

Trash Long-Term Reduction Plan and Progress Assessment Strategy

Feb. 1, 2014

Submitted by:
City of Emeryville
INCORPORATED 1896



1333 Park Avenue
Emeryville, California 94608-3517

In compliance with Provisions C.10.c of Order R2-200

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**City of Emeryville
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:



Maurice Kaufman
Director of Public Works/City Engineer
City of Emeryville

January 31, 2014

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ABBREVIATIONS

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

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 EMERYVILLE*'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 EMERYVILLE 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 OF EMERYVILLE, a revised Long-Term Plan will be submitted to the Water Board through the CITY OF EMERYVILLE'S annual reporting process.

1.0 Introduction

1.1 Purpose of Long-Term Trash Reduction Plan

The Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit for Phase I communities in the San Francisco Bay (Order R2-2009-0074), also known as the Municipal Regional Permit (MRP), became effective on December 1, 2009. The MRP applies to 76 large, medium and small municipalities (cities, towns and counties) and flood control agencies in the San Francisco Bay Region, collectively referred to as Permittees. Provision C.10.c of the MRP requires Permittees to submit a *Long-Term Trash Load Reduction Plan* (Long-Term Plan) by February 1, 2014. Long-Term Plans must describe control measures that are currently being implemented, including the level of implementation, and additional control measures that will be implemented and/or increased level of implementation designed to attain a 70% trash load reduction by July 1, 2017, and 100% (i.e., “No Visual Impact”) by July 1, 2022.

This Long-Term Plan is submitted by the CITY OF EMERYVILLE 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 EMERYVILLE'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.

1.2 Background

1.2.1 Long-Term Trash Load Reduction Plan Framework

A workgroup of MRP Permittee representatives 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).

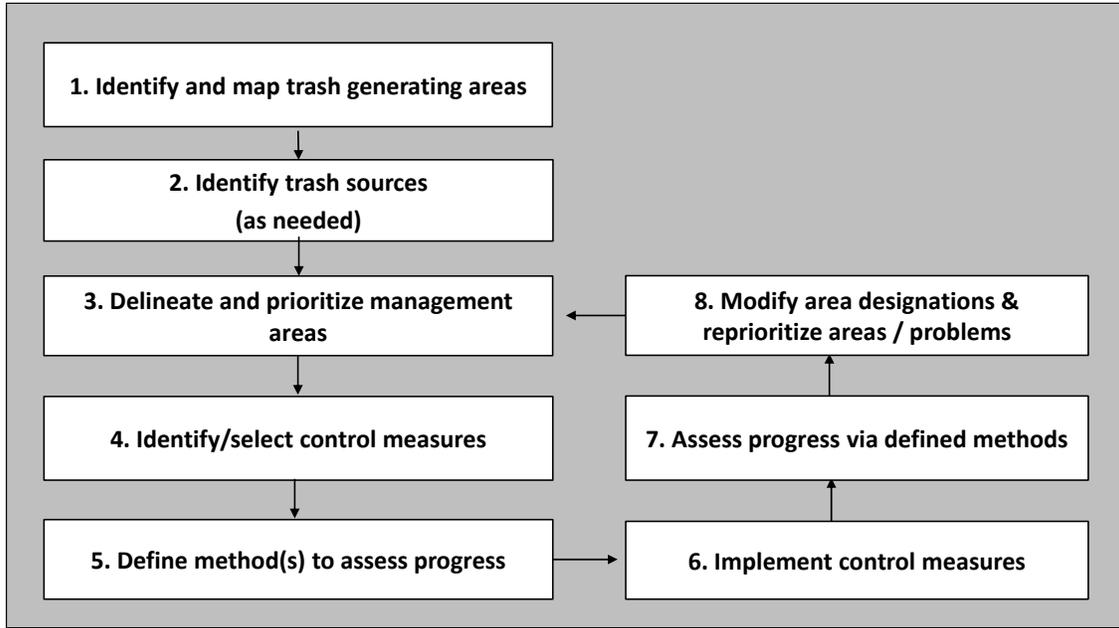


Figure 1-1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

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 1-2 illustrates the difference between trash generation and loading.

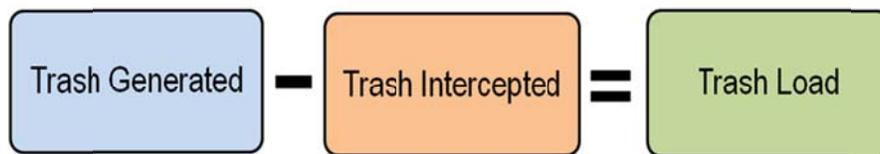


Figure 1-2. Conceptual model of trash generation, interception and load.

Trash generation rates were estimated based on factors that significantly affect trash generation (i.e., land use and income). The method used to establish trash generation rates for each Permittee builds off “lessons learned” from previous trash loading studies conducted in urban areas (Allison and Chiew 1995; Allison et al. 1998; Armitage et al. 1998; Armitage and Rooseboom 2000; Lippner et al. 2001; Armitage 2003; Kim et al. 2004; County of Los Angeles 2002, 2004a, 2004b; Armitage 2007). The method is based on a conceptual model developed as an outgrowth of these studies (BASMAA 2011b).

Trash generation rates were developed through the quantification and characterization of trash captured in Water Board-recognized full-capture treatment devices installed in the San Francisco Bay area. Trash generation rates estimated from this study are listed for each land use type in Table 1-1. Methods used to develop trash generation rates are more fully described in BASMAA (2011b, 2011c, and 2012).

Table 1-1. 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.

1.3 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 EMERYVILLE. Control measures that will be implemented by CITY OF EMERYVILLE 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 1896, the City of Emeryville covers 938 acres in Alameda County, and has a jurisdictional area of 715 acres. According to the 2010 Census, it has a population of 10,080, with a population density of 8,089.9 people per square mile, and average household size of 1.76. Of the 10,080 who call the City of Emeryville home, 10.2% are under the age of 18, 10.6% are between 18 and 24, 46.4% are between 25 and 44, 22.9% are between 45 and 65, and 10.0% are 65 or older.

Top employers in the City of Emeryville include Pixar, Novartis, AC Transit, Oaks Card Club, LeapFrog, ClifBar and IKEA. The median household income was \$45,359 in 2000 .

Land uses within Emeryville depicted in ABAG (2005) are provided in Table 2-1. The City of Emeryville is primarily comprised of 7 land uses. These include commercial and services, industrial, residential, retail, K-12 schools and urban parks.

Table 2-1. Percentages of the City of *Emeryville's* jurisdictional area¹ within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (acres)	% of Jurisdictional Area
Commercial and Services	201.0	28.1%
Industrial	156.1	21.8%
Residential	177.2	24.8%
Retail	116.1	16.2%
K-12 Schools	17.6	2.5%
Urban Parks	23.4	3.3%
Other	23.6	3.3%

2.2 Trash Generating Areas

2.2.1 Generation Categories and Designation of Areas

The process and methods used to identify the level of trash generation within the City of Emeryville are described in this section and illustrated in Figure 2-1.

