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March 5, 2012

Regional Water Quality Control Board  
San Francisco Bay Region  
Attn: Dale Bowyer  
1500 Clay Street, Suite 1400  
Oakland, CA 94612

Subject: Municipal Regional Stormwater Trash Plans

This is in response to the notice providing an opportunity to comment on the *Preliminary Baseline Trash Generation Rates for San Francisco Bay Area MS4s<sup>1</sup>, Trash Load Reduction Tracking Method<sup>2</sup> and Permittee's Short-Term Trash Loading Reduction Plans<sup>3</sup>*.

BASMAA's February 1, 2012 *Trash Load Reduction Tracking Method* report is nearly identical to the November 11, 2011 version that BASMAA circulated for comment. I submitted extensive comments to Geoff Brosseau on December 22, 2011, copy attached. Geoff indicated that BASMAA wouldn't have sufficient time to review and address my comments before submitting the report to the Regional Board; therefore, my December 22, 2011 comments are submitted in response to your notice.

There are several points that I want to emphasize after reviewing the *Preliminary Baseline Trash Generation Rates for San Francisco Bay Area MS4s, Trash Load Reduction Tracking Method and Permittee's Short-Term Trash Loading Reduction Plans*. We are now learning from the Permittee's *Short-Term Trash Loading Reduction Plans* that BASMAA proposes to extensively rely on an adapted version of a formula to estimate baseline trash *generation* loadings applying a set of curves (Figure 3.2, ref 1) developed in South Africa by Neil Armitage and from the presentation by Joe Teresi of the City of Palo Alto at a recent CASQAA conference. Neil Armitage (personal communication December 4, 2011) confirmed that his street sweeping efficiency curve "merely delineates the upper long-term theoretical limit" and that he has not validated the curve through actual field data. I have been unsuccessful in my attempts to obtain clarification of Mr. Teresi's data used to estimate the increased effectiveness of street sweeping through parking enforcement to validate that portion of the Figure 3-2. It is premature to consider using Figure 3.2 until it has been validated with actual field data. There is a more straight

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<sup>1</sup> *Preliminary Baseline Trash Generation Rates for San Francisco Bay Area MS4s, Technical Memorandum, EOA, Inc. February 1, 2012*

<sup>2</sup> *Trash Load Reduction Tracking Method, Assessing the Progress of San Francisco Bay Area MS4s Towards Stormwater Trash Load Reduction Goals, Technical Report (Version 1.0), EOA, Inc. February 1, 2012*

<sup>3</sup> *Permittee's Short-Term Trash Loading Reduction Plans, Individual Plans, February 2012*

forward scientifically sound method of developing the trash baseline loadings by applying the monitoring data and data submitted by the permittees in their annual reports on the amount of material removed by current street sweeping practices and storm drain inlet cleanouts.

It is very important to consider the context and conditions in South Africa that led to the estimates of street sweeping efficiency by Neil Armitage. I urge that you obtain the July 1998 report *The removal of urban litter from stormwater conduits and streams*<sup>4</sup>, by Neil Armitage, Albert Roseboom, Christo Nel & PeterTownshend where they describe the South Africa litter problem that is so vastly different than we have in the United States. Commercial litter loadings are about two orders of magnitude (100 times) greater, there has been a collapse of services to sub-economic residential areas and street sweeping is limited to commercial areas and is performed manually using push brooms multiple times throughout the day with mechanical sweeping after people have gone home. Is this what BASMAA is now proposing as the baseline street sweeping program for the permittees? I am forwarding to you under separate cover pictures of conditions in South Africa that document these conditions.

I have a number of issues with the *Preliminary Baseline Trash Generation Rates* for San Francisco Bay Area MS4s and the *Permittee's Short-Term Trash Loading Reduction Plans* and conclude that BASMAA's submittal does not comply with MRP Provision C.10. and the proposed trash load reduction control measures will not achieve the short-term 40% reduction requirement in Provision C.10.a.i. It must have been very difficult for BASMAA to submit the *Technical Memorandum* (ref 1) knowing that it was incomplete, not in compliance with the MURP, data is not scientifically sound and does not provide a basis for establishment of baseline trash loadings and is proposing use of control measures that that are overly optimistic in capturing or reducing trash loads and in several cases contrary to the Clean Water Act. The lack of key data that was to be provided pursuant to the April 25, 2011 Sampling and Analysis Plan<sup>5</sup> made it virtually impossible to review the report and evaluate the data reported.

