reaching the curb for the most effective sweeping.

Implemented after MRP Effective Date and Prior to July 1, 2014:
No actions were implemented during this time period as the City was evaluating the effectiveness of sweeping within this area, and determining if additional actions are necessary to increase the effectiveness of its sweeping program.

Planned for Future Implementation between July 2014 and July 2022:
Daily street sweeping will continue along Broadway from Taylor Blvd. to Meadow Glen. Prior to the end of FY 2013-2014, the City plans to install additional parking enforcement signs requiring mandatory car removal along all of Broadway.

On-Land Clean-ups

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae's Parks Department performs on-land clean-ups within TMA#1 along Broadway and its surrounding side streets, 6 days a week. City staff removes pedestrian litter, litter thrown from vehicles, and trash that is the result of customers patronizing local retail locations. City staff retrieves an average of 10 gallons of uncompacted trash each day, which is mainly comprised of coffee cups, newspapers, and cigarette butts.

Since 2002, the City of Millbrae has also held an annual Coastal Cleanup event that covers 15 to 20 areas, including the entire area delineated as TMA#1 along Broadway and its side streets from Murchison Drive to Meadow Glen Avenue. On September 21, 2013, despite heavy rain, the event included 100 community volunteers and 3 City staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#1 are not available.

Implemented after MRP Effective Date and Prior to July 1, 2014:
Beginning in 2012, the City of Millbrae began an annual citywide Earth/Arbor day trash clean-up effort that addresses 12 sites throughout the City, including the entire area delineated as TMA#1 along Broadway and its side streets from Murchison Drive to Meadow Glen Avenue. This year, the clean-up took place on April 27, 2013 and included 125 community volunteers and 5 City staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#1 are not available. These cleanups are intended to continue into the foreseeable future with no plans to cease or reduce the current level of effort.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae has no additional on-land cleanups planned for TMA #1 since current on-land cleanup efforts have been determined to be adequate in addressing trash load reduction within this TMA.

Partial-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae did not install any partial-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:
In August 2012, the City installed 15 United Stormwater Clean Screen III Partial-Capture devices (USW-2) in TMA #1 with funding provided through the San Francisco Bay-area Wide Trash Capture Demonstration Project administered by San Francisco Estuary Partnership (SFEP). Devices are currently maintained at a frequency of two times per year with additional with additional inspection and maintenance conducted, as necessary after storms. To date, the City has not experienced any issues or problems with these devices.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae has no plans for future installation of partial-capture devices within TMA #1. The City feels that full-capture devices and other trash control measures are a more effective use of resources in addressing trash load reduction within TMA #1.

Improved Trash Bin/Container Management

Implemented Prior to and Continued After MRP Effective Date:
City of Millbrae staff was not aware of any problems with the existing system of trash bins within TMA #1 during this time period. The trash bins and locations were seemingly adequate until a recent assessment performed by City staff revealed some issues.

Implemented after MRP Effective Date and Prior to July 1, 2014:
In an effort to eliminate overflowing public trash bins and to reduce litter within the Downtown area, the City revised the collection schedule to increase the collection frequency for identified public trash bins and decrease collection for trash bins in other areas that do not need as much service. In addition, tenants identified as not having trash service within the Downtown area were contacted and informed to start service. Additional outreach is planned for tenants in the downtown area to encourage them to recycle and use trash bins allocated for their apartments and to not use the public trash bins.

On a regular basis, City staff contacts businesses and residents identified as using public trash bins within the Downtown and other areas to determine if they have trash service. If they do not have trash service, both are asked to sign-up for service, and instructed not to use public trash bins.

In addition, the City of Millbrae has implemented the following additional measures relating to improved trash bin management within TMA #1:

- Installed a large solar-operated trash compacting container next to a coffee shop where the public trash bin was continually overflowing with paper cups. As a related measure, the City distributed reusable travel mugs to reduce the use of single-use paper cups. Over 500 reusable travel mugs were distributed in 2013. By early 2014, a total of 1,000 travel mugs will have been distributed.

- To reduce the amount of paper placed in a public trash bin at the Millbrae Post Office, City staff worked with the Post Office to place an additional recycling container inside for the collection of unwanted mail/mixed paper. Outreach is also being done to identify companies who distribute bundles of newspapers in front of stores to reduce the potential for the newspapers to end up as litter.

Planned for Future Implementation between July 2014 and July 2022:
To eliminate accumulating trash observed within the surrounding area, the City is planning to install a trash enclosure within a parking lot behind a busy section of Broadway to accommodate waste from two restaurants and other businesses. In addition, the City is planning to install a solar trash compactor unit at the Millbrae Library in FY 2014-2015 to address trash accumulation around trash bins provided at the library.

The City is currently researching various cigarette butt disposal containers and trash can lids with built-in ashtrays to help remedy the presence of cigarette butt litter in areas where they have the potential of reaching the storm drainage system. The City plans to pilot-test a set of these devices in FY 2014-2015 to determine if the desired impact is achieved.