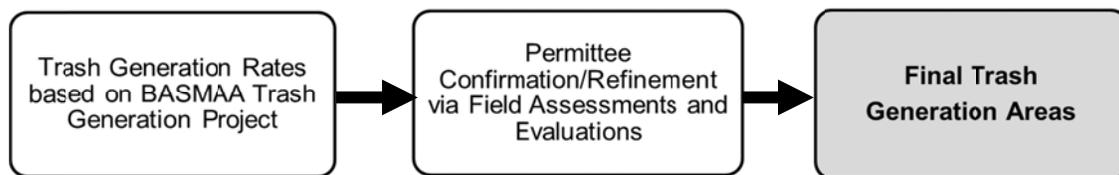


Figure 2-1. Development of Trash Generation Areas

As a first step, trash generation rates developed through *the BASMAA Trash Generation Rates Project* were applied to parcels within the City of Emeryville 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 Emeryville to identify trash generation 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 2-2.

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

Table 2-2. 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 Emeryville 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 2-3. Using the Draft Protocol the City of Emeryville assessed a total of 5 areas to assist in conducting/refining trash generating area designations.

Table 2-3. 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

Public Works staff reviewed maps generated based on land-use and demographics, and with the on-land visual assessment details they provided adjustments were made to create maps that accurately reflected trash generation.

c. Reviewing Municipal Operations Data

An actual City wide litter/trash generation rate was determined for a typical month by observing that a 30 yard roll-off bin was approximately 2/3 filled with litter collected by City Sheriff's Work Alternative Program staff



during a 3 week period in June 2013. See photo:

Mid-way through the 3-week collection period in June 2013: on its way to filling up.

d. Viewing Areas via Goggle Maps – Street View

Google Maps assisted discussions with 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 *Emeryville*. 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 Emeryville’s Final Trash Generation Map is included as Figure 2-2.

2.2.2 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 2-4.

Table 2-4. Percentage of jurisdictional area within the City of Emeryville 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	124.6	3.9%	2.6%	5.2%	88.0%	0.0%	0.0%	0.4%
High	171.0	9.5%	14.5%	50.6%	1.5%	9.8%	10.1%	4.1%
Medium	351.1	51.2%	35.9%	7.0%	0.8%	0.2%	1.8%	3.1%
Low	68.3	0.0%	3.3%	87.2%	1.8%	0.0%	0.0%	7.7%

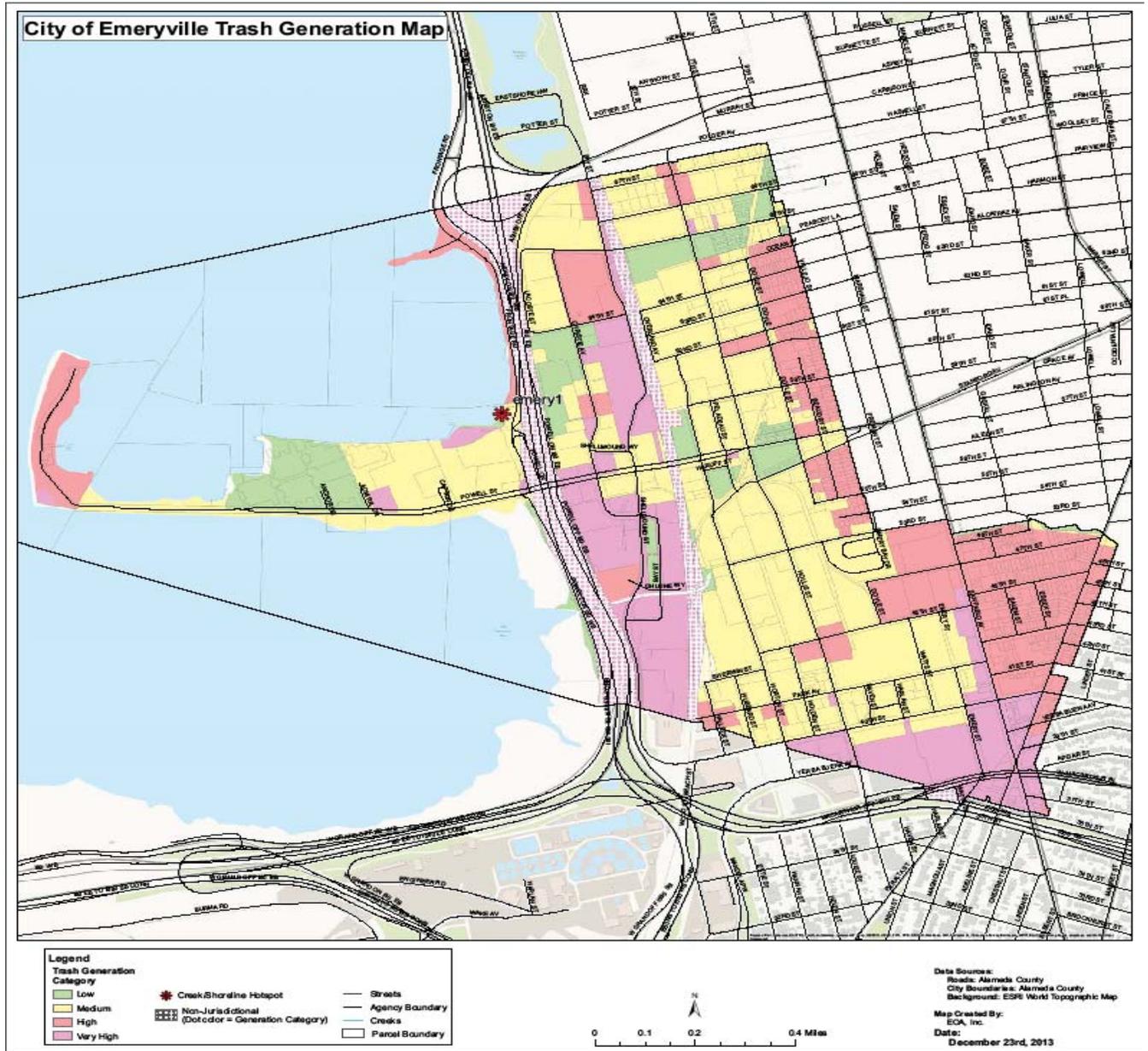


Figure 2-2. Final Trash Generation Map for the City of Emeryville

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3.0 Trash management areas and control measures

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

3.1 Management Area Delineation and Prioritization

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

As overlay to the above process, City of Emeryville Clean City program staff, who pick up litter and other trash on a daily basis provided reports based on their visual assessment, as to the nature and quantity of trash City-wide, assisting in the prioritization of which areas to install full-capture devices first, 2nd, 3rd and so on.

A map depicting the City of Emeryville's TMAs is included as Figure 3-1. 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 3-1.

