State-Wide Hydromodification Workgroup Meeting
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Region 2 Hydrograph Modification Management Plans & Permit Requirements – Update
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All Phase I MS4 Permits contain HM Control Requirements:
Alameda Countywide amendment – Order R2-2007-0025
Contra Costa Countywide amendment – Order R2-2006-0050
Fairfield-Suisun amendment – Order R2-2007-0026
San Mateo Countywide amendment – Order R2-2007-0027
Santa Clara Valley amendment – Order

- All require only the *increase* in runoff *from pre-project condition* be controlled. Note that Washington State required the increase in runoff *from the native forested condition* be controlled. It's very important that the pre-project runoff be estimated (modeled) correctly.

- Critical Flow: Each Program except Contra Costa used local data from geomorphic studies to determine the critical flow (at which bed/bank materials begin to erode) of creeks. Local critical flows are 0.1Q2 – 0.2Q2 on average. Contra Costa used the same value as W.WA (0.5Q2). This could be subject to reconsideration in future.

- Allowable Low Flow Rate (Qcp): Flow control structures may be designed to discharge stormwater at a very low rate that doesn't threaten to erode the receiving water body. Qcp is a means of apportioning the critical flow in a stream to individual projects that discharge to that stream, such that cumulative discharges do not exceed the critical flow in the stream. For all Programs, Qcp is set at 0.1 of the pre-project 2-year peak flow. Note that for Contra Costa IMPs, it's not as clear how the design criteria meet Qcp.

- Goodness of Fit Criteria: This tells how *well* the post-project runoff curve must match the pre-project runoff curve. Our Permits set this as: The post-project flow duration curve shall not deviate above the pre-project flow duration curve by more than 10% over more than 10% of the length of the curve corresponding to the range of flows to control. This is less stringent than W.WA's criteria.

- Range of Flows to Control: 10% of pre-project 2-year peak flow to the pre-project 10-year peak flow. Question for future consideration: Is the amount of erosion in the stream that occurs at the tail of the curve (Q10 and greater) significant? GeoSyntec showed that something like 10% of erosion or more would occur over the higher flows.

- Continuous Simulation Models: All the Programs used long-term continuous simulation models (HSPF and HEC-HMS) with local rainfall data. The source and quality of rainfall data is important. HSPF input values can be an issue (see Clear Creek Solutions memo). Validating the model to local conditions is important. The model used for IMPs is not validated to local conditions, which is one reason it is allowed for use only on small sites.

- Self-Retaining Areas: Only one Program excludes "self-retaining areas" from the post-project runoff calculations. Its Permit requires this Program to submit technical support for its definition of self-retaining, which is 1:1 impervious-to-pervious area (not further specified), before using "self-retaining."

- Areas of implementation: HM Controls must be implemented on sites with one acre or more impervious surface (all land uses). Not required in areas discharging to streams under tidal influence or that are totally hardened all the way to the Bay/Ocean. Not required where ≥ 65% impervious AND where there are no natural streams. Most Programs have created a map of "implementation areas" except Contra Costa (each site must determine applicability) and Santa Clara Valley, which has a map but it will be changing in next Permit round (Municipal Regional Permit).