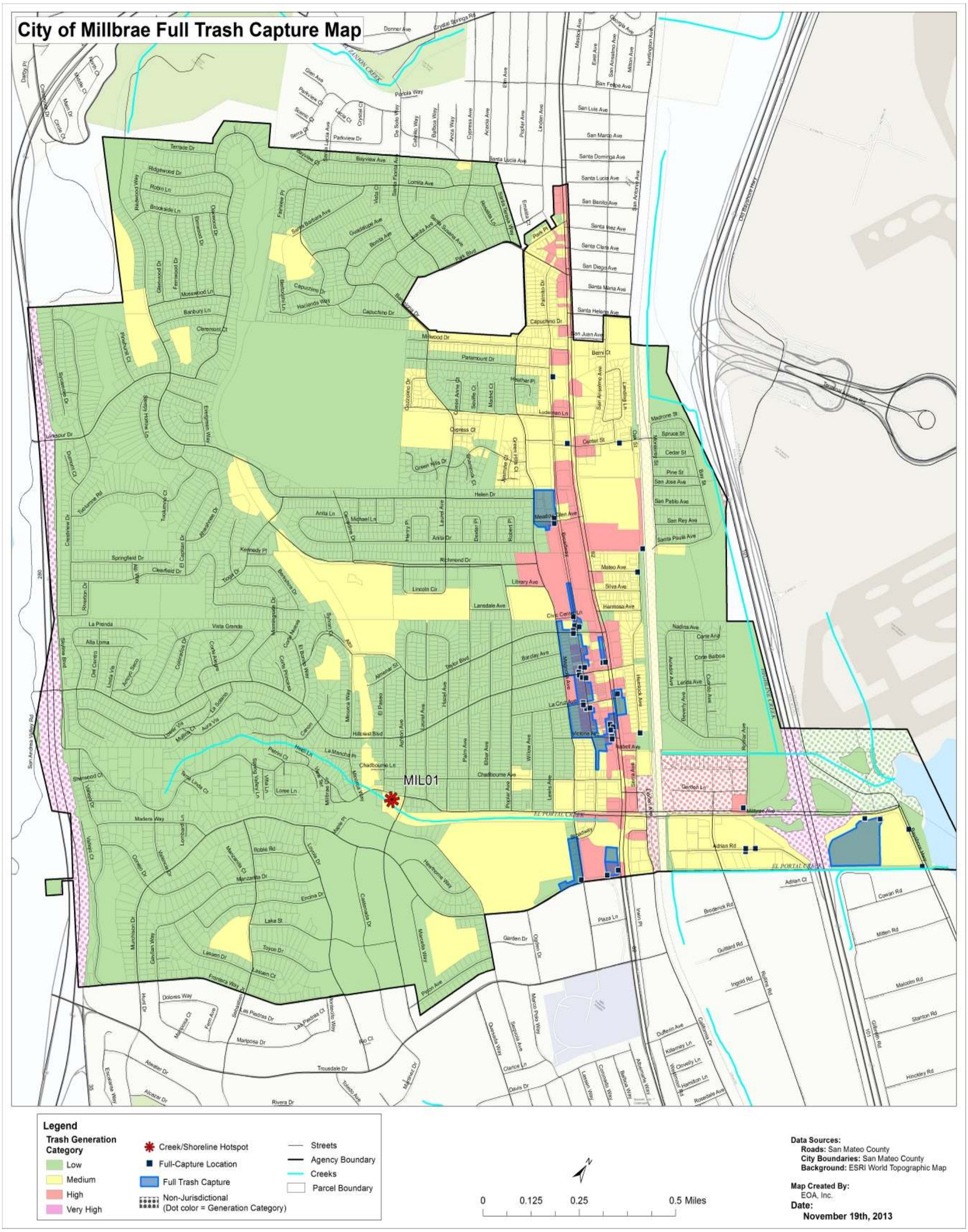

Figure 7. Trash Full Capture Device Map for the City of Millbrae

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3.2.2 Trash Management Area #2

Trash Management Area #2 (TMA #2) is approximately 84 acres of land bordered by El Camino Real on the East, Green Hills Golf Course to the West, TMA #1 to the South and the San Bruno border to the North. This area is mostly residential to the West of Broadway with retail and commercial land uses in the Eastern portion closest to El Camino Real. The close proximity of TMA #2 to El Camino Real lends itself to litter facilitated by a large amount of vehicular traffic through the area. On-land clean-ups, street sweeping and partial trash- capture devices have been implemented within TMA #2 to address trash that is present due to these sources. The City also maintains a network of public trash bins within this area. The tendency for public bins to become full and overflow has added to the presence of trash. Currently, City staff is addressing this source via trash bin reorganization and working with property owners to ensure adequate trash containers and service levels by each property in the area. The City of Millbrae also has plans to design and install a large full capture device that will serve this TMA in the next 5 years. Although this Trash Management Area is itemized as the second priority, the City of Millbrae is making every effort to address all TMAs immediately, regardless of prioritization.

Full-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae did not install any full-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:
In November 2013, the City installed 2 Full Capture USW-1 Devices in TMA #2 that capture about half of the drainage associated with this area. The first device was placed at the North West corner of El Camino Real and Center Street while the second was placed on Broadway, just across from Paramount Drive. These devices are indicated on the Millbrae Full Capture Map included above. Due to the timing of their installation, the associated drainage areas were not able to be depicted on this map.

Planned for Future Implementation between July 2014 and July 2022:
The City plans to design and install a large full-capture device that will serve the drainage area encompassed by TMA #2. Currently, the proposed location of this device is the concrete drainage channel located behind 1136 Landing Lane. This device will treat the area between Jasmine and Cypress Courts to the South and Millwood & Capuchino Drives to the North. This area accounts for approximately 1/3 of TMA #2.

Street Sweeping

Implemented Prior to and Continued After MRP Effective Date:
The streets closest to El Camino Real, which include retail and commercial land uses are swept 5 days a week. The primarily residential areas to the West are swept twice a month. There is no parking enforcement in this area. Therefore, the sweeper can only get to the curb where cars are not present.

Implemented after MRP Effective Date and Prior to July 1, 2014:
No actions were implemented during this time period as the City was evaluating the effectiveness of sweeping within this area, and determining if additional actions are necessary to increase the effectiveness of its sweeping program.

Planned for Future Implementation between July 2014 and July 2022:
The City does not have any future plans to implement additional sweeping within this area. The City feels that current sweeping efforts coupled with additional trash control measures implemented within TMA #2 are adequate in addressing trash load reduction within this TMA.

