CALIFORNIA Water Boards

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Response to External Peer Review Comments on March 20, 2012 Final Draft OWTS Policy

The State Water Board requested an external peer review of the scientific basis of the March 20, 2012 Final Draft of the Onsite Wastewater Treatment System (OWTS) Policy per Health and Safety Code section 57004. Peer reviewer comment letters were received from each of the three reviewers. Those comments where a change or modification to the Policy was suggested were discussed by the OWTS Policy Team and a responsive change to the Policy was considered and prepared. However, not every comment resulted in a change to the Policy. Following are responses to each of these peer review comments.

Issue 5 – Percolation Rate Testing

Section 7.4 of the OWTS Policy establishes percolation rate testing requirements and the range of allowable percolation rates as those between 1 minute per inch (MPI) and 90 MPI. Two of the peer reviewers suggested that the range of allowable percolation rates be extended beyond 90 MPI to 120 MPI. The OWTS Policy has been modified accordingly and the allowable range is now from 1 MPI to 120 MPI.

One reviewer commented that the use of “minutes per inch” to represent an infiltration rate was incorrect and it should be expressed as “inch per minute” in order to follow the convention of “volume per area over time.” We agree that when expressing a true infiltration rate the volume per area over time should be used, however for percolation rate testing we are following the procedures established by U.S. Environmental Protection Agency. These procedures for convenience of measurement and calculation use the minutes that the water has taken to drop a measured number of inches. The resulting percolation value in MPI is then converted to an actual application rate expressed in gallons per day per square foot via table and it is this value that is used in dispersal system sizing. Finally, if the percolation was expressed in inches per minute, those of slower soils would need to be expressed in very small decimal numbers. To increase the size of the numbers we have seen some tables also include an inches per hour rate, but have chosen to only use MPI in this Policy as is done in the USEPA procedures.

Issue 6. b. – Setback from Water Wells

Sections of the Policy require a 100 foot setback from water wells and monitoring wells. This setback is consistent with the California Plumbing Code requirement. One reviewer recommended that “water wells” as called out in these sections should be specified as not intended to provide drinking water supplies so as to clearly distinguish them from “public water wells” called out in later sections. We are not certain whether the reviewer intended that those wells should not be used as drinking water supplies for a single dwelling or if the intention was

to assert that "supplies" meant wells providing for a larger usage such as multiple dwellings. Regardless, the intent of the policy is to provide that a minimum setback from all types of wells, including those used for drinking water, irrigation water, groundwater monitoring, and any other use is 100 feet. We then distinguish that those "public water wells" (specifically defined in the Policy) that provide water to "public water systems" (specifically defined in the Policy) should have a larger setback so as to provide a larger degree of safety for those wells that provide drinking water to a larger number of people.

The use of a 150 foot setback for all drinking water supply wells, including for single family dwellings, would impose difficult siting conditions on many parcels. It should be noted that the 100 foot setback is considered in combination with the restrictions of no dispersal systems deeper than 10 feet and a groundwater separation minimum of 5 feet as further protection against contamination of the groundwater. For these reasons we are not proposing to change the setback requirements at this time.

Issue 6. f. and 6. g. – Setback from Public Water Wells

Sections of the Policy require a 150 foot or 200 foot setback from public water wells depending on the depth of the dispersal system, and one reviewer commented that a clarifying statement about the separation to groundwater be added. We are declining to make this change because different setbacks are allowed within the different Tiers of the Policy, and making a statement about separation from groundwater within the context of the horizontal setback sections may lead to more confusion as it seems to imply there are other combinations of separation and setback allowed.

Issue 8. – Density of New Subdivisions

The OWTS requirements of Tier 1 do not require supplemental treatment for nitrogen, so the only means of managing nitrate impacts on groundwater from OWTS in Tier 1 is to control for the density of OWTS installations. Therefore we have chosen to use the Hantzche-Finnemore model that compares an aquifer's assumed recharge rate to an expected nitrate discharge from OWTS. Following the assumptions of the model's authors, we assumed that an aquifer's recharge rate could be associated with the region's average annual rainfall amount. Originally, this model was run to find a single density that would be protective statewide, and this was established as one single-family dwelling equivalent unit per 2.5 acres. The average annual rainfall for these areas was 8 inches per year or less, which occupies a large portion of California.

Two peer reviewers comment that a density of one single-family dwelling unit equivalent per 2.5 acres is too restrictive. To address this comment, we have again applied the same model and its assumptions, but this time have run it for the different average rainfall zones in California. The result is a table of six different density values for different rainfall rates. This reduces the restrictiveness of the density for those areas that have higher rainfall rates and does not impose a single value statewide.

One reviewer also commented that of important concern when considering an OWTS's nitrate impact on groundwater was whether shallow wells were down gradient and in the path of an OWTS's dispersal field's expected plume. We do not disagree with this. However, considering the information that is usually available to a permitting entity on the location of shallow wells and

the hydrogeology within an area, this situation can be very difficult to ascertain and so the inclusion of such a requirement along this line that would be effective is beyond the scope of effort required of a permitting entity implementing Tier 1 under this Policy. We do encourage local agencies developing Local Agency Management Programs under Tier 2 to include these considerations within their programs where information is available or its development is warranted.

Issue 9. – Dispersal System Cover

One reviewer commented that in addition to the Policy's requirement for 12 inches of soil cover above dispersal systems, 6 inches should be allowed for pressure dispersal systems and drip dispersal systems. In accordance with this comment, we have modified the Policy to allow 6 inches of cover for pressure dispersal systems. However we have not included this for drip systems for the reason that drip systems usually require extra filtration not provided for in Tier 1.

Issue 10. – Minimum Depth to Groundwater

One reviewer again commented on the appropriateness of using "minutes per inch" for percolation rates. Please see the discussion above under Issue 5. for our response to this comment.

Issue 19. – 50 Percent Reduction of Nitrate Standard

One reviewer commented that a 50 percent reduction of nitrate from OWTS supplemental treatment was conservative and a higher bar of reduction of 80 percent should be used. We do not disagree that this would be more desirable. However, in order to rely on established industry testing protocols and independent certification organizations for the protection of consumers, we find conformance to the 50 percent reduction standard to be the most prudent choice for the time being. The State Water Board has the option to modify this standard as industry practices improve and higher performance levels are set in the future.

Issue 22. – Tier 3 Minimum Soil Depth and Separation from Groundwater

Tier 3 of the Policy sets a minimum soil depth and a vertical separation from groundwater of 3 feet. This is, in essence, a one foot increase above the minimum of 2 feet set for the same criterion in Tier 2. This is to increase the safety factor for Tier 3 OWTS, since Tier 3 OWTS are in areas where impacts are likely based on the nearby water body being listed for pathogens or nitrates. An increase to 5 feet as recommended was not selected due to the fact that OWTS installed under Tier 1 will not have supplemental treatment, but OWTS installed under Tier 3 may have supplemental treatment as directed by a TMDL, special provision in a Local Agency Management Program, or other requirements in Tier 3.

The State Water Board wishes to thank the peer reviewers who reviewed the Final Draft OWTS Policy, as the comments and resulting changes have inevitably improved the OWTS Policy.