

Memorandum

July 13, 2007

To: Shin-Roei Lee
From: Roger James

SUBJECT: Administrative Draft - NPDES Municipal Regional Storm Water Permit

My review of the Administrative Draft of the NPDES Municipal Regional Storm Water Permit (Draft Permit) identified a number of policy issues that need to be addressed before issuance of subsequent drafts. I recommend that the Regional Board meet in a series of workshops to consider these policy issues and provide guidance to the staff in preparing a revised Administrative Draft.

In addition to these policy level issues I have multiple suggestions to clarify the permit that will be provided them as annotated comments on a copy of the Draft Permit.

Scope of Regional Permit

The Draft Permit should include all counties within the San Francisco Bay Region and include all the agencies referenced in Attachment 3 – Non-Traditional Small MS4s to the SWRCB's WQ Order No. 2003-0005-DWQ. The North Bay Counties include growing communities contributing loadings of Pollutants of Concern (POC) covered by TMDLs and discharged to San Francisco Bay. These communities must be subject to the same regulatory approach as the remaining Bay Area communities to achieve equitable, consistent and uniform pollutant reductions.

There are over 170 public agencies listed in Attachment 3 to the SWRCB's Phase II NPDES permit that are not regulated by storm water programs. Many of these facilities mimic smaller municipalities that are regulated by the Draft Permit and have extensive operations with impervious surfaces including buildings, roadways, parking lots, athletic facilities, maintenance operations, etc. The Orinda Union School District has actually adopted a resolution exempting itself from the City of Orinda's ordinance pertaining to construction of instructional and related facilities on all its schools sites pursuant to Government Code section 53094. The District's action was taken to exempt itself from the City's creek protection requirements. The Non-Traditional Small MS4s must not be allowed to avoid requirements that have been imposed on a regulated community that could jeopardize that community's compliance with the NPDES permit.

The Draft Permit must include the North Bay communities and all the Attachment 3 - Non - Traditional Small MS4s if there is to be equitable and effective control of pollutants in storm water runoff.

It is unclear why we have multiple approaches to controlling hydromodification – why can't you simply adopt the most restrictive and apply it to all other counties. I understand that the programs have proceeded to implement the hydromodification programs they have developed, but there will be significant benefits of having a uniform approach.

Permittee Accountability and Enforceability of Draft Permit

There have been numerous assertions that the current countywide municipal storm water permits have serious deficiencies regarding accountability by municipalities and are not enforceable. The initial NPDES permits issued to municipalities in the early 1990's contained multiple municipal maintenance and pollution prevention programs to reduce the discharge of pollutants. These programs should have matured and should have been refined by this time and fully institutionalized and implemented; however, it appears from the permit that more time is being granted to develop these programs. The Draft Permit needs to be carefully reviewed to ensure that no additional time is being granted to implement programs that are in the current permits.

Equally disturbing, the Draft Permit lacks definition or specificity in many areas. There are over 100 instances in the Draft Permit where requirements are qualified with language like – appropriate, adequate, properly, significant, as needed or as necessary with “appropriate” used over 40 instances. Use of these terms will only lead to debate and arguments later if enforcement of the Draft Permit is attempted. Most if not all of these “qualifiers” can be eliminated or in cases where they can't the staff needs to provide precise definitive expectations of the requirements so there is no room for later debate on the expectations.

Compliance with Water Quality Standards (Receiving Water Limitations and Prohibitions)

EPA policies and regulations and SWRCB decisions envision that storm water dischargers would achieve compliance with water quality standards within three permit terms or 15 years. An unwritten policy of “Don't Look, Don't Ask and Don't Tell” has been in place for over 12 years and the Draft Permit appears to continue that policy and is vague regarding enforcement of Provision C.1.

Compliance Monitoring is apparently included in Status and Trends Monitoring (Provision C.8.c.) and is difficult to identify as a priority issue. Finding 64 discusses Status & Trends Monitoring, but includes no reference to compliance with Water Quality Standards (Receiving Water Limitations and Prohibitions). Finding 68 indicates that source identification is required when there are exceedances of water quality objectives. There is no mention made of Discharge Prohibitions or Receiving Water Limitations or the reporting requirements of Provision C.1.

This subject should be the topic of a workshop and if the RWQCB determines that it is not going to require compliance with Receiving Water Limitations and Prohibitions and are not going to require the reports specified by Provision C.1. then all references to Compliance Monitoring should be deleted from the Draft Permit because they are misleading.