BASMAA alone is not solely culpable for these deficiencies. The lack of rain in 2011-2012 and the June 2011 unseasonable rain events are contributing factors. The San Francisco Estuary Partnership's effort to widely disperse the Federal stimulus grant to many municipalities resulted in numerous widely disperse sites (137 sites dispersed over 16 municipalities) using catch basin inserts for monitoring trash and debris created quality control and logistical challenges. The Regional Board staff in providing the list of "recognized" devices as meeting the trash "Full-Capture" definition resulted in the use of catch basin inserts that were neither effective nor efficient in capturing and "retaining" trash. I also feel that I could have been much more persistent in the development of a realistic sampling plan, sharing my experience in monitoring storm water runoff and treatment devices and assisting in the evaluation of storm water structural treatment devices. These factors combined with an inadequately funded overly aggressive sampling and analysis plan are at fault.

BASMAA could have met the MURP requirements and deadlines had it fully investigated and applied the "lessons learned" from trash monitoring studies conducted by Dr. Robin Allison in Australia, Dr.

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<sup>4</sup> *The removal of urban litter from stormwater conduits and streams, Neil Armitage, Albert Roseboom, Christo Nel & PeterTownshend, WRC Report No TT 95/98, July 1998*

<sup>5</sup> *Baseline Trash Loading Rates from Bay Area Municipal Stormwater Systems, Sampling and Analysis Plan, EOA, Inc. April 25, 2011*

Stenstrom at UCLA, Dr. John Sansalone at LSU, Caltrans, Betty Rushton in Florida, Desert Research Institute at Lake Tahoe and in the Bay Area and Northern California and embarked on a monitoring program using existing CDS devices to characterize and quantify trash in storm water runoff. BASMAA also missed an opportunity when it did not follow through on my comments and the many thoughtful comments and recommendations made by Dr. Peter Mangarella although it indicated that it would address and follow-up to the issues we raised. BASMAA did summarize the results of some of these other studies, but they did not pursue the real “lessons learned”. It has been my experience that people that conduct monitoring studies are frequently reluctant to write about and report on the glitches they run into (“Murphy’s Law” almost always is encountered) but in private discussions admit that multiple problems were encountered that affect the integrity of the reported results. Hopefully BASMAA will provide a comprehensive list of “lessons learned” with recommendations so others do not repeat their mistakes.

In my opinion BASMAA could have met the February 1, 2012 deadline since it was aware of the monitoring requirements well ahead of the October 2009 adoption of the MRP. At that time there were over 600 CDS devices installed in the Bay Area and at least five CDS devices within a short walk of the RWQCB offices that treat runoff from the land uses that BASMAA proposed for monitoring. The Santa Clara Valley Urban Runoff Program in a 2002 report<sup>6</sup> also listed the location of 57 CDS devices installed in the Bay Area so knowledge was available to BASMAA of the many potential sites for monitoring that would have covered all the land uses. Monitoring programs could have been developed and implemented with minimal effort and monitoring could have been initiated to sample the “first flush” of the 2009-10 rainfall season.

The net effect of not pursuing these early monitoring opportunities was not only the delay in initiating a monitoring program it also resulted in the ultimate use of catch basin inserts that are not effective in capturing and retaining trash and achieving the “full capture” criteria. Jamison Crosby in his comments on the draft *Method to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems, Technical Memorandum # 1*<sup>7</sup> pointed out the importance of having representative data and accurate estimates of trash loads and that underestimates of loads will result in easy compliance, but the creeks will still look very dirty and municipalities be found in noncompliance. Jamison was very perceptive and that is precisely what we face.