On-Land Clean-ups

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae's Parks Department performs on-land clean-ups in the commercial and retail area along El Camino Real and its side streets, 6 days a week. City staff removes pedestrian litter, litter thrown from vehicles, and trash that is the result of patronizing local retail locations. Staff retrieves an average of 10 gallons of uncompacted trash each day, which is mainly comprised of coffee cups, newspapers, and cigarette butts.

Since 2002, the City of Millbrae has also held an annual Coastal Cleanup event that covers 15 to 20 areas, including approximately 21 acres of TMA #2 in the Green Hills Park and Green Hills School vicinity. On September 21, 2013, despite heavy rain, the event included 100 community volunteers and 3 City staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#2 are not available.

Implemented after MRP Effective Date and Prior to July 1, 2014:
Beginning in 2012, the City of Millbrae began an annual citywide Earth/Arbor day trash clean-up effort that addresses 12 sites throughout the City, including approximately 21 acres of TMA #2 in the Green Hills Park and Green Hills School vicinity. This year, the clean-up took place on April 27, 2013 and included 125 community volunteers and 5 city staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#2 are not available. These cleanups are intended to continue into the foreseeable future with no plans to cease or reduce the current level of effort.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae has no additional on-land cleanups planned for TMA #2 since current on-land cleanup efforts have been determined to adequate in addressing trash load reduction within this TMA.

Partial-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae did not install any partial-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:
In August 2012 the City installed 3 Partial-Capture USW-2 devices in the retail and commercial area of TMA #2, bordering El Camino Real, with funding provided through the San Francisco Bay-area Wide Trash Capture Demonstration Project administered by San Francisco Estuary Partnership (SFEP). Devices are currently maintained at a frequency of two times per year with additional inspection and maintenance conducted, as necessary after storms. To date, the City has not experienced any issues or problems with these devices.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae has no plans for future installation of partial-capture devices within TMA #2. The City feels that full-capture devices and other trash control measures are a more effective use of resources in addressing trash load reduction within TMA #2.

Improved Trash Bin/Container Management

Implemented Prior to and Continued After MRP Effective Date:
City of Millbrae staff was not aware of any problems with the existing system of trash bins within TMA #2 during this time period. The trash bins and locations were seemingly adequate until a recent assessment performed by City staff revealed some issues.

Implemented after MRP Effective Date and Prior to July 1, 2014:
In an effort to eliminate overflowing public trash bins and to reduce litter within the Downtown area associated with TMAs #1 and #2, the City revised the collection schedule to increase the collection frequency for identified public trash bins and decrease collection for trash bins in other areas that do not need as much

service. Additional outreach is planned for residents in these areas to encourage them to recycle and use trash bins allocated for their residences and to not use the public trash bins.

On a regular basis, City staff contacts businesses and residents identified as using public trash bins within the Downtown and other areas to determine if they have trash service. If they do not have trash service, both are asked to sign-up for service, and instructed not to use public trash bins. Outreach is also being done to identify companies who distribute bundles of newspapers in front of stores to reduce the potential for the newspapers to end up as litter.

Planned for Future Implementation between July 2014 and July 2022:
The City is currently researching various cigarette butt disposal containers and trash can lids with built-in ashtrays to help remedy the presence of cigarette butt litter in areas where they have the potential of reaching the storm drainage system. The City plans to pilot-test a set of these devices in FY 2014-2015 to determine if the desired impact is achieved.

3.2.3 Trash Management Area #3

Trash Management Area #3 (TMA #3) consists of approximately 96 acres of land that runs parallel along the East side of El Camino Real from Millbrae Avenue to the South and San Juan Avenue to the North. This area consists of retail and commercial land uses along El Camino with residential area in the side streets spanning the entire length of the TMA between El Camino Real to the West and the Caltrain/BART tracks to the East. The close proximity of TMA #3 to El Camino Real, Caltrain and BART lends itself to litter facilitated by a large amount of vehicular and pedestrian traffic through the area. On-land clean-ups, street sweeping and full trash- capture devices have been implemented within TMA #3 to address trash that is present due to these sources.. The City of Millbrae also has plans to design and install 2 large full capture devices that will serve this TMA in the next 5 years. Although this Trash Management Area is itemized as the third priority, the City of Millbrae is making every effort to address all TMAs immediately, regardless of prioritization.

Full-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae did not install any full-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:
In November 2013, the City installed 4 Full Capture USW-1 Devices in TMA #3 that capture about 1/3 of the drainage associated with this area. These devices are indicated on the Millbrae Full Capture Map included above. Due to the timing of their installation, the associated drainage areas were not able to be depicted on this map. Devices are currently maintained at a frequency of two times per year, with additional inspection and maintenance conducted, as necessary after storms. The City has not experienced any problems with these devices to date.

Planned for Future Implementation between July 2014 and July 2022:
The City plans to design and install 2 large full-capture treatment devices within the next 5 years. Currently, the proposed location of these devices is behind Landing Lane and in the Highline Canal. It will collectively treat approximately 1/3 of this TMA.

Street Sweeping

Implemented Prior to and Continued After MRP Effective Date:
The streets closest to El Camino Real, which include retail and commercial land uses are swept weekly. The primarily residential areas to the West are swept twice a month. “No Parking” signage is posted for the entire length of Hemlock Avenue. “No Parking” is requested on the other streets in this TMA, but not enforced. The sweeper is able to reach the curb in all areas with mandatory car removal since sweeping occurs between

9:00am and 12:00pm. The sweeper is also able to reach the curb on most streets due to the lack of parked vehicles present at that time.

Implemented after MRP Effective Date and Prior to July 1, 2014:
No actions were implemented during this time period as the City was evaluating the effectiveness of sweeping within this area, and determining if additional actions are necessary to increase the effectiveness of its sweeping program.

Planned for Future Implementation between July 2014 and July 2022:
The City does not have any future plans to implement additional sweeping within this area. The City feels that current sweeping efforts coupled with additional trash control measures implemented within TMA #3 are adequate in addressing trash load reduction within this TMA.

