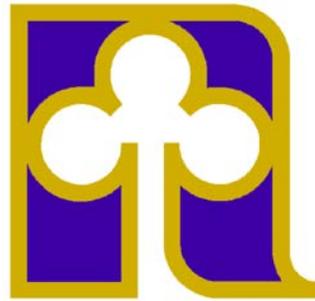


# Trash Long-Term Reduction Plan and Progress Assessment Strategy

February 1, 2014



**Submitted by:**  
**City of Newark**  
**37101 Newark Boulevard**  
**Newark, CA 94560**

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

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**CITY OF NEWARK  
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:**



Soren Fajeau  
Senior Civil Engineer

February 1, 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
USW	United Storm Water, Inc.
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 Newark'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 Newark 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 Visual Impact”) by July 1, 2022.

This Long-Term Plan is submitted by the City of Newark 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 Newark’s municipal separate storm sewer system (MS4) that are regulated by NPDES Permit requirements. The Long-Term Plan includes:

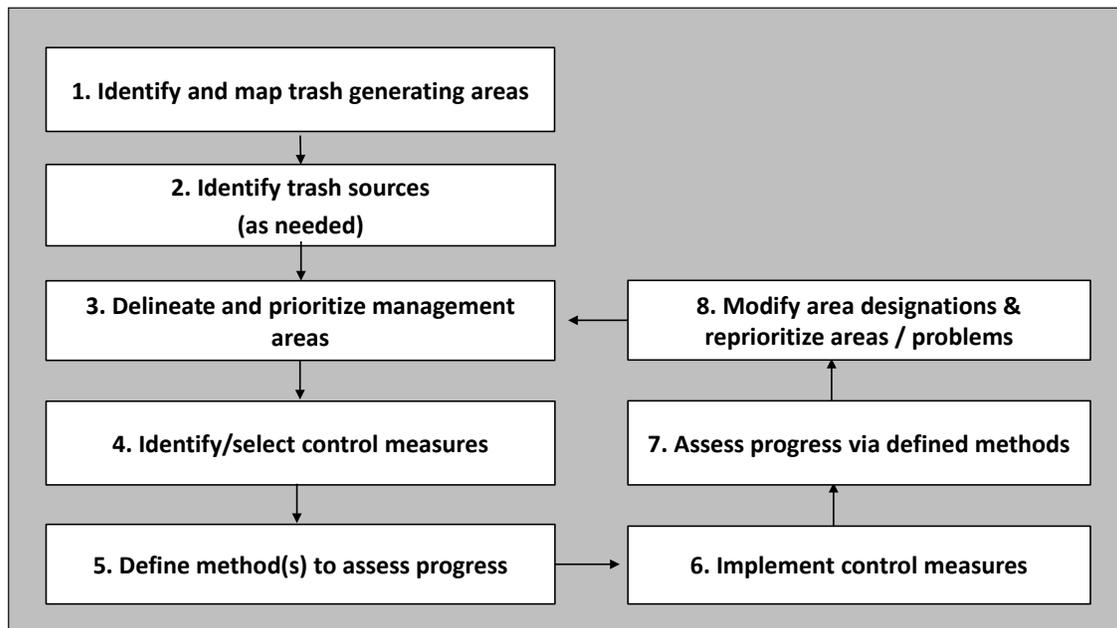
1. Descriptions of the current level of implementation of trash control measures, and the type and extent to which new or enhanced control measures will be implemented to achieve a target of 100% (i.e. full) trash reduction from MS4s by July 1, 2022, with an interim milestone of 70% reduction by July 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 Newark’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 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.

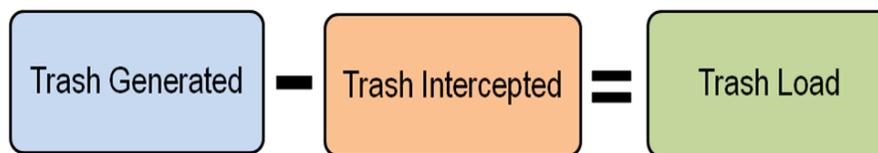


Figure 1-2. Conceptual model of trash generation, interception and load.

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

<sup>a</sup> 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.

<sup>b</sup> 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 = 90<sup>th</sup> percentile; Best = mean generation rate; and, Low = 10<sup>th</sup> 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 Newark. Control measures that will be implemented by the City of Newark 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 1955, the City of Newark is located in Alameda County, and has a total area of approximately 9,000 acres. The jurisdictional area for the purposes of this report is 5,391 acres. Non-jurisdictional areas of approximately 3,609 acres within Newark include extensive salt evaporations ponds as a non-urban agriculture use, U.S federal government lands, California Department of Transportation rights-of-way, community college lands, and railroad rights-of-way. Interstate 880 and State Route 84 run north-south and east-west respectively adjacent to the City's limit with the City of Fremont.

According to the 2010 Census, Newark has a population of 42,573, with a population density of 3,086.3 people per square mile and average household size of 3.27. Of the 42,573 residents who call Newark home, 25.4% are under the age of 18, 9.0% are between 18 and 24, 29.8% are between 25 and 44, 25.2% are between 45 and 64, and 10.6% are 65 or older. The median household income was \$69,350 in 2010.

The City of Newark is home to Cargill Salt which operates a large salt production operation on San Francisco Bay and occupies the majority of the non-jurisdictional area described above. Newpark Mall, a super-regional shopping center with anchor stores such as Sears, J.C. Penney, Macy's, the Burlington Coat Factory, and over 140 other retailers, is located in the southeastern portion of the City adjacent to Interstate 880. Other large commercial retail areas include multiple properties in the Four Corners shopping area centered at the intersection of Newark Boulevard and Jarvis Avenue near State Route 84. Newark is also home to a fairly new Ohlone Community College campus on Cherry Street between Mowry Avenue and Stevenson Boulevard.

Based on the City's June 2012 Comprehensive Annual Financial Report, the top employers in Newark are the Newark Unified School District (700), Logitech (621), WorldPac (280), FullBloom Baking Company (280), Risk Management Solutions (270), SMART Modular Technologies (249), Morpho Detection (208), Cargill Salt (182), the City of Newark (183), and Valassis (166).

Newark's ability to control trash from being discharged from its municipal storm sewer system is limited by several key characteristics. The proximity to both Interstate 880 and State Route 84 results in some freeway trash loading of nearby flood control channels or adjacent public rights-of-way. Newark has some homelessness issues, particularly in the adjoining Caltrans rights-of-way and these sites are also in close proximity to flood control channels. Because Newark is completely surrounded by the City of Fremont, these channels also carry upstream runoff from Fremont through Newark. The larger retail commercial areas in Newark, including Newpark Mall and the Four Corners area, have many direct connections to the flood control channels so that full trash capture controls within the City's public right-of-way do not contain all trash loading to the MS4 from these private properties. Many of the City's higher-density, lower-income residential areas represent a significant portion of the overall MS4 trash loading from

within the jurisdictional area and would require substantial investment to provide full trash capture.

Land uses within the City of Newark depicted in ABAG (2005) are provided in

Table 2-1. The City of Newark is primary comprised of six (6) land uses. These include Commercial and Services, Industrial, Residential, Retail, K-12 Schools, and Urban Parks. In addition, an “other” category is provided and includes open space and wetland areas within the jurisdictional area. Non-jurisdictional areas such as the Cargill Salt ponds, federal government lands, and other State or rail rights-of-way are among the areas within the City of Newark limits not included in the table.

