

**Response to Comments on Tentative Resolution No. R9-2010-0066**  
**Received by May 10, 2010**

**Comment No. 1**

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*The Hydromodification Management Plan (HMP) provides an incomplete and improper conception of low impact development (“LID”). The HMP only weakly incorporates LID techniques, limited almost entirely to infiltration, while effectively ignoring evaporation and water harvesting and reuse practices. Further, the HMP only cursorily addresses the use of soil amendments and is almost entirely predicated on use of USDA soil survey data, which is inappropriate for site specific analysis of infiltration potential.*

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

**Response:**

The San Diego Water Board disagrees that the HMP provides an incomplete and improper conception of LID. Chapter 7 of the HMP encourages the use of LID facilities for the dual treatment of the 85<sup>th</sup> percentile water quality event as well as hydromodification mitigation flow control. Standards for LID implementation, which include options for harvesting and reusing rainwater, have already been developed and are provided in the Model Standard Urban Storm Water Mitigation Plan (Model SUSMP). The HMP, once adopted, will be incorporated into the Model SUSMP. Only after a project applicant demonstrates that implementation of LID is infeasible, can other approaches for both water quality treatment and hydromodification mitigation be considered. Special circumstances allowing for the use of alternative treatment are described in the Model SUSMP and are limited in scope. This approach is consistent with the Development Planning provisions of Order No. R9-2007-0001.

The commenter states that the LID techniques in the HMP ignored both evaporation and water harvesting and reuse practices. However, the Copermittees are using continuous simulation modeling to develop BMP sizing factors, which in turn use evapotranspiration data as an input variable—ensuring that this mechanism is not ignored. Further, the Model SUSMP states that it may be possible to harvest and reuse rainwater in conjunction with integrated management practices. A project applicant may consider harvesting and reusing rainwater, as long as the storage devices meet the hydromodification mitigation criteria presented in the HMP. Order No. R9-2007-0001 does not require reuse of rainwater as part of the HMP or Model SUSMP.

The commenter incorrectly states that the HMP only cursorily addresses the use of soil amendments and is almost entirely predicated on use of USDA soil survey data, as opposed to site specific infiltration data. Chapter 6 of the HMP specifically states that site-specific geotechnical investigations be conducted to determine site-specific infiltration rates. USDA soil survey data mentioned as

part of the Literature Review is not meant to be used in place of site specific data. Additionally, both the HMP and the Model SUSMP discuss and encourage the use of amended soil to improve infiltration rates.

### **Comment No. 2**

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*The HMP's definition of critical flows is poorly-founded and overly complex. The HMP provides a vaguely defined alternative to use of a single value critical flow of 10 percent of the pre-development two-year flow rate, with little guidance or requirement for its application.*

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

#### **Response:**

The San Diego Water Board disagrees that the definition of critical flows is poorly-founded, as the analysis to support the findings is discussed in Chapter 5 and Appendix A of the HMP. The Copermittees used 170 combinations of channel, rainfall, and watershed conditions in a flow-erosion model to identify appropriate lower flow thresholds appropriate for typical conditions in San Diego County.

Agreeably, the flow charts in Chapter 6 describing the appropriate lower flow threshold are complex, and project applicants may find that the identification of the appropriate value to be difficult. However, the HMP clearly states that a conservative, blanket value of 0.1Q2 (10 percent of the flow rate associated with the 2-year frequency storm) may be used if project applicants wish to forego the complicated analysis. The value of 0.1Q2 was identified as a conservative value that would be protective of the most sensitive, highly erodible streams. Therefore there is no requirement for project applicants to identify and use a lower flow threshold other than 0.1Q2. Guidance for the voluntary use of an alternative lower flow threshold is provided in Chapter 6.

Copermittees will be responsible for ensuring that project applicants, should they opt to use an alternative lower flow threshold, use the methodology correctly. The San Diego Water Board will take appropriate enforcement action against any Copermittee allowing a project applicant to use an inappropriate lower flow threshold, or one that is not protective of downstream receiving waters.

### **Comment No. 3**

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*The HMP contains ill-conceived and excessive exemptions from its requirements. Among other concerns, the exemptions allowed by the HMP do not appropriately define the term pre-project to reflect "undeveloped," as opposed to pre-construction or conditions, and exclude both too much land area and too many development and redevelopment projects from compliance requirements.*

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

**Response:**

The San Diego Water Board agrees that the HMP contains excessive exemptions from its requirements. As a result, Tentative Resolution No. R9-2010-0066 directs the Copermittees to remove exemptions relating to urban infill projects because these exemptions are predicated on land zoning in General Plans. The exemption only applies if the contributing watershed will not be paved over more than an additional 3 percent over existing conditions (as allowed in the General Plans). This exemption is inappropriate because the Copermittees can change General Plans and land zoning that would affect the status of a previously exempted project.

The remaining exemptions are based on analysis showing that unmitigated flows from exempted projects would not cause erosion downstream. Provision D.1.g. of Order No. R9-2007-0001 requires Copermittees to "...manage increases in runoff discharge rates and durations from all Priority Development Projects, **where** such increased rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force" [emphasis added]. Hydromodification mitigation requirements are meant to be implemented on projects that would likely cause downstream erosion, not on projects that are not likely to cause downstream erosion. The modeling analysis used as the basis for the HMP has demonstrated, using available data, that unmitigated flows from the exempted projects would not cause downstream erosion.