On-Land Clean-ups

Implemented Prior to and Continued After MRP Effective Date:
Since 2002, the City of Millbrae has also held an annual Coastal Cleanup event that covers 15 to 20 areas, including the portion of TMA #3 that fronts El Camino Real between Helen Drive and Millbrae Avenue. On September 21, 2013, despite heavy rain, the event included 100 community volunteers and 3 City staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#3 are not available.

Implemented after MRP Effective Date and Prior to July 1, 2014:
Beginning in 2012, the City of Millbrae began an annual citywide Earth/Arbor day trash clean-up effort that addresses 12 sites throughout the City, including the portion of TMA #3 that fronts El Camino Real between Helen Drive and Millbrae Avenue. This year, the clean-up took place on April 27, 2013 and included 125 community volunteers and 5 city staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#3 are not available. These cleanups are intended to continue into the foreseeable future with no plans to cease or reduce the current level of effort.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae Public Works Department will be implementing a quarterly on-land cleanup schedule for all areas not addressed by trash capture devices within TMA#3. Staff will walk the area and remove all visible trash and attempt to log the types and volume of trash being removed on an "On-land Cleanup Assessment" Form developed by City staff. The City hopes that data logged on the form will demonstrate the volume of trash removed through the implementation of control measures within TMA#3 over time. These on-land cleanups are expected to commence by the first quarter of FY 2014-2015.

3.2.4 Trash Management Area #4

Trash Management Area #4 (TMA #4) consists of 12 locations, covering a total of approximately 133 acres, that includes parks, churches and schools located sporadically throughout the City that were not otherwise associated with another Trash Management Area. The locations include: Mills Estate Park, Spring Valley School, Schultz Park, Taylor Middle School/Millbrae Recreation Center, Mills High School, Meadows School, Lions Park, Millbrae Meadows Park, the Millbrae Montessori School at 797 Santa Margarita Avenue, the New Vision United Methodist church located at 450 Chadbourne Avenue, and the Calvary Lutheran Church located at 401 Santa Lucia Avenue. These areas are deemed to have a medium trash generation rate which can be attributed to litter from frequent public presence and vehicular traffic as they represent recreational areas and areas of consistent and regular patronage for religious or educational purposes. These areas can experience dense populations during peak usage hours. Therefore, trash generation will rise during the times when these areas are most heavily occupied. These areas experience street sweeping at either a bimonthly or weekly interval with parking enforcement for sweeping present in many areas. On-land clean-ups are currently being performed and will be added to in the future implementation schedule, as well as the addition of 2 large full capture devices that will serve this TMA are planned for installation within the next 5 years. Although this Trash Management Area is

itemized as the forth priority, the City of Millbrae is making every effort to address all TMAs immediately, regardless of prioritization.

Full-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae did not install any full-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:
City staff has reviewed potential locations for full-capture treatment devices within TMA#4. Due to accessibility issues and the varied terrain, the City has decided to implement a variety of other trash control measures to address trash accumulation observed within TMA #4.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae plans to install 2 large full-capture devices that will treat various areas within the next five years. Currently, the proposed location for the first large device is Cowan Canal. It will treat the drainage areas of 3 locations associated with TMA #4: Spring Valley School, Mills High School, and Mills Estate Park. The proposed location of the second device is the Highline Canal. It will treat the drainage area of 4 locations within TMA#4: Lions Park, Schultz Park, Taylor Middle School/Millbrae Recreation Center, and the Methodist Church at 450 Chadbourne.

Street Sweeping

Implemented Prior to and Continued After MRP Effective Date:
The areas within this TMA are all swept at frequencies of either once a week or once every two weeks. The following breakdown addresses each specific site's sweeping frequency:

Mills Estate Park: Swept every two weeks with car removal requested.
Spring Valley School: Weekly sweeping frequency with car removal requested.
Schultz Park: Weekly sweeping frequency with car removal requested.
Taylor Middle School/Millbrae Recreation Center: The Northern half of this area is swept weekly while the Southern half is swept every two weeks. Car removal for sweeping is requested in this area, both in the Northern and Southern portions.
Mills High School: Weekly sweeping frequency with car removal requested.
Meadows School: Swept every two weeks with car removal requested.
Lions Park: Swept every two weeks with car removal requested.
Millbrae Meadows Park: Swept every two weeks with car removal requested.
Millbrae Montessori School: Swept every two weeks with car removal requested.
New Vision United Methodist: Weekly sweeping frequency with car removal requested.
Calvary Lutheran Church: Swept every two weeks with car removal requested.

Although car removal is requested, there is currently no parking enforcement for street sweeping near these areas. The sweeper is able to reach the curb in many of these locations since sweeping is conducted during hours in which residents are at work. However, the sweeper is not always able to reach the curb.

Implemented after MRP Effective Date and Prior to July 1, 2014:
No actions were implemented during this time period as the City was evaluating the effectiveness of sweeping within this area, and determining if additional actions are necessary to increase the effectiveness of its sweeping program.

Planned for Future Implementation between July 2014 and July 2022:
The City does not have any future plans to implement additional sweeping within this area. The City feels that current sweeping efforts coupled with additional trash control measures implemented within TMA #4 are adequate in addressing trash load reduction within this TMA.

On-Land Clean-ups

Implemented Prior to and Continued After MRP Effective Date: N/A

Since 2002, the City of Millbrae has also held an annual Coastal Cleanup event that covers 15 to 20 areas in the City, including the Taylor Middle School/Millbrae Recreation Center and Mills High School Areas in TMA #4. This accounts for approximately 91 Acres of TMA #4. On September 21, 2013, despite heavy rain, the event included 100 community volunteers and 3 City staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#4 are not available.