Table 3-1. 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	151.2	34.1%	5.7%	56.7%	3.5%
2	146.5	14.3%	11.8%	59.8%	14.0%
3	227.2	20.5%	40.7%	36.3%	2.5%
4	101.5	4.7%	21.7%	48.9%	24.7%
5	88.5	0.8%	34.5%	51.4%	13.4%

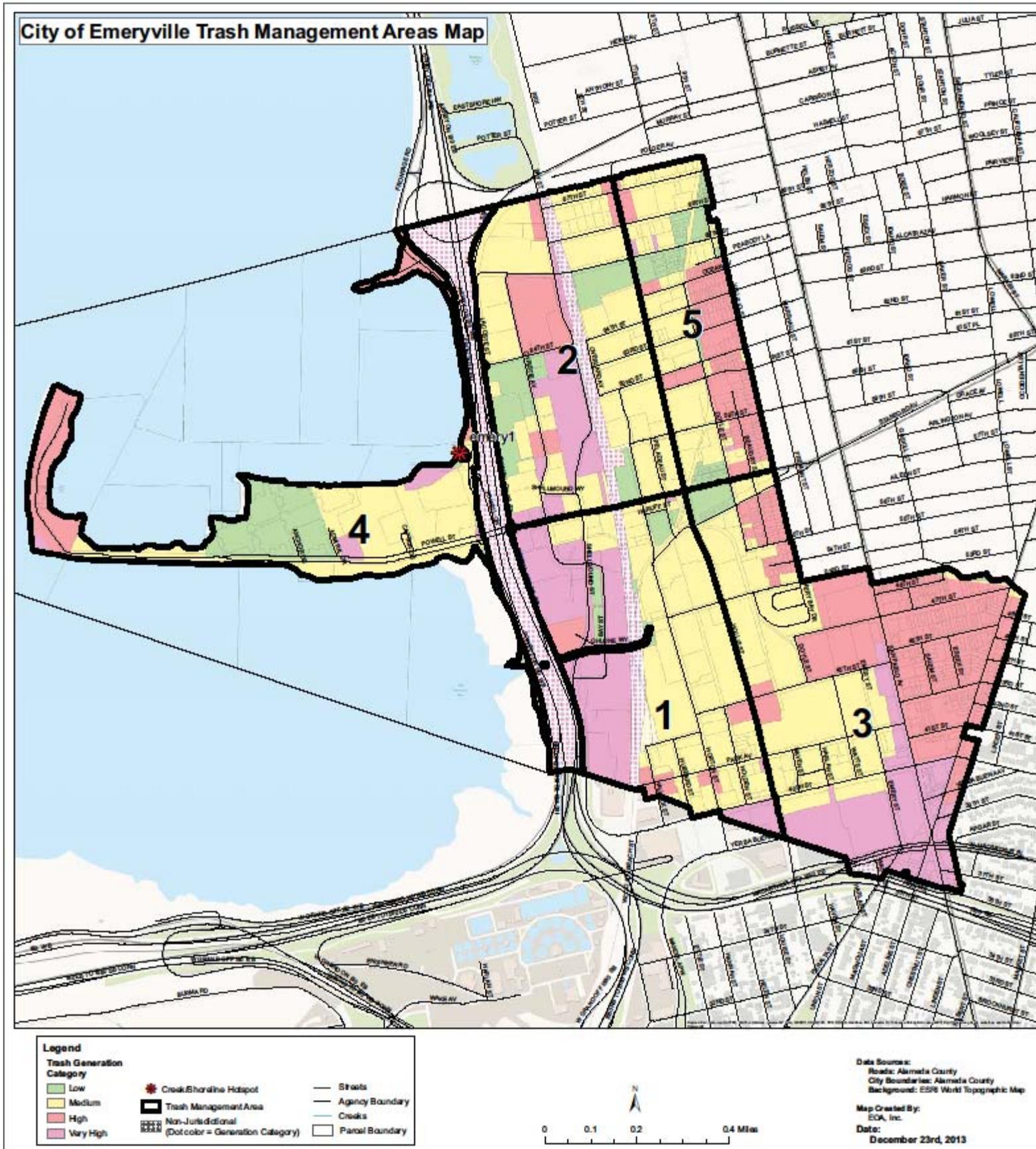


Figure 3-1. Trash Management Area Map for the City of *Emeryville*

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3.2 Current and Planned Trash Control Measures

All trash control measures listed in this report for the City of Emeryville, have been and will continue to be employed in all 5 Trash Management Areas before the effective date of the MRP, **except for** the trash full-capture devices in TMAs 1-4. Three trash full-capture devices have been installed in TMA #4, and 45 more trash full-capture devices will be installed between now and June 30, 2014, in TMA 1, 2 and 3, along 40th St, Christie Ave. and Shellmound St. Details are included below.

Trash/litter on land at the source is picked up before it reaches the MS4. Emeryville began implementing the "Clean City Program" long before the effective date of the MRP. This City-wide program, utilizes City staff to lead the Sheriff's Work Alternative Program (SWAP) crews to pick up litter 7 days a week. The SWAP crew size averages about 8 to 10 people per day. This ongoing program removes litter before it enters the MS4. In addition, annual clean-ups with informally organized volunteers, as well as annual-at-minimum inlet clean-outs, container management, street sweeping and enforcement of illegal dumping and litter ordinance violations, and ordinances restricting to-go ware and plastic carry-out bags augment this core Clean City program for optimal litter clean-up.

3.2.1 Trash Management Area #1

Bounded on the east by Hollis St. on the south by the Oakland border, on the west by the railroad tracks, and on the north by Powell St., this area's trash is generated by dense residential, retail, commercial and industrial uses.

Please see Section "3.2.5 Jurisdiction-wide Control Measures", which describes effective litter removal at the source. In addition to "Jurisdiction-Wide" measures, each TMA lists additional measures specific to that TMA.

Actions initiated prior to the MRP effective date, and before July 1, 2014:

TMA # 1 will include 27 Full-Capture Treatment Devices -

In TMA #1, 25 Trash Full-Capture devices are planned for installation along Shellmound St. from 40th St. to Powell St., and 2 more on Christie Ave. between Shellmound Way and Powell St. This will cover 13.06 acres of drainage area. All devices, once installed jurisdiction-wide, total 21.30 acres of coverage. These devices will be installed before June 30, 2014. Annual debris-clearing is planned, as a baseline, with additional clearing scheduled as needed. Devices will be monitored for proper functioning and desired outcome.