For a discussion of the pre-project condition, please see the response to Comment No. 7.

**Comment No. 4**

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*The HMP's monitoring program is incompletely developed and is missing critical components.* Though corrected in part under the Tentative Order, the monitoring program is still vague and poorly developed in several key areas, and does not ensure proper monitoring of the HMP's effectiveness.

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

**Response:**

The San Diego Water Board agrees that the HMP's monitoring program is incompletely developed and fails to ensure that the HMP's effectiveness will be assessed. For that reason, Tentative Resolution No. R9-2010-0066 requires the monitoring program include in-stream flow based sediment concentration monitoring at a minimum of 20 percent of planned or completed PDPs subject to

HMP requirements. Because the program will include both *planned* and *completed* PDPs subject to HMP requirements, the program will look at conditions before and after PDPs are implemented, allowing Copermitttees to assess both conditions and the effectiveness of the HMP.

### **Comment No. 5**

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These concerns, as well as suggested corrective measures, were communicated frequently and in detail to the TAC during the process of developing the HMP, and have since been communicated to the Regional Board in comments submitted by our organizations on February 16, 2010. Unfortunately, these concerns have not been adequately, if at all, addressed in the Tentative Order.

First, the Tentative Order fails entirely to resolve, or even address concerns raised by Coastkeeper, NRDC, and Dr. Horner related to use of LID practices to achieve hydromodification requirements. This is particularly problematic where, as here, the inadequate provisions and findings of the HMP with respect to LID have potential implications for the operation of the SUSMP and Permit overall. As we stated previously, the HMP's "erroneous assessment of infiltration potential . . . and improper failure to adequately include the use of either evaporation or rainfall harvesting practices may provide a blanket and meritless justification for sites to declare the use of LID practices to be 'infeasible' and exclude their use under the Permit and SUSMP." (See Coastkeeper and NRDC letter of February 16, 2010.)

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

### **Response:**

Please see the response to Comment No. 1 with regards to infiltration potential, evaporation, and rainwater reuse.

Chapter 4 of the Model SUSMP presents an LID design guide and clearly presents a hierarchy of preferred treatment control BMP implementation, beginning with LID. The Model SUSMP contains step-by-step instructions regarding the implementation of LID, including 1) optimizing site layout for LID, 2) using pervious surfaces, 2) dispersing runoff, and 3) using integrated management practices to achieve hydromodification mitigation, and possibly rainwater reuse. Further, the Model SUSMP instructs the project applicant to consult with municipal staff **before** preparing an alternative design for storm water treatment, flow control, and LID compliance if the applicant believes LID implementation is infeasible. In other words, the project applicant should not assume that building or grading permits will be issued, because the municipality may find that implementation of LID is indeed feasible. Alternative treatment facilities are allowed on only limited circumstances (for example, road widening). The San Diego Water Board finds the requirements for LID in the Model SUSMP

(the implementing mechanism of the HMP) to be consistent with Order No. R9-2007-0001.

### **Comment No. 6**

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Second, the Tentative Order, while paying lip service to issues related to calculations of critical flows, does not correct questionable and vague aspects of the HMPs critical flow rate development requirements. This issue, in which the HMP fails to define how the multiple value alternative may or will be applied, leaves potential flaws in a key factor for the HMPs methodology.

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

#### **Response:**

The San Diego Water Board disagrees that the calculations of critical flows are questionable or vague for the reasons stated in Comment No. 2. The San Diego Water Board does not find that the HMP's presentation of the critical flow (lower flow threshold) requires correction. The HMP presents a conservative, blanket lower flow threshold of 0.1Q2 to be used for BMP selection where a project applicant does not wish to, or cannot, perform a site specific analysis. The value of 0.1Q2 was chosen as a conservative value to be protective of the most highly susceptible streams.

In cases where the project applicant wishes to seek an alternative lower flow threshold (resulting in a more relaxed standard for BMP selection), the applicant may wish to utilize the methodology presented in Chapter 6. The applicant would first need to evaluate the susceptibility of the downstream creek to erosion. If the analysis, as described in the HMP, results in a finding that the downstream creek has a high risk of susceptibility, then the project applicant must use the conservative value of 0.1Q2 for BMP sizing requirements. Only if the stream demonstrates a medium or low risk of susceptibility, does the project applicant have the ability to use an alternative lower flow threshold (0.3Q2 or 0.5Q2, respectively). This approach is appropriate given the wide range of both channel conditions and a stream's susceptibility to erosion observed in San Diego County.

Figure 5-1 of the HMP describes the critical shear stress (stress at which erosion occurs) in pounds per square foot for different channel materials. For example, for channels consisting of sandy loam, the critical shear stress is 0.03 lbs/sq ft, and for channels consisting of 6-inch cobbles, the critical shear stress is 2 lbs/sq ft. This means that the channel consisting of cobbles is almost 100 times more stable, or more resistant to erosion, than the sandy loam channel. Further, a stream's susceptibility to erosion is also dependent on channel dimensions, average rainfall, and watershed area. Because of the high variability of a stream's susceptibility to erosion, the San Diego Water Board supports the alternative lower flow threshold methodology.

