Alameda Countywide
Clean Water Program

Contra Costa
Clean Water Program

Fairfield-Suisun
Urban Runoff
Management Program

Marin County
Stormwater Pollution
Prevention Program

Napa County
Stormwater Pollution
Prevention Program

San Mateo Countywide
Water Pollution
Prevention Program

Santa Clara Valley
Urban Runoff Pollution
Prevention Program

Sonoma County
Water Agency

Vallejo Sanitation
and Flood
Control District

B A S M A A

Bay Area
Stormwater Management
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February 1, 2011

Bruce Wolfe, Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Progress Report: Trash Baseline Loads and Load Reduction Tracking – MRP Provision C.10.a(ii)

Dear Mr. Wolfe:

This letter and attachment are submitted on behalf of all 76 permittees subject to the requirements of the Municipal Regional Stormwater NPDES Permit (MRP).

Provision C.10.a(ii) requires each Permittee to submit a progress report to the Water Board by February 1, 2011 that "indicates whether it is determining its baseline trash load and trash load reduction method individually or collaboratively with other Permittees and a summary of the approach being used. The report shall also include the types and examples of documentation that will be used to propose exclusion areas, and the land use characteristics and estimated area of potentially excluded areas."

All MRP Permittees will be using baseline trash load and load reduction tracking methods developed collaboratively through BASMAA. These methods are summarized in the Progress Report and were created under the oversight of the BASMAA Trash Committee in coordination with Permittees. The BASMAA Trash Committee serves under the oversight of the BASMAA Board of Directors and has active participation of staff from Permittees and Stormwater Programs.

The Permittees have worked diligently since the MRP was adopted in October 2009 to develop this information. The work has been carried out collaboratively among the Permittees and in cooperation with your staff. We thank your staff for their helpful and attentive participation in the BASMAA Trash Committee and other discussions leading to this submittal.

We certify under penalty of law that this document was prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our 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 our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

James Scanlin, Alameda Countywide Clean Water Program

Tom Dalziel, Contra Costa Clean Water Program

Kevin Cullen, Fairfield-Suisun Urban Runoff Management Program

Matt Fabry, San Mateo Countywide Water Pollution Prevention Program

Adam Olivieri, Santa Clara Valley Urban Runoff Pollution Prevention Program

Lance Barnett, Vallejo Sanitation and Flood Control District

Attachment: Progress Report: Trash Baseline Loads and Load Reduction Tracking (February 1, 2011)

cc: Tom Mumley, Regional Water Board
Dale Bowyer, Regional Water Board
BASMAA Board of Directors

Progress Report

Trash Baseline Loads and Load Reduction Tracking

February 1, 2011

Introduction and Purpose

This progress report is submitted on behalf of all towns, cities, counties and flood control agencies (i.e., Permittees) subject to the Municipal Regional Stormwater NPDES Permit (#CAS612008) issued by the San Francisco Regional Water Quality Control Board (Water Board) on October 14, 2009.[1] This report is submitted in compliance with Provision C.10.a (ii), which requires Permittees to submit a progress report to the Water Board. Based on the requirements in this provision, the progress report shall:

- Indicate whether Permittees are determining their baseline trash loads and trash load reduction methods individually or collaboratively with other Permittees:
- Provide a summary of the approaches being used; and,
- Include the types and examples of documentation that will be used to propose exclusion areas, and the land use characteristics and estimated area of potentially excluded areas.

All MRP Permittees will be using baseline trash load and load reduction tracking methods developed collaboratively through the Bay Area Stormwater Management Agencies Association (BASMAA). These methods are summarized in the following sections and were created under the oversight of the BASMAA Trash Committee in coordination with Permittees. The BASMAA Trash Committee serves under the oversight of the BASMAA Board of Directors and has active participation of staff from Permittees and Stormwater Programs.[2]

Summaries of Collaborative Approaches

Trash Baseline Load Method

Provision C.10.a(ii) requires Permittees, working collaboratively or individually, to determine the baseline trash load from their stormwater conveyance system to establish the basis for tracking trash load reductions. The baseline trash load method should allow reporting of the trash load per unit area and based on factors that significantly affect loading rates (e.g., land use type and drainage area characteristics). Each Permittee will submit a baseline trash load to the Water Board by February 1, 2012, along with documentation of methodology used to determine the load level.

The method being used to establish a baseline trash load for each Permittee builds off of lessons learned from previous trash loading studies (Allison and Chiew 1995; Allison et al. 1998;

[1] Herein also refers to Permittees covered under the Eastern Contra Costa County NDPES Permit issued by the Central Valley Regional Water Quality Control Board on September 23, 2010 (#CAS0083313).