If the Regional Board members are serious about requiring storm water dischargers to comply with Receiving Water Limitations and Prohibitions then:

- Compliance Monitoring needs to be a stand alone program under Water Quality Monitoring Provision C.8 with its own Elements (similar to Table 8.2).
- Compliance Monitoring parameters must include all Basin Plan and CTR receiving water limitations and prohibitions.
- The monitoring program sampling frequency must be at levels that document compliance within a period of two years from permit adoption.

- Monitoring stations for water quality parameters must be established for all major watersheds at locations outside the tidal influence.
- Monitoring stations for trash and deposited solids shall be same as water quality stations and additionally in wetlands downstream from the point of tidal influence.
- Compliance Monitoring must be conducted by an independent third party like the SFEI. I believe that the trash monitoring conducted by the Santa Clara URPPP is sufficient evidence that municipalities cannot be trusted to "objectively and honestly" monitor and report on trash and it should be done by a third party such as SFEI or as a fallback by the Flood Control Districts.

Increase Role of Flood Control Districts

The Draft Permit is an opportunity to develop a new approach to the regulation of storm water discharges using the authority and responsibilities of Flood Control Districts (FCD). This new approach would be similar to the regulation of industries by POTWs under the pretreatment program. I recognize that this shift in regulatory approach would be contentious with FCD; however, it has numerous advantages including:

- FCD are conveyors of pollutants to San Francisco Bay and considered under the law to be the dischargers of those pollutants.
- FCD were required in EPA regulations and current permits to identify storm drains entering their systems and to establish ordinances to control pollutants entering their systems.
- FCDs have extensive knowledge of all storm drains entering their channels or creeks and have established or mapped these locations. Land use information for each storm drain has been established or can be easily established using GIS and working with the municipalities. In some cases information on each parcels size and impervious surface has or could be established.
- FCD own or have easements on major creeks entering San Francisco Bay. Creeks upstream of FCD systems would likely be owned by the municipality; encased in pipes owned by municipalities; or free flowing on private property, but in some cases creeks flow in pipes where municipalities never accepted the ownership when property was developed. In the upper watersheds it is much more complex and would take time to straighten out. In any event municipalities were supposed to have done that as part of the existing permits or regulations.
- FCD staff frequently patrol their property for evidence of levee damage or locate potential failures and especially during high flow events so they know where trash is being discharged, know where homeless camps are located and where trash accumulates. The more progressive FCD have established programs to inspect creeks for dumping of trash and hazardous waste in drums and for removal of those materials.
- FCD right-of-way can in many cases be used to install full capture devices and access roads used for maintenance of the devices. In many cases they also own the pump stations where trash and gross pollutants accumulate before being pumped to creeks or the Bay.
- FCD have heavy equipment or have heavy equipment rental contracts used for maintenance of cleaning channels or blockages of storm drains to prevent local flooding that can be used for storm water BMP construction and maintenance.

- FCD have trained personnel that are more technically competent in managing storm water than municipalities.
- FCD issue permits for all discharges to their systems and in the case of Santa Clara required compliance with water quality standards - they just never enforced it. I suspect that FCDs would appreciate "outside" regulatory pressure to do something about controlling gross pollutants because they are really the victims and have to clean out the channels and creeks:
 - Sediments are deposited in the channels that have to be periodically removed to reestablish the flood capacity. I strongly suspect that many channels in the Bay Area have lost capacity to carry the 100-year floods because of this and we will see a lot of flooding during the next big storms. In tidal creeks cattails slow down the flow and sediments build up, cattails die during winter months and create more mass and following year new cattails grow and the cycle repeats itself reducing the carrying capacity of the creek or channel. We saw this effect during the 1995 floods in Santa Clara Valley.
 - Contra Costa County FCD last year removed about 650,000 cubic yards of sediment and vegetation from a short stretch of Walnut Creek and quotes in paper indicated that there are more areas where this needs to be done, but they lack money. Newspaper articles also indicate that Cull Canyon Reservoir has lost much of its capacity from sedimentation and requires cleanout. Wouldn't it be a novel idea to keep this sediment from even entering the creeks. We also know that detention basins are rapidly filling up and there is limited money to clean these.
 - Santa Clara Valley Water District is by far the largest generator of solid waste in the County and spends a huge amount of money cleaning channels. Fortunately they get contractors to take dirt for fill or it goes to cover landfills, but this is a growing problem for them. I also suspect that if the sediments were ever tested they would have some "hot spots" and environmental compliance issues.
- FCD already operate regional systems like detention basins and ground water recharge facilities that can optimize groundwater recharge and
- FCD are more familiar with state and federal grant programs and are better staffed to seek the grants for regional projects.
- I believe that the trash monitoring conducted by the Santa Clara URPPP is sufficient evidence that municipalities cannot be trusted to "objectively and honestly" monitor and report on trash and it should be done by a third party such as SFEI or as a fallback by the FCDs.
- Buildup of sediments is probably already being done through periodic surveys that measure accumulation rates - most FCDs simply don't have funding currently to remove the sediments.

