

Ms. Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

#10

May 2, 2012

Dear Ms. Townsend:

I am a resident of Sonoma County and have a septic system. I commented on the draft 2008 rule, and have reviewed the current Draft Onsite Wastewater Treatment System (OWTS) Policy and Substitute Environmental Document (SED). I recommend the State Board adopt the No-Project (Status Quo) Alternative.

1

This proposed regulation fails to substantially meet the Project Objective to, "Establish an effective implementation process that considers economic costs, practical considerations for implementation, and technological capabilities existing at the time of implementation."¹ This is based on the following conclusions:

- The proposed Policy does not adequately consider the costs to implement the Project.

There are significant costs to implement OWTS requirements. Initially, nearly 64,000 existing OWTS will need to meet supplemental treatment requirements.² New, non-sewered construction is also expected to grow. By 2013 approximately 110,000 new systems are anticipated³. The estimated costs to meet these more rigorous treatment requirements during initial program implementation are, at least \$683 million statewide and will, more realistically, cost over \$2 billion or \$27,500 per affected household (Attachment A). Additionally, an expanded water quality monitoring program will likely increase the number of water bodies/aquifers listed as impaired by nutrients or pathogens, and result in an additional, undetermined number of OWTS that will need to meet supplemental treatment requirements.

2

The costs of the supplemental OWTS requirements fall disproportionately on those communities least able to afford them. None of the 15 counties with more than 45% of their households served by septic systems⁴ have household incomes above the \$57,664 median household income of counties in California⁵. Twelve of these 15 counties have median household incomes below \$45,000. For these counties supplemental treatment requirement costs would constitute over 60% of their annual household income.

- The proposed Policy does not adequately take into account practical considerations to implement the Project.

The microbiological methods used to characterize pathogenic impairment in water bodies listed in the SED⁶, (and described in greater detail in each Regional Water Quality Control Board's 303(d) List⁷), have significantly compromised the linkage of OWTS to

such impairment. Traditional culture-based measures of fecal indicator bacteria (FIB) using total coliform, fecal coliform and *e.coli* cannot distinguish human sources of these pathogens (body contact recreation and storm water runoff, as well as OWTS), from the contribution of birds and warm-blooded wildlife, nor from the contribution of domesticated pets and farm animals.

Without being able to identify and distinguish the primary source(s) of these FIB, it is impossible to determine whether, or to what extent OWTS are contributing to that impairment. How effective the increased regulation of OWTS will be on improving overall surface water impairment is also impossible to determine without FIB source identification and control. If the contribution of OWTS to these pathogens is small relative to other sources little improvement in water quality can be expected, despite costly supplemental treatment requirements imposed on OWTS (the same conclusion is reached by State Board staff⁸). This is because the contribution of avian and wildlife pathogens is impossible to control, and the contribution from domesticated pets and farm animals has also proven difficult to control.

- The proposed Policy does not include existing technological capabilities to better characterize FIB impairment source(s).

Traditional culture-based methods for FIB have been used almost exclusively by the Regional Water Quality Control Boards to identify surface waters impaired by pathogens to compile 303(d) lists, in spite of the inability of these measures to identify or quantify the sources of such impairment and their relative contribution. Historically, these were the only measures available to measure impairment by FIB. However, in the past decade molecular methods such as polymerase chain reaction (PCR) have been developed to remedy the source identification deficiency of total coliform, fecal coliform and *e.coli* measures.

Over the past five years, a variety of molecular methods have been refined to increase their sensitivity and specificity.^{9 10} In addition to refinement of the specific FIB enumeration methods, various procedures to enhance the capability of microbial source tracking (MST) have focused on the integration of multiple analytical methods in the study design, as well as enhanced statistical assessment of the measured results.^{11 12 13}

These efforts have resulted in MST methods that are superior to those microbial methods currently used in State and Regional Board monitoring programs to characterize FIB impairment for risk assessment and risk management purposes.^{14 15} These MST methods are now routinely (and preferentially) used by universities, and such environmental monitoring organizations as the Southern California Coastal Water Research Project and the US Geological Survey.

In the 3-year interval between the original and current draft regulations, the State and Regional Boards should have availed themselves of the MST expertise and experience in California. MST methods should have been used to evaluate and validate the assumption that OWTS are a significant source of FIB in waters determined to be impaired in which

3

only traditional culture-based microbial methods were used. By ignoring the available technological capabilities of MST, State Board staff may be implementing a program that poses a significant financial burden upon a relatively small group of California homeowners and business owners without providing a concomitant protection of human health or improvement of environmental quality.