Implemented after MRP Effective Date and Prior to July 1, 2014:

Beginning in 2012, the City of Millbrae began an annual citywide Earth/Arbor day trash clean-up effort that addresses 12 sites throughout the City, including the Taylor Middle School/Millbrae Recreation Center and Mills High School Areas in TMA #4. This year, the clean-up took place on April 27, 2013 and included 125 community volunteers and 5 city staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#4 are not available. These cleanups are intended to continue into the foreseeable future with no plans to cease or reduce the current level of effort.

Planned for Future Implementation between July 2014 and July 2022:

The City of Millbrae Public Works Department will be implementing a quarterly on-land cleanup schedule for all areas in TMA#4. Staff will walk the area and remove all visible trash and attempt to log the types and volume of trash being removed on an "On-land Cleanup Assessment" Form developed by City staff. The City hopes that data logged on the form will demonstrate the volume of trash removed through the implementation of control measures within TMA#4 over time. These on-land cleanups are expected to commence by the first quarter of FY 2014-2015.

3.2.5 Trash Management Area #5

Trash Management Area #5 (TMA #5) consists of approximately 37 acres of land along Millbrae Avenue and East of the BART & Caltrain tracks that runs parallel to El Camino. This area includes the industrial and retail areas of Rollins and Adrian Road, a gas station along the North side of Millbrae Avenue, and the Westin and Aloft Hotels that occupy approximately 15 acres at the corner of East Millbrae Avenue and Old Bayshore Road. Because these areas are mostly commercial, with a small amount of retail, and are also in close proximity to main thoroughfares such as Millbrae Avenue, Highway 101, and the Millbrae BART & Caltrain Station, the trash generation rate in this area is considered medium. The trash sources include pedestrian and commuter litter, litter attributed to a relatively high vehicular presence, and trash from customers of the retail locations in the area. Currently, full and partial trash capture devices and street sweeping has been implemented within this area. Although this Trash Management Area is itemized as the fifth priority, the City of Millbrae is making every effort to address all TMAs immediately, regardless of prioritization.

Full-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:

The City of Millbrae did not install any full-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:

In November 2013, the City installed 5 small full-capture treatment devices in TMA #5 that, in conjunction with 2 private (City-inspected) hydrodynamic separators previously installed at the Aloft Hotel, treats the entire drainage area associated with TMA #5. These small devices are indicated on the Millbrae Full Capture Map included above although. Due to the timing of their installation, the associated drainage areas were not able to be depicted on this map. The small devices are currently maintained at a frequency of two times per

year, with additional inspection and maintenance conducted, as necessary after storms. The City has not experienced any problems with these devices to date.

Planned for Future Implementation between July 2014 and July 2022:
No additional full-capture devices are necessary in TMA #5 since the drainage area is already being fully treated by existing full-capture devices.

Street Sweeping

Implemented Prior to and Continued After MRP Effective Date:
Streets within TMA#5 are swept at a frequency of two times per month. The sweeper is able to easily reach the curb in most areas since the majority of parking within this area is confined to parking lots.

Implemented after MRP Effective Date and Prior to July 1, 2014:
No actions were implemented during this time period as the City was evaluating the effectiveness of sweeping within this area, and determining if additional actions are necessary to increase the effectiveness of its sweeping program**.**

Planned for Future Implementation between July 2014 and July 2022:
The City does not have any future plans to implement additional sweeping within this area. The City feels that current sweeping efforts coupled with additional trash control measures implemented within TMA #5 are adequate in addressing trash load reduction within this TMA.

On-Land Clean-ups

Implemented Prior to and Continued After MRP Effective Date:
Since 2002, the City of Millbrae has also held an annual Coastal Cleanup event that covers 15 to 20 areas in the City, including the area surrounding the gas station on the North side of Millbrae Avenue, fronting the Millbrae BART parking lot. This accounts for approximately .75 Acres of TMA #5. On September 21, 2013, despite heavy rain, the event included 100 community volunteers and 3 City staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#5 are not available. These cleanups are intended to continue into the foreseeable future with no plans to cease or reduce the current level of effort.

Implemented after MRP Effective Date and Prior to July 1, 2014:
The City of Millbrae did not implement any additional on-land cleanup in TMA #5 during this time period since current on-land cleanup efforts have been determined to adequate in addressing trash load reduction within this TMA.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae has no additional on-land cleanups planned for TMA #5 since current on-land cleanup efforts have been determined to adequate in addressing trash load reduction within this TMA.

Partial-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae did not install any partial-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:
In August 2012, the City installed 3 partial capture USW-2 devices in TMA#5 on Adrian Road with funding provided through the San Francisco Bay-area Wide Trash Capture Demonstration Project administered by San Francisco Estuary Partnership (SFEP). Devices are currently maintained at a frequency of two times per

year with additional inspection and maintenance conducted, as necessary after storms. To date, the City has not experienced any issues or problems with these devices.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae has no plans for future installation of partial-capture devices within TMA #5. The City feels that full-capture devices and other trash control measures are a more effective use of resources in addressing trash load reduction within TMA #5.

3.2.6 Trash Management Area #6

Trash Management Area #6 (TMA #6) consists of the low trash generation areas within the City that are subsequently not included in any other trash management area. The area covers approximately 1660 acres of the City and is comprised of almost entirely residential land use. The areas in TMA #6 experience regular street sweeping and benefit from jurisdictional- wide efforts such as single-use carryout bag and polystyrene foam food service ware policies, and public outreach and education programs.

Full-Capture Treatment Devices

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae did not install any full-capture devices during this time period since the availability of, and necessity for, such devices was not yet known to City staff.

Implemented after MRP Effective Date and Prior to July 1, 2014:
The City of Millbrae did not install any full-capture treatment devices in TMA#6 during this time period.

Planned for Future Implementation between July 2014 and July 2022:
The City plans to design and install 3 large full-capture treatment devices that will serve most of the drainage area encompassed by TMA #6. The proposed locations of these large devices are 3 different concrete channels that receive and transport storm water prior to entering the receiving waters of the San Francisco Bay. The proposed locations include the channel behind 1136 Landing Lane, Highline Canal and Cowan Canal.