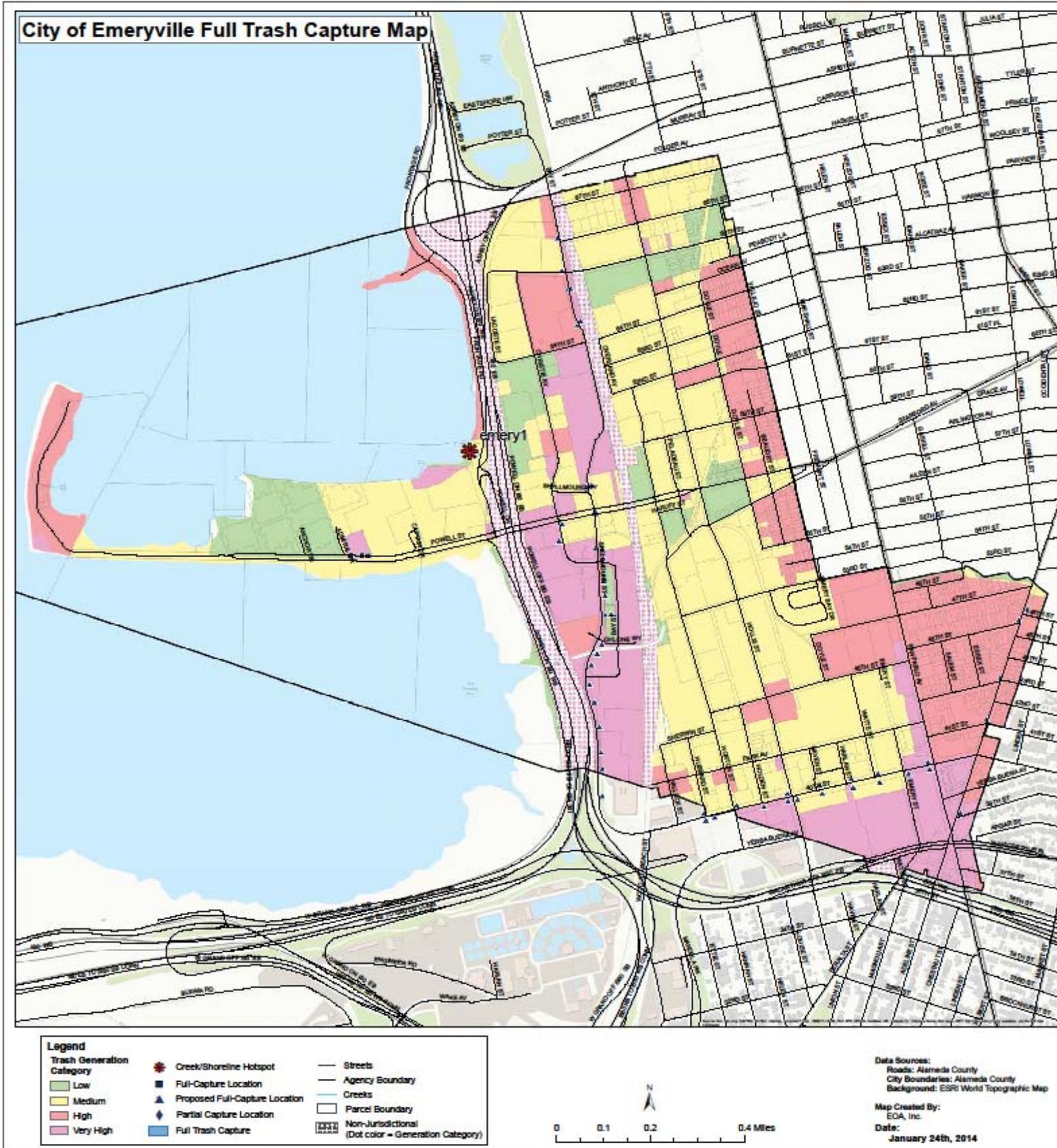


Figure 3-2. Trash Full Capture Device Map for the City of Emeryville.

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3.2.2 Trash Management Area #2

TMA#2 is bound by Powell St. to the south, the Berkeley City border to the north, Hollis St. on the east and LaCoste St. on the west. This area is characterized by industrial, retail and residential uses.

See Section “3.2.4 Jurisdiction-wide Control Measures”. In addition to “Jurisdiction-Wide” measures each TMA lists additional measures specific to that TMA.

Actions initiated after the MRP effective date, and before July 1, 2014:

TMA # 2 will include 8 Full-Capture Treatment Devices –

8 Trash Full-Capture devices are planned for installation along Shellmound St. from Powell St. to the Berkeley border. This will cover 3.70 acres of drainage area. City-wide a total of 21.30 acres of coverage by full-capture devices will be installed. As with TMAs #1 and #3, these devices will be installed before June 30, 2014. Annual debris-clearing of these devices is planned, with additional clearing scheduled as needed. Devices will be monitored for proper functioning and to ensure desired outcome.

3.2.3 Trash Management Area #3

TMA#3 is bound by Powell St. and the City of Oakland boundary on the north, eastern and southern boundaries. On the west, TMA#3 is bound by Hollis St. As with TMA #1 and #2, this area is a mix of retail, industrial and residential uses and includes an elementary school.

See Section “3.2.5 Jurisdiction-wide Control Measures”. In addition to “Jurisdiction-Wide” measures each TMA lists additional measures specific to that TMA.

Actions initiated after the MRP effective date, and before July 1, 2014:

TMA # 3 will include 10 Full-Capture Treatment Devices –

10 Trash Full-Capture devices will be installed along the length of 40th St. This will cover 3.85 acres of drainage area. A total of 21.30 acres of coverage will be installed City-wide. These devices will be installed before June 30, 2014. Annual debris-clearing is planned, as a baseline, with additional clearing scheduled as needed. Devices will be monitored for proper functioning and desired outcome.

Partial-Capture Treatment Devices:

On Adeline St. between 46th St. and 39th St., the City of Emeryville installed 5 partial-capture trash capture devices. These are screen placed over inlets to the MS4. They are located as follows:

Location	Device	Detail
Adeline & 46th	Partial	northeast corner
Adeline & 45th	Partial	northwest corner
Adeline & 43rd	Partial	northwest corner
Adeline & 41st	Partial	northwest corner
Adeline & 39th	Partial	northeast corner

3.2.4 Trash Management Area #4

TMA#4 is bound by Frontage Rd. on the east, and the Bay on north, south and west. Dense commercial office towers, the City's largest multi-tenant residential property, two Marinas, including live-aboard boat residents, along with a convenience market, 4 restaurants, Police and Fire Stations characterize this TMA.

See Section "3.2.4 Jurisdiction-wide Control Measures. In addition to "Jurisdiction Wide" measures each TMA lists additional measures specific to that TMA.

Actions initiated after the MRP effective date, and before July 1, 2014:

TMA # 4 includes 3 Full-Capture Treatment Devices -

Three trash full-capture devices were installed in fall of 2013, along Powell St., at Captain Drive, in front of Watergate Market. This area was identified as a "very high" trash generation area. These 3 devices cover .69 acres of drainage area, bringing the total jurisdiction-wide acreage to 21.30.

3.2.5 Jurisdiction-wide Control Measures (TMAs #1 - #5)

The City of Emeryville has long acknowledged the litter and trash on its streets and has thus invested in the Clean City Program to keep litter off the streets. From fast food and liquor store wrappers to illegal dumping of household furnishings, the City of Emeryville has been dedicated to keeping the City litter-free. TMA #5 is characterized by both single and multiple tenant residential properties, industrial uses and some retail, mainly restaurants. Please read details of control measures for all TMAs below.

Actions initiated prior to and continued after the MRP effective date:

On-land Trash Cleanups Detail -

The City of Emeryville's effort of on-land trash cleanups (Clean City Program) is far greater than any other City covered under this MRP. Emeryville's Clean City Program is considered an enhanced action because it goes far beyond what the average city does regarding on-land litter collection. By removing litter city-wide on a daily basis, large volumes of trash are kept from entering the City's MS4. The City invests substantial time, energy and expense to remove litter from public areas through this program. Two City employees are dedicated to lead an average size crew of 8 to 10 Sheriff's Work Alternative Program (SWAP) personnel to clean litter from public areas around the City 7 days a week, 6 hours a day. The crews collect the litter in bags which are emptied into a roll-off bin at the City's corporation yard. On average approximately 6,000 gallons of litter is hauled away weekly as a result of this program. This measurement is based on the actual volume collected in a dedicated roll-off bin during a 3 week period in June 2013.