[2] Santa Clara Valley Urban Runoff Pollution Prevention Program, Clean Water Program of Alameda County, Contra Costa Clean Water Program, San Mateo Countywide Water Pollution Prevention Program, Fairfield-Suisun Urban Runoff Management Program, and the Vallejo Sanitation and Flood Control District.

Armitage et al. 1998; Armitage and Rooseboom 2000; Lippner et al. 2001; Armitage 2003; Kim et al. 2004; Los Angles County 2002, 2004a, 2004b; Armitage 2007) and provides a regionally consistent approach for the Bay Area. The baseline loading method uses the preliminary conceptual model presented in Figure 1, which is based off of the results of the studies cited above.

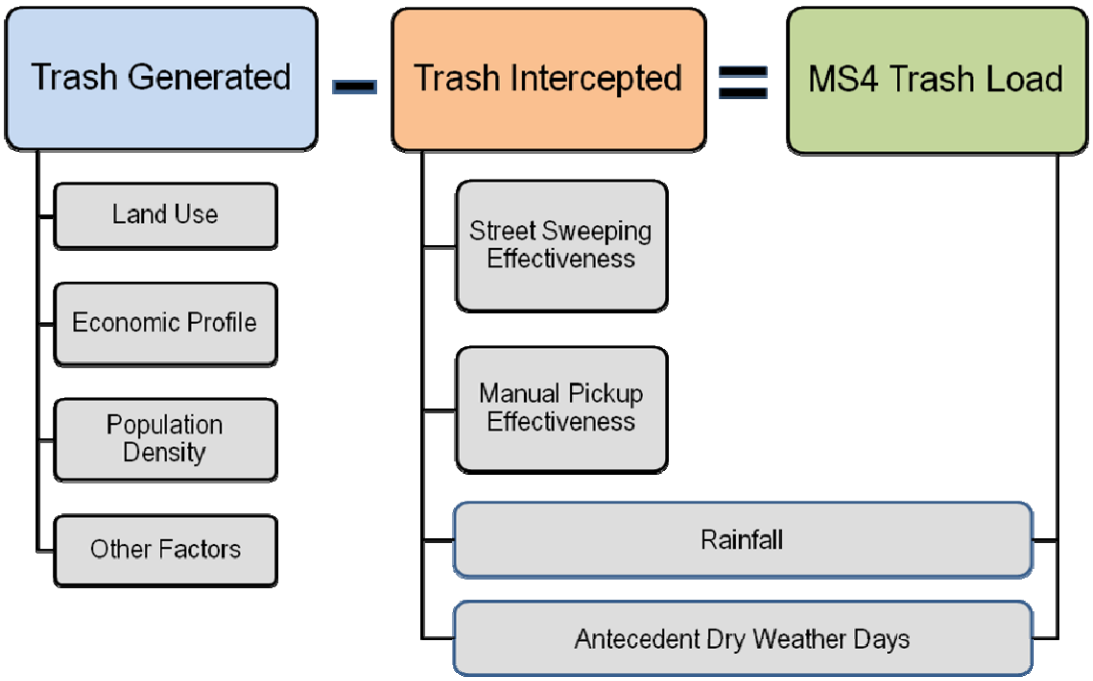

Figure 1. Preliminary conceptual model of factors affecting trash generation and loads from Bay Area municipal separate storm sewer conveyances.

The selected method will be used to develop regional baseline trash generation rates[3] based on monitoring data collected in the Bay Area and in consideration of factors that may affect trash generation as presented in Figure 1. Trash generation rates will be applied to Permittee jurisdictional areas to develop trash baseline loads based on Permittee-specific control measures currently in place. The approach is intended to be cost-effective but still provide an adequate level of confidence in trash loads from their municipal separate storm sewer systems (MS4s), while acknowledging that uncertainty in trash loads will still exist. The approach is fully described in BASMAA (2011a) and summarized by the following steps:

1. Establish quantifiable relationships between MS4 trash loads and a variety of storms types using existing robust datasets (i.e., Los Angeles River and Ballona Creek TMDLs).
2. Monitor trash loads during wet and dry periods at roughly 150 to 175 Bay Area sites equipped with trash full capture devices and selected to test hypotheses regarding the effects of population density, land use type and economic profile on trash generation. In

[3] The rate at which trash is deposited onto the urban landscape.

parallel, other factors that may affect trash generation rates and the extent of existing trash control measures at these monitoring sites will be evaluated.