I recognize that this new approach may take some time for discussions with the FCD and municipalities and delay issuance of the Tentative Order, but the future program efficiencies and reduction in RWQCB staff time will more than offset this delay.

Support of Governors Policy on Global Warming and Water Supply Agencies Programs to Conserve Water Supplies

Governor Schwarzenegger's June 2005 Executive Order S-3-05 established greenhouse gas emissions targets for California and required biennial reports on climate change

effects on several areas including water resources. The Department of Water Resources and US Bureau of Reclamation established a Climate Change Work Team and its initial July 2006 report assesses potential impacts of climate change on California's water resources. While specific impacts on the State's water resources are yet to be developed it is sufficient to say that the impacts of climate change must be addressed in the selection {Provision C.3.a.i. (11) and Provision C.3.c.i.} and design of storm water treatment systems {Provision C.3.d.i.(3)}.

Water supply agencies are currently facing supply shortages and are urging conservation including reduction of landscaping demands through use of drought tolerant vegetation, more efficient irrigation and supporting wastewater reuse. BACWA have provided information on the importance of recycled water and role that it plays in the Bay Area water supply needs.

The Draft Permit must support the Governor's, water supply agencies and BACWA's efforts to conserve and enhance the State's water resources by:

- Prohibiting the use potable water supplies for the irrigation of vegetated BMPs as a waste and unreasonable use of water under California Constitution Article X, Section 2
- Requiring use of reclaimed water for irrigation of vegetated BMPs
- Encouraging and supporting through assigning grant priority to regional projects that recharge groundwater aquifers with storm water runoff in compliance with the Safe Drinking Water Act Underground Injection Control Program and the Basin Plan's groundwater protection requirements.

Hydromodification Management

Considerable effort has gone into the development of requirements for and the development of individual county hydromodification plans and implementation guidance documents. There have been many good assessments of the damages to creeks and streams that have occurred from increased flows from increased impervious surface during land development. A number of sub watersheds have been identified that are vulnerable to further deterioration of hydrologic, physical, water quality and biological features.

The impacts of urbanization were identified in the early 1990s, but it was Derek Booth of the University of Washington and Tom Schueler of the Center for Watershed Protection in 1997 that identified the threshold of 10% impervious cover at which these impacts were taking place. It is now rather important that Tom Schueler in a March 2003 report "Impacts of Impervious Cover on Aquatic Systems" summarized the review of over 225 research studies documenting even greater impacts from impervious cover. The 10% (2 acre lot) threshold for impervious cover was confirmed, but alarmingly he found that severe degradation of most stream quality indicators are expected beyond 25% (¼ acre lot) impervious cover.

Additional findings reported by Schueler include:

- The Impervious Cover Model used in assessments should only be applied in ecoregions where tested that did not include the Bay Area or arid or semiarid climates. It is unclear what, if any, impervious cover thresholds exist for intermittent and ephemeral streams like we have in the Bay Area.

- There are questions on whether widespread application of watershed practices and storm water management can mitigate the impact of impervious cover and more research is needed.
- Extreme caution should be used in setting high expectations for watershed treatment to mitigate impervious cover.
- The potential performance of better site design or low-impact development has yet to be evaluated.
- Streams with more than 25% impervious cover in their watersheds cannot support beneficial water uses or attain water quality standards and are severely degraded from a physical and biological standpoint.

Given that a very high percentage of Bay Area watersheds are built out and many watersheds have far greater than 25% impervious cover it is questionable whether on site hydromodification measures to limit increases in storm water runoff rates and durations for new and redevelopment projects in most watersheds is the most cost effective method of preventing further deterioration or improving the habitat in creeks. In stream restoration projects and large scale sub regional groundwater recharge projects that serve both new and existing development in watersheds with greater than 25% impervious cover should receive much higher emphasis and would be of greater benefit towards restoration of our creeks. Flood control districts should have a leadership role in this effort for many of the reasons described earlier.

The staff is strongly encouraged to create a forum including a RWQCB workshop where the above concept can be explored. The staff should also require the development of land use maps showing watersheds with greater than 25% impervious cover so that areas can be identified where sub regional projects should be undertaken. The RWQCB should also give priority to these areas when considering grant priorities.

