



CITY OF STOCKTON

DEPARTMENT OF MUNICIPAL UTILITIES

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June 30, 2009

Bay Delta Conservation Plan – Other Stressors Workgroup
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COMMENTS FROM THE CITY OF STOCKTON AND THE COUNTY OF SAN JOAQUIN ON THE DRAFT OTHER STRESSORS CONSERVATION MEASURE OSCM5 DATED MAY 8, 2009

The City of Stockton and the County of San Joaquin appreciate the opportunity to provide comments on the Other Stressors Conservation Measure – OSCM5 (dated May 8, 2009¹), entitled “*Reduce the Loads of Toxic Contaminants in Stormwater and Urban Runoff by Working with Existing Regulatory Programs in the Delta.*” The City and County are regulated under the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (Order No. R5-2007-0173) and collaboratively develop and implement their corresponding Stormwater Management Plans (SWMPs) to meet the requirements of this permit.

We have reviewed the draft OSCM5 and provided a revised version as an attachment to this letter. We also have the following general comments for your consideration.

1. As demonstrated by the many control measures proposed by the BDCP, there are a multitude of potential stressors to fish and other aquatic life within the Delta. Since stormwater is just one potential stressor, the BDCP should conduct the studies necessary to understand the relative magnitude of impact of each identified stressor so that the critical and most cost-effective stressors are the focus of the BDCP. More importantly, the BDCP should conduct the studies

¹ It should be noted that on June 22, 2009 the City and the County received an updated version of OSCM5 (dated June 16, 2009). While the comments that were drafted pursuant to the May 8, 2009 version are still applicable, comment #7 is an additional comment that is directly related to specific language changes within the June 16, 2009 version.



necessary to determine if urban stormwater is a potential stressor on the BDCP covered species.

2. The background information for the OSCM5 should recognize that the stormwater agencies have been regulated for over 15 years and, in addition to the overarching stormwater program, have established several pollutant specific water quality based plans, such as the Pesticide Plan, which focus the programs on identified pollutants of concern. The Pesticide Plan includes monitoring, the implementation of BMPs, program effectiveness assessments, and reporting.
3. Even if activities are funded by the BDCP, OSCM5 states that the stormwater agencies would be responsible for "submitting reports as specified in the MOA that demonstrate that the work plan has been implemented." Coordination with the BDCP Implementing Agencies and Fishery Agencies and the preparation of additional reports represent significant administrative costs to stormwater agencies. As such, the BDCP should cover all costs associated with the activities that would be undertaken pursuant to the MOA.
4. Since the potential impact and/or the magnitude of the effect of each of the other stressors within the Delta have not been determined, the problem statement of OSCM5 should be modified. For example, the OSCM5 problem statement states that stormwater "is thought to be a large contributor to toxics in the Delta (Weston et al. 2005, Amweg et al. 2006, Werner et al. 2008)." Each of the studies cited focus on pyrethroids. The most recent study cited, Werner et al. 2008, states that "little is known about the toxic effects of pyrethroids on resident Delta species." As Werner et al. 2008 notes, "[r]ecent research findings suggest that pyrethroids are not transported far from the source (Amweg et al., 2006), thus sources within the Delta or immediately adjacent to the Delta are likely to be more important than upstream sources." Weston et al. 2005 is a study of toxicity in urban creeks in Roseville and therefore does not reflect contributions to the Delta as a whole. Amweg et al. 2006 monitored multiple urban creeks in California, but monitored each site on four or fewer occasions. As storm events strongly impact stormwater quantity and quality, the scope of this study is not large enough to draw conclusions about the magnitude of storm water's impact on the Delta. Considering the uncertainty associated with the information cited and relied upon in the conservation measure, the problem statement should be revised to indicate that stormwater runoff is a potential source of pollution to the Delta but not make assertions regarding the magnitude of this source, nor its effects on BDCP covered species.
5. In the hypothesis section, the assertion is made that "Weston et al. (2008) found that residential runoff is a larger source of pyrethroid pesticides than agricultural