Street Sweeping

Implemented Prior to and Continued After MRP Effective Date:
Because of the wide breadth of area covered by TMA #6, the street sweeping frequency within TMA #6 varies from weekly to twice a month. Car removal is requested, but currently not enforced. The ability of the sweeper to reach the curb is dependent upon the number of cars that comply with the removal request. In general, the residents and tenants in these areas are acutely aware of their designated sweeping dates and times and are mindful of the car removal requests.

Implemented after MRP Effective Date and Prior to July 1, 2014:
No actions were implemented during this time period as the City was evaluating the effectiveness of sweeping within this area, and determining if additional actions are necessary to increase the effectiveness of its sweeping program**.**

Planned for Future Implementation between July 2014 and July 2022:
Due to the "low" trash generation of this area, the City does not have any future plans to implement additional sweeping within this area. The City feels that current sweeping efforts are adequate in addressing trash load reduction within this TMA.

On-Land Clean-ups

Implemented Prior to and Continued After MRP Effective Date:
Since 2002, the City of Millbrae has also held an annual Coastal Cleanup event that covers 15 to 20 areas in the City, including multiple areas in TMA #6 such as the Bayside Manor District, Marina Vista District, Skyline Boulevard and Richmond and Helen Drives. On September 21, 2013, despite heavy rain, the event included 100 community volunteers and 3 City staff members. Because the amount of trash collected is quantified

cumulatively, specific numbers for TMA#6 are not available. These cleanups are intended to continue into the foreseeable future with no plans to cease or reduce the current level of effort.

Implemented after MRP Effective Date and Prior to July 1, 2014:
Beginning in 2012, the City of Millbrae began an annual citywide Earth/Arbor day trash clean-up effort that addresses 12 sites throughout the City, including Skyline Boulevard, which is included within TMA #6. This year, the clean-up took place on April 27, 2013 and included 125 community volunteers and 5 city staff members. Because the amount of trash collected is quantified cumulatively, specific numbers for TMA#6 are not available. These cleanups are intended to continue into the foreseeable future with no plans to cease or reduce the current level of effort.

Planned for Future Implementation between July 2014 and July 2022:
The City of Millbrae has no additional on-land cleanups planned for TMA #6 since current on-land cleanup efforts have been determined to adequate in addressing trash load reduction within this TMA.

3.2.7 Jurisdiction-wide Control Measures

The City of Millbrae has taken action on a jurisdiction-wide level to address the problem of trash within City limits. Through ordinances designed to reduce and eliminate the availability of certain items, specifically single-use carryout bag and polystyrene foam food service ware, the City is making efforts to reduce its overall trash load by targeting specific items that are known to be prevalent in and harmful to stormwater discharges from the MS4 system. In addition, the City participates in countywide programs that assist in outreach to the public regarding the need to address and reduce litter and trash accumulation within the City and County.

Single-Use Carryout Bag Policy

Implemented Prior to and Continued After MRP Effective Date:
Prior to the MRP effective date, no policy was in place prohibiting the use of single-use carryout plastic bags and the distribution of free paper bags at retail stores, including grocery stores, supermarkets, convenience stores, drug stores, clothing stores, and other retail stores.

Implemented after MRP Effective Date and Prior to July 1, 2014:
The Single-Use Carryout Bag Ordinance (No 742), adding section 6.50 to the Millbrae Municipal Code, was adopted at the February 14, 2012 City Council meeting. The Ordinance, which became effective on September 1, 2012, prohibits the use of single-use carryout plastic bags and the distribution of free paper bags at retail stores, including grocery stores, supermarkets, convenience stores, drug stores, clothing stores, and other retail stores. Stores are allowed to distribute paper bags that contain a minimum of 40 percent post-consumer recycled content for a minimum charge of $0.10 for each point-of-sale paper bag. The stores retain the charge for the bags. The Ordinance does not apply to protective types of bags, including for meat, produce, and bakery items. The businesses exempt from the Ordinance include food vendors, such as restaurants and take-out food establishments; dry cleaners; and non-profit charitable reuse organizations. The City continued to distribute reusable cloth shopping bags made from 100 percent post-consumer recycled plastic bottles to Millbrae residents and has distributed over 8,500 reusable bags to date.

Outreach was conducted pre and post-implementation of the Ordinance to the businesses and community. Outreach materials were provided by the City to businesses for employees and customers, including customer fact sheets, window posters and cash register tent cards. A variety of outreach was conducted to the community, including website postings, public service announcements on the local cable station, educational displays at City facilities and the Library, newsletter articles and a utility bill message, and a workshop was held for the community. Outreach was also conducted to the schools, City employees, commissions and

committees. Reusable shopping bags were handed out pre and post of the Ordinance at events and workshops, and at public areas to inform the community of the Ordnance.

New businesses were informed during the businesses license application process and followed up by staff to ensure compliance. New businesses are required to fill out an Acknowledgement and Verification Form that they understand and will comply with the regulations. One business had a site visit inspection and was provided information for complying with the regulations; the business switched to compliant bags. No citations were issued. Businesses are required to maintain records for three years for the charge on paper bags. The ordinance is attached and available online at http://www.ci.millbrae.ca.us/index.aspx?page=409 .

Planned for Future Implementation between July 2014 and July 2022:
No additional actions regarding the single-use carryout bag policy are planned for future implementation.