### **Comment No. 7**

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Third, while we welcome the Regional Board's decision to appropriately eliminate exemptions for "urban infill projects discharging to an existing hardened or rehabilitated conveyance system," we note that the HMP still provides an exemption from hydromodification requirements for, for example, any project that is not a PDP, and improperly focuses on preventing increases in peak flows without adequate consideration of increases in total discharge volume or duration of elevated flow. Further, the Tentative Order would still allow for the definition of pre-project to equate developed conditions immediately prior to construction, such that a parking lot could be considered the "pre-project" site hydrology to be matched. This issue is of particular concern, both because of the implications for downstream hydromodification resulting from projects that must only meet the hydrograph of a site previously covered all or in part by impervious surface, but also because the Regional Board itself previously pointed out its concern over this issue, but has now failed to require corrections to the HMP but has now seemingly backtracked from this (and other) comments made previously.

In its June 29, 2009 comments on the Draft HMP, the Regional Board pointedly noted that the Orange County Municipal Permit defines pre-project "to reference pre-development (naturally occurring) conditions." (See Regional Board Letter to Ms. Chandra Wallar, June 29, 2009.) This concern of the Regional Board is ignored entirely in the final HMP, and has now been ignored by the Regional Board itself in fashioning the Tentative Order. The current definition of "pre-project" as employed in the HMP will not protect downstream resources, and is substantially out of line with other Permit requirements statewide.

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

### **Response:**

The San Diego Water Board disagrees that the HMP improperly focuses on preventing increases in peak flows without adequate consideration of increases in total discharge volume or duration of elevated flow. Chapter 6 of the HMP states that PDPs are required to implement hydrologic control measures so that **post-project runoff flow rates and durations do not exceed pre-project flow rates and durations** where they would result in increased potential for erosion or significant impacts to beneficial uses or violate the channel standard [emphasis added]. Although discharge volume is not specifically addressed, the proposed approach is consistent with the requirements of Order No. R9-2007-0001. Additionally, many of the BMPs that will be used to comply with hydromodification mitigation requirements will likely allow for evaporation and/or infiltration, thereby resulting in a reduced volume of storm water leaving a site.

The San Diego Water Board agrees that defining pre-project as "pre-development (naturally occurring) conditions" is preferable because it would result in slowly returning a watershed's hydrology to its natural condition. For this

reason, Order No. R9-2009-0002 (the Orange County Storm Water Permit), adopted on December 16, 2009, defines “pre-project” as such. In its letter dated June 29, 2009, the San Diego Water Board recommended that the San Diego Copermittees voluntarily adopt this standard. Order No. R9-2007-0001 does not have a likewise definition for pre-project conditions, and therefore, the approach proposed by the Copermittees is adequate. When Order No. R9-2007-0001 is superseded, it is highly likely that the definition of “pre-project” will be amended to match the language in Order No. R9-2009-0002. At that time, the San Diego Copermittees will have to revise their HMP appropriately.

### **Comment No. 8**

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Finally, we note that the HMP’s monitoring requirements, while greatly improved by the Tentative Order’s provision to require in-stream monitoring, remains poorly developed, and provides poor definition that does not ensure further degradation will be prevented, or that lost beneficial uses may be recovered. In particular, we note that the HMP does not require that monitoring of compliance be conducted prior to development, but only *after* development has occurred. As a result, the monitoring program will fail to provide baseline data critical for assessing effectiveness of the HMPs requirements or implementation.

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

### **Response:**

Please see the response to Comment No. 4.

### **Comment No. 9**

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Under the terms of the Permit, the HMP was due January 24, 2009. It is now May, 2010, and the HMP is still riddled with poorly conceived, or flatly inadequate provisions that fail to implement the requirements of the overlying permit and fail to ensure that surface waters in the San Diego Region will be protected from the effects of development. As drafted, the HMP will fail to meet the goals of the current Permit, and will assuredly fail to meet more rigorous standards in further Permits. We strongly urge the Regional Board to either remand the HMP to the Permittees with specific instructions to correct these failings in a timely fashion, or for the Regional Board to undertake to correct these issues itself at the June 9, 2010 hearing.

**Submitted by:** *San Diego Coastkeeper and National Resources Defense Council*

**Response:**

The San Diego Water Board agrees that immediate implementation of the HMP is necessary to prevent further adverse effects to receiving waters caused by land development. With the exception of the Monitoring Plan, the San Diego Water Board disagrees that the HMP contains inadequate provisions to protect receiving waters from hydromodification impacts or that the HMP will fail to meet the goals of Order No. R9-2007-0001.

The HMP was developed to meet the specific requirements of Order No. R9-2007-0001. When the Order is superseded, the requirements for hydromodification mitigation will likely be changed to resemble the requirements in Order No. R9-2009-0002 (the Orange County Storm Water Permit). At that time, the San Diego County Municipal Storm Water Copermittees will have to update the HMP to incorporate any new requirements, such as matching post-project hydrology to pre-developed, naturally occurring hydrology. Until then, the San Diego Water Board finds that immediate implementation of the HMP is necessary to prevent impacts on receiving waters that are caused by land development.

**Comment No. 10**

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In Stream Management is only recommended under certain conditions, in addition to or instead of mitigation Best Management Practices (BMP), such as detention basins and swales (p.28, section 4.1.4.1 and p.77, section 6.3). Considering that restoring streams and wetlands to their natural condition is beneficial in many respects, including preventing channel bed erosion and improving water quality, we believe that restoration should be a standard part of Low Impact Development measures. Part of the development and maintenance money should be used for stream and wetland restoration, even if BMPs are adequate to manage the hydrograph. Streams and wetlands restored as closely as possible to their natural state, provide a safety net for all existing and future developments.