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runoff." This citation is from a presentation made by Weston in 2008. Vanessa Emerzian indicated per e-mail communication that *Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks* (Weston, 2009) was a paper based on this presentation. This study states "there is no agriculture in the study area" and does not compare loads of pyrethroids in residential runoff vs. agricultural runoff. Thus, it is unclear to us how the conclusion can be made that residential runoff is a larger source of pyrethroid pesticides than agriculture return water. Furthermore, this study also notes that pyrethroids are strongly hydrophobic and continues "[t]herefore, much of the pyrethroid in runoff samples may be associated with suspended particles." The study calls the OSCM5 statement into question by stating, "[u]rban drains discharge far less sediment than agricultural drain systems (by about 20-fold, compared to the farm noted above) so pyrethroid loading from a given urban drain may be substantially less than that from an agricultural drain." This does not discuss the load of sediment from agricultural drainage sheds versus urban drainage sheds. However, tributaries to the Delta contribute 99% of the suspended sediment load to the Delta according to the Delta Methylmercury TMDL (Central Valley Regional Water Quality Control Board, 2006). As these tributaries primarily drain agricultural areas, this suggests that the reverse of the OSCM5 statement may be true. As a result, the City and County request that the statement in the hypothesis section be removed.

6. OCSM5 states that "[t]he BDCP Implementing Entity would be responsible for monitoring the effectiveness of stormwater pollution load reduction activities in achieving covered fish species benefits." Until the relative magnitude of impact of urban runoff, in general, or individual contaminants has been identified, determining program effectiveness by monitoring fish species assumes a correlation between ambient pollutant levels and fish species benefit, which has not been determined or proven. OCSM5 itself recognizes "the effect of some contaminants in stormwater on covered fish species at a population level is not well known". To date, no documentation exists to definitively link ambient pollutant levels in the Delta to fish population success. An intermediary metric for program effectiveness should be used until the relative magnitude of impact of each stressor can be determined. Monitoring may then attempt to assess a correlation between pollutant load reduction, ambient levels, and fish benefit, however, the ability to establish a direct linkage between a pollutant load reduction and population-level benefit to fish species is tenuous, at best.

Further, the California Stormwater Quality Association (CASQA) identifies the improvement of receiving water quality as the highest level outcome in program effectiveness assessment and notes "[c]hanges in receiving waters and the environment resulting from stormwater programs may only be seen over long

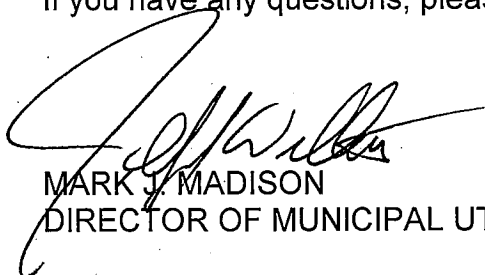
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periods of time that allow the cumulative impacts of multiple control measures and program elements to result in a measurable change in water quality" (CASQA Municipal Stormwater Program Effectiveness Assessment Guidance, 2007). Taking this a step further to attempt to measure the impact of receiving water quality on fish will likely take an even longer period of time. Therefore, even if a correlation between pollutant load reduction, ambient levels and population-level fish benefit is assumed, fish benefit is not an appropriate program effectiveness measure for the short term.

7. The June 16, 2009 version of OSCM5 includes several actions that have been identified as potential projects that could be funded by the BDCP Implementing Entity. Since the list of projects has not been fully vetted with the stormwater agencies within the Delta and may not be the most cost effective way to prevent/remove the pollutants of concern, OSCM5 should clearly identify that the list of projects are simply included as *potential* projects and, in no way, should be construed as a list of the only types of projects that should be considered or as priority projects for funding.

The City and County appreciate your consideration of these comments and look forward to working with the BDCP to provide additional input.

If you have any questions, please contact Courtney D. Vasquez at (209) 937-8705.