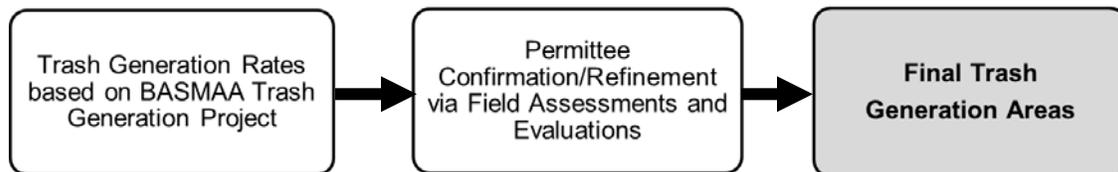
**Table 2-1.** Percentages of the City of Newark’s jurisdictional area<sup>1</sup> within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (Acres)	% of Jurisdictional Area
Commercial and Services	225.8	4.2%
Industrial	973.1	18.1%
Residential	2,235.6	41.5%
Retail	281.6	5.2%
K-12 Schools	227.9	4.2%
Urban Parks	110.1	2.0%
Other	1,336.8	24.8%

## 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 Newark are described in this section and illustrated in Figure 2-1.



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

**Figure 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 Newark 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 Newark 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 2-2.

**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 Newark 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 assessed at least 20 areas to assist in conducting/refining trash generating area designations.

On-land assessments were the final and most important step in confirming and refining the generation categories initially assigned within the City. Following discussions with municipal staff, review of municipal operations data, and analysis of available street-view imagery, on-land assessments

were completed by Engineering Division staff. Target areas included low-density residential neighborhoods that were initially provided with moderate loading rates, known isolated high trash areas with lower loading rates, and arterial streets.

Staff concluded from the ground-truthing activities that while most of the initial designations were generally accurate, many adjustments were still necessary. Refinements included reduction of moderate-loading rates for several low-density residential neighborhoods where virtually no trash was visible to low generation designations. There were several low-income, high-density neighborhoods initially categorized as low or moderate that required adjustment to medium-high or high based on the level of trash visible on the street. Also adjusted upward from moderate to high or very high were several small, isolated locations with either very high-density residential properties or industrial properties with source control issues and adjacent truck parking that results in significant dumping. Staff adjusted high-volume arterial street segments to high trash loading areas as well.

**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**

The City of Newark formed a small work group consisting of Engineering Division and Maintenance Division staff with local knowledge of trash generation and/or direct experience in trash removal from streets. The initial generation maps were reviewed and discussed in detail for perceived accuracy. From these discussions, determinations were made regarding which areas warranted further evaluation, including on-land assessments. Members of the public were not queried as part of the evaluation process.

**c. Reviewing Municipal Operations Data**

As part of the evaluation of trash generation rates for various areas, staff discussed street sweeping and inlet cleaning operations with municipal maintenance operations personnel. The current street sweeping schedule

was evaluated for frequency and effectiveness. As part of this evaluation it was confirmed that arterial streets continue to be high generation locations and that there are conflicts with the schedule related to garbage pick-up days. Street sweeping personnel also identified several isolated high loading areas that were not consistent with the initial map. Inlet cleaning data was discussed and resulted in confirmation increased loading on arterial streets, commercial areas, and high-density residential areas.

**d. Viewing Areas via Google Maps – Street View**

Prior to performing the on-land visual assessments, staff utilized street view imagery from Google Maps to get a sense of existing conditions at various locations where we had concerns related to the initial assessment condition category assigned. The imagery was very useful in allowing for initial evaluations over a larger percentage of the jurisdictional area than would have been possible with performing only on-land assessments. The imagery was also helpful in drawing staff’s attention to isolated high trash generation areas that may not have been discovered otherwise.

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 Newark. 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 Newark’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

**Table 2-4.** Percentage of jurisdictional area within the City of Newark assigned to each trash generation category.

Trash Generation Category	Area (Acres)	Commercial and Services	Industrial	Residential	Retail	K-12 Schools	Urban Parks	Other
High / Very High	24.7	0.0%	81.1%	15.6%	0.0%	0.0%	0.0%	3.3%
High	591.4	1.5%	0.0%	16.5%	46.1%	0.0%	0.0%	35.9%
Medium / High	40.0	5.4%	3.2%	91.4%	0.0%	0.0%	0.0%	0.0%
Medium	1,816.4	11.4%	52.4%	11.5%	0.5%	11.9%	6.1%	6.3%
Low	2,918.4	0.2%	0.0%	64.7%	0.0%	0.4%	0.0%	34.6%

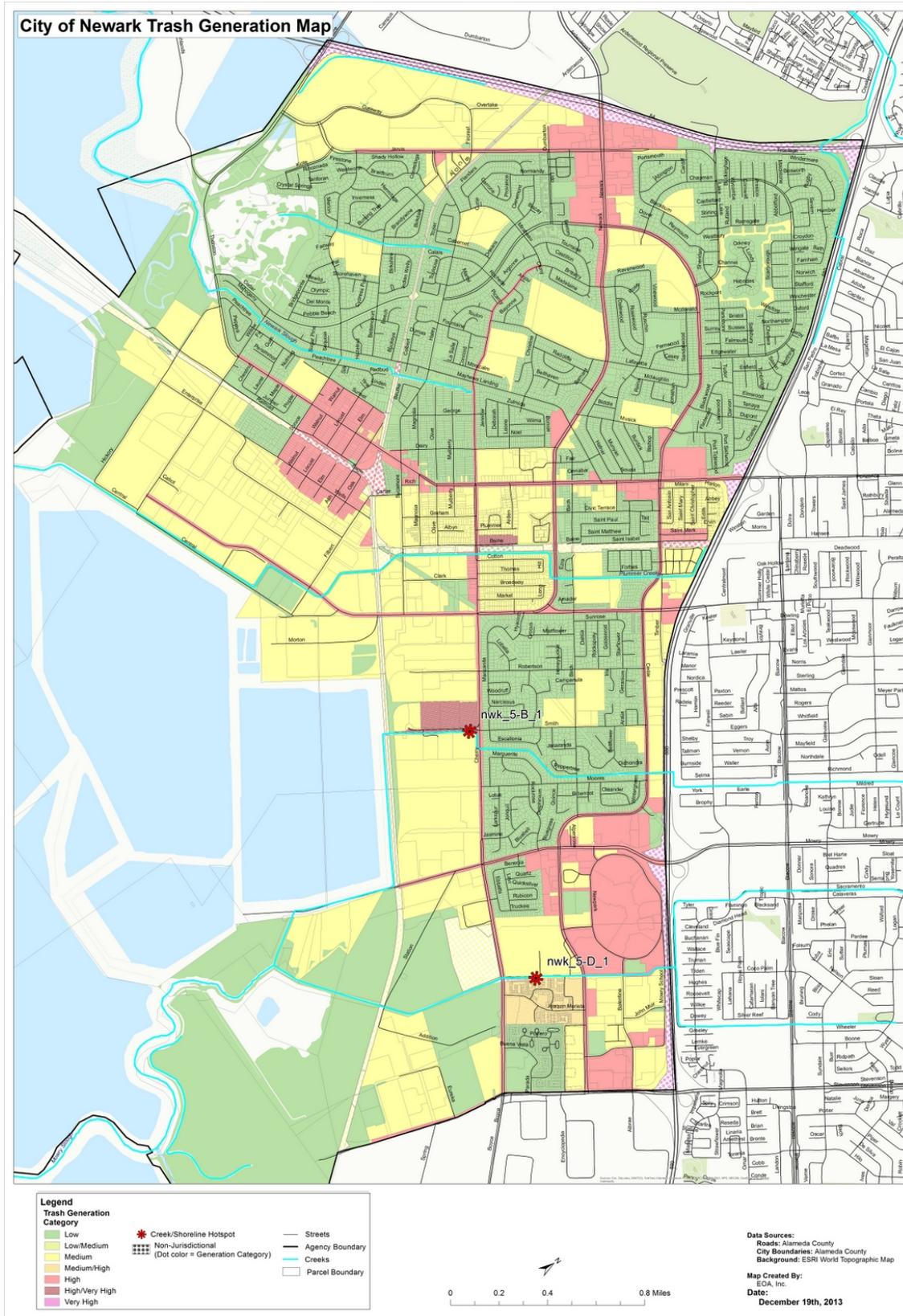


Figure 2-2. Final Trash Generation Map for the City of Newark.