There are many specific issues that need to be addressed before the Regional Board accepts these reports:

#### Effective Date of Baseline Trash Loads

BASMAA in the April 21, 2011 *Technical Memorandum #1* (ref 1) indicates that “the effective date will be the time when final samples have been collected from sites via this study”; however, we now see that BASMAA may extend the study to an indefinite time. The effective date for establishment of trash baseline loadings must be December 1, 2009 - the effective date of the MURP. The loadings should be

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<sup>6</sup> *An Update of the 1999 Catch Basin Retrofit Feasibility Study Technical Memorandum, June 26, 2002*

<sup>7</sup> *Method to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems, Technical Memorandum #1, EOA, Inc. April 21, 2011*

calculated using scientifically sound monitoring data as a base and adding any reductions in trash loads that have been achieved through documented trash load reductions achieved through implementation of control measures implemented between December 1, 2009 and the date that the monitoring data was collected. The baseline trash loadings must not be based on subtracting trash load reductions achieved through implementation of control measures implemented between December 1, 2009 and the date that the monitoring data was collected as indicated in Table 2-3 of the *Permittee's Short-Term Trash Loading Reduction Plans*.

#### Calculation of Baseline Trash Generation Rates

It was not apparent from Section 4 of BASMAA's proposed method (ref 7) for estimating *baseline trash loads* (volume and mass) that *baseline trash generation rates* would be determined using an adapted version of an equation developed by Armitage shown in Section 3.2 *Technical Memorandum* (ref 1) that includes consideration of street sweeping effectiveness. Indeed Section 4.5 states that "the generation rates will likely be based upon a no street sweeping scenario, to allow generation rates to be easily converted to loading rates in Step #6." This change in the method has not been explained and it only became apparent when the February 12, 2012 *Technical Memorandum* (ref 1) was released.

The equation in Section 4.1 *Technical Memorandum* (ref 1) provides for a calculation of the *baseline trash loads* based on land use *generation rates* and loading areas for that land use and then reducing that value by effectiveness of baseline street sweeping, pump station maintenance and storm drain inlet maintenance.

To say the least, the methods for calculating *baseline trash generation rates* and the *baseline trash loads* is most confusing, has not been clearly explained in Section 4 *Technical Memorandum #1* (ref 7). Both the calculation of *baseline trash generation rates* and *baseline trash loads* adjust the loads using the street sweeping frequency effectiveness curves - Figure 3.2 *Technical Memorandum* (ref 1). This appears to be double counting trash loads calculated using the effectiveness of street sweeping. Application of these curves requires that both the street sweeping frequency and the rainy season storm event return frequency which is approximately 7 days in the Bay Area be determined for each of the monitoring sites. BASMAA needs to explain and provide examples of how the loadings were calculated considering the extremely long trash accumulation periods, multiple storm events and the number of wet weather days during the accumulation periods cited in Section 2.2.1. *Technical Memorandum* (ref 1).

It would have been much more straight forward and scientifically sound if a single *baseline trash load* was established for each land use based on the results of the very recent monitoring then adding the documented or scientifically sound trash loads achieved through implementation of enhanced trash control measures implemented since December 1, 2009.

As explained later, data is available from the permittees' annual reports, other studies conducted by the permittees and in Southern California to estimate the loads from these enhanced trash control measures. BASMAA in its publication on *Sediment Management Practices*<sup>8</sup> has demonstrated that it has the capability to research and develop this type of information and perform this type of analysis, but this was not found in the trash program technical reports or memoranda.

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<sup>8</sup> *Sediment Management Practices, Clean Watersheds for a Clean Bay Task 4 Literature Review, EOA, Inc and Geosyntec Consultants, June 7, 2011*

Trash Baseline Loads Conceptual Model

The conceptual model in Figure 1.1 *Technical Memorandum #1* (ref 1) is missing a component that would provide a much clearer explanation of the mobilization and transport of trash. The addition of a module showing transport of trash would clarify that rainfall, wind (natural and motor vehicle) and intentional dumping are key factors that must be considered in selecting control measures. Listing “Rainfall” alone does not adequately address how storm events impact the transport of trash. Storm event total rainfall, average intensity during an event and most important short-duration intensities corresponding to a catchments Tc is critical in designing structural control measures and evaluating monitoring data.