3. Develop a trash generation rate for each Bay Area monitoring site by applying equation(s) of quantifiable relationships developed in Step #1, and accounting for the effectiveness of existing control measures and trash full capture devices at each monitoring site.
4. Evaluate whether trash generation rates at monitoring sites representing specific categories of land uses, economic profiles, population densities, and other applicable factors are significantly different, and based on results develop a set of trash generation rates.
5. As a validation step, apply applicable trash generation rates to a land area served by a full capture device (i.e., hydrodynamic separator) that was monitored but not used to develop trash generation rates; develop a predicted trash load based on generation rates and the effectiveness of control measures currently in place in the drainage area; compare predicted trash load to trash load measured via monitoring of the full capture device; and, adjust trash generation rates accordingly.
6. Apply applicable trash generation rates to each Permittee's jurisdictional area and develop a baseline trash load based the effectiveness of control measures currently in place.

Monitoring of trash captured by full capture devices is scheduled to begin in the winter of 2010/11 and continue through 2011.[4] Sampling and analysis procedures are described in BASMAA (2010b). Table 1 provides the list of land uses for which trash generation rates will be developed, and distribution goals for monitoring sites. The distribution goals are based on the variability of trash loads observed within land use categories during the development of baseline loads for the Los Angeles River and Ballona Creek Trash TMDLs (County of Los Angeles 2004). Monitoring sites will be located within as many Permittee areas as feasible to account for geographical differences in trash loadings.

The identification of land areas that have trash loading rates of zero will be based on information collected via the regional trash loading method described above, or additional information provided by Permittees, and can therefore not be identified at this time. If information indicates that land areas other than those that representing low density residential land uses have trash loading rates of zero, and should therefore be excluded from their trash baseline load, Permittees will provide additional information to the Water Board to verify that trash loads are insignificant and/or not observed from these areas. Types of documentation that Permittees may submit to the Water Board to verify that their areas are clean and should be excluded from baseline loading estimates may include: photo-documentation, results from litter audits on streets and/or sidewalks, and full capture device monitoring or MS4

[4] Additional monitoring may be conducted in 2012 if deemed necessary by Permittees.

maintenance data. Documentation of this information will be submitted to the Water Board by February 1, 2013 to provide further support for excluding these areas from baseline trash loads.

Table 1. Monitoring site distribution goals by land use type and household income.

Land Use Category	Land Use Category Description	Median Annual Household Income			Total
		Low (<$50,000)	Moderate ($50,000 to $100,000	High (>$100,000)	
High Density Residential	Residential lots < 0.333 acres	6.0%	6.0%	6.0%	18%
Low Density Residential	Residential lots > 0.333 acres	4.0%	4.0%	4.0%	12%
Commercial and Public Services	Local government buildings, research centers, offices, churches, hospitals and military	3.0%	3.0%	3.0%	9%
Retail and Wholesale	Retail and wholesale businesses	13.0%	13.0%	13.0%	39%
Light and Other Industrial	Light and unspecified industry	6.5%			7%
Heavy Industrial	Heavy industry	6.5%			7%
Urban Parks	Parks, golf courses, and other recreational areas	4.0%			4%
Primary Schools	Elementary, middle and high schools	4.0%			4%

Trash Load Reduction Tracking Method

Provision C.10.a(ii) requires Permittees to demonstrate progress towards the MRP trash load reduction goal (i.e., 40% by 2014). As a BASMAA regional project, all Permittees are collectively developing a trash load reduction tracking method that includes the development of formulas and factor for quantifying trash load reductions that are attributable to specific control measures. The methodology assumes that as new or enhanced trash control measures are implemented by Permittees, a commensurate trash load reduction will occur. Anticipated load reductions for each control measure will be based on the demonstrated effectiveness observed in a variety of effectiveness studies conducted in the recent past in the Bay Area, California, U.S. and internationally (BASMAA 2010c). Permittee load reductions will be demonstrated through comparisons to established baseline trash loads. A preliminary list of trash control measures that may have trash load reduction quantification formulas developed and utilized to track progress toward load reduction goals are included as Table 2.

Table 2. Control measures under consideration for load reduction quantification formula development to track progress towards trash load reduction goals.

1.	Full and Partial Capture Devices
2.	Stormwater Conveyance System Maintenance
3.	Street Sweeping
4.	Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal)
5.	Product Bans and Prohibitions
6.	Public Education and Outreach Programs
7.	On-land Litter Pickup/Removal
8.	Additional Fees at Landfills for Unsecured Loads
9.	Anti-Littering and Illegal Dumping Enforcement Activities
10.	Free Trash Pickup/Drop Off Days (e.g., Bulky Days)
11.	Improved Municipal Trash Bin/Container Management
12.	Solid Waste Recycling and Diversion Programs
13.	Litter Fees on Businesses
14.	Storm Drain Signage/Inlet Marking

Citations

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