**Submitted by:** *Sierra Club of San Diego*

**Response:**

The San Diego Water Board agrees that stream and wetland restoration would both help prevent channel bed erosion and improve water quality, and for this reason encourages restoration at any available opportunity. Order No. R9-2007-0001 does not, however, require the HMP to include stream restoration as part of Low Impact Development measures.

**Comment No. 11**

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An exemption is proposed whereby developments near large rivers could be exempted from flow duration requirements (p.197, Memorandum). The analysis

shows that post development changes in flow rates for the San Diego River would not have an appreciable impact on erosion within the channel. However, overland flow, due to impervious surface created by development, could cause erosion as it travels to the main channel. Depending on the land cover, this type of boundary erosion could eventually affect the main river channel. Therefore, we recommend that this exemption only be granted where it can be shown that the buffer zone between the development and the main river channel will not be adversely affected.

**Submitted by:** *Sierra Club of San Diego*

**Response:**

The exemption discussed by the commenter would only be granted if the project discharges *directly* into the large river system (HMP, page 6-5). Therefore, there is no buffer zone (and hence no adverse impacts to the buffer zone) between the project and the main river channel.

**Comment No. 12**

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Regional Board Findings - Tentative Resolution Item 6a Section 6 of the Final HMP describes cases where exemptions from hydromodification mitigation requirements may be granted for PDPs. One such exemption is for urban infill projects discharging runoff to an existing hardened or rehabilitated conveyance system. According to the Final HMP, exemptions may be granted where the existing impervious area percentage in the watershed exceeds 40 percent, and if the potential future development in the watershed would increase the watershed's impervious area percentage by less than 3 percent (as compared to existing conditions). The potential for future development in each watershed is speculative and highly variable and there is no guarantee that such impacts would result in an increase in impervious surface limited to less than 3 percent. Therefore, this exemption is not appropriate.

RWQCB Recommended Revision

Section 6, Figure 6-1 -HMP Applicability Determination

Remove nodes 10-13 regarding program exemptions for urban infill projects, and all accompanying discussion.

County Response

The Copermittees do not believe the HMP infill exemption criteria to be speculative. The exemptions criteria are comprehensive and organized to filter only those projects that qualify. Using various case studies against continuous simulation modeling to support our approach, these exemptions would result in only marginal increases to the basin flow and, therefore, negligible channel degradation. Below is a more detailed explanation on the exemption criteria including a case study to support the Copermittees approach.

The proposed exemption for small urban infill projects was proposed for scenarios where the all of the following five (5) conditions are met.

1. The watershed to which the proposed project discharges is significantly urbanized (existing impervious area of the watershed is greater than 40 percent). No exemption would be considered if the existing impervious area of the watershed is less than 40 percent.
2. The potential for cumulative added impervious area in the watershed (including the proposed project site) is less than 3 percent (as compared to existing conditions at the time of HMP adoption). This determination will be made by analyzing municipal Land Use General Plans and assigning anticipated impervious area percentages to specific land use designations. If there is potential for cumulative added impervious areas in excess of 3 percent for a watershed, then this exemption cannot be considered. Continuous simulation models have been prepared showing that if the existing watershed impervious area is 40 percent or greater, then additional impervious areas increases of less than 3 percent have a negligible impact on the resultant flow duration curve. These analyses are presented in Appendix F of the HMP submitted to the RWQCB on December 29, 2009.
3. The project discharges runoff directly to a hardened conveyance system or a rehabilitated drainage system which has been designed to safely convey the ultimate land development conditions. No exemption would be considered if the proposed project discharged to a natural conveyance system.
4. The hardened or rehabilitated conveyance system detailed in the item above would be required to extend beyond the project's domain of analysis, as defined in the HMP. Thus, if a hardened conveyance system extends for 200 feet downstream of a proposed site and the domain of analysis extends for 500 feet downstream of a site, then no exemption would be considered.
5. In addition to the criteria listed in the HMP submitted on December 29, 2009, the Copermittees would further limit the potential exemption to scenarios where the conveyance system ultimately discharges runoff to a channel reach with a LOW susceptibility to channel erosion, as determined by the Southern California Coastal Water Research Project (SCCWRP) channel susceptibility method outlined in the HMP. If the conveyance system ultimately discharges to a channel reach with MEDIUM or HIGH susceptibility to erosion, then no exemption can be considered.

#### Case Study

The following case study details an example project watershed which may be considered for the urban infill exemption. A 150 acre existing urbanized watershed is located in the Clairemont area of the City of San Diego. The watershed contains a mix of single-family residential and commercial development. The existing impervious area of the watershed is 55 percent. Since

the existing impervious area of the watershed is greater than 40 percent, then the urban infill exemption can be considered.

Runoff from the existing watershed drains to an existing storm drain system. At the storm drain system outfall location, the storm drain system size is 72 inches. The storm drain discharges flow to a tributary of Tecolote Creek. A properly sized riprap energy dissipation system is provided at the outfall prior to discharge to the unlined tributary.

The total remaining developable area in the watershed (which drains to the storm drain system outfall location) is 3 acres. This developable area, which represents multiple projects in various areas of the watershed, has been zoned for commercial development, which has an anticipated impervious area percentage of 85 percent.