Information is now readily available for many Bay Area rainfall stations that allow calculation to determine the **peak flow rate** resulting from a one-year, one-hour storm. NOAA <http://hdsc.nws.noaa.gov> recently published Point Precipitation Frequency Estimates for over 25 Bay Area stations and many in California that show rainfall intensities at 5-minute intensities. As an example for the Oakland Museum station for the one year storm the 60-minute intensity is 0.434 inch/hour and 5-minute is 0.128-inch or 1.536 inch/hour. The **peak flow rate** using just the hourly intensity and the Rational Formula would be  $Q = CIA$ ,  $Q=0.9$  (coefficient typical for paved surfaces)  $\times 1.536 \times 3 = 4.1$  cfs while the **peak flow rate** using just the hourly intensity it would be  $Q=0.9 \times 0.434 \times 3 = 1.2$  cfs.

Trash Load Estimated Via Baseline Street Sweeping

It is not clear how the trash load removed via the baseline street sweeping entered in Table 2-3 of the *Permittee’s Short-Term Trash Loading Reduction Plans* (ref 3) was determined from the *Method to Estimate Baseline Trash Loads Technical Memorandum #1*(ref 7) or *Draft Template & Guidance*<sup>9</sup> and this needs to be explained. Bay Area municipalities have been required by the MRP to report the amount of trash removed by street sweeping and storm drain inlet cleaning. A review of the most recent annual reports found that many municipalities were waiting for BASMAA’s guidance before initiating this effort; however, some municipalities in Contra Costa County have provided data and that information combined with a May 10, 2007 report<sup>10</sup> on pollutant load removal from street sweeping allows a comparison of historic street sweeping removal to the proposed baseline street sweeping loads entered in Table 2-3.

Historic Street Sweeping Removal vs Proposed Baseline Street Sweeping Trash Loads

Municipality	Volume of Trash Removed via Street Sweeping, gallons			
	Average – FY 01/02 – 05/06 (ref 10)	2009-10 Annual Report	2010-11 Annual Report	Table 2-3, Baseline Report
Clayton	350	946	NR	675
Concord	11,462	22,000	22,000	15,197
CCCounty	4,321	NR	NR	9,773
Danville	4,580	NR	NR	4,954
El Cerrito	2,253	NR	1,745	5,322

<sup>9</sup> *Baseline Trash Load and Short-Term Trash Load Reduction Plan, Draft Template & Guidance*

<sup>10</sup> *Pollutant Load Removal from Street Sweeping Best Management Practices, EOA, Inc. May 10, 2007*

Hercules	653	710	686	1,932
Lafayette	2,200	NR	NR	2,962
Martinez	3,324	2,772	2,913	6,314
Moraga	321	684	NR	1,554
Orinda	587	869	1,225	994
Pinole	911	559	546	3,062
Pittsburg	4,072	5,942	NR	8,938
Pleasant Hill	2,464	3,830	NR	5,861
San Pablo	1,813	1,936	NR	9,724
San Ramon	3,960	5,419	NR	5,086
Richmond	4,385	NR	NR	32,266
Walnut Creek	4,413	NR	NR	8,364

Note: NR – no report; Volumes of trash (gallons) were calculated by converting cubic yards to gallons and multiplying that by 1% from Table 10 of reference 10 which is the percent of trash found in the material removed from streets based on visual observations.

A value in the column – “Table 2-3 *Baseline Report*” that exceeds values for the 2009-10 and 2010-11 Annual Reports or historic data for FY 01/02 – 05/06 must be questioned because it indicates that estimated trash reductions exceed what has been actually reported. The method used by all Bay Area municipalities for calculating the Load Removed via Baseline Street Sweeping is not accurate. The calculated Baseline Report values should be less than values determined from the amounts of trash removed via street sweeping reported in recent annual reports. This analysis shows that the BASMAA proposal for estimating trash load reductions through street sweeping is flawed. Twelve (12) of the 17 Contra Costa County municipalities are claiming significantly more trash removal than can be determined from the data they are reporting in their annual reports.