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## 3.0 Trash Management Areas and Control Measures

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

### 3.1 Management Area Delineation and Prioritization

Consistent with the long-term plan framework, the City of Newark 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 Newark'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 Newark's jurisdiction. For ease of management and tracking all TMAs are contiguous. Newark staff used the following procedure to designate TMAs:

The City of Newark delineated trash management areas based on three major characteristics: geography, land use, and trash loading rates. For ease of defining boundaries, simplifying the generation map as a whole, applying future management actions to targeted areas, and evaluation of the effectiveness of trash control measure taken, it was determined that each individual TMA should be contiguous rather than distributed over multiple locations based solely on trash generation rates. With this concept in mind, land uses were clustered together to the extent possible and then final adjustments were made in some cases based on generation rates. This approach resulted in ten (10) total TMAs Citywide with boundaries generally established on street centerlines and along jurisdictional limits.

Prioritization of the 10 TMAs was generally based on the final determined trash loading rates in each zone. Another important consideration was anticipated effectiveness of trash control measures in each area to ensure that application of the City's limited available resources results in the most significant impact possible in terms of trash reduction. For example, in areas with similar trash loading rates but different land uses, it may be more appropriate to install full trash capture devices in individual inlets

located in high-density residential areas with no direction connections to the MS4 from private properties rather than commercial properties with such connections. This ensures full capture of the entire area and a more cost-effective approach to trash reduction. With the TMAs primarily established on a geographic basis, it is expected that multiple control measures may be appropriate for a given TMA and that management actions could be prioritized over several TMAs.

With this in mind, primary TMA areas include 1, 5, and 9. These TMAs have the highest percentage of high trash generation areas due to large retail areas (1 and 9) and large retail and high-density residential areas (5). Mid-level priority TMAs include 6 and 7 which have several isolated high generation locations and/or large medium generation rates. Lower-level priority TMAs are 2, 3, 4, 8 and 10.

A map depicting the City'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

**Table 3-1. Jurisdictional area and percentage of each Trash Management Area (TMA) comprised of trash generation categories**

TMA	Jurisdictional Area (Acres)	Trash Generation Category			
		High/Very High	High	Medium*	Low
1	309.1	0.0%	29.0%	70.7%	0.3%
2	728.4	0.0%	4.4%	11.2%	84.4%
3	928.0	0.0%	3.3%	13.2%	83.5%
4	411.3	0.0%	0.0%	43.3%	56.7%
5	246.5	0.0%	44.9%	27.3%	27.9%
6	355.9	1.3%	17.9%	55.1%	25.7%
7	667.3	3.0%	3.6%	85.5%	7.8%
8	431.0	0.0%	5.2%	14.4%	80.4%
9	284.7	0.0%	63.4%	29.5%	7.1%
10	1,028.7	0.0%	3.7%	26.7%	69.6%

\* TMAs 5 (0.7%) and 10 (3.7%) contain some Medium/High trash generation locations. For ease of reporting, these were combined with the Medium category.

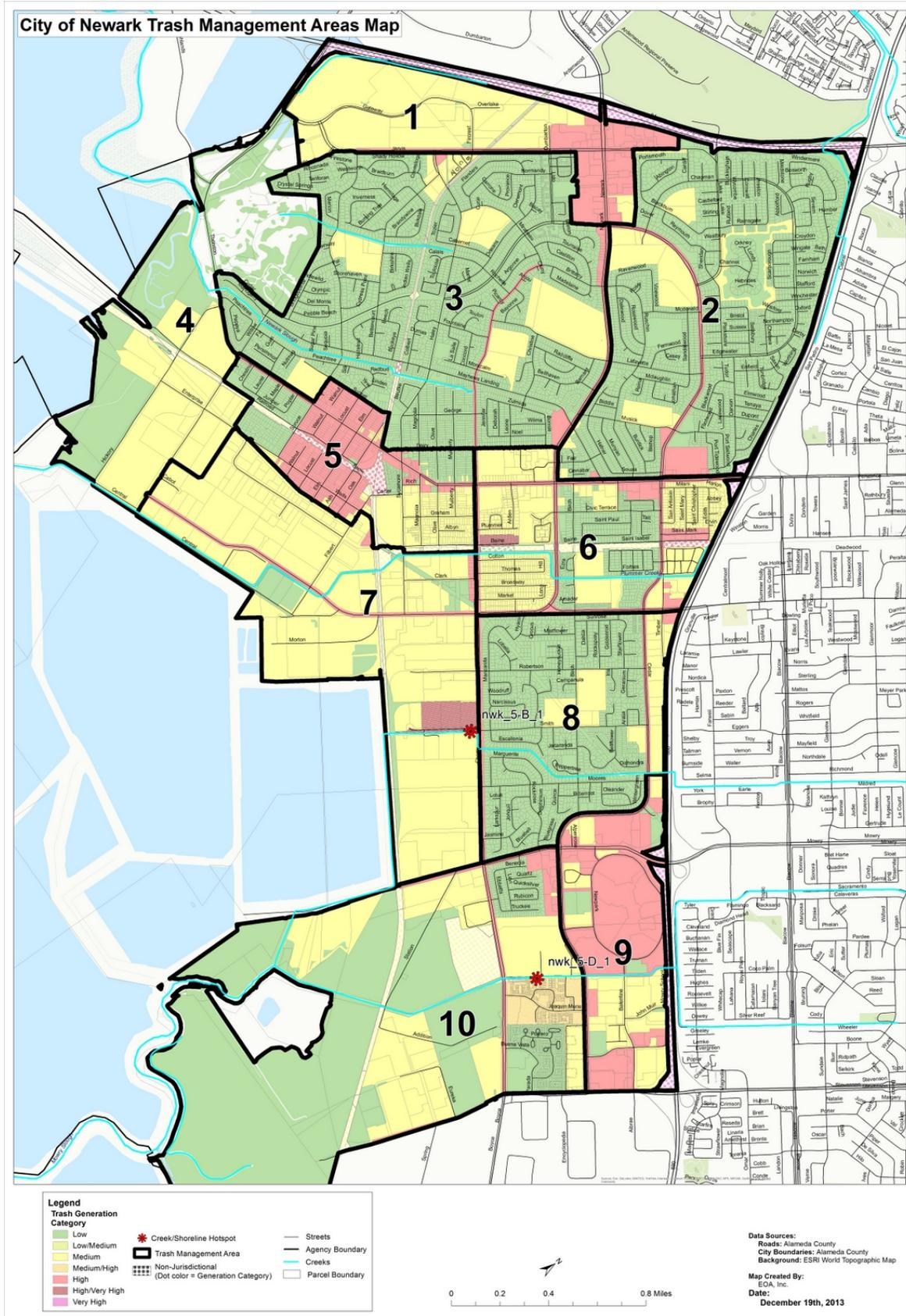


Figure 3-1. Trash Management Area Map for the City of Newark.

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## 3.2 Current and Planned Trash Control Measures

For the City's 10 Trash Management Areas, there are various types of control measures either currently being implemented or planned for the future. The control measures include Full-Capture Treatment Devices, Partial-Capture Treatment Devices, On-land Trash Cleanups, Trash Hot-Spot Cleanups, Private Property Full-Capture Treatment Device Outreach Program, Development Conditions of Approval, and Street Sweeping. The applicability and level of implementation varies for each TMA.

Installation of full-capture treatment devices is the most impactful treatment measure to date. The City has installed 127 full-capture inlet devices, representing an estimated catchment area of 177.8 acres over higher trash generating land uses. An additional 120 full-capture inlet devices are planned in next several months over an additional estimated 154.7 acres of high trash generation areas. The combined coverage area of more than 330 acres is well above the City's minimum requirement of 94 acres based on Provision C.10.a.iii of the MRP. In order to satisfy benchmark requirements under the MRP for trash removal by 2017 and 2022, it is anticipated that full-capture treatment devices will be the primary control measure, particularly for high and medium trash generation areas.