Sustainable/Polystyrene Food Service Ware Policy

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae adopted the Sustainable Food Service Ware Ordinance, NO. 717, adding section 6.40 to the Millbrae Municipal code prohibiting the use of polystyrene foam and solid disposable food service ware requiring the use of biodegradable, compostable, reusable or recyclable food service ware by food vendors in the City. Prior to the implementation of this Ordinance, the City provided outreach to the existing affected businesses in the City in the form of a letter dated October 18, 2007. The City also meets with each new affected business prior to the opening of the business in order to inform them of the specific requirements of this ordinance. The City also provides multiple informative notices and handouts to these businesses and requires that the business owners sign an acknowledgment form, affirming that they understand the requirements set forth by this ordinance. Annual check-ups are conducted, however most enforcement efforts are complaint driven. Ordinance No 717 was passed on October 9, 2007 and became effective on January 1, 2008. It is available online at: http://www.ci.millbrae.ca.us/Modules/ShowDocument.aspx?documentid=395

Implemented after MRP Effective Date and Prior to July 1, 2014:
No additional actions regarding the polystyrene food service were implemented during this time period.

Planned for Future Implementation between July 2014 and July 2022:
No additional actions regarding the polystyrene food service ware policy are planned for future implementation.

Public Outreach and Education Programs

Implemented Prior to and Continued After MRP Effective Date:
The City of Millbrae implemented the following public education and outreach programs prior to the effective date of the MRP and has continued to implement these programs since MRP adoption.

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 City of Millbrae plans to continue implementing litter reduction outreach to school-age children and youth. SCWPPP 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. 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 clean-up 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 FY 2012-2013. 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 City of Millbrae 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.

Implemented after MRP Effective Date and Prior to July 1, 2014:
Planned for Future Implementation between July 2014 and July 2022:

In addition to the public education and outreach programs implemented after the adoption of the MRP, the City of Millbrae is currently implementing or planning to implement the following public education and outreach control measures that were initiated after the MRP was adopted.

BASMAA Youth Outreach Campaign (Regional)

Through participation and funding of the regional **BASMAA Youth Outreach Campaign,** the City of Millbrae 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:

- Raising Awareness: 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 Campaign by joining a Facebook page, entering a contest, taking an online quiz, etc., and providing their contact information. At the beginning of FY 12-13, a video contest 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.
- Change Behaviors: 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.
- Maintain Engagement: The Campaign continues to interact with the target audience through email marketing and social media websites.

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.

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.

3.2.8 Creek and Shoreline Hot Spot Cleanups

The City of Millbrae has one (1) creek hotspot located in the El Portal Creek adjacent to Millbrae Avenue between El Paseo Avenue and Ashton Avenue, as indicated on the Trash Generation, Trash Management Area, and Full Capture Device maps included within this Plan. The trash found in this location can be attributed to pedestrian litter and wind- blowing trash from other locations. This site is cleaned once annually in compliance with section C.10.biii of the MRP. Approximately 5 gallons of uncompacted trash is removed from this site during annual cleanups and consists mainly of bottles, cans, paper and other plastic products. These cleanups have been occurring annually since the adoption of the MRP.

3.2.9 Summary of Trash Control Measures

Trash Management Area #1

- 25 small full-capture treatment devices (currently installed)
- 2 large full-capture treatment devices (currently installed)
- 2 large full-capture treatment devices (planned for future implementation)
- Daily street sweeping with parking enforcement (currently implemented)
- Additional parking enforcement for street sweeping (planned for future implementation)
- Daily on-land cleanups in high-trash generating areas (currently implemented)
- Annual on-land cleanups (currently implemented)
- 15 partial-capture treatment devices (currently installed)
- Improved trash bin/container management (currently implemented)
- Additional trash bin/container installation (planned for future implementation)

The implementation of current and planned trash control measures are expected to achieve the trash reduction goal of "No Adverse Impact" within Trash Management Area #1 by July 1, 2022.

Trash Management Area #2

- 2 small full-capture treatment devices (currently installed)
- 1 large full-capture treatment device (planned for future implementation)
- Street sweeping at daily or twice/month frequency (currently implemented)
- Daily on-land clean-ups in high-trash generating areas (currently implemented)
- Annual on-land cleanups (currently implemented)
- 3 partial-capture treatment devices (currently installed)
- Improved trash bin/container management (currently implemented)

The implementation of current and planned trash control measures are expected to achieve the trash reduction goal of "No Adverse Impact" within Trash Management Area #2 by July 1, 2022.

Trash Management Area #3

- 4 small full-capture treatment devices (currently installed)
- 2 large full-capture treatment devices (planned for future implementation)
- Street sweeping at weekly and/or twice/month frequency (currently implemented)
- Annual on-land cleanups (currently implemented)
- Quarterly on-land cleanups (planned for future implementation)

The implementation of current and planned trash control measures are expected to achieve the trash reduction goal of "No Adverse Impact" within Trash Management Area #3 by July 1, 2022.

Trash Management Area #4

- 2 large full-capture treatment devices (planned for future implementation)
- Street sweeping at weekly and/or twice/month frequency (currently implemented)
- Annual on-land cleanups (currently implemented)

- Quarterly on-land cleanups (planned for future implementation)

The implementation of current and planned trash control measures are expected to achieve the trash reduction goal of "No Adverse Impact" within Trash Management Area #4 by July 1, 2022.

Trash Management Area #5

- 5 small full-capture treatment devices (currently installed)
- 2 large full-capture treatment devices (currently installed)
- Street sweeping at a frequency of twice a month (currently implemented)
- 3 partial-capture treatment devices (currently installed)
- Annual on-land cleanups (currently implemented)

The implementation of current and planned trash control measures are expected to achieve the trash reduction goal of "No Adverse Impact" within Trash Management Area #5 by July 1, 2022.

Trash Management Area #6

- 3 large full-capture treatment devices (planned for future implementation)
- Street sweeping at a frequency of weekly and/or twice/month (currently implemented)
- Annual on-land cleanups (currently implemented)

The implementation of current and planned trash control measures are expected to achieve the trash reduction goal of "No Adverse Impact" within Trash Management Area #6 by July 1, 2022.