Municipalities in Los Angeles have been reporting volumes of material removed by street sweeping and catch basin cleaning by land use and costs of implementing these programs for some time and that data is readily available from their annual reports. Using the protocols developed by the Contra Costa study (ref 10) for sub sampling street sweeping material and those by the BASMAA study for trash sample analysis it should be rather straight forward to make an early determination of the amount of trash now being removed through street sweeping practices and storm drain inlet cleaning providing actual data on the effectiveness of these practices.

#### Land Uses Not Monitored and Trash Loads Remain Undetermined

Appendix A *Technical Memorandum* (ref 1) is the first document that provides information on exact location of the monitoring sites. Entering the latitude and longitude for individual sites in Google Earth – Street View allows the determination and observation of the exact location of an individual site. Earlier attempts to obtain this information from the San Francisco Estuary Partnership was met with resistance by claiming confidentiality and denied. Twenty-five (25) sites involving Retail and Wholesale, K-12 Schools, Commercial and Services, high Density Residential and Industrial were randomly selected to determine the actual location and observe the land uses where monitoring occurred.

In every case the monitoring device was located in the street adjacent to the land use and not on the land use where the trash is generated. The trash loadings from the land uses were not monitored and monitoring data only represents incidental loadings from the pass-through traffic and not activities on the actual land use. At BASMAA site ID SL 25 the catch basin insert is located in Lewelling Boulevard adjacent to a large shopping center. Google traversed the shopping center parking lot in many of the parking lot aisles and trash at storm drain inlets can be readily observed using Street View. At BASMAA

site SJ 38 the sampled catch basin insert is located on East Capitol Expressway a four lane divided highway and not on the school property it was to monitor. The inlet in East Capitol Expressway is separated from the school by a fence and wide vegetated buffer so trash loads for this site do not reflect what originated on the K-12 school property. BASMAA has not monitored the trash loads generated on the designated land uses.

#### Jurisdictional and Effective Loading Areas Excludes Large Areas from Control Measures

Section 4.2 *Technical Memorandum* would limit loads to areas within a 200-foot buffer that extends from either side of a street center line. This must be viewed as an attempt on the part of BASMAA to exclude any and all responsibility for controlling trash from a large portion of private property even though the trash is discharged into and from the MS4. This would be particularly true for large shopping centers, schools and business parks with private storm drain systems. The impact of this can be clearly seen by looking at Figure 2-1 *Estimated trash baseline loading rates for geographical areas in the City of Santa Clara, Santa Clara's Baseline Trash Load and Short-Term Load Reduction Plan* (ref 3) and comparing that to a view of Google Earth to determine the lands excluded using Effective Loading Areas. Well over half of the land has been excluded.

Review of permittees' *Baseline Trash Load and Short-Term Load Reduction Plan* (ref3) Table 2-2 "Jurisdictional areas and effective loading areas" found that many municipalities excluded significant portions (~50%) of the Commercial and Services/Heavy, Light and Other Industrial, Retail and Wholesale and K-12 Schools jurisdictional areas by applying the "Effective Loading Area" even though these areas are known significant contributors of trash

Section 2.1.2. *Technical Memorandum* (ref 1) indicates that monitoring sites were limited to those where there is no contribution from State or federally owned freeways or highways. Trash loadings from these sources as well as from locally owned highways or expressways must be determined and included in the loadings discharged from the MS4.

I can appreciate BASMAA's concern about and desire to avoid any responsibility for achieving trash load reductions from private property and schools; however, when those sources discharge trash into and from the MS4 then permittees must be required to develop and implement oversight programs or implement control measures that will address these sources.

The Regional Board must reject the use of "Jurisdictional and Effective Loading Areas" and require permittees to submit detailed maps of their entire storm drain system and private storm drains that drain to their systems with the associated land uses and trash loadings determined for these areas.