Enhanced Trash Bins/Container Management-

The City manages public litter containers as follows:

- Staff identifies whether public area trash containers are sufficiently located in high trash generating areas, and where higher capacity is needed.

- Staff determines whether public litter containers are adequately designed to manage trash types that typically are generated from activities occurring at these areas (e.g., containers with larger openings designed to accommodate larger trash items (e.g., pizza boxes).
- Staff identifies whether high trash-generating sites need an increased level of inspection and maintenance to prevent litter ending up on the ground.
- Ongoing communication between City Public Works employees and franchised hauler collection crews closes the loop and maintains an effective monitoring program of City public litter containers.

Street Sweeping –

Existing enhanced street sweeping, conducted years before MRP implementation and continuing today includes street-sweeping once per month in residential areas and twice per month in commercial and industrial areas.

Enhanced Storm Drain Inlet Maintenance –

City of Emeryville Public Works Department maintains inlets by clearing debris at least annually and as needed if debris re-accumulates.

Activities to Reduce Trash from Uncovered Loads –

Since 2005 and continuing with the latest Franchise Agreement with Waste Management of Alameda County, implemented Feb. 2011, City has required the Contractor to cover loads, and to otherwise prevent litter from spilling or blowing during collection and transport. In addition, contractor is required to clean up any spills or blown materials within 2 hours of occurrence. Contractor is also required to work with customers who generate spillage or litter to prevent this after the initial occurrence.

Anti-littering and Illegal Dumping Enforcement Activities –

When the source of illegal dumping and littering can be identified, and/or when the litter or dumping is on private property, the City contacts those responsible in the enforcement of its ordinances and monitors follow-through. When this is not possible, the City's paid and work furlough crews collect and dispose material in the public right of way.

Disposable food-ware ordinance May 2007

The City's FOOD SERVICE WASTE REDUCTION ordinance has banned disposable food service ware that is not recyclable or compostable.

Actions initiated after the MRP effective date, and before July 1, 2014:

Segregate and measure Clean City Litter collected-

The City will designate a roll-off bin for litter collected by the Sheriff's Work Alternative Program (SWAP) crews and record weight data. 6000 gallons per week and 1.11 tons was recorded during a 3 week period in June 2013, the first time a bin was designated for this purpose. Subsequent capturing of this data will take place periodically.

Ensuring Adequate Private Trash Service – The City of Emeryville will implement a program, working with its franchised hauler, to identify businesses or households that have inadequate trash service (i.e., insufficient trash collection or use of bins which are

too small). Through municipal code enforcement and the newly adopted Mandatory Recycling ordinance (Phase I July 1, 2012 and Phase II July 1 2014), the City will partner with StopWaste and WMAC to ensure effective containment of trash.

Improved Trash Bins/Container Management –

In Emeryville’s Franchise Agreement with Waste Management of Alameda County, effective Jan. 2011, litter-reducing collection methods and trucks are required. Crews are required to report any issues preventing litter-reduction, such as repetitive overages in which trash is not fully contained.

Future implementation between July 1, 2014 and July 2022:

Cataloguing of City Can inventory

The City will enter all City public litter containers into a GIS system, which will include photos and identify types of containers at each location. This will enable more effective management of public litter containers.

Purchase of additional public litter cans-

-The City will purchase new litter cans and install as needed, replacing old or inadequate City Cans, or adding cans were warranted by visual assessment. This will be done in coordination with the “Clean City Program”, and with the franchised hauler, Waste Management of Alameda County.

-Where warranted and realistic, the City will consider installation of new technologies (e.g., Big Belly Solar Trash Compactors) to reduce trash from spilling out of cans and to reduce the cost of adding public area trash containers.

Alameda County Waste Management Authority Single-Use Bag Ban Ordinance

Single-Use plastic bags were a significant component of the litter found in storm drains and water bodies throughout Alameda County. To address this issue, the Alameda County Waste Management Authority adopted a single-use bag ban. As of January 1, 2013, all grocery stores, supermarkets, mini-marts, convenience stores, liquor stores, pharmacies, drug stores or other entities that sell milk, bread, soda and snack foods (all four items) and/or alcohol (Type 20 or 21 license) in Alameda County must comply with the Single-Use Bag Ban Ordinance.

Single-Use Bag Requirement: Affected stores may no longer provide customers with single-use plastic bags at check-out.

Bag Sales Requirements:

- Affected stores that distribute recycled paper or reusable bags must charge 10 cents or more per bag. These bags must meet the specifications in the Ordinance.
- All proceeds from the sale of recycled paper bags and reusable bags are retained by the retailer without any restrictions on their use

A copy of the Ordinance is available on the Alameda County Waste Management Authority’s website: <http://reusablebagsac.org/ordinancetext.html>
The City of Emeryville is a member of ACCWP. The jurisdiction-wide control measures described below will be conducted through participation in ACCWP.

Litter Outreach to K-12 Schools

K-12 schools are often high litter generation areas. ACCWP has developed a request for proposal for a four-year litter reduction education/outreach grant directed at K-12 schools throughout Alameda County. ACCWP intends to award a total of up to \$125,000 per year to up to 4 successful applicants. The goals of the project are to clearly reduce the amount of litter at the participating schools and incorporate institutional changes at the schools so that litter will continue to be reduced in the future. Implementation is scheduled to begin in the 2014/15 school year. The request for proposal will include a requirement to evaluate the level of litter reduction achieved. A description of the successful proposals will be included in the ACCWP Fiscal Year 2013/14 Annual Report.

“Be the Street” Youth Anti-Litter Advertising Campaign

Intentional litter by youth has been found to be a significant contributor to litter problems. To address this issue, ACCWP has participated in the development and implementation of the Be the Street campaign. Be the Street is a Bay Area wide outreach effort that takes a Community Based Social Marketing approach to encourage youth to keep their community clean (<http://www.bethestreet.org/>). The intent of the campaign is to make “no-littering” the norm among the target audience (youth between the ages of 14 and 24). The campaign is a three-year effort that began in fiscal year 2011-12 and will run through 2013-14. ACCWP has been participating in and providing financial support to the Be the Street campaign since its inception. The campaign will be evaluated in the spring of 2014. Depending upon the results of the evaluation, ACCWP may continue to participate in this or similar efforts in future years.

Multi-Family Dwelling Litter Outreach

Multi-family dwellings (i.e., apartment buildings and condominium complexes) are often areas of high trash generation. ACCWP is working with the City of Livermore to develop a litter reduction pilot targeting multi-family complexes known to be sites with significant litter issues. The pilot includes the following apartment building and condominium complexes: Livermore Garden Apartments (5720 East Avenue), La Castilleja (975 Murrieta Boulevard), and Castilleja Del Arroyo (1001 and 1009 Murrieta Boulevard).