### 3.2.1 Trash Management Area #1 - Four Corners Area

The Four Corners area is at the northwest end of Newark, adjacent to State Route 84. It includes high generation commercial retail areas on Newark Boulevard and Jarvis Avenue as well as medium level generation in larger research & development and office areas adjacent to Gateway Boulevard. Due in large part to the trash loading from the commercial area, TMA#1 is the second highest priority area in the City.

#### Full-Capture Treatment Devices

The City has installed 24 full-capture devices in TMA #1 to date. This action was initiated after implementation of the MRP, but prior to July 1, 2014. Additional full-capture devices will be installed within the public right-of-way for remaining high and medium level trash generation areas. Some of these installations are anticipated to occur prior to 2017. Many of the commercial properties in this TMA which generate high trash levels are equipped with



storm drain systems that have direct connections to the MS4 in the street and therefore bypass the units installed in the public right-of-way. The locations of full trash capture devices already installed are depicted on Figure 3-2. The photo on the previous page depicts a typical condition in TMA #1 with trash visible in the gutter near an inlet. The inlet shown here is equipped with a full trash capture device. New trash capture devices are now scheduled for maintenance twice annually. To date, there have been no issues with flooding or device failure. However, there have been relatively few significant rain events since the initial installations. Installation of additional full-capture treatment devices will remain the primary control measure for high and medium generation areas in TMA #1.

### **Partial-Capture Treatment Devices**

The City has several Continuous Deflection Separator (CDS) units in this TMA which provide some level of trash removal, although the existing screens may not meet full trash capture criteria. There are also privately-owned units that could be upgraded. In order to meet long-range trash capture requirements, the City will evaluate the possibility of modifying screens in these existing devices to result in full trash capture. CDS units were installed prior to adoption of the MRP, but screen upgrades are planned for future implementation between July 2014 and July 2022.

### **On-Land Trash Cleanups**

Within TMA #1 there are a few locations adjacent to Jarvis Avenue and Gateway Boulevard where significant dumping occurs on a fairly regular basis. These locations are in close proximity to flood control channels. Although the material dumped is often not mobilized, a portion of the waste stream can enter the MS4. The City performed on-land trash cleanups on an as-needed basis prior to MRP adoption, but intends to increase such activity after 2014 as a control measure to reduce this source of trash in the jurisdictional area. It is anticipated that on-land cleanups will continue to be primarily led by the City rather than volunteers, although the City does have some trash pick-up volunteer efforts in City parks.

### **Private Property Full-Capture Treatment Device Outreach Program**

Due to the private property storm drain system direct connectivity issues described above, full-capture over the high generation commercial retail properties in TMA #1 is not possible with on-site device installations. In the next several years as a target for 2017 trash reduction compliance, the City will begin a volunteer program for commercial property owners to install full-capture devices on their properties. If the outreach to private property owners proves to be unsuccessful, the City will evaluate the possibility of implementation of a mandatory compliance program. This would be a significant step that would require approval by the City Council.

### **Development Conditions of Approval**

With implementation of the MRP, the City began modifying conditions of approval for new development and re-development projects to include full trash capture device installations as part of the required scope of improvements. Any projects proposed in TMA #1, which is largely built-out at this time, will require full trash capture devices. Prior to the MRP, the City required new trash enclosures for new or redevelopment projects

where adequate closures do not exist. This policy has also continued with MRP implementation.

### Street Sweeping

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

### 3.2.2 Trash Management Area #2 – Lake Area

The Lake Area is at the northerly end of Newark and is generally bounded by State Route 84, Interstate 880, Thornton Avenue and Newark Boulevard. The Lake Area is dominated by low-density residential land uses. With the exception of typical arterial street trash levels on Cedar Boulevard and in the smaller commercial/retail areas near the corner of Thornton Avenue and Cedar Boulevard, TMA #2 has a lower level priority for action, ranking 9<sup>th</sup> overall among all TMAs. The photo below represents a typical low level trash generation designation on a collector street in the residential area (Edgewater Drive).



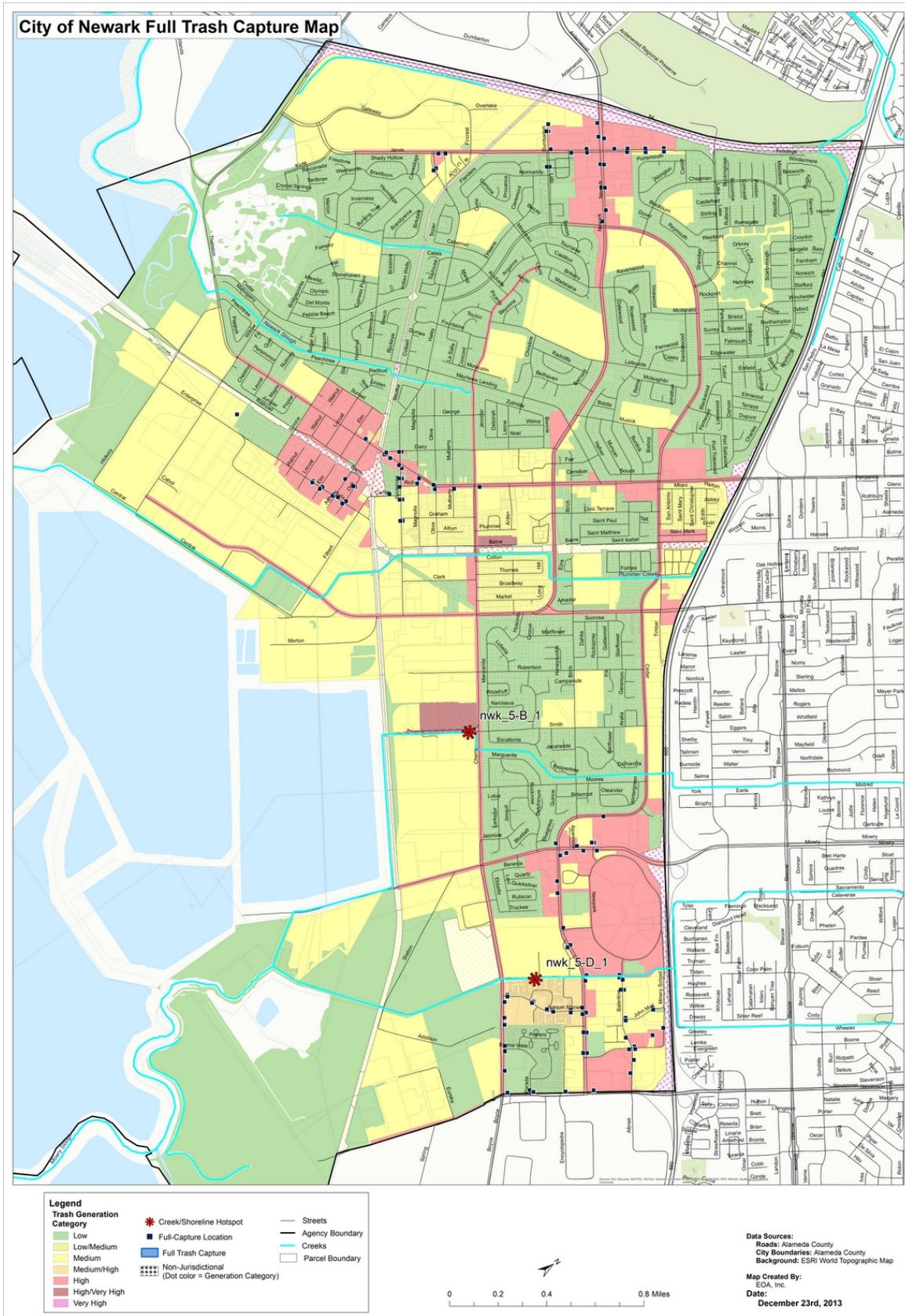


Figure 3-2. Trash Full Capture Device Map for the City of Newark.