Sustainability of Low Impact Development Best Management Practices

The Regional Board staff in the review and comment on new development and redevelopment projects and in the issuance of water quality certifications has promoted and required the use of swales, infiltration trenches, sand filters, pervious pavements and biofiltration systems. These systems are required in Provision C.3.d.i.(3) to be designed to “treat at least 80% of the total runoff over the life of the project”. Public works infrastructure projects are typically designed for a life cycle of 50 years and new and redevelopment projects would be required to have a longer project life. The Draft Permit is requiring that storm water treatment systems have a life cycle greater than many public works projects. This requirement must be considered in the siting, design, construction, operation and maintenance of the treatment systems and further must address restoration or replacement of these systems during the project’s life.

The sustainability of these systems and the life cycle costs over the life of the projects they serve presents a huge institutional regulatory oversight challenge that have not been adequately addressed in the Draft Permit. Eric Livingston of the Florida Department of Environmental Protection identified five critical factors in the performance and sustainability of Low Impact Development (LID) BMPs – site design, construction, operation, maintenance and monitoring.

Monitoring of the performance of LID BMPs nationwide has been largely done on newly installed systems and little information is available on the effectiveness or condition of these systems after several years of operation (ASCE BMP Data Base). Only one study

has been done on the performance of swales in the Bay Area and no studies have been done on the effectiveness of biofiltration systems in California (Aldrete 2005) and (CASQA 2002). WERF in 2005 reported that there is effectively no water quality performance data available for bioretention, porous pavement and infiltration devices. Limited studies that have been done of infiltration BMPs have found very high (>50%) rates of failure within a period of a few years.

Livingston 2002 reported that only 50% of the swales surveyed in Maryland were considered to be working. Studies on the performance and maintenance of swales found that over 75% of the 33 biofiltration swales surveyed (King County-1995) to be in fair to poor condition having little or no vegetation or extensive channelization. Dr. Gary Minton in 1996 performed an extensive survey of swales in the Pacific Northwest and reported "These results raise concerns about bioswales as a viable treatment BMP". Recent observations of swales in the Northwest and reports on the operation of swales have documented the poor condition of swales due to the destruction of vegetation requiring extensive and expensive reconstruction. A survey of LID BMPs in Portland found that many of the systems were not functioning as designed (personnel communication Gail Boyd 2006). My inspection of five Bay Area swales cited in BASMAA's Start at the Source found that 100% of these systems have failed due to poor design or construction and lack of maintenance. Mosquito abatement districts have reported that several of the swales have standing water and have created a habitat for breeding of mosquitoes.

The performance of infiltration systems (swales, bioretention, infiltration basins, etc) degrade through normal operation as suspended and settleable solids in storm water runoff plug or clog the infiltration surface. WERF in 2005 did an extensive study and field survey on the performance and whole life costs of BMPs and found a wide variation in maintenance of these systems and these systems tend to fail within a period of 2 to 7 years. WERF reported that even the best storm water agencies lack funding for BMP maintenance and that inadequate and deferred maintenance results in rehabilitation or reconstruction of the BMPs.

A large number of storm water BMPs have been installed in the Bay Area – Alameda Countywide Clean Water Program (August 2005), Santa Clara Valley Urban Runoff Pollution Prevention Program (April 2004) and Northern San Francisco Bay Area (November 2005). These reports contain some valuable "lessons learned" and it is timely to revisit these systems during periods of rainfall to determine their functionality and levels of maintenance. The RWQCB should seek funding to perform an independent evaluation of the systems that have been in place more than five years to determine if there are lessons to be learned that could increase the treatment systems sustainability and reduce failures that have been observed at other sites.

Provision C.3.e. regarding operation and maintenance of storm water treatment systems must be significantly strengthened where infiltration BMPs are employed if they are going to be sustainable over the projects life. This requires considerable more investigation and would be appropriate for a focused workshop, but some preliminary suggestions include:

Siting of Treatment Systems

- Systems must be located where they are publicly accessible by heavy equipment necessary to maintain and rehabilitate or replace the system

- Areas where heavy equipment will excavate or compact the soil must be avoided.

Design

- Require that design soil infiltration rates reflect rates at the point of “failure” rather than at optimal rates when the systems are placed in operation.
- Require analysis of the volumes and flow rates of systems designed to meet the uniform intensity approach of 0.2 inch/hour and compare to rates using IDF intensities that correspond to the catchments T_c . System must be designed to manage bypasses and/or scouring of trapped pollutants. See discussion under Flow Based Sizing Criteria.