- December 2013: Pre-campaign Measurement – ACCWP and the City will take baseline measurements of all three sites. Methods of measurement will include taking photos of on-site litter, as well as collecting, characterizing and counting the litter using the Ocean Conservancy’s Volunteer Trash Data Form. (Adopt A Creek Spot volunteers use this Data Form to characterize and count the trash collected from the Trash Hot Spot located behind the condominium complexes on Coastal Clean-up Day.) Areas to be measured include landscaped and other common areas, the sidewalk, gutter and streets located in front of the sites. All three property managers/volunteers will collect one week’s worth of on-site litter.
- November – December 2013: Research – All three property managers will be interviewed by City staff using twenty-five questions developed by the ACCWP. The interview results will help define the target audience(s) (i.e., age groups, income level, ethnic groups, etc.) and determine outreach tactics (i.e., face-to-

face, signage, printed materials, etc.) This information will also assist the City and ACCWP in developing appropriate messaging.

- November 2013 – January 2014: Plan – One of the three sites will be chosen as the “Control” site. In addition, outreach strategies and tactics will be selected for the “Active” sites.
- February 2014: Concept/Design/Content Production – Selected outreach tactics will be designed and produced for the Active sites.
- February 2014: Multi-cultural Advising, Translation – Consultant will advise on outreach tactics and messaging, and will provide translation as needed.
- March 2014 – May 16, 2014: Outreach – Outreach tactics will be rolled out at Active sites.
- May 17, 2014 – May 31, 2014: Post-campaign Measurement — City staff and ACCWP will duplicate the pre-campaign measurement methodologies at all three sites, including the Control. All three property managers/volunteers will collect one week’s worth of on-site litter. On-site and off-site litter will be characterized and counted by City staff using the Ocean Conservancy’s Volunteer Trash Data Form. All three property managers will be interviewed by City staff to help determine residents’ attitudes/change in behavior, etc.
- June 1, 2014 – June 30, 2014: Reporting – Final Pilot Report will be presented to ACCWP member agencies.

Depending on the success of the pilot, it may be replicated at other multi-family complexes throughout the County.

The Public Information and Participation Subcommittee of ACCWP also is in the process of identifying other litter-related areas and activities that affect jurisdictions throughout the County, and will implement pilot projects to address the high priority issues over the next several years. One issue being considered is cigarette butt litter.

Community Stewardship Grants

Through its Community Stewardship Grants program ACCWP provides up to \$20,000 per year to individuals and community groups to implement stormwater and watershed enhancement and education projects. The grants range from \$1,000 to \$5,000. Starting in fiscal year 2014/15 ACCWP will specifically encourage and support litter reduction grant applications. The projects of the Fiscal Year 2014/15 grant recipients will be described in the ACCWP Fiscal Year 2013/14 Annual Report.

Anti-Litter Outreach to Residents

Through its Public Information and Participation program ACCWP encourages residents to adopt less polluting behaviors. One targeted behavior is littering, both intentional and unintentional. ACCWP uses a variety of mechanisms to influence residents including public service announcements, online and movie theater advertising, and participating in outreach events. The ACCWP Public Information and Participation

Subcommittee is in the process of developing a three-year budget/strategic plan for fiscal years 2014/15 through 2016/17. One of the strategic objectives of the plan will be to reduce litter. This plan will be described in the ACCWP Fiscal Year 2013/14 Annual Report.

3.2.6 Creek and Shoreline Hot Spot Cleanups

The City of Emeryville coordinates volunteers from the community to clean up litter at the Shorebird Park hot spot in the City during at least 2 one-day events. This effort is considered an enhanced on-land trash cleanup. The City's Annual Coastal Clean-Up events pre-dated the MRP by a few years, while an additional annual Earth Day Clean Up at the Shorebird Park hot-spot has taken place the last two years.

These on-land cleanups are coordinated by City staff annually and the volume of trash removed during Coastal Clean-Up is tracked to demonstrate trash loads reduced. Tracking the Earth Day event trash volume will start this year. Please note that only trash that potentially came from the MS4 is tracked. As a result, large items (e.g., appliances, shopping carts, furniture, mattresses, televisions, tires, lumber, etc.) that are removed during on-land trash cleanups are not part of the volume determination since they do not have the potential of entering the MS4. It should also be noted that the City's opinion is that most (if not all) of the trash that is collected from the hot spot does not come from the MS4 but instead is deposited by the tidal action of San Francisco Bay.

The annual Coastal Clean Up event attracts an average of 140 volunteers, who pick up a varied total of between 400-1200 pounds of litter combined, at Shorebird Park, the City's "hot spot", Pt. Emery, and the accessible shorelines on East Bay Regional Park land, and at the Emeryville Marina, following Powell St. out to the end. The Earth Day event at Shorebird Park is smaller, attracting about 50 people.

In addition, permanently affixed boxes containing re-purposed empty 5-lb. coffee bags have been located at Shorebird Park and Pt. Emery for the purpose of litter collection. These boxes were installed and are managed by a small non-profit called All One Ocean. The boxes display information and instructions for use of the bags. Based on monitoring by City and All One Ocean staff, these bags are being used properly and have become another effective, albeit modest, method of removing litter from the San Francisco Bay shoreline in Emeryville

3.2.7 Summary of Trash Control Measures

Trash Management Areas #1, 2, 3, 4, 5:

Actions initiated prior to and continued after the MRP effective date of December 2009:

- Clean City Program
- Street Sweeping
- Storm Drain clear-out
- Management of customer trash containers
- Management of City public-area trash cans
- Managing illegal dumping
- Covering loads of hauled waste

- City of Emeryville Food Ware ordinance
- Alameda County Plastic Bag ordinance
- Clean Water Program Campaigns

For TMAs #1, 2 3, 4: A combined 48 trash full-capture devices will be installed after the MRP effective date, and before July 1, 2014.

Trash Management Area 1

- Twenty-seven trash full-capture devices installation by June 30, 2014, expected to capture what is left after jurisdiction-wide measures are employed.

Trash Management Area 2

- Eight trash full-capture devices installation by June 30, 2014, expected to capture what is left after jurisdiction-wide measures are employed.

Trash Management Area 3

- Ten trash full-capture devices installation by June 30, 2014, expected to capture what is left after jurisdiction-wide measures are employed.

Trash Management Area 4

- Three trash full-capture devices were installed at the end of 2013, at the “very high” trash section of this TMA, at Watergate Market.

3.3 Control Measure Implementation Schedule

Prior to the MRP effective date, multiple measures were already in place, as indicated in Section 3.2.5 above. In fall 2013, 3 trash full-capture devices were installed in TMA #4. Between Feb. 1 and July 1, 2014, 45 additional trash full-capture devices will be installed, as indicated in Section 3.2.1, 3.2.2, 3.2.3 and 3.2.4 above. Also, prior to July 1, 2014, a roll-off bin will be dedicated to the Sheriff’s Work Alternative Program, to record volume of litter removed before it enters the storm drain system.

Table 3-2. City of Emeryville completed and planned trash control measure implementation schedule.