MARK J. MADISON
DIRECTOR OF MUNICIPAL UTILITIES

MJM:CDV:rk

cc: C. Mel Lytle, Ph.D. County of San Joaquin Water Resources Coordinator

emc: Courtney D. Vasquez, Stormwater Program Manager

Attachments: OSCM5 Revised Document

OSCM5: Reduce the Loads of Toxic Contaminants in Stormwater and Urban Runoff by Working with Existing Regulatory Programs in the Delta. The BDCP Implementing Entity would coordinate with the Sacramento Stormwater Quality Partnership, the City of Stockton, the County of San Joaquin, the City of Tracy, and other small municipalities (hereafter “stormwater agencies”) who are currently regulated pursuant to National Pollutant Discharge Elimination System (NPDES) municipal stormwater permits to implement activities consistent with and/or identified within their respective stormwater management plans (SWMPs)¹. Activities would be implemented if water quality standards are exceeded, if urban stormwater is causing or contributing to a violation of an applicable water quality standard, if violation of the water quality standard is directly tied to BDCP covered species, and if the corresponding benefits would be expected to protect BDCP covered species.

The stormwater agencies would voluntarily enter into a Memorandum of Agreement (MOA) with the BDCP Implementing Entity, or similar binding instrument that would describe the respective roles and obligations for the expenditure of the BDCP funding. Elements of the MOA would include a description of specific activities that would be funded by the BDCP, provisions for documenting work performed, provisions for monitoring, and provisions for modifying or terminating the MOA.

The BDCP Implementing Entity would be responsible for developing annual work plans in coordination with the stormwater agencies and Fishery Agencies that specify the activities that would be implemented by the stormwater agencies during the specified timeframe. The stormwater agencies would be responsible for implementing their designated tasks within the annual work plan and submitting reports as specified within the MOA that demonstrate that the work plan has been implemented.

The BDCP Implementing Entity would be responsible for monitoring the effectiveness of the stormwater-related activities in reducing pollutant loads from stormwater into the Delta. However, it is recognized that there are significant uncertainties and unknowns surrounding the potential population level benefits that may be attributable to the reduction of stormwater and/or urban runoff loads on BDCP covered fish species (see *Uncertainties/Risks* discussion below). As a result, it may be difficult to establish a connection between stormwater and/or urban runoff load reductions and covered fish species benefits.

The BDCP Implementing Entity would use the results from the program effectiveness assessment to adaptively manage the funding levels, control methods, or other related aspects of the program, if it is determined by all entities that there is value in continuing the program. Such changes would be included in the subsequent annual work plans. If a connection between the reduction of stormwater and/or urban runoff loads and measurable benefits to covered fish species can be determined, the program may also be adjusted in order to improve the effectiveness of the program.

If monitoring results indicate that a reduction of stormwater and/or urban runoff loads does not substantially and/or cost-effectively benefit the covered fish species, then the BDCP Implementing Entity, in coordination with Fishery Agencies, may terminate this conservation measure. The BDCP Implementing Entity, in coordination with the Fishery Agencies, would also terminate this conservation measure if the stormwater agencies choose not to enter into a MOA, or if the stormwater agencies terminated the MOA pursuant to its provisions, with the BDCP Implementing Entity. If terminated, the remaining funding would be reallocated to augment funding for other, more effective conservation measures identified in coordination with the Fishery Agencies through the BDCP adaptive management process.

¹ The stormwater-related activities will be focused on treatment controls rather than source controls.

Problem statement: Stormwater runoff has been identified as the leading source of surface water pollution in California (USEPA, 2000). As stormwater runoff returns to the Delta, it may accumulate sediment, oil and grease, pesticides, and many other toxic substances. Unlike sewage, stormwater is not centrally treated by stormwater agencies before entering the Delta. Instead, stormwater agencies implement best management practices (BMPS) and other control measures to reduce the discharge of pollutants in urban runoff to the maximum extent practicable (MEP).

All major urban centers in the Delta, including Sacramento, the County of San Joaquin, Stockton, and Tracy, and multiple smaller cities are regulated under NPDES municipal stormwater permits which require the Permittees to develop and implement a Stormwater Management Plan (SWMP). The overall goal of the SWMP is to reduce the level of pollutants in stormwater to the MEP, and protect surface water. The SWMPs identify the goals, objectives, legal authorities, source identification processes, funding sources, BMPs, monitoring programs, and effectiveness assessment processes and functions as the principal policy and guidance document for complying with the NPDES permits.