Construction

- Require “as built” drawings certified by a registered professional civil engineer that system was built as designed or address any deviations and impact of system’s performance as a result of any deviation
- Require “as built” infiltration tests and replacement of material failing to meet design rates

Operation

- Require that system failure be clearly defined so that rehabilitation or replacement is undertaken
- Require detailed operational plans be prepared especially covering flow control devices that are incorporated in the system and when underdrains are used
- Prohibit use of potable water and require use of reclaimed water for irrigation

Maintenance

- Require description and type of maintenance equipment that will be used to avoid compaction of the infiltrating area

Rehabilitation and Replacement

- Require preparation of a plan including estimated costs for rehabilitation or replacement of system upon failure

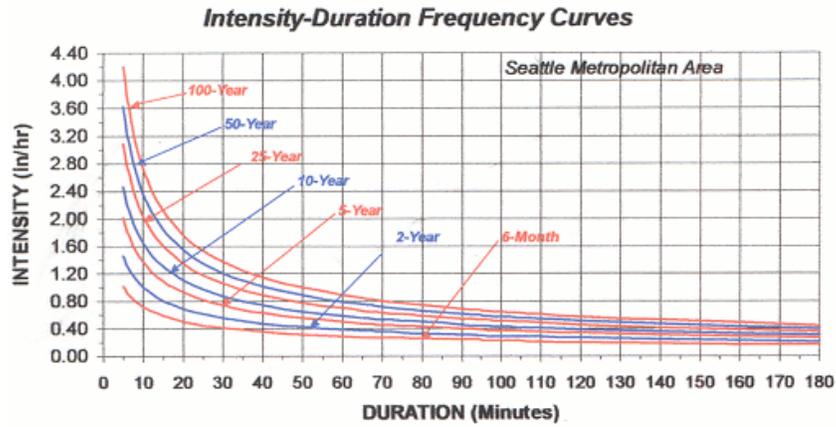
Flow Based Sizing Criteria

The flow based sizing criteria for storm water treatment systems of 0.2 inches per hour {Provision C.3.d(2)(c)} is fundamentally flawed when applied to the design of BMPs for small LID catchments. These issues were raised during the consideration of the Contra Costa County program’s HMP and the response to comments were did not address my concerns or indicate that the staff understands the importance at looking at short-duration high intensities that can occur even during small storm events. Unfortunately many storm water BMP designs are now using this flawed criteria because it results in small land requirements. I believe that these BMPs are under designed at least by a factor of 4 and as high as 10 when high infiltration rates are applied and will frequently bypass or scour accumulated solids. I understand that the RWQCB staff used the 0.2 inch/hour criteria simply because it was being used elsewhere and has not done any analysis on whether it is applicable to the Bay Area’s wide variation in rainfall characteristics.

Catchments for the small LID BMPs have times of concentration (T_c) less than 5 minutes. Rainfall intensities for 5-minute interval data can readily be obtained through software programs analyzing continuous rainfall records, NOAA and the Department of Water Resources. This type of data is readily available from a number of continuous reporting rain gauges located throughout the Bay Area. Various software programs can easily develop the short-duration rainfall depths and intensities from existing rainfall

records. A number of Bay Area communities and water agencies have continuous data to generate the 5-minute intensities. The NOAA site <http://hdsc.nws.noaa.gov/hdsc/pfds/> has information on multiple rain gauges in California where you can obtain these 5-minute intensities as well as links to EPA water quality and TMDL information. The importance of using the short-duration high intensities in the design of LID BMPs cannot be overstated. You should contact Jim Goodridge former State Climatologist working as a retired annuitant for DWR to gain his professional opinion on this. He can be reached at 530-893-4036 or jdgoodridge@sbcglobal.net. Jim has given me all the data used to update Bulletin No. 195 and I can make that available to you if interested.

I also understand that the Bay Area storm water programs have adapted the Western Washington Hydrology Model in modeling their watersheds; however, the model results in significantly undersized LID BMPs. The City of Seattle's experience with BMPs designed using the WWHM approach found that BMPs are overwhelmed and bypass or scour during an event with short-duration high intensity periods of rainfall (MGS Engineering Consultants, Inc. December 2003). The City's analysis also found that these short-duration high intensity periods have rainfall intensities significantly greater than 50 and 100-year hourly intensities as indicated in the following graph.