#### Effectiveness of Catch Basin Inserts

Peter Mangarella in his comments on the November 17, 2010 *Sampling and Analysis Plan*<sup>11</sup> states that "Given that drain inserts are not technically full capture devices, how do you plan to correct data for trash that has bypassed units? I know Chris mentioned this issue in last trash meeting, but maybe it should be addressed here or in the SAP" and the response to comments in the April 25, 2011 *Sampling and Analysis Plan* (ref 5) states "In part, the analysis of trash in hydrodynamic units will be used to assess

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<sup>11</sup> *Baseline Trash Loading Rates from Bay Area Municipal Stormwater Systems, Sampling and Analysis Plan, EOA, Inc, November 17, 2010*

the estimated proportion of trash that bypasses storm drain inserts. Additionally, over the next few months BASMAA will continue to discuss options for determining the effectiveness of these devices.

Section 3.2. of *Technical Memorandum* (ref 1) indicates that data and associated information on trash captured via monitored full capture treatment devices underwent quality checks and *trash generation rates* were calculated considering accumulation periods and street sweeping effectiveness. The Technical Memorandum does not include a discussion of the catch basin effectiveness (efficiencies) in capturing and retaining trash >5-mm (0.20-inch), does not indicate the results of using a hydrodynamic units to assess the estimated proportion of trash that bypasses storm drain inserts and does not contain the calculations.

Section 2.1.3. *Technical Memorandum* (ref1) lists the types of drain inlet screens installed as device to monitor the amount of trash in stormwater runoff. The Los Angeles baseline monitoring program found several types of catch basin inserts to be only 50% effective in capturing trash by measuring the amount of trash captured in a CDS device downstream of the inserts. Observations of the connector pipe screens have been found to experience severe clogging and bypass problems even when cleaned on a storm event basis<sup>12</sup>. The catch basin insert has a storage capacity less than 1-ft<sup>3</sup> and screening module that would be prone to blockage with "scumutzdecke" and gross pollutants and become "self cleaning" as documented in Los Angeles (ref 12).

In the Los Angeles baseline study catch basin inserts were cleaned after each storm event >0.25-inch providing reasonable consistent measure of the mass and volume of trash. BASMAA's inlet cleanout data is from multiple storm events and accumulation periods as long as 355 days. Trash would be compacted as a result of the multiple storm events and deposition of sediment and vegetation. BSAMAA needs to explain how this can be addressed in the data analysis and determination of trash loads.

#### Monitoring Site Loading Areas

Section 2.1.4. *Technical Memorandum* (ref 1) describes the method for determining the area of each monitoring site loading area. Accurate determination of the total area treated by catch basin inserts is essential if accurate loads are to be determined. A check of several Permiitee *Short-Term Trash Loading Reduction Plans* (ref 3) found identical areas for all monitoring sites ie. City of San Jose indicates that all sites have the same highly improbable loading area of 1.97-acres and in San Mateo 1.6-acres. The determination of the total area treated by catch basin inserts at each monitored site must be determined.

#### Bias of Monitoring Data

Appendix A *Technical Memorandum* (ref 1) lists 137 monitoring sites by city and land use. An analysis of this information found that 64 of these sites are located in the City of San Jose with 22 of the 28 High Density Residential sites and 16 of the 54 Retail Wholesale sites in San Jose. A comparison of the trash load monitoring results from the sites in San Jose needs to be compared to the results from the other similar land uses in the remaining cities to determine if the results are biased. It is likely that trash load monitoring results from San Jose sites would reflect lower trash loadings because of the maturity of San

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<sup>12</sup> *Estimates of the Actual Trash Capture Effectiveness of Catch Basin Inserts Reported by the City of Los Angeles, Roger James, February 14, 2012*

Jose's storm water program that has included a more extensive public information program and publicity from product bans than other Bay Area communities. If a bias is found then *baseline trash loads* for other Bay Area municipalities must be increased to reflect that bias.