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### **Full-Capture Treatment Devices**

The City has installed 2 full-capture devices in TMA #2 to date. Up to 16 additional full-capture devices will be installed within the public right-of-way for remaining high level trash generation areas by 2017. Some of the commercial properties in this TMA which generate high trash levels are equipped with storm drain systems that have direct connections to the MS4 in the street and therefore bypass many of the units installed in the public right-of-way. New trash capture devices are now scheduled for maintenance twice annually. To date, there have been no issues with flooding or device failure. However, there have been relatively few significant rain events since the initial installations. Full-capture devices will also be used to satisfy 2022 requirements.

### **Partial-Capture Treatment Devices**

The City has several Continuous Deflection Separator (CDS) units in this TMA which provide some level of trash removal, although the existing screens may not meet full trash capture criteria. There are also privately-owned units that could be upgraded. In order to meet long-range trash capture requirements, the City will evaluate the possibility of modifying screens in these existing devices to result in full trash capture. CDS units were installed prior to adoption of the MRP, but screen upgrades are planned for future implementation between July 2014 and July 2022.

### **On-Land Trash Cleanups**

Within TMA #2 dumping and trash accumulation sometimes occurs on Thornton Avenue or in the various parks. Although the material dumped is often not mobilized and does not always represent a serious stormwater threat, a portion of the lighter debris can sometimes enter the MS4. The City performed on-land trash cleanups on an as-needed basis prior to MRP adoption, but intends to increase such activity after 2014 as a control measure to reduce this source of trash in the jurisdictional area. It is anticipated that on-land cleanups will continue to be primarily led by the City rather than volunteers, although the City does have some trash pick-up volunteer efforts in City parks.

### **Private Property Full-Capture Treatment Device Outreach Program**

Due to the private property storm drain systems having direct connections to the MS4, full-capture over the high generation commercial retail properties in TMA #2 is not possible with on-site device installations. In the next several years as a target for 2017 and 2022 trash reduction compliance, the City will begin a volunteer program for commercial property owners to install full-capture devices on their properties. If the outreach to private property owners proves to be unsuccessful, the City will evaluate the possibility of implementation of a mandatory compliance program. This would be a significant step that would require approval by the City Council.

### **Development Conditions of Approval**

With implementation of the MRP, the City began modifying conditions of approval for new development and re-development projects to include full trash capture device installations as part of the required scope of improvements. Any projects proposed in TMA #2, which is fully built-out at this time, will require full trash capture devices. Prior to the MRP, the City required new trash enclosures for new or redevelopment projects

where adequate closures do not exist. This policy has also continued with MRP implementation.

### Street Sweeping

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

### 3.2.3 Trash Management Area #3 – Northwest Residential Area

Bounded by Jarvis Avenue, Newark Boulevard, Thornton Avenue, and the Don Edwards Wildlife Refuge, this area is primarily comprised of low-density residential housing with low levels of trash generation. Exceptions are smaller commercial retail sites on Jarvis Avenue and on Newark Boulevard as well as higher density residential on southbound Newark Boulevard just south of Cedar Boulevard where high generation rates were seen based on these land uses. There are also several school sites where low to moderate generation rates were identified. Other than these isolated locations, TMA #3 is a low priority area for action and ranks 8<sup>th</sup> out of the 10 TMAs. The following photo is representative of a typical residential street in this TMA with little to no trash present and is in front of Graham Elementary School on Cherry Street.



### **Full-Capture Treatment Devices**

The City has installed 4 full-capture devices in TMA #3 to date adjacent to the small commercial retail site on Jarvis Avenue. Up to 15 additional full-capture devices could be installed within the public right-of-way for remaining high level trash generation areas by 2017. Full-capture devices are anticipated to be used as the primary control measure for all high and medium generation areas in TMA #3.

### **On-Land Trash Cleanups**

Within TMA #3 dumping and trash accumulation sometimes occurs. Although the material dumped is often not mobilized and does not always represent a serious stormwater threat, a portion of the lighter debris can sometimes enter the MS4. The City performed on-land trash cleanups on an as-needed basis prior to MRP adoption, but intends to increase such activity after 2014 as a control measure to reduce this source of trash in the jurisdictional area. It is anticipated that on-land cleanups will continue to be primarily led by the City rather than volunteers, although the City does have some trash pick-up volunteer efforts in City parks.

### **Private Property Full-Capture Treatment Device Outreach Program**

In TMA #3 there are several small commercial/retail sites with direct connections to the City's storm drain system. In the next several years as a target for 2017 and 2022 trash reduction compliance, the City will begin a volunteer program for commercial property owners to install full-capture devices on their properties. If the outreach to private property owners proves to be unsuccessful, the City will evaluate the possibility of implementation of a mandatory compliance program. This would be a significant step that would require approval by the City Council.

### **Development Conditions of Approval**

TMA #3 is also nearly built-out, but staff will require full trash capture devices and new trash enclosures meeting current standards with any reconstruction projects. Specific target locations would be the shopping center at Newark Boulevard and Mayhews Landing Road and the small retail center on Jarvis Avenue at Haley Street.

### **Street Sweeping**

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

## **3.2.4 Trash Management Area #4 – Dumbarton TOD Area**

TMA #4 is located along the City's western jurisdictional boundary and encompasses the Don Edwards Wildlife Refuge and the Dumbarton Transit Oriented Development (TOD) area which has an approved specific plan for higher density residential development over former industrial sites. As development is expected in the next couple of years, no major actions by the City other than on-land cleanups and street

sweeping adjustments are planned in this TMA. With development, conditions of approval will trigger installation of full trash capture devices in all of the re-developed areas. The picture below is a view of southbound Willow Street adjacent to a site planned for residential development. Given the extent of development proposed in TMA #4 it is ranked 6<sup>th</sup> overall in terms of priorities.



### **Full-Capture Treatment Devices**

The City has installed 1 full-capture device in TMA #4 to date on Wells Avenue near the TMA #5 border. New devices for Willow Street, Enterprise Drive, and the new public streets in the development will be installed concurrent with development. City-funded installations should be minimal in this area since most installations for high and medium generation areas should be installed concurrent with development.

### **On-Land Trash Cleanups**

Within TMA #4, dumping and trash accumulation does occur at the far west end of Enterprise Drive and at the south end of Willow Street because these locations are relatively isolated. With the planned development project, dumping should become much less of a problem due to increased visibility and activity in these areas. The City will continue to perform on-land cleanups in TMA #4 as needed. The picture below shows Enterprise Drive west of Willow Street where dumping has been an issue in the past. During the last year there appears to have been a drop-off in dumping.



#### **Development Conditions of Approval**

As discussed, a major component of improved trash elimination in TMA #4 will be the application of specific conditions of approval requiring full trash capture for all projects in the Dumbarton TOD plan area. It is anticipated that some of these projects will begin in the next calendar year and may continue for the next several years as more than 2,500 new housing units are planned.

#### **3.2.5 Trash Management Area #5 – Old Town Area**

The Old Town Area of Newark is located along the Thornton Avenue corridor (formerly State Route 84) between Cherry Street and Willow Street. TMA #5 has areas of heavy commercial retail activity as well as high-density residential land uses. With this combination of land uses there is significant trash generation. The management area has essentially been built-out. There are opportunities in the future for re-development of many of the commercial properties on Thornton Avenue. The photo below is indicative of common conditions in the Old Town Area on Thornton Avenue. A trash capture device is installed in the inlet shown.



### **Full-Capture Treatment Devices**

This area has been given the highest prioritization for treatment with full-capture devices. There are 33 devices already installed and another 49 devices are planned in 2014. Most all commercial and residential properties have surface drainage to the public right-of-way. As a result, full-capture inlet devices are effective in providing treatment for both public and private property in TMA #5. It is anticipated that full-capture treatment devices will be used in all high and medium trash areas.

### **Partial-Capture Treatment Devices**

The City has two Continuous Deflection Separator (CDS) units in this TMA which provide some level of trash removal, although the existing screens may not meet full trash capture criteria. In order to meet long-range trash capture requirements, the City will evaluate the possibility of modifying screens in these existing devices to result in full trash capture. CDS units were installed prior to adoption of the MRP, but screen upgrades are planned for future implementation between July 2014 and July 2022.