Control of Gross Pollutants

The discharge of trash and solid waste to the Bay Area's creeks, wetlands, Bay and Ocean have been prohibited in RWQCB water quality plans and policies since the mid 60's, Basin Plans since 1975 and have been prohibited in Countywide NPDES permits for over 15 years. The Permittees have been implementing municipal maintenance practices and public education programs for over 15 years that are aimed at reducing the discharge of gross pollutants including trash. However, ongoing violations of the NPDES Permits discharge prohibitions and receiving water limitations have been well documented by the RWQCB's Rapid Trash Assessment Protocol, testimony received by the RWQCB on March 14, 2007 and 303(d) submittals of February 28,2007. The time has long past for conducting any further studies to document the presence of gross pollutants in view of the progress and actions that have been taken by the Los Angeles RWQCB to address trash in that regions waterways and magnitude of the trash found in the Bay Area's waters.

The Draft Permit should include the following elements:

GOALS FOR CONTROL OF TRASH, LITTER AND GROSS POLLUTANTS

- Trash and Litter Program Goal – Achieve trash and gross pollutant free creeks, wetlands, beaches, San Francisco Bay and ocean in the San Francisco Bay Area by 2017. Eliminate discharges of trash and gross pollutants to San Francisco Bay, ocean and urban creeks in the San Francisco Bay watershed within a period of 10 years – 10% annual reduction. Reduce intentional dumping of litter at locations where it may enter waters of the state.
- Gross Pollutant Program Goal – Reduce discharge of debris and coarse sediments concurrent with reduction of trash and litter that result in the deposition of material that cause nuisance or adversely affect beneficial uses.
- *Rationale or Comment*
 - *It is important to establish goals on what you are trying to achieve for trash and litter as well as gross pollutants because the BMPs to control each can be materially different*
 - *Gross pollutants include litter, debris and coarse sediments. Research is showing that the mass of solids, heavy metals and nutrients are associated with particles >150µm. Many of the pollutants of concern regulated by the Draft Permit are associated with suspended and settleable solids and many full capture devices will effectively remove both trash and these solids.*
 - *When 80% of the trash and gross pollutants have been eliminated then the RWQCB should determine whether the levels remaining are impacting beneficial uses and whether further reductions are needed to protect those uses.*

FINDINGS TO BE INCLUDED IN DRAFT PERMIT

- Definitions
 - **Gross Pollutants** – Trash and litter, debris and sediments that would be retained on a five millimeter (0.20 inch) screen and transported as floating, submerged or neutrally buoyant materials.
 - **Trash and Litter** - Human derived material including paper, plastics, metals, cigarette butts, glass and cloth
 - **Debris** – Any organic material transported by storm water including leaves, twigs, natural wood and grass clippings
 - **Coarse Sediments** – Inorganic breakdown products from soils, pavement or building materials > 75µm
 - **Full Capture Devices** – Structural BMPs that achieve at least 90% capture of gross pollutants – trash, litter, debris and coarse sediments.
- Trash and litter is a pollutant of concern, is a nuisance and adversely affects beneficial uses. The presence of trash and litter in receiving waters is a violation of the 1975 Basin Plan prohibitions and current storm water NPDES permits.
- Debris and coarse sediments when deposited in creeks, wetlands and the Bay at levels that smother aquatic life, create unsightly material or toxic sediments are violations of the 1975 Basin Plan prohibitions and current storm water NPDES permits.
- Trash and debris adversely affect aquatic life and birds through entanglement, ingestion and subsequent starvation, bioconcentration of pollutants, smothering of habitat. Trash and debris when it accumulates in areas where public has access to waterways is a public nuisance.
- Trash and litter such as discarded medical waste and hypodermic needles, human and pet waste and broken glass including fluorescent light bulbs are significant threats to public health and constitute a contamination.

- The RWQCB in recommendations on the 2001 303(d) list revisions indicated that:
 - Municipalities would be expected to assess trash impairments in their jurisdictions and report findings in their annual reports.
 - Urban creeks with no new information by the next listing process (2006) will be automatically listed as impaired due to trash.
- The RWQCB Staff as part of the Surface Water Ambient Monitoring Program developed and implemented a rapid trash assessment method at 26 sites in eight of the nine Bay Area counties (Napa County excepted) during 2003 -2005 that included 85 individual site surveys. This study concluded that:

“The data collected and presented in this report, over the 2003-2005 period, suggest that the current management approach to managing trash in water bodies is not improving the problem. The levels of trash in the waters of the San Francisco Bay Region are alarmingly high, considering the Basin Plan prohibits discharge of trash and that littering is illegal with potentially large fines. Even during dry weather condition, a significant quantity of trash, particularly plastic, is making its way into waters and being transported downstream to San Francisco Bay and the Pacific Ocean.”