#### Baseline Stormwater Inlet Cleaning

Section 4.3.2. *Technical Memorandum* (ref 1) refers to a literature review in *Technical Memorandum #1* (ref 7) that justifies a 5% reduction of trash loads; however, that reference contains only one reference in section 2.2.7 and there is no supporting information to justify the 5% reduction. The Draft Technical Report (ref 2) contains a discussion on page 43 of trash load reductions from storm drain inlet maintenance. Current literature does not provide the basis for establishment of trash load reductions from storm drain inlet maintenance as indicated in my December 22, 2011 letter to Geoff Brosseau - comments under Enhanced Storm Drain Inlet Maintenance QF-4 on page 10. The actual removal of trash from inlet cleaning is amenable to quantification by measuring the actual amount of material removed as suggested under the street sweeping discussion. Credits for removal of trash through cleaning of storm drain inlets must not be granted until BASMAA provides actual data on the effectiveness of this practice.

#### Baseline Stormwater Pump Station Maintenance

Section 4.3.3. *Technical Memorandum* (ref 1) refers to *Technical Memorandum #1* (ref 7) that assumes a 25% reduction of trash loads from maintenance of pump station trash racks; however, that reference does not contain any information on reduction of trash loads from maintenance of pump station trash racks. The *Technical Report* (ref 2) contains a discussion on page 41 of trash load reductions from pump station maintenance. Current literature does not provide the basis for establishment of trash load reductions from maintenance of pump station trash racks as indicated in my December 22, 2011 letter to Geoff Brosseau - comments on page 9. The actual removal of trash from maintenance of pump station trash racks is amenable to quantification by measuring the actual amount of material removed as suggested under the street sweeping discussion. Credits for removal of trash through maintenance of pump station trash racks must not be granted until BASMAA provides actual data on the effectiveness of this practice.

#### Robust Data

Section 3.2.2. *Technical Memorandum* (ref 1) indicates that a "more" robust statistical comparisons between land uses, economic profile and population density will be conducted after the third monitoring event. If all sites produced valid data then the 37 sites monitored between 2008-2010, 71 sites monitored in May 2011, 149 sites monitored in September 2011 and 149 sites to be monitored in 2012 would produce data for approximately 400 cleanout events. In comparison Los Angeles monitored over 550 inserts cleaning out the inserts after each of 20 storm events and three dry weather cleanouts producing over 12,500 data points. The amount of data collected by BASMAA pales in comparison to that collected by the Los Angeles baseline monitoring program that included both the mass and volume of trash and sediments & vegetation. BASMAA indicated that the data collected by the Los Angeles baseline monitoring program would be mined and relationships between rainfall and loads determined. The analysis of the Los Angeles data has not been provided.

#### Missing Data and Information

It appears that the *Technical Memorandum* was put together in haste to comply with the February 1, 2012 deadline for the report. A few examples of erroneous, missing or incomplete data include:

- Verification of Trash Loading Rates – Section 5.5.2. of the April 25, 2011 *Sampling and Analysis Plan* (ref 5) indicates that two hydrodynamic separators would be monitored to verify trash loading rates established via storm drain insert monitoring. BASMAA in the response to comments indicates that they are confident that the data would provide valuable information regarding the uncertainty associated with the loading rates through the process described (use of catch basin inserts). No data has been provided and no indication that the hydrodynamic separators were monitored.
- Section 2.1.4. *Technical Memorandum* (ref 1) refers to Section 5.2. and there is no such section
- Accumulation Periods - Section 2.1.5. *Technical Memorandum* (ref 1) indicates that Appendix C contains accumulation periods for each site and sampling event combination. Appendix C does not contain that data.
- Mass and volume of trash and debris removed from monitoring the two hydrodynamic separators. No data has been provided and no indication that the hydrodynamic separators were monitored.
- The monitoring results from the 2008 -2010 monitoring of 37 sites in San Jose and Sunnyvale has not been provided.
- Rainfall data for each site and storm event (storm event total rainfall, average intensity during an event and most important short-duration intensities corresponding to each sites catchments Tc) has not been provided.
- Analysis of Los Angeles County Baseline Trash Study – Section 8.1. *Sampling and Analysis Plan* (ref 5) indicates that the data from that study would be examined to quantify the relationship between trash loading rates in different land use areas and total rainfall, maximum hourly intensity and antecedent dry weather days. This analysis has not been provided.
- Results of observations for evidence that devices bypassed during the individual cleanouts has not been provided.
- Percentages of Trash in Land Use Categories – Table 3.1. *Technical Memorandum* (ref 1) – The % Trash column needs an explanation. Does it mean that Rural Residential land use accounted for 1% of the trash that was measured from all land uses? If that is the case then the total for that entire column should 100%.