Assuming full development of the remaining developable area, the anticipated ultimate condition added impervious area of the watershed is (3 acres)  $(0.85 \times 3 = 2.55)$  acres. This added impervious area would increase the total impervious area of the watershed from 82.5 acres to 85.05 acres, which would adjust the maximum ultimate condition impervious area in the watershed to 56.7 percent. This represents an added impervious area increase of 1.7 percent as compared to the existing condition. Since the added impervious area percentage is less than 3 percent, then the urban infill exemption can be considered.

For each individual project in the remaining developable land areas, the project proponent must show that the project discharges runoff to a hardened or stabilized conveyance system that extends beyond the project's domain of analysis. As an example, a 1-acre commercial development site is proposed in the example watershed (1 acre of the watershed's 3 acres of remaining developable land). The project will discharge runoff to an existing 24-inch storm drain system just downstream of the site and the project's domain of analysis was determined to extend 100 feet downstream of the proposed project site. The receiving storm drain system continues downstream in increasing storm drain pipe sizes (each of which has capacity to convey at least the 10-year ultimate condition design flow) until reaching the 72-inch storm drain outfall pipe 1,000 feet downstream of the project site. Since the project discharges to a hardened conveyance system that extends to the discharge location and beyond the domain of analysis, then the urban infill exemption can be considered.

At the discharge location, calculations show that the existing riprap energy dissipation system provides adequate energy dissipation for the incrementally increased design flows at the conveyance system outfall. Furthermore, the Tecolote Creek tributary was determined to have a LOW susceptibility to erosion as determined by the SCCWRP channel susceptibility analysis. Since an adequately sized energy dissipation is provided and since the receiving channel segment has a LOW susceptibility to erosion, the urban infill exemption can be considered.

**Submitted by:** *County of San Diego*

**Response:**

The San Diego Water Board understands that continuous simulation modeling provided by the Copermittees shows that discharges from urban infill projects under conditions described in this comment would result in marginal increases to the overall basin flow, and therefore, negligible channel degradation. This no-impact result is predicated on the assumption that the “potential” for cumulative added impervious area in the watershed is less than 3 percent (as compared to existing conditions). Further, this analysis was based on very limited data.

This assumption is based on analysis of municipal Land Use General Plans, and assigning “anticipated” impervious area percentages to specific land use designations. Land Use General Plans serve as primary policy guides for the future development municipalities. Generally, such plans are continuously updated as needed to incorporate evolving goals and envisions of municipalities. What was previously zoned for a residential or commercial area could be re-zoned to incorporate more park or open space area, should this be a desirable goal of the municipality. In this case, the potential for increased impervious area could theoretically decrease from 3 percent to 1 percent, rendering a situation where discharges from urban infill projects exempt from HMP requirements would no longer result in negligible impacts. Yet this proposed exemption assumes that changes to the General Plans would never occur.

Because the San Diego Water Board finds that imposing HMP requirements on highly impervious watersheds will do little to prevent erosion to receiving waters, Order No. R9-2007-0001 allows for exemptions where the watershed is already at least 70 percent built out. This criterion could be reevaluated based on data collected as part of HMP implementation, upon reissuance of the Order No. R9-2007-0001. For now, exemptions beyond what is allowable under Order No. R9-2007-001, based on analysis of extremely limited data and the assumption that General Land Use Plans will never change, are inappropriate.

**Comment No. 13**

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Regional Board Findings - Tentative Resolution Item 6b

Section 6 of the Final HMP includes a decision matrix to guide users in choosing or sizing appropriate hydromodification mitigation facilities. The decision matrix and accompanying text states that a maximum drawdown time of 72-hours is allowed, which corresponds to standards set forth by the County Department of Environmental Health (DEH) for vector control. As DEH standards are subject to change, it is more appropriate to state generic drawdown requirements in meeting this design specification.

RWQCB Recommended Revision

*Section 6, Figure 6-2 -Mitigation Criteria and Implementation, and Figure 6-3 -  
Mitigation Criteria and Implementation*

Change nodes 5 and 17 from "Verify 72 hour Drawdown Time" to "Verify  
Necessary Drawdown Time," and revise all accompanying discussion as needed.

County Response:

Concur.

**Submitted by:** *County of San Diego*

**Response:**

Comment noted.

**Comment No. 14**

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Regional Board Findings - Tentative Resolution Item 6c

The Final HMP does not include development of a Quality Assurance Project Plan (QAPP) for water quality monitoring or geomorphic assessment described in the HMP Monitoring Plan. A QAPP is necessary to ensure consistency and data reliability.

RWQCB Recommended Revision

Section 8 - Monitoring and BMP Evaluation - Add the following component:

Develop a Quality Assurance Project Plan (QAPP) compatible with the Surface Water Ambient Monitoring Program (SWAMP), including details for each monitoring component included in the HMP Monitoring Plan.

County Response

Concur.

**Submitted by:** *County of San Diego*

**Response:**

Comment Noted.

**Comment No. 15**

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Regional Board Findings - Tentative Resolution Item 6d

Various assumptions were made in calculations of critical flows (flows which initiate sediment movement and cause erosion). Assumptions included designating typical configurations to local channels since data describing such configurations is sparse. Local geomorphic data is needed to validate or refine these assumptions to improve the accuracy of calculated critical flows, and refine

design standards and other HMP requirements as necessary. PDPs, if conditioned to do so, can provide such data as part of the land development permitting process. To include data for undeveloped areas, the Copermittees must supplement the local data where no PDPs are planned.