- Only the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPP) has conducted trash assessments as suggested by the RWQCB in the 2001 303(d) listing revisions. The SCVURPPP in the FY2005-2006 Annual Report indicates that 27 trash assessment evaluations conducted during FY2005-2006 reported that “Most of the sites were scored as “optimal” or ‘suboptimal”, while only five percent were scored as “marginal”; no sites were scored as poor.” This report is dramatically inconsistent with photographs taken by the former employees of the Santa Clara Valley Water District and Larry Johnmann of the Guadalupe River Resource Conservation District presented at March 14, 2007 workshop and 303(d) 2007 submittal.
- The SWRCB in comments on the 2001 list indicated that existing storm water permits should be used to reduce trash discharged via storm drains and that notices to comply, cleanup and abatement orders, time schedule order, cease and desist orders and administrative civil liabilities are appropriate enforcement options.
- RWQCB will recommend priority grant funding for installation of trash “full capture devices” in the retrofit of flood control facilities and pump stations
- A discharger that does not aggressively pursue local, state, and federal grants for the construction of full capture devices has not met the MEP requirements for reduction in the discharge of gross pollutants.

IMPLEMENTATION PROGRAM

- Flood Control District - Trash and Gross Pollutant Assessment and Reduction Program
 - Applicability – The Bay Area flood control agencies shall conduct trash and gross pollutant assessment and reduction programs for all channels, streams and creeks where they are the owner in fee title or have easements
 - Assessment Program

- Initial Assessment and Documentation of Sources of Trash and Debris **within 60 days** of permit adoption
 - Submit map showing location of all pipes 18” and larger and storm water conveyance channels discharging to district facilities
 - Submit list of all locations where district personnel have knowledge of where trash accumulates
 - Full Assessment and Documentation of Sources of Trash and Gross Pollutants **within 180 days** of permit adoption
 - Submit map showing location of all pipes smaller than 18” discharging to district facilities
 - For each pipe or storm water conveyance channel submit a map showing tributary drainage area, political boundaries and land uses by residential, commercial, industrial, public institution and highway with estimates of percent land use for each category.
- Monitoring Program
 - Provide **within 180 days** of permit adoption a detailed description and schedule for implementation of a program to monitor trash and gross pollutants discharged from representative watersheds. The program shall sufficient to characterize the volume, weight and physical characteristics of the trash and gross pollutants from each tributary watershed and sufficient to document annual reductions in loadings to achieve the Program’s Goals
 - Districts shall conduct assessments of their facilities on a biannual basis to determine the rate of accumulation and impacts of sediments and debris on beneficial uses. If assessments are not conducted then a regulatory program shall be implemented to achieve full capture of Gross Pollutants
- Regulatory Program
 - Describe **within 60 days** of permit adoption the trash and litter BMPs that are currently being implemented, the current level of implementation and additional BMPs that will be implemented and/or increased level of implementation to achieve the Program Goals.
 - Describe **within one year** from the date of permit adoption and annually thereafter the BMPs that will be implemented in the following year to demonstrate an additional 10% reduction
- Implementation Program
 - Districts through regulation of discharges to their facilities shall achieve an annual 10% reduction in trash and litter beginning the second year of the permit
 - Districts through maintenance programs shall remove deposited sediments and debris material that are adversely affecting beneficial water uses
 - Districts shall install or require installation of trash and litter “full capture devices” for all new discharges to its facilities and as part of all flood control projects

- RWQCB will recommend priority grant funding for installation of trash “full capture devices” in the retrofit of flood control facilities and pump stations
 - RWQCB will require installation of full capture devices as a condition of water quality certification under CWA Section 404 for any discharge from an improved or new flood control facility
- **RATIONALE/COMMENTS**
 - *Flood control agencies are comparable to POTWs in that they have the authority to regulate what is discharge into their facilities. They are dischargers because they are conveyors of pollutants to the Bay even though they do not necessarily generate the pollutants.*
 - *Districts issues permits for discharges to their facilities and have been required to establish the authority to control pollutants as part of the NPDES permitting process.*
 - *Districts have inventoried and know where the pipes are discharging to their facilities.*
 - *Districts have personnel that routinely patrol their facilities for flood control protection purposes and have or should have readily available knowledge of sources of trash and where it accumulates.*
 - *Districts have heavy equipment capable of maintenance of storm water BMPs.*
 - *The incremental cost of storm water treatment devices in a new flood control project is rather small in comparison to retrofit that project at a later date.*
- **Municipalities - Trash and Gross Pollutant Assessment and Reduction Program**
 - Applicability – Municipalities are primarily responsible for public education, municipal maintenance practices and implementation of BMPs to achieve compliance with water quality standards at the point of discharge in the upper watershed, for discharges to their storm drainage facilities and to flood control district facilities. Many of these discharges occur to creeks in the upper watersheds and to flood control facilities operated by flood control districts. Illegal dumping occurs primarily in the upper watersheds or areas where municipalities have jurisdiction rather than in larger flood control channels.
 - Assessment Program
 - Initial Assessment and Documentation of Sources of Trash and Debris **within 60 days** of permit adoption
 - Illegal Dumping and Homeless Camps
 - Submit list of sites/locations where there is a record of illegal dumping of trash and debris and known homeless camps.
 - Sites/locations should be sufficiently described relative to cross streets, business address, physical landmarks or GPS
 - Storm Drains
 - Submit map showing location and size of all storm drains discharging to creeks and flood control district facilities