### **On-Land Trash Cleanups**

Within TMA #5 there are many locations where significant dumping and trash accumulation occur. The City performed on-land trash cleanups on an as-needed basis prior to MRP adoption, but intends to increase such activity after 2014 as a control measure to reduce this source of trash in the jurisdictional area. It is anticipated that on-land cleanups will continue to be primarily led by the City rather than volunteers.

### **Private Property Full-Capture Treatment Device Outreach Program**

In TMA #5 there are also some small commercial/retail sites with direct connections to the City's storm drain system. In the next several years as a target for 2017 and 2022 trash reduction compliance, the City will begin a volunteer program for commercial property owners to install full-capture devices on their properties. If the outreach to

private property owners proves to be unsuccessful, the City will evaluate the possibility of implementation of a mandatory compliance program. This would be a significant step that would require approval by the City Council.

### **Development Conditions of Approval**

Again, the Old Town Area is mostly built-out. However, for any of the smaller commercial or higher density residential properties that are proposed for redevelopment in TMA #5, conditions of approval will be applied to ensure placement of full-capture devices and new trash enclosures.

### **Street Sweeping**

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

## **3.2.6 Trash Management Area #6 – Central Newark Area**

Central Newark is a combination of office buildings, commercial retail, and both high- and low-density residential areas. This area is generally bounded by Thornton Avenue, Interstate 880, Central Avenue, and Cherry Street. During the on-land assessments it was confirmed that there are several isolated areas with significant trash loading. This includes high density residential properties on Baine Avenue and St. Isabel Street as well as commercial properties on Thornton Avenue. Based on these discoveries and the associated trash loading levels, TMA #6 has been given the 4<sup>th</sup> highest priority ranking. The sample photo below shows common conditions on Baine Avenue:



### **Full-Capture Treatment Devices**

There is currently just 1 full-capture treatment device installed in TMA #6, but an additional 33 are planned in 2014. These devices are intended to cover the high generation areas noted above, approximately 62 acres total. Full-capture treatment devices are planned to be used in all high and medium generation areas in TMA #6.

### **Partial-Capture Treatment Devices**

The City has two Continuous Deflection Separator (CDS) units in this TMA which provide some level of trash removal, although the existing screens may not meet full trash capture criteria. In order to meet long-range trash capture requirements, the City will evaluate the possibility of modifying screens in these existing devices to result in full trash capture. CDS units were installed prior to adoption of the MRP, but screen upgrades are planned for future implementation between July 2014 and July 2022.

### **On-Land Trash Cleanups**

Within TMA #6 there are several locations where significant dumping and trash accumulation occur. This includes portions of the public right-of-way adjacent to the paved surfaces for St. Isabel Avenue and Baine Avenue.

### **Private Property Full-Capture Treatment Device Outreach Program**

In TMA #6 there are commercial/retail sites on Thornton Avenue with direct connections to the City's storm drain system. In the next several years as a target for 2017 and 2022 trash reduction compliance, the City will begin a volunteer program for commercial property owners to install full-capture devices on their properties. If the outreach to private property owners proves to be unsuccessful, the City will evaluate the possibility of implementation of a mandatory compliance program. This would be a significant step that would require approval by the City Council.

### **Development Conditions of Approval**

This portion of Newark, like many others, is mostly built-out. However, for any of the smaller commercial or higher density residential properties that are proposed for redevelopment in TMA #6, conditions of approval will be applied to ensure placement of full-capture devices and new trash enclosures.

### **Street Sweeping**

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

## **3.2.7 Trash Management Area #7 – Industrial Area**

The Industrial Area of Newark is primarily industrial land uses and is centered around the Central Avenue corridor west of Cherry Street and the west side of Cherry Street south

to Mowry Avenue. High priority areas in TMA #7 include these arterial street segments as well as some properties on Smith Avenue in the vicinity of one of the City's Hot Spot locations (see Section 3.2.12) and the segment of Cherry Street in front of a few high-density residential properties on southbound Cherry Street between the Union Pacific Railroad tracks and Central Avenue. The latter two areas are among the worst isolated locations in all of Newark and a very high priority will be given to the placement of full-capture devices in these areas. The remainder of the Industrial Area is generally designated as medium trash loading. The overall ranking for TMA #7 in terms of priorities is 5. Pictures follow which demonstrate the high loading conditions at the two isolated locations discussed (Smith Avenue and Cherry Street).



**Full-Capture Treatment Devices**

There are currently no full-capture treatment devices installed in TMA #7. However, given the ongoing conditions at the locations cited on Smith Avenue and in front of the high-density residential properties on southbound Cherry Street, nine (9) new full-capture devices are planned in 2014 for this management area. At this time, the remaining high and medium generation areas in TMA #7 will also be equipped with full-capture treatment devices to satisfy 2017 and 2022 requirements.

**On-Land Trash Cleanups**

The on-land cleanup in the vicinity of the Cherry Street residential area within TMA #7 will be given priority by City staff. This work will likely be done by City personnel, although a volunteer effort may be considered. This will likely be ongoing work starting after 2014.

**Trash Hot Spot Cleanups**

As noted, one of the City's hot spot cleanup locations (see Section 3.2.12) is on Smith Avenue and needs significant attention. Staff has coordinated ongoing cleanup efforts with the paper recycling business across the street and this has resulted in less trash impacts within the flood control channel at this location. However, semi-trucks commonly park on this street and this often results in dumping activity and trash accumulation between the street curb and fence. Work to clean this hot spot area has been underway on an annual basis since adoption of the MRP.

**Private Property Full-Capture Treatment Device Outreach Program**

In TMA #7 there are many industrial sites with direct connections to the City's storm drain system. In the next several years as a target for 2017 and 2022 trash reduction compliance, the City will begin a volunteer program for commercial property owners to install full-capture devices on their properties. For industrial properties with medium levels of loading, this would be a lower priority than high trash loading sites.

**Development Conditions of Approval**

The Industrial Area of Newark has relatively little in the way of remaining open buildable area. For any development projects that are proposed in TMA #7, conditions of approval would be applied to ensure placement of full-capture devices and new trash enclosures to eliminate trash issues. Any such conditions would have been applied prior to 2014.

**Street Sweeping**

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

### 3.2.8 Trash Management Area #8 – Mowry West Area

Trash Management Area #8, the Mowry West Area is bounded by Central Avenue, Interstate 880, Cedar Boulevard, Mowry Avenue, and Cherry Street. Except for the arterial street segments on the perimeter of TMA #8, Mowry West is mostly low-density residential and has a lower priority in terms of action. A portion of the properties located east of Cedar Boulevard with frontage on Timber Street are planned to be converted from commercial uses to high-density residential. Similar to the Dumbarton TOD Area (TMA #4), conditions of approval have been applied to require that full-capture devices be installed with site development. Timber Street currently has significant trash loading issues and it is anticipated that these will be largely eliminated with the new development. This project is tentatively scheduled to begin construction during the first half of 2014. The overall priority ranking for this trash management area is 7<sup>th</sup> out of 10. Representative photos from Timber Street and from Birch Street follow to provide a sense of existing conditions and the varying loading levels in the TMA.



### **Full-Capture Treatment Devices**

There are currently no full-capture treatment devices installed in TMA #8, but 11 are planned on some of the arterial street segments in the management area that will not be affected by the upcoming residential project. For the remaining high and medium generation areas it is anticipated that full-capture treatment devices will be utilized to satisfy 2017 and 2022 requirements.

### **Partial-Capture Treatment Devices**

The City has one Continuous Deflection Separator (CDS) unit in this TMA which provides some level of trash removal for a small subdivision, although the existing screens may not meet full trash capture criteria. In order to meet long-range trash capture requirements, the City will evaluate the possibility of modifying screen in this existing device to result in full trash capture. CDS units were installed prior to adoption of the MRP, but screen upgrades are planned for future implementation between July 2014 and July 2022.

### **On-Land Trash Cleanups**

Within TMA #8 there are a few locations on Timber Street, Cedar Boulevard and Cherry Street where some dumping and trash accumulation occur. Staff will monitor these locations following the planned development and implement additional on-land trash cleanups as necessary.