#### RWQCB Recommended Revision

Section 8.2 - Pre-Project Monitoring Activities: Add requirement that each PDP subject to HMP requirements shall provide pre-project monitoring. Where no PDPs are planned in open space areas, the Copermittees shall supplement this data by annually monitoring at least one location per hydrologic unit.

#### County Response:

If a project applicant elects to determine the appropriate lower flow threshold for the project site (through use of the Critical Flow Calculator and SCCWRP Channel Susceptibility Tool), then a field investigation would be required. This investigation would include acquisition of channel survey information downstream of the proposed discharge location(s). The Copermittees will also require pre-project field channel investigations for all projects proposing in-stream mitigation options. The Copermittees will collectively manage this assembled geomorphic data for use in future monitoring reporting efforts. If a project applicant does not conduct a field investigation, then hydromodification mitigation facilities must be designed assuming the most restrictive lower flow threshold (0.1Q2). The Copermittees can require projects, via conditions of approval, to provide pre-project channel data in certain situations. One such potential scenario could include a project discharging runoff to a highly susceptible movable channel. In this scenario, the project applicant may choose to bypass the channel susceptibility analysis and design to the more restrictive 0.1Q2 lower flow threshold (given the receiving channel's obvious susceptibility). However, the governing municipality can identify this as a potentially significant monitoring location. These determinations will be made on a case by case basis and coordinated with the Copermittee Land Development work group.

To assess conditions in permit coverage areas where no new development is anticipated and to provide comparison to watersheds experiencing development-related impacts, the Copermittees recommend that one channel monitoring location be identified and monitored in the permit coverage area where no future development is anticipated.

**Submitted by:** *County of San Diego*

#### **Response:**

With the exception of assessing area where no future development is planned, the Copermittees' proposed approach outlined above will satisfy the requirement imposed in Revision 4 of Tentative Resolution No. R9-2010-0066.

The San Diego Water Board finds that assessing geomorphology of one pristine location for the entire County is inadequate for comparing development-related

erosion to naturally-caused erosion. Copermittees should seek to understand how erosion takes place under natural conditions in order to properly refine the HMP. The requirement in Revision 4 of Tentative Resolution No. R9-2010-0066 requires the Copermittees to annually monitor (assess) at least one location per hydrologic unit. For San Diego County, this equates to 8 locations (hydrologic units 1 and 2 are in Orange County, and hydrologic unit 8 is almost entirely built out and would not provide a suitable pristine location). The requirement consists of performing a geomorphic assessment once a year at 8 suitable locations for the entire County. No laboratory analysis would be required because this would entail a geomorphic assessment involving field measurements, only.

### **Comment No. 16**

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Regional Board Findings - Tentative Resolution Item 6e

Section 8 of the Final HMP describes monitoring and best management practice (BMP) evaluation, including flow based sediment monitoring. Section 8 proposes a minimum of 5 monitoring points throughout San Diego County over a period of 2 rainy seasons. This proposed monitoring is inadequate for purposes of assessing effectiveness of HMP implementation, as required by provision D.1.9(1)(k) of Order No. R9-2007-0001. Substantially more data are needed to better quantify flow based sediment concentrations associated with the typical range of channel dimensions and materials, contributing watershed sizes, land uses, vegetative cover, and rainfall patterns (and subsequent flow) in receiving waters throughout San Diego County. In addition to increased spatial coverage, monitoring is needed over several rainy seasons for increased temporal coverage because Copermittees will need to distinguish erosion caused by anthropogenic activities from naturally occurring erosion in order to assess the effectiveness of the HMP.

#### RWQCB Recommended Revision

##### Section 8 - Monitoring and BMP Evaluation

Add a requirement that for each hydrologic unit, the Copermittees must monitor instream flow based sediment concentrations downstream of planned or completed PDPs for the purpose of assessing effectiveness of HMP implementation. Monitoring shall occur downstream of a minimum of 20 percent of PDPs subject to HMP requirements per hydrologic unit (rounded up to the next whole number). Monitoring shall take place at a minimum of two storms each rainy season until Order No. R9-2007-0001 is superseded. Monitoring shall occur during the first wet weather event of the season which meets the U.S. EPA's criteria as described in 40 CFR 122.21(9) (7), and monitoring shall occur during a wet weather event after February 1.

#### County Response

This recommendation is excessive and will cause undue burden on municipalities and project applicants. Monitoring activities proposed in this section exceed monitoring requirements detailed in the Stormwater Municipal Permits of Contra Costa, Santa Clara and Sacramento Counties. The Santa Clara and Sacramento permits do not require hydromodification-related monitoring and the Contra Costa permit requires only inflow and outflow monitoring of five (5) selected LID facilities throughout the County. The cost to complete the Copermittee recommended monitoring activities (detailed below) could be as much as \$742,000 over the next five (5) years while the cost to complete the Regional Board staff recommended monitoring plan is projected to be \$1,745,000 over the next five (5) years.