- The map shall show tributary drainage area and land use by residential, commercial, industrial, public institution and highway with estimates of percent land use for each category.
 - Submit map **within 180 days** of permit adoption showing locations for each creek where trash assessments have found >300 trash items/100 feet have accumulated during any of the previous four years.
- Monitoring Program
 - Conducting field assessments pursuant to the modified Rapid Trash Assessment Protocol that documents the impact on beneficial water uses;**and**
 - Provide **within 180 days** of permit adoption a detailed description of and schedule for implementation of a program to monitor trash and gross pollutants from representative watersheds. The program shall sufficient to characterize the volume, weight and physical characteristics of the trash and gross pollutants from each tributary watershed and sufficient to document annual reductions in loadings to achieve the Program's Goals
 - Rapid Trash Assessments and monitoring programs shall be conduct in all creeks listed in the 8/27/01 draft RWQCB staff report, but must be expanded to include Colma Creek and Vista Grande Canal in San Mateo County and creeks tributary to San Pablo and Upper San Leandro Reservoirs in Contra Costa County (drinking water supplies);
- Regulatory Program
 - Describe **within 60 days** of permit adoption the trash and litter BMPs that are currently being implemented, the current level of implementation and additional BMPs that will be implemented and/or increased level of implementation to achieve the Program Goals.
 - Describe **within one year** from the date of permit adoption and annually thereafter the BMPs that will be implemented in the following year to demonstrate an additional 10% reduction
- Implementation Program
 - Municipalities through regulation of discharges to their facilities shall achieve an annual 10% reduction in trash and litter beginning the second year of the permit
 - Municipalities trough maintenance programs shall remove deposited sediments and debris material that is adversely affecting beneficial water uses
 - Municipalities shall install or require installation of trash and litter "full capture devices" for all new discharges to its facilities and as part of all flood control projects
 - RWQCB will recommend priority grant funding for installation of trash "full capture devices" in the retrofit of flood control facilities and pump stations

- RWQCB will require installation of full capture devices as a condition of water quality certification under CWA Section 404 for any discharge from an improved or new flood control facility
- Compliance to be demonstrated by:
 - Conducting field assessments pursuant to the modified Rapid Trash Assessment Protocol that documents the impact on beneficial water uses; ***and***
 - Installation of structural full capture BMPs or implement control measures that the municipality has demonstrated through peer reviewed technical studies that document the BMPs or control measures achieve full capture of all particles ≥ 5 mm in all catchments and that achieve an annual 10% reduction in the trash loading
- Control Measures
 - Municipalities shall provide in second year annual report and annually thereafter for any new control measure a technical report supporting claims that the BMPs or control measures achieve capture of all particles ≥ 5 mm
 - Reports shall provide required inspection frequencies and maintenance requirements and document that municipalities have implemented necessary oversight or municipal maintenance management programs to ensure that control measures are operated and maintained on optimal schedules and levels.

RATIONALE/COMMENTS

- *Agencies responsible for storm drainage facilities are or should be aware of locations where trash accumulates.*
- *Municipalities have previously been required to inventory their storm drainage systems and points of discharge into creeks.*
- *The LARWQCB's trash TMDL established that basin plan and NPDES permits provide the basis for goals of zero trash without having to develop a TMDL. The USEPA, SWRCB and OAL approved the TMDL.*
- *BMPs and/or control measures have been identified that can if properly designed, operated and maintained can effectively control trash ≥ 5 μ m in storm water runoff.*
- *Rapid Trash Assessment protocols can document whether levels of trash in receiving waters are impacting beneficial water uses, but can be used to document the reduction of trash discharged from storm drains and creeks*
- *Full capture devices will document compliance with annual trash reduction goals.*

cc/ Tom Mumley