### **Development Conditions of Approval**

As discussed, conditions of approval have been applied to the Timber Street residential project that fronts on Cedar Boulevard (and Timber). These conditions include requirements for full trash capture and trash pick-up by the Homeowner's Association. For any other projects in TMA #8 in the future, similar conditions of approval will apply.

### **Street Sweeping**

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

## **3.2.9 Trash Management Area #9 – Newpark Mall Area**

The area around Newpark Mall has many commercial and retail uses. This area has been given a high priority for trash loading reductions based on these uses and field observations, ranking 3<sup>rd</sup> out of 10 total TMAs. Many trash capture devices have already been installed within the surrounding public rights-of-way. However, a vast majority of the surface area is on private property and has direct tie-ins to the MS4. The full-capture treatment device outreach program will be very important for this TMA.

### **Full-Capture Treatment Devices**

There are currently 42 full-capture treatment devices installed in TMA #9 , but 11 are planned on the some of the arterial street segments in the management area that will on the surrounding public street system that includes Cedar Boulevard and Balentine Drive. Full-capture treatment devices are anticipated to be the primary control measure for remaining high and medium generation areas in TMA #9.

### **Partial-Capture Treatment Devices**

There is one private CDS unit in this TMA which provides some level of trash removal for a retail center, although the existing screens may not meet full trash capture criteria. In order to meet long-range trash capture requirements, the City will evaluate the possibility of coordinating a modification with the property owner to upgrade the screen in the existing device to result in full trash capture. CDS units were installed prior to adoption of the MRP, but screen upgrades are planned for future implementation between July 2014 and July 2022.

### **Private Property Full-Capture Treatment Device Outreach Program**

Given the large private retail and commercial properties in TMA #9 there, the City's volunteer program for commercial property owners to install full-capture devices on their properties will be a critical element, particular if re-development of these properties is delayed. If the outreach to private property owners proves to be unsuccessful, the City will evaluate the possibility of implementation of a mandatory compliance program. This would be a significant step that would require approval by the City Council.

### **Development Conditions of Approval**

It is anticipated that Newpark Mall and other surround properties will have significant capital investment in the coming years to improve the commercial/retail infrastructure in TMA #9. With any proposed improvements the City will include conditions of approval requiring full trash capture devices. These should be implemented in the 2014-2022 time period.

### **Street Sweeping**

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

## **3.2.10 Trash Management Area #10 – Southwest Development Area**

The Southwest Development Area is located west of Cedar Boulevard and south of Mowry Avenue to the City limit line at Stevenson Boulevard. This area includes some higher density housing where full trash capture devices have already been installed on Cherry Street and on Joaquin Murrieta Avenue. The remainder of this area will have a lower priority until additional residential development near the corner of Stevenson

Boulevard and Cherry Street and in the area west of Stevenson Boulevard is formally approved.

### **Full-Capture Treatment Devices**

There are currently 20 full-capture treatment devices installed in TMA #10. Additional devices will be placed on Cherry Street as funding allows but not during the 2014 phase of work. It is expected that the remaining high and medium generation areas within the Southwest Development area will be equipped with full-capture treatment devices to satisfy 2017 and 2022 trash removal requirements.

### **Partial-Capture Treatment Devices**

There is one City-owned CDS unit in this TMA which provides some level of trash removal, although the existing screens may not meet full trash capture criteria. In order to meet long-range trash capture requirements, the City will evaluate the possibility of coordinating a modification with the property owner to upgrade the screen in the existing device to result in full trash capture. CDS units were installed prior to adoption of the MRP, but screen upgrades are planned for future implementation between July 2014 and July 2022.

### **Trash Hot Spot Cleanups**

One of the City's hot spot cleanup locations (see Section 3.2.12) is in the flood control channel between Balentine Drive and Cherry Street adjacent to Newark Memorial High School. Work to clean this hot spot area has been underway on an annual basis since adoption of the MRP.

### **Development Conditions of Approval**

It is anticipated that new development will occur in this TMA and that conditions of approval will be applied to require placement of full-capture treatment devices. These should be implemented in the 2014-2022 time period.

### **Street Sweeping**

Prior to the MRP, all streets were swept once per month and all arterial streets were swept twice per month. With adoption of the MRP, the City has continued with this frequency level. However, the City is currently evaluating modifications to the street sweeping schedule to have it better coordinated with trash pick-up days in several TMAs, including this one. The City is also evaluating the purchase of a new street sweeper.

### 3.2.11 Jurisdiction-wide Control Measures

The control measures described in the previous sections above are specific to each trash management area. While each TMA is unique with regard to size, population, land use, traffic, drainage, and rates of generation, there are many control measures that apply on a jurisdictional level. In the City of Newark, jurisdiction-wide control measures include the following:

#### **Enhanced Storm Drain Inlet Maintenance**

Prior to implementation of the MRP, the City attempted to clean as many inlets once per year as possible given staff resources. With the MRP, the City has increased maintenance to include cleaning of all inlets equipped with full trash capture devices twice per year and, to the extent possible, all other inlets at least once per year. This control measure ensures adequate maintenance and ongoing proper operation of the full trash capture devices.

#### **Improved Trash Bins/Container Management**

Prior to the MRP and to date the City has not aggressively pursued assessment of private trash bins or container management. With a new solid waste management provider as of the current reporting year (Republic Services), the City will evaluate the possibility of a coordinated effort to work with property owners and the service provider to upgrade containers, bins, enclosures, and operational procedures.

#### **Activities to Reduce Trash from Uncovered Loads**

Prior to the MRP, uncovered trash loads were prohibited by local ordinance. The City will continue with this ordinance as an existing policy.

#### **Anti-littering and Illegal Dumping Enforcement**

Prior to the MRP, the City prohibited dumping by ordinance. The City will continue with implementation of this ordinance and will increase anti-littering campaigns as part of the ACCWP.

#### **Polystyrene Foam Food Service Ware Policies**

The City has not adopted a polystyrene foam food service ware policy and does not have any immediate plans to do so. However, the City would strongly consider participation in a county-wide ordinance similar to the Single-Use Bag Ban Ordinance.

#### **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 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.

Single-Use Bag Requirement: Affected stores may no longer provide customers with single-use 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 Newark 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.

As part of efforts to support the *Be the Street* anti-litter youth campaign, ACCWP member agencies purchased additional mass media distribution of a video contest entry entitled "Pick Up Trash." ACCWP edited the spot to include a *Be the Street* watermarked logo, and to add the website URL at the end of the spot.

The video was distributed at movie theatres and through an online ad campaign as follows:

- *Regional Movie Theater Ad Buy: \$19,028*
  - 637,000 projected impressions
  - 9 theaters in Alameda County, 132 screens
  - 4-week run: July 5, 2013 to August 1, 2013
- *Individual Theater Ad Buy: \$4,208*
  - Approximately 150,000 projected impressions
  - 3 Theaters in Livermore and Castro Valley (not covered in regional buy)
  - Ad runs from 4 weeks to 28 weeks
- *Online Video Ad Campaign*
  - Google Display Network and YouTube Pre-Roll
  - Estimated Impressions: 300,000
  - Estimated views: 24,000
  - Estimated click-throughs: 1,500 to the Be the Street webpage

### **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.

### 3.2.12 Creek and Shoreline Hot Spot Cleanups

Under Provision C.10.b.i of the MRP, the City of Newark has two required annual trash hot spot clean-ups. The hot spot locations are identified in Figures 2-2, 3-1, and 3-2 and are as follows:

1. Alameda County Flood Control Channel Line B, Smith Avenue
2. Alameda County Flood Control Channel Line D, between Cedar Boulevard and Cherry Street

City staff completes annual clean-ups of each hot spot location. The volume of material at location #1 has varied from 0.6 to 1.4 cubic yards. The trash load consists of approximately 95% paper very consistently as the primary source is a paper recycling plant across the street from the flood control channel. This location is also a common semi-truck parking area and this often results in dumping issues.