I strongly urge the State Board to adopt the No Action Alternative, until monitoring of pathogen impaired waters with MST methods confirms that OWTS are a significant source of FIB in those waters.

Thank you for your consideration.



Robert Berger
Sebastopol, California

References

- ¹ State Water Resources Control Board. 2011. Onsite Wastewater Treatment System Policy, Preliminary Substitute Environmental Document (SED). Page 1.
- ² SED. Page 229.
- ³ SED. Page 4
- ⁴ SED. Table 4-6, Page 70.
- ⁵ United States Department of Agriculture, Economic Research Service. 2012. County-Level Unemployment and Median Household Income for California.
- ⁶ SED. Table 4-11, Pages 78-106.
- ⁷ State Water Resources Control Board. 2010. Integrated Report - 303 (d) List of Water Quality Limited Sections and 305(b) Surface Water Quality Assessment.
- ⁸ SED. Pp. 187-188.
- ⁹ Ahmed, W., A. Goonetilleke and T. Gardner. 2008. Alternative Indicators for Detection and Quantification of Faecal Pollution. *Journal of the Australian Water Association*. pp. 39-45.
- ¹⁰ Balleste, E., et al. 2010. Molecular Indicators Used in the development of Predictive Models for Microbial Source Tracking. *Appl. Environ. Microbiol.* 76(6) pp. 1789-1795
- ¹¹ United States Environmental Protection Agency. 2005. Microbial Source Tracking Guide Document. Office of Research and Development. National Risk Management Research Laboratory. EPA/600/R-05/064, 123pp.
- ¹² Reischer, G.H., et al. 2011. Hypothesis-driven Approach for the Identification of Fecal Pollution Sources in Water Resources. *Environ. Sci. Technol.* 2011 45(9) pp. 4038-4045.
- ¹³ Wang, D., et al. 2010. Estimating true human and animal host source contribution in quantitative microbial source tracking using the Monte Carlo Method. *Water Research* 44(16) pp. 4760-4775.
- ¹⁴ Kildare, B.J., et al. 2007. 16SrRNA-based assays for quantitative detection of universal, human-, cow-, and dog-specific Bacteroidales: A Bayesian approach. *Water Research* 41 pp.3701-3715.
- ¹⁵ Stoeckel, D.M., et al. 2011. Semi-quantitative evaluation of fecal contamination potential by human and ruminant sources using multiple lines of evidence. *Water Research* 45 pp.3225-3244.

Attachment A

Minimal Cost Estimate^a

Existing OWTS	64,000 ^b	x	\$ 5,000 ^c	=	\$320 million
New construction OWTS	110,000 ^d	x	\$ 3,300 ^e	=	\$363 million
				Total	= \$683 million

More Realistic Cost Estimate^f

Existing OWTS					
Inspection only	2,598 ^g	x	\$ 5,000 ^h	=	\$ 13 million
Supplemental treatment	61402 ⁱ	x	\$27,500 ^j	=	1.69 billion
New construction OWTS	110,000 ^k	x	\$ 5,000 ^l	=	\$550 million
				Total	= \$2.25 billion

^a Assumes that none of 64,000 OWTS will need to construct advanced treatment systems after the required inspection; that none of the 110,000 new OWTS will be sited near enough to impaired waters to be affected by Tier 3 supplemental treatment requirements, and OWTS construction costs are at the low range for Tier 1.

^b State Water Resources Control Board. 2011. Onsite Wastewater Treatment System Policy, Preliminary Substitute Environmental Document (SED). Pg 229.

^c SED Table 1-2, Pg.7

^d SED Pg. 4

^e SED Table 1-2, Pg. 236

^f Assumes that 96% of the 64,000 OWTS will need to construct advanced treatment systems after inspection. Based on USDA the average percent acreage of soils suitable for those California counties with more than 45% of households served by OWTS (SED Table 4-4, Pp. 55-56); that none of the 110,000 new OWTS will be sited near enough to impaired waters to be affected by Tier 3 supplemental treatment requirements, and OWTS construction costs are at the mid range under Tier 1.

^g 4% of 64,000 OWTS that will not need to construct advanced treatment systems after the required inspection.

^h SED Table 1-2, Pg.7

ⁱ 96% of 64,000 OWTS that will need to construct advanced treatment systems after the required inspection.

^j SED Table 1-2, Pg.7

^k SED Pg. 4

^l SED Table 1-2, Pg. 236