In compliance with their municipal stormwater permits, the stormwater agencies are already implementing their respective SWMPs as well as the associated monitoring programs. Some of these programs include the implementation of BMPs that target the reduction of pesticide loads through the implementation of integrated pest management programs while others include the monitoring of pesticides such as pyrethroids in water and sediments, water column toxicity monitoring, sediment toxicity monitoring, and/or bioassessment monitoring. The toxicity monitoring is intended to directly measure the impacts of water quality on aquatic life and the bioassessment monitoring is intended to track the health of aquatic communities and provide an indication of larger ecosystem health.

The primary goal and objective through the continual implementation, assessment, and adaptive management of the SWMP is to help surface waters achieve compliance with water quality standards. To this end, the municipal stormwater program is a long-term program that would benefit from additional funding.

Hypotheses: Assisting the existing regulatory programs, such as the stormwater programs, to reduce the amount of pollution in stormwater runoff entering the Delta waterways is hypothesized to provide benefits to the covered BDCP fish species by:

- Reducing direct mortality of splittail, delta and longfin smelt, green and white sturgeon, steelhead, and Chinook salmon (all races) from contaminants that may be present in urban runoff, to the extent demonstrated to occur. Pyrethroids are suspected to affect aquatic organisms in urban waterways within the Delta, including covered fish species and their food (Weston et al. 2005) (see OSCM4 for more information);
- Reducing sublethal effects (behavior, tissue/organ damage, reproduction, growth, and immune) of contaminants that may be present in urban runoff on splittail, delta and longfin smelt, green and white sturgeon, steelhead, and Chinook salmon (all races), to the extent such effects are shown to occur. Pyrethroids and other chemicals from urban and stormwater run-off can potentially reduce the health of covered fish species. Suspended sediment in high concentrations can impair respiration and reduce the growth rate of fish (e.g., Sutherland and Meyer 2006); and
- Increasing food abundance for splittail, delta and longfin smelt, green and white

sturgeon, steelhead, and Chinook salmon (all races), to the extent food web effects may be linked to urban runoff. Above specific threshold levels and exposure durations, pesticides and herbicides can be highly toxic to invertebrates and phytoplankton, which form the base of the food web or are important prey species for covered fish species (Amweg et al. 2005, Weston et al. 2005, Stoiber et al. 2007). Further, suspended sediment is the primary attenuator of sunlight in the water column (Cloern 1987, Jassby et al. 2002) and thus can reduce photosynthesis in phytoplankton and submerged aquatic vegetation if seasonally elevated.

Implementation timeframe: It is anticipated that this conservation measure could be implemented in the BDCP near-term implementation period if the conditions described above are achieved.

Implementation considerations: The BDCP Implementing Entity would need to coordinate with each stormwater agency separately because each agency is under a separate NPDES MS4 permit.

Resiliency to future changes: This conservation measure is not expected to be affected by future changes.

Uncertainties/risks: The effect of some contaminants in stormwater and urban runoff on covered fish species at a population level in the Delta is not well known nor documented.

Monitoring and adaptive management considerations: *[Note to reviewers: this section is a general summary; more detail will be provided in future iterations.]* Individual stormwater agencies would be responsible for conducting monitoring necessary to assess the effectiveness of BDCP supported elements of their stormwater management plans. The Implementing Entity will provide ongoing review of monitoring progress, and other relevant reports from the stormwater agencies related to the effectiveness of the Program for reducing contaminant loads in stormwater and urban runoff. The Implementing Entity will coordinate with the stormwater agencies to adjust stormwater pollution reduction strategies and funding levels through the BDCP adaptive management process as appropriate based on review of the cities' monitoring and other reports.

Reversibility: Reversibility of this conservation measure is expected to be moderate to high due to the possibility of the need for infrastructure improvements and significant capital investment.

References

Cloern, J.E., 1987, Turbidity as a control on phytoplankton biomass and productivity in estuaries: *Continental Shelf Research*, v. 7, no. 11/12, p. 1367–1381.

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U.S. EPA, 2000, Quality of Our Nation's Waters: Summary of the National Water Quality Inventory 1998 Report to Congress. 841-S-00-001, June 2000.