Location #2 is adjacent to Newark Memorial High School. The trash load removed each year has varied from 0.25 to 1.67 cubic yards. Many larger items were removed in FY 2010-11, but during the last two years the dominant trash types have included fast food containers, food wrappers, paper, and plastic. High school students are the primary source of the trash loading has a result of the close proximity to a variety of fast food restaurants, convenience stores, and the school grounds.

The creek/flood control channel hot spot clean-up activities are new with the MRP adoption.

### 3.2.13 Summary of Trash Control Measures

#### Trash Management Area 1 – Four Corners Area

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- On-Land Trash Cleanups
- Private Property Full-Capture Treatment Device Outreach Program
- Development Conditions of Approval
- Street Sweeping

#### Trash Management Area 2 – Lake Area

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- On-Land Trash Cleanups
- Private Property Full-Capture Treatment Device Outreach Program
- Development Conditions of Approval
- Street Sweeping

#### Trash Management Area 3 – Northwest Residential Area

- Full-Capture Treatment Devices
- On-Land Trash Cleanups

- Private Property Full-Capture Treatment Device Outreach Program
- Development Conditions of Approval
- Street Sweeping

**Trash Management Area 4 – Dumbarton TOD Area**

- Full-Capture Treatment Devices
- On-Land Trash Cleanups
- Development Conditions of Approval

**Trash Management Area 5 – Old Town Area**

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- On-Land Trash Cleanups
- Private Property Full-Capture Treatment Device Outreach Program
- Development Conditions of Approval
- Street Sweeping

**Trash Management Area 6 – Central Newark Area**

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- On-Land Trash Cleanups
- Private Property Full-Capture Treatment Device Outreach Program
- Development Conditions of Approval
- Street Sweeping

**Trash Management Area 7 – Industrial Area**

- Full-Capture Treatment Device
- On-Land Trash Cleanups
- Trash Hot Spot Cleanups
- Private Property Full-Capture Treatment Device Outreach Program
- Development Conditions of Approval
- Street Sweeping

**Trash Management Area 8 – Mowry West Area**

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- On-Land Trash Cleanups
- Development Conditions of Approval
- Street Sweeping

**Trash Management Area 9 – Newpark Mall Area**

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Private Property Full-Capture Treatment Device Outreach Program
- Development Conditions of Approval
- Street Sweeping

**Trash Management Area 10 – Southwest Development Area**

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Trash Hot Spot Cleanups
- Development Conditions of Approval
- Street Sweeping

The control measures listed above are designed to achieve full trash reduction in each management area.

### **3.3 Control Measure Implementation Schedule**

The City of Newark's time schedule to implement all control measures for trash reduction is in Table 3-2 beginning on the following page:

Table 3-2. City of Newark 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 <sup>a</sup>	FY 2014-2015	FY 2015-2016	FY 2016-2017 <sup>b</sup>	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 <sup>c</sup>
<b>TMA #1 - Four Corners Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
Partial-Capture Treatment Devices								X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Private Property Full-Capture Treatment Device Outreach Program								X	X	X	X	X	X	X
Development Conditions of Approval			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
<b>TMA #2 - Lake Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
Partial-Capture Treatment Devices								X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Private Property Full-Capture Treatment Device Outreach Program								X	X	X	X	X	X	X
Development Conditions of Approval			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
<b>TMA #3 - Northwest Residential Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Private Property Full-Capture Treatment Device Outreach Program								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 <sup>a</sup>	FY 2014-2015	FY 2015-2016	FY 2016-2017 <sup>b</sup>	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 <sup>c</sup>
Development Conditions of Approval			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
<b>TMA #4 – Dumbarton TOD Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Development Conditions of Approval			X	X	X	X	X	X	X	X	X	X	X	X
<b>TMA #5 – Old Town Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
Partial-Capture Treatment Devices								X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Private Property Full-Capture Treatment Device Outreach Program								X	X	X	X	X	X	X
Development Conditions of Approval			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
<b>TMA #6 – Central Newark Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
Partial-Capture Treatment Devices								X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Private Property Full-Capture Treatment Device Outreach Program								X	X	X	X	X	X	X
Development Conditions of Approval			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	
<b>TMA #7 – Industrial Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
On-Land Trash Cleanups	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 <sup>a</sup>	FY 2014-2015	FY 2015-2016	FY 2016-2017 <sup>b</sup>	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 <sup>c</sup>
Trash Hot Spot Cleanups			X	X	X	X	X	X	X	X	X	X	X	X
Private Property Full-Capture Treatment Device Outreach Program								X	X	X	X	X	X	X
Development Conditions of Approval			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
<b>TMA #8 – Mowry West Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
Partial-Capture Treatment Devices								X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Development Conditions of Approval			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
<b>TMA #9 – Newpark Mall Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
Partial-Capture Treatment Devices								X	X	X	X	X	X	X
Private Property Full-Capture Treatment Device Outreach Program								X	X	X	X	X	X	X
Development Conditions of Approval			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
<b>TMA #10 – Southwest Development Area</b>														
Full-Capture Treatment Devices					X	X		X	X			X	X	X
Partial-Capture Treatment Devices								X	X	X	X	X	X	X
Trash Hot Spot Cleanups			X	X	X	X	X	X	X	X	X	X	X	X
Development Conditions of Approval			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

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 <sup>a</sup>	FY 2014-2015	FY 2015-2016	FY 2016-2017 <sup>b</sup>	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 <sup>c</sup>	
<b>Jurisdiction-wide Control Measures</b>															
Enhanced Storm Drain Inlet Maintenance					X	X	X	X	X	X	X	X	X	X	
Improved Trash Bins/Container Management								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	
Polystyrene Foam Food Service Ware Policies								X	Activities to be determined						
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								
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						
<b>Creek and Shoreline Hot Spot Cleanups</b>															
Cleanup of Hot Spot 1			X	X	X	X	X	X	X	X	X	X	X	X	
Cleanup of Hot Spot 2			X	X	X	X	X	X	X	X	X	X	X	X	

<sup>a</sup>July 1, 2014 - 40% trash reduction target  
<sup>b</sup>July 1, 2017 - 70% trash reduction target  
<sup>c</sup>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 Alameda Countywide Clean Water Program (ACCWP), including the City of Newark. 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 Newark.

#### 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 Newark 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 Newark 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 annual 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 Newark 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 Newark 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 Newark 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 Newark 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

The City of Newark is anticipating implementation of an assessment program to evaluate its trash control measures for effectiveness in trash reduction. This program will include quarterly on-land trash assessments of designated areas in each TMA and at least annual assessments of trash capture device installations. Priority for location selection of both on-land trash assessments and trash capture devices will be based on the relative priority for reductions in each TMA. The number of locations and precise level of documentation must still be determined. However, photo-documentation is expected to be undertaken along with the use of specific forms to be developed either by staff or the ACCWP. Information from these forms should be stored using a database. It is expected that selected locations will be repeatedly evaluated for comparative purposes.

### 4.4 Long-Term Assessment Strategy

The City of Newark 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 Newark planned trash progress assessment implementation schedule.

Trash Assessment Programs and Methods	Prior to FY 2013-14	Fiscal Year								
		2013-14 <sup>a</sup>	2014-15	2015-16	2016-17 <sup>b</sup>	2017-18	2018-19	2019-20	2020-21	2021-22 <sup>c</sup>
<b>Pilot Trash Assessment Strategy (ACCWP)</b>										
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					
<b>Tracking California's Trash Project (BASMAA)</b>										
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					
<b>Additional Assessments City of Newark</b>										
On-Land Trash Assessments			X	X	X	X	X	X	X	X
Trash Capture Device Assessments			X	X	X	X	X	X	X	X
<b>Long-Term Trash Assessment Strategy (ACCWP)</b>						X	X	X	X	X

<sup>a</sup>July 1, 2014 - 40% trash reduction target

<sup>b</sup>July 1, 2017 - 70% trash reduction target

<sup>c</sup>July 1, 2022 - 100% trash reduction target

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