Permittees have not complied with the requirements of the MRP and the Regional Board must consider enforcement action and require permittees as part of that action to provide scientific sound technical responses to each of the issues that have been raised in these comments and my December 22, 2011 letter to BASMAA. I do not believe that civil monetary remedies and restriction on additional connections that would add to the trash loading are appropriate **at this time** because a number of factors and other parties contributed to the non compliance.

Some Permittees like the City of Oakland that have already provided early implementation of structural trash control devices, installed measures (booms) to mitigate the discharge of trash, implemented enhanced trash control measures, provided controls and funded the Lake Merritt Institute and are planning the installation of proven full capture devices serving over 600 acres adopted ordinances that address product bans should be commended and exempt from enforcement action and should receive credit for those reductions.

In the enforcement action the permittees must be required to take the following actions by a date certain:

- Develop a sampling plan that determines the effectiveness (efficiency) in capturing and retaining trash > 5-mm (0.20-inch) until removed through maintenance.
- Develop a maintenance program for all publically and privately owned structural trash control devices that includes inspection procedures and frequency to determine when cleanout of the devices is required, reporting of the location, types/model and hydraulic capacity of all trash control devices, reporting the agency responsible for maintenance of the devices and reporting the date of and amount (mass and volume) of trash and other material removed during each cleanout event.
- Determines baseline loads (mass and volume) based on monitoring that has obtained representative samples of trash in storm water runoff from actual land uses.
- Develops scientifically sound basis for determining the amount (mass and volume) of trash removed through street sweeping practices, storm drain inlet cleaning and pump station maintenance to achieve the trash load reduction requirements of the MRP
- Submit a program that will ensure that trash originating from all (public and private) sources discharged to and from the MS4 achieve trash reduction goals.
- Submit a program to document trash reduction credits for control measures through actual measurement of trash load reductions similar to the procedure required by the Los Angeles RWQCB or based on scientifically sound studies conducted in the Bay Area or in areas with a climate, rainfall characteristics and characteristics of trash similar to that found in the Bay Area.

The Regional Board should also take this opportunity to correct the error in Table 10.1 in Attachment J of the MRP. It appears that the RWQCB staff misinterpreted the ABAG information that only listed commercial land uses that were vulnerable to hazards – flooding, earthquake faults, soil liquefaction, landslides, etc. A comparison of data from MRP Table 10.1 Attachment J and Table 2-2 in representative permittee trash load reduction plans (ref 3) confirms that Attachment J Table 10.1 significantly understates the commercial land uses. To compare the data from Table 10.1 Attachment J to Table 2-2 it would be necessary to include just the Commercial acres; however, in every case just the Retail/Wholesale Acres from Table 2-2 exceeds the acres in Table 10.1 Attachment J.

Comparison of Municipal Regional Permit Retail/Wholesale Commercial Acres to  
Trash Load Reduction Plan Retail/Wholesale Acres

Municipality	Retail/Wholesale Commercial Acres Table 10.1 Attachment J	Table 2-2, Trash Load Reduction Plan	
		Commercial/Services and Industrial Acres	Retail/Wholesale Acres
San Leandro	721	2108	528
Hayward	726	3858	877
Fremont	698	4590	846
Oakland	759	4233	1010
Daly City	242	300	312
Redwood City	309	1390	382
San Mateo	275	781	406
South San Francisco	195	1792	229
Concord	1016	1290	1174
Walnut Creek	329	836	405
Richmond	391	4361	509
Pittsburg	520	1893	614
Vallejo	559	1113	753

Fairfield	486	1430	761
Milpitas	457	2058	631
Mountain View	375	1764	468
Santa Clara	560	3712	767
San Jose	2983	9821	3708
Sunnyvale	548	3762	711
Palo Alto	282	1563	365

Please do not hesitate to contact me if you have any questions about the above comments.

Sincerely,

Roger B. James  
Senior Consultant