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
TMA #1														
27 Trash Full Capture Devices (13.06 acres)						X	X	X	X	X	X	X	X	X
TMA #2														
8 Trash Full Capture Devices (3.70 acres)						X	X	X	X	X	X	X	X	X
TMA #3														
10 Trash Full Capture Devices (3.85 acres)						X	X	X	X	X	X	X	X	X
TMA #4														
3 Trash Full-Capture Devices (.69 acres)						X	X	X	X	X	X	X	X	X
Jurisdiction-wide Control Measures (TMAs #1-#5)														
Clean City Program	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Street sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Activities to Reduce Trash from Uncovered Loads	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anti-littering and Illegal Dumping Enforcement	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bins/Container Management	X	X	X	X	X									
Enhanced Trash Bins/Container Management						X	X	X	X	X	X	X	X	X
Implementation of Strategic Plan for Public Area Trash	X					X	X	X	X	X	X	X	X	X
Purchase and installation of new City public litter containers							X	X	X	X	X	X	X	X
Single-Use Bag Ban					X	X	X	X	X	X	X	X	X	X
K-12 School Outreach						X	X	X	X	Activities to be determined				
Be the Street campaign				X	X	X	Activities to be determined							

CITY OF EMERYVILLE

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
Multi-Family Dwelling Outreach						X	Activities to be determined							
Community Stewardship Grants (litter)							X	Activities to be determined						
Litter related outreach to residents	X	X	X	X	X	X	X	X	Activities to be determined					
Creek and Shoreline Hot Spot Cleanups														
Coastal Clean Up Annual Event	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Earth Day event				X	X	X	X	X	X	X	X	X	X	X

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

4.0 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 Alameda Countywide Clean Water Program (ACCWP), including the City of Emeryville. 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 ACCWP. 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 ACCWP Pilot Assessment Strategy

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

4.1.1 Management Questions

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

- Are specific control measures effective?
- Is the amount of trash in and along local waterways declining?
- Are control measures being implemented appropriately?

The ACCWP Pilot Strategy, including indicators and methods, is summarized in this section. These indicators are intended to detect progress towards trash load reduction targets and solving trash problems.

4.1.2 Indicators of Progress and Success

To track progress, both outcome and output indicators will be assessed. Outcome-based indicators are those that measure the result of litter reduction efforts. This type of

indicator could include measurements of litter in and around the storm drain system or local water bodies. Output-based indicators are those that assess the implementation of control measures. This type of indicator could include assessing the maintenance of trash capture devices or compliance with product bans. Indicators that ACCWP Permittees will use to answer the management questions include:

Outcome-Based Indicators:

- 1-A Amount of single-use plastic bags entering storm drains
- 1-B Amount of polystyrene food ware entering storm drains
- 1-C Amount of litter removed from Trash Hot Spots and other creek/shoreline cleanup events
- 1-D Amount of litter at schools participating in the litter outreach program
- 1-E Amount of litter at multi-family dwellings participating in the targeted outreach program
- 1-F Self-reported litter related attitude and behavior of residents

Output-Based Indicators:

- 2-A Full capture device operation and maintenance
- 2-B Compliance with the Single-Use Bag Ban
- 2-C Implementation of an effective street sweeping program
- 2-D Commercial Trash Container Management
- 2-E Residential Trash Container Management

In selecting the indicators above, the City of *Emeryville* in collaboration with ACCWP and other ACCWP 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.

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. 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 *Emeryville* will implement through the ACCWP Pilot Strategy to generate indicator information described in the previous section. Additional information on each method can be found in the ACCWP Pilot Trash Assessment Strategy submitted to the Water Board by ACCWP on behalf of the City.

OUTCOME-BASED INDICATORS

1-A Amount of Single-Use Plastic Bags Entering Storm Drains

ACCWP participated in the development of the BASMAA baseline trash generation rate study. A total of 47 drop inlet full trash capture devices located throughout Alameda County were included in the study. The study included an assessment of the volume and number of single-use plastic bags found in these 47 inlets as well as over 100 other inlets from throughout the Bay Area. Since the conclusion of the study, the Alameda County Waste Management Authority has adopted a single-use bag ban. As of January 1, 2013, all grocery stores, supermarkets, mini-marts, convenience stores, liquor stores, pharmacies, drug stores or other entities that sell milk, bread, soda and snack foods (all four items) and/or alcohol (Type 20 or 21 license) in Alameda County must comply with the Single-Use Bag Ban Ordinance.

ACCWP will conduct a follow-up study to assess the number and volume of single-use plastic bags in storm drain inlets throughout the County following the implementation of the bag ban. The study will consist of re-sampling most or all devices sampled during the previous study and comparing the number of single-use bags found before versus after the implementation of the bag ban. ACCWP will also sample up to 50 additional full trash capture inlet devices from high and medium trash generating areas throughout the County and compare the number of single-use bags found in all of the sampled inlets in Alameda County after the adoption of the bag ban versus the number of bags found in inlets throughout the Bay Area during the baseline trash generation rate study. ACCWP is planning to assess the level of single-use and other trash in all of the approximately 100 inlets again after several years to assess the overall decline in trash over time. A detailed study design is included in the ACCWP Pilot Assessment Strategy to be submitted separately.

1-B Amount of Polystyrene Food Ware Entering the Storm Drain System

As noted above, ACCWP participated in the development of the BASMAA baseline trash generation rate study. A total of 47 drop inlet full trash capture devices located throughout Alameda County were included in the study. The study included an assessment of the volume and number of expanded polystyrene (EPS) food ware items found in these 47 inlets as well as over 100 other inlets from throughout the Bay Area. A majority of the fourteen cities within Alameda County have adopted expanded polystyrene food ware bans. San Leandro and Pleasanton adopted their expanded polystyrene bans after the completion of the BASMAA baseline trash generation rate study.

ACCWP will conduct a follow-up study to assess the effectiveness of the EPS food ware bans at reducing the amount of EPS entering the storm drain system. As San Leandro and Pleasanton have adopted their ban since the completion of the baseline study, the follow-up study will compare the volume and number of EPS food ware items in the full trash capture devices in those two cities before and after the implementation of the bans. ACCWP will also sample a total of up to 100 full trash capture inlet devices from throughout the County and compare the number and volume of EPS food ware items

in areas with versus without EPS bans. A detailed study design is included in the ACCWP Pilot Assessment Strategy to be submitted separately.

1-C Amount of Litter Removed from Trash Hot Spots and Other Creek/Shoreline Cleanup Events

ACCWP member agencies collect trash annually from a total of 47 Hot Spots as well as numerous additional creek and shoreline cleanup events. Each member agency will gather data from these events that will allow for long term tracking of trends. The data to be collected include the volume and or weight of trash removed, the number of people and or the total number of person hours for each event, the length of creek or shoreline cleaned, and the dominant types of trash at each location. ACCWP will compile the data from these events and track the long term trends in trash along these water bodies throughout the County. Member agencies will also track trends at their specific cleanup locations.

1-D Amount of Litter at Schools Participating in the Litter Outreach Program

ACCWP has developed a request for proposal for a four-year litter reduction education/outreach grant directed at K-12 schools throughout Alameda County. ACCWP intends to award a total of up to \$125,000 per year to the successful applicant(s). The goals of the project are to clearly reduce the amount of litter at the participating schools and incorporate institutional changes at the schools so that litter will continue to be reduced in the future. Implementation is scheduled to begin in the 2014/15 school year. The request for proposal will include a requirement to evaluate the level of litter reduction achieved. A copy of the request for proposals is included in the ACCWP Pilot Assessment Strategy. A description of the assessment mechanism(s) of the successful proposal(s) will be included in the ACCWP Fiscal Year 2013/14 Annual Report.