During this difficult time of budget constraints, each agency looks to recoup costs in order to perform additional work such as this. Typically, Copermittees could pass on monitoring costs to new development; however, there are challenges with the RWQCB request. First, since monitoring locations could be located upstream of a Copermittee jurisdiction (but within a hydrologic area) the Copermittee will not be able to charge developer fees for the cost. Second, if the monitoring location is located within a Copermittee's jurisdiction but includes drainage from previously developed land, pollutants and drainage runoff will not be attributable only to developing land, and therefore the Copermittee will not be able to charge a developer fee for it. Third, some of the PDP's located downstream of a monitoring location would be paying for in-stream monitoring for drainage they do not contribute to. Since these monitoring costs will not be recoverable through developer fees, they could qualify as an unfunded mandate and the Copermittees would seek reimbursement from the State.

The San Diego Copermittees recommend the hydromodification monitoring activities at (5) monitoring locations as detailed in the Hydromodification Management Plan submitted on December 29, 2009 as well two (2) additional monitoring sites, The proposed monitoring activities include the following.

1. Baseline cross section data shall be acquired downstream of five (5) proposed Priority Development Projects, as recommended in the HMP submitted on December 29, 2009. It is inherent that the monitoring locations should be selected so that development-related impacts can be independently assessed and outside watershed influences are minimized. Thus, monitoring locations will be identified at the headwaters of watersheds or watershed sub basins whenever possible. A portion of this data acquisition effort may be supplanted by project applicants subsequent to conditions of approval. Data from at least 1 year (two monitoring events) should be acquired prior to significant additional development in the watershed upstream of the monitoring location (additional pre-project data should be collected if development in the watershed is delayed). One monitoring event should occur just before the beginning of the rainy season (September) and the other should occur just after completion of the rainy season (May).

2. Baseline cross section data shall be acquired downstream of one (1) urban infill watershed. This monitoring plan component is in addition to the

recommendations provided in the HMP submitted on December 29, 2009. Data from at least 1 year (two monitoring events) should be acquired prior to significant additional development in the watershed upstream of the monitoring location (additional pre-project data should be collected if development in the watershed is delayed). One monitoring event should occur just before the beginning of the rainy season (September) and the other should occur just after completion of the rainy season (May). Baseline cross section data shall be acquired at one (1) watershed location where there is no existing or planned upstream development. This monitoring plan component is in addition to the recommendations provided in the HMP submitted on December 29, 2009. One monitoring event should occur just before the beginning of the rainy season (September) and the other should occur just after completion of the rainy season (May).

4. Baseline (pre-project, existing conditions) flow-based sediment monitoring shall be conducted as detailed in the HMP submitted on December 29, 2009. This monitoring should be provided at the same monitoring locations as required for the baseline cross section monitoring detailed above. Data from at least 1 rainy season should be acquired prior to significant additional development in the watershed upstream of the monitoring location (additional pre-project data should be collected if development in the watershed is delayed). Monitoring shall take place at a minimum of two storms per rainy season until No. R9-2007-0001 is superseded. Monitoring shall occur during the first wet weather event of the rainy season which meets the U.S. EPA's criteria as described in 40 CFR 122.21(9) (7), and one monitoring event shall occur during a wet weather event after February 1. As detailed in the HMP submitted on December 29, 2009, post-project cross section monitoring shall be conducted at all baseline monitoring locations. Post-development stream cross section data will be compared to baseline cross section data and determinations will be made regarding the causes of cross sections changes (natural versus development-related). This data can be used to modify flow threshold ranges and mitigation selection. Monitoring shall take place twice per year until Permit No. R9-2007-0001 is superseded. One monitoring event should occur just before the beginning of the rainy season (September) and the other should occur just after completion of the rainy season (May).

6. As detailed in the HMP submitted on December 29, 2009, post-project flow-based sediment monitoring shall be conducted at all baseline monitoring locations. Flow-based sediment monitoring data can be used to identify flows at which sediment begins to be transported in a selected stream location. This data can be used to refine the quantification of critical flow and the lower flow threshold limit used in hydromodification mitigation design. Monitoring shall take place at a minimum of two storms per rainy season until No. R9-2007-0001 is superseded. Monitoring shall occur during the first wet weather event of the rainy season which meets the U.S. EPA's criteria as described in 40 CFR 122.21(g) (7), and one monitoring event shall occur during a wet weather event after February 1.

7. As detailed in the HMP submitted on December 29, 2009, monitoring of hydromodification mitigation facilities, such as bioretention basins, flow-through planter boxes or extended detention basins, shall be conducted at Priority Development Projects upstream of stream monitoring locations. Facility inflows and outflows will be monitored on a continuous hourly basis. Continuous simulation models will be developed for hydromodification mitigation facilities included in the monitoring program. Results from the predicted models, generated using rainfall data, will be compared to inflow and outflow results collected in the monitoring program. The models will then be calibrated and adjustments to sizing factors and pond sizing algorithms will be made if necessary. Continuous monitoring will be analyzed throughout the duration of the monitoring program. Specific rainfall event results will be analyzed for a minimum of two storms per rainy season until No. R9-2007-0001 is superseded. Detailed analysis shall occur during the first wet weather event of the rainy season which meets the U.S. EPA's criteria as described in 40 CFR '122.21(g) (7), and one event occurring after February 1.

**Submitted by:** *County of San Diego*

**Response:**

The San Diego Water Board disagrees that the level of monitoring described in Tentative Resolution No. R9-2010-0066 is excessive.