Jurisdiction-wide Control Measures

- Single-use carryout bag policy (currently implemented)
- Polystyrene foam food service ware policy (currently implemented)
- Public education and outreach programs (currently implemented)

The implementation of jurisdiction-wide trash control measures are expected to achieve the trash reduction goal of "No Adverse Impact" by July 1, 2022.

Creek Hot Spot Cleanups

- Annual MRP-required creek hot spot cleanups (currently implemented)

The implementation of creek hot spot cleanups are expected to achieve the trash reduction goal of "No Adverse Impact" by July 1, 2022.

3.3 Control Measure Implementation Schedule

The City of Millbrae has been implementing trash control measures prior to the effective date of the MRP (prior to December 1, 2009) and during the current MRP (between December 1, 2009 and July 1, 2014). The City intends to initiate further actions moving forward into the coming years. Prior to the MRP effective date, the City has implemented a robust sweeping program, a vigorous downtown and City-wide on-land cleanup schedule, and was one of the first Bay Area cities to initiate jurisdictional-wide efforts in trash reduction, such as adopting our Sustainable Food Service Ware Ordinance. During the course of the current MRP, the City of has been proactive in identifying trash generation rates and management areas within the City. In addition, the City has adopted a single-use carryout bag policy, installed full and partial-capture treatment devices and started taking actions to improve trash bin and container management in our downtown trash management area. Future plans for additional on-land cleanups, parking enforcement for sweeping and the installation of large full-capture devices will help the City achieve the trash reduction goal of "No Adverse Impact" by July 1, 2022.

Table 7. City of Millbrae 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	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
TMA #1														
Full-Capture Treatment Devices					X	X	X	X	X	X	X	X	X	X
Large Full-Capture Devices									X	X	X	X	X	X
Daily Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Additional Parking Enforcement for Sweeping						X	X	X	X	X	X	X	X	X
Daily On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Annual On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Partial Capture Treatment Devices					X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Management						X	X							
Additional Trash Bin Installation							X							
TMA #2														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Large Full-Capture Device								X	X	X	X	X	X	X
Daily/Weekly Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Daily On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Annual On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Partial Capture Treatment Devices					X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Management						X	X							
TMA #3														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	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	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Large Full-Capture Devices								X	X	X	X	X	X	X
Weekly/Twice Monthly Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Annual On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Quarterly On-Land Cleanups							X	X	X	X	X	X	X	X
TMA #4														
Large Full-Capture Devices									X	X	X	X	X	X
Weekly/Twice Monthly Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Annual On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Quarterly On-Land Cleanups							X	X	X	X	X	X	X	X
TMA #5														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Twice Monthly Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices					X	X	X	X	X	X	X	X	X	X
Annual On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #6														
Large Full-Capture Devices								X	X	X	X	X	X	X
Weekly/Twice Monthly Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Annual On-Land Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jurisdiction-wide Control Measures														
Single-Use Carryout Plastic Bag Ordinance					X	X	X	X	X	X	X	X	X	X
Polystyrene Foam Food Service Ware Ordinance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Public Education & Outreach	X	X	X	X	X	X	X	X	X	X	X	X	X	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	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Creek and Shoreline Hot Spot Cleanups														
Annual Creek Hotspot Cleanup		X	X	X	X	X	X	X	X	X	X	X	X	X

X [a]July 1, 2014 - 40% trash reduction target
[b]July 1, 2017 - 70% trash reduction target
[c]July 1, 2022 - 100% trash reduction target

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 Millbrae. 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 Millbrae.

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 (i.e., 40%, 70%, and No Adverse Impacts) being achieved?
- Are there trash problems in receiving waters (e.g., creeks and rivers)?
- 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 Millbrae 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 Millbrae 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 Millbrae 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 <u>not</u> 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 Millbrae 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 – Descriptions of outreach efforts, tracking and reporting business compliance rates, or other metrics of control measure performance.
- Street Sweeping- Identification sweeping frequency and the ability to sweep to the curb by primary TMA, including any enhancements that have been implemented; and any other metrics demonstrating the enhanced performance of street sweeping.
- Public/Private Trash Container Management - Descriptions of control measures implemented to prevent overflowing trash containers or promoting the more effective use of public/private bins, including any new or enhancements to existing actions; and any other metrics demonstrating the performance of the control measure.
- Public Outreach and Education – Descriptions of outreach and education actions specific to trash deduction, including the number of events conducted within the municipality; descriptions of effectiveness measurements, including the results of pre- and post-implementation surveys or other metrics.
- On-land Cleanups and Enforcement – Descriptions of on-land cleanup actions, including any enhancements that have been implemented; identification of whether on-land cleanup are Permittee or volunteer–led; or other metrics of control measure performance.
- Storm Drain Inlet Maintenance – Descriptions of the level of maintenance, including any enhancement to maintenance frequency; the numbers of inlets where enhanced maintenance is being implemented; and any other metrics demonstrating the performance of inlet maintenance.
- Anti-littering and Illegal Dumping Prevention/Enforcement - Descriptions of control measures implemented to prevent littering and illegal dumping, including any new or

enhancements to existing actions; descriptions and results of enhanced enforcement actions; and any other metrics demonstrating the performance of the control measure.

- Prevention of Uncovered Loads - Descriptions of control measures implemented to prevent trash dispersion from uncovered loads, including any new or enhancements to existing actions; descriptions and results of enhanced enforcement actions; and any other metrics demonstrating the performance of the control measure.
- Partial Capture Devices – Descriptions, numbers and types of devices implemented; maintenance frequencies by device or groups of devices; and any other metrics demonstrating the partial capture device performance.
- Other Control Measures - Descriptions of control measures implemented to prevent or intercept trash before discharge to receiving waters, and any other metrics demonstrating the performance of the control measure.

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 Millbrae 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 City of Millbrae 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 Millbrae 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

[a]July 1, 2014 - 40% trash reduction target
[b]July 1, 2017 - 70% trash reduction target
[c]July 1, 2022 - 100% trash reduction target

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