1-E Amount of Litter at Multi-Family Dwellings Participating in the Targeted Outreach Program

Multi-family dwellings (i.e., apartment buildings and condominium complexes) are often areas of high trash generation. ACCWP is working with the City of Livermore to develop a litter reduction pilot targeting multi-family complexes known to be sites with significant litter issues. The pilot includes the following apartment building and condominium complexes: Livermore Garden Apartments (5720 East Avenue), La Castilleja (975 Murrieta Boulevard), and Castilleja Del Arroyo (1001 and 1009 Murrieta Boulevard). The planned assessment mechanisms include:

- December 2013: Pre-campaign Measurement – ACCWP and the City will take baseline measurements of all three sites. Methods of measurement will include taking photos of on-site litter, as well as collecting, characterizing and counting the litter using the Ocean Conservancy's Volunteer Trash Data Form. (Adopt A Creek Spot volunteers use this Data Form to characterize and count the trash collected from the Trash Hot Spot located behind the condominium complexes on Coastal Clean-up Day.) Areas to be measured include landscaped and

other common areas, the sidewalk, gutter and streets located in front of the sites. All three property managers/volunteers will collect one week's worth of on-site litter.

- November – December 2013: Research – All three property managers will be interviewed by City staff using twenty-five questions developed by the ACCWP. The interview results will help define the target audience(s) (i.e., age groups, income level, ethnic groups, etc.) and determine outreach tactics (i.e., face-to-face, signage, printed materials, etc.) This information will also assist the City and ACCWP in developing appropriate messaging.
- November 2013 – January 2014: Plan – One of the three sites will be chosen as the “Control” site. In addition, outreach strategies and tactics will be selected for the “Active” sites.
- May 17, 2014 – May 31, 2014: Post-campaign Measurement — City staff and ACCWP will duplicate the pre-campaign measurement methodologies at all three sites, including the Control. All three property managers/volunteers will collect one week's worth of on-site litter. On-site and off-site litter will be characterized and counted by City staff using the Ocean Conservancy's Volunteer Trash Data Form. All three property managers will be interviewed by City staff to help determine residents' attitudes/change in behavior, etc.
- June 1, 2014 – June 30, 2014: Reporting – Final Pilot Report will be presented to ACCWP member agencies.

1-F Self-Reported Litter Related Attitude and Behavior of Residents

Through its Public Information and Participation program ACCWP encourages residents to adopt less polluting behaviors. One targeted behavior is littering. ACCWP uses a variety of mechanisms to influence residents including public service announcements, online and movie theater advertising, outreach to K-12 schools, and participating in outreach events. ACCWP conducts telephone surveys of residents every several years to gauge Alameda County residents' awareness and attitude regarding stormwater related issues. These surveys include questions regarding respondents' reported behavior and attitudes regarding litter and littering. Future surveys will continue to track the long term trends in residents' awareness and attitudes regarding litter and littering.

OUTPUT-BASED INDICATORS

2-A Full capture device operation and maintenance

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 Emeryville is currently developing an operation and maintenance verification program (Trash O&M Verification Program), via ACCWP, to ensure that devices are inspected

and maintained at a level that maintains this designation. The ACCWP 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.

2-B Compliance with the Single-Use Bag Ban

The Alameda County Waste Management Authority is taking the lead on inspection and enforcement of the Single-Use Bag Ban. ACCWP will coordinate with the Waste Management Authority and report on the results of their inspection and enforcement program.

2-C Implementation of an effective street sweeping program

Street sweeping can be very effective in reducing the amount of trash entering the storm drain system. However, its effectiveness is dependent upon the frequency of sweeping and the ability of the sweeper to sweep along the edge of the curb. Parked cars can significantly reduce the effectiveness of a street sweeping program. The City of Emeryville *will coordinate with ACCWP to develop and implement an assessment of its street sweeping program.*

2-D Commercial Trash Container Management

Improper trash container management at commercial facilities can be a significant source of trash to the storm drain system. The City of Emeryville *will coordinate with ACCWP to develop and implement an assessment of its commercial trash container management program.*

2-E Residential Trash Container Management

Fugitive trash from residential trash collection can be a significant source of trash to the storm drain system. The City of Emeryville *will coordinate with ACCWP to develop and implement an assessment of its residential trash collection program.*

4.2 BASMAA “Tracking California’s Trash” Project

The ACCWP 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. In an effort to address these information gaps associated with trash assessment methods, the Bay Area Stormwater Management Agencies Association (BASMAA), in collaboration with ACCWP, 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 ACCWP 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 Additional Progress Assessments

Dedicated litter bin prior to July 1, 2014:

Beginning before July 1, 2014, and in the future, one roll-off bin will be dedicated to the litter collected by the Sheriff's Work Alternative crews. This will be a new "pilot" program for the City Public Works Department. Weight tags for the bin will be recorded and used as a measure in comparison to our past bin dedicated to this purpose (see photo on p.8).

4.4 Long-Term Assessment Strategy

The City of Emeryville is committed to implementing standardized assessment methods post-FY 2016/17 based on the lessons learned from pilot assessments. 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 assessment methods that will be used to demonstrate progress during the remaining term of trash reduction requirements.

4.5 Implementation Schedule

The implementation schedule for the ACCWP Pilot Implementation Strategy, BASMAA's Tracking California's Trash project, and the Long-Term Assessment Strategy are included in Table 4-1. 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.

Table 4-1. City of Emeryville planned 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 (ACCWP)										
Single-Use Plastic Bag Assessment	X	X				X				
Expanded Polystyrene Assessment	X	X								
Trash Hot Spot Cleanup Assessment	X	X	X	X	X					
K-12 School Litter Reduction Outreach Program						X				
Multi-Family Dwelling Litter Outreach Program	X									
Residents' Self-Reported Litter-Related Behavior	X					X				
Full Capture Operation and Maintenance Verification			X	X	X					
Single-Use Bag Ban Compliance		X	X	X	X					
Street Sweeping Effectiveness Evaluation			X	X	X					
Commercial Trash Container Management Assessment			X	X	X					
Residential Trash Container Management Assessment			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					
Additional Assessments City of Emeryville										
Sheriff's Work Alternative Program	X	X	X	X	X	X	X	X	X	X
Trash Full-Capture Devices			X	X	X	X	X	X	X	X
Long-Term Trash Assessment Strategy (ACCWP)										
						X	X	X	X	X

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

-As described in Section 3.2.5, the City-wide SWAP program litter collection has been measured in 2013 and will be measured again, and periodically, going forward. This will provide both volume and weight of litter collected before it has a chance to enter the stormwater conveyance, a measure of the effectiveness of this program.

-At minimum, annual clearing of storm inlet trash full-capture devices will provide data regarding the volume and types of litter still making its way to the MS4. As indicated above, these devices will be installed in TMAs #1 - #4.

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