An adequate number of monitoring locations and samples are needed to characterize flow rates and sediment concentrations associated with the typical range of channel dimensions and materials, contributing watershed sizes, land uses, vegetative cover, and rainfall patterns throughout San Diego County, as well as perform any meaningful statistical analysis. As described in the HMP and modified in the comment letter from the Copermittees dated May 10, 2010, the seven monitoring locations proposed by the Copermittees will not be sufficient to meet the requirement of section D.1.g.(1)(k) of Order No. R9-2007-0001 to "...assess the effectiveness of implementation of the HMP," nor provide enough data to cover the variation associated with the roughly 4,000 square miles of area within San Diego County. Because the Copermittees failed to propose an adequate monitoring plan, the San Diego Water Board modified the monitoring plan in Tentative Resolution No. R9-2010-0066 to ensure compliance with the Copermittees' requirement to assess the effectiveness of HMP implementation.

Copermittees correctly state that requirements presented in Tentative Resolution No. R9-2010-0066 for in-stream monitoring are beyond monitoring requirements associated with HMPs in other parts of the state. The proposed monitoring described in Tentative Resolution No. R9-2010-0066 was drafted specifically to ensure compliance with Provision D.1.g.(1)(k) and can also be used to identify "...mechanisms for addressing cumulative impacts with a watershed on channel morphology" [Provision D.1.h.(1)(I)].

Storm water permits in other parts of the state do not contain a requirement to assess effectiveness of HMP program implementation; therefore programs in

other parts of the state were not required to include such monitoring. Further, comparing the monitoring program of the Copermittees' HMP to that of other HMPs in the state is inappropriate because the approaches for identifying lower flow thresholds are significantly different. The Copermittees' HMP is extremely complex, allowing for dischargers to use alternative lower flow thresholds for choosing BMPs. This approach is more lenient than the blanket lower flow threshold value of 0.1Q2 used in HMPs in other parts of the state.

The lower flow threshold analysis that forms the basis of the HMP is predicated on extensive watershed modeling with numerous assumptions in place of real data. Data acquisition is the only way to validate the numerous assumptions made in the analyses. Other HMPs in the state do not allow an alternative lower flow threshold analysis, ensuring the most conservative BMPs are implemented for hydromodification mitigation. Therefore it is not as critical to obtain data for other HMPs as it is the HMP submitted by the San Diego County Copermittees.

Finally, the Copermittees state that monitoring required in Tentative Order No. R9-2010-0066 could exceed \$1 million, but do not provide any specific information to support this claim. This claim implies that the cost of the monitoring program will be borne entirely by the Copermittees. Contrary to their claim, however, the Copermittees can recuperate costs to support this monitoring program from project applicants. Location of monitoring stations with respect to PDPs is not relevant because fees associated with projects would be used to support the program, not the specific monitoring locations. The San Diego Water Board did not receive any comments from land developers or the engineering community opposing the requirements imposed in Tentative Order No. R9-2010-0066.

### **Comment No. 17**

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#### Regional Board Findings - Tentative Resolution Item 6f

Section I of the Final HMP states that the details of the HMP Monitoring Plan for San Diego County will continue to evolve and be improved over time, and that this improvement process will be based in part on the analysis of collected data. The Final HMP states that, as more data are collected and as field issues associated with the data collection are refined, the HMP Monitoring Plan can be fine-tuned to most accurately assess the effects of the hydromodification flow control facilities. However, the Final HMP does not contain a commitment with a specific timeframe to verify and/or refine the assumptions, findings, and requirements of the HMP in light of newly gathered data. Neglecting to include such a commitment gives no assurance that the assumptions, findings, and requirements of the HMP will ever be revisited. RWQCB Recommended Revision Section 8 - Monitoring and BMP Evaluation Add a commitment to revisit the Final HMP with data and information gathered in accordance with Section 8 within 5 years of HMP implementation, or when enough data has been collected to verify

and/or refine the assumptions, findings, and requirements of the HMP (whichever is sooner).

County Response

Concur.

**Submitted by:** *County of San Diego*

**Response:**  
Comment Noted.

**Comment No. 18 (Summarized Collective Comment)**

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- We support the comments issued by the County of San Diego regarding Tentative Resolution R9-2010-0066. We request that the Regional Board take into consideration the comments raised by the County on behalf of the Copermitees.
- One area of concern in the HMP is the monitoring requirements that have been discussed in the Tentative Resolution. The monitoring requirements could create an economic burden during a time when municipal funds are scarce. We support the level of monitoring proposed by the County.
- The recommendation put forth by Regional Board Staff regarding monitoring activities exceeds the monitoring requirements of Municipal Storm Water Permits of Contra Costa, Santa Clara, and Sacramento Counties. The proposed monitoring plan, which is summarized in the comment letter submitted by the County of San Diego, provides a level of monitoring which is fair and sufficient concerning the ultimate goals of a Hydromodification Management Plan. Additional requirements which were added by Regional Board Staff in the Tentative Resolution are excessive and would place an additional undue economic burden on municipalities in a time when additional revenue sources are extremely scarce.
- We encourage the Regional Board to consider the points outlined in the letter and the comments that will be presented during the June 9 Board Meeting before making a final decision on the Final HMP.

**Submitted by:** *The Cities of Poway, Vista, Chula Vista, Encinitas, Santee, Poway, La Mesa, Imperial Beach, and Del Mar*

**Response:**  
Please see the response to Comment No. 16.