



December 6, 2013

Eric Oppenheimer  
 California State Water Resources Control Board  
 eric.oppenheimer@waterbords.ca.gov

Subject: State Water Board Groundwater Concept Plant Paper (Draft 10/4/2013) Comments

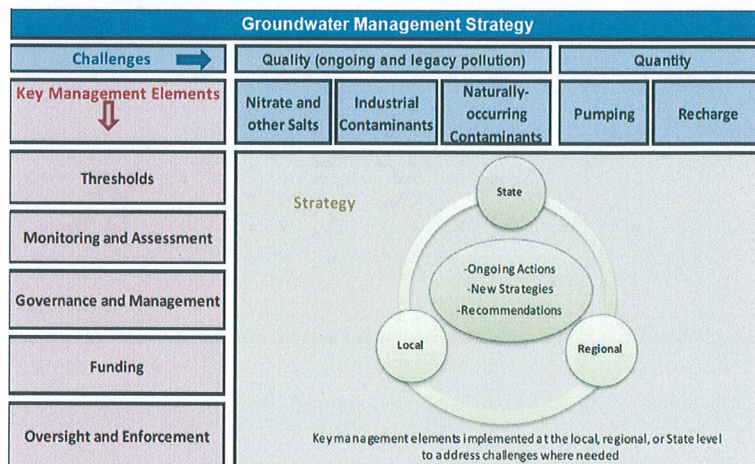
Dear Mr. Oppenheimer:

SPI is a consulting engineering organization involved in the design of water treatment facilities used for treatment of groundwater, surfaces water and recycled water. Our focus is in the application of membrane and other advanced treatment processes used to remove contaminants to achieve compliance with the applicable regulations. SPI's experience is widely recognized and includes work as a contributing author for preparation of the USEPA's Membrane Filtration Guidance Manual.

We respectfully offer five comments and discussion when deemed appropriate for your consideration.

Comment 1:

The State Water Board Groundwater Workplan Concept Paper (Draft 10/4/2013) hereafter referred to as the Concept Paper includes the following figure:







The following text is also included in the Concept Paper. Our comments are specifically associated with the section beginning with “Many of...” and ending with “...into groundwater”

**sustainable levels that support beneficial uses of water over the long-term. Many of the most pressing challenges associated with groundwater quality can be broken down into three categories: (1) nitrate and other salts; (2) industrial chemicals; and (3) naturally-occurring chemicals. Nitrate and salt problems are generally associated with diffuse nonpoint pollution sources, such as agricultural drainage. Industrial pollutants typically originate from discrete point sources. Naturally-occurring chemicals are associated with geologic processes, and human activities often mobilize these pollutants into groundwater. Groundwater quality can also be impacted by pumping and declining water levels. In**

It is suggested that there are inconsistencies in words and meaning that should be reviewed and addressed. For example, the term “Industrial Contaminants” (figure) is inconsistent with the term “Industrial Chemicals” (text) as a chemical is only one form of contamination. Moreover, and more importantly, the word “Industrial” is more commonly associated with the source of contamination, and not the type of contaminant.

It is suggested that water quality characteristics (or parameters) including contamination can be categorized by its type, source, and location aspects and can be thought of as a “matrix” of permutations. Others may also include the aspects of regulation (e.g. regulated/unregulated contaminants) when appropriate. The following discussion is provided to elaborate on the primary categories and describe an alternative perspective for consideration.

#### Types of Contamination

It is suggested that the term “Nitrate and Other Salts” be modified to include background constituents, which are commonly present in the environment at some level, but which may have upper or lower regulatory limits. Thus, it is suggested that the term to “Nitrate, Salts and Background Constituents is more appropriate. For the purpose of this discussion, constituents are chemicals (and some microorganisms) and/or chemical mixtures (such as sediment) and/or properties (temperature, pH) that are commonly present in the environment, and that may have an associated regulatory limit.

It is suggested that the terms “Synthetic Contaminants” or “Man-Derived Contaminants” are more accurate than the term of “Industrial Contaminants” Either of the proposed alternatives would reflect a broader range of contaminants that are not naturally occurring. This would include inorganic or organic contaminants including pesticides, herbicides and pharmaceutical products that are not normally associated with “Industrial” activity. The characteristic of these contaminants is that they would have a maximum regulatory limit and a maximum contaminant level goal below detection limits (zero).



For “Naturally Occurring Contaminants,” it is suggested that the characteristics of these contaminants (not chemicals as it may include some microorganisms) is that they would have a maximum regulatory limit and a contaminant goal of below detection limits (zero).

#### Sources of Contamination

In a regulatory framework, further definition of sources is suggested. It is suggested that the most common sources of contamination are as follows:

- Domestic
- Municipal
- Industrial
- Agricultural
- Conveyance

While the first four terms are self-explanatory, it is suggested that the term Conveyance be applied to the surface transport of waters from one location to another by natural (river) or artificial (aqueduct) means. This suggestion is offered as the transport of water from one location to another can present regulatory challenges or opportunities because of the regulations and basin plan objectives.

#### Location of Contamination

The terminology of “point sources” and “non-point sources” used to describe location is generally understood and does not require further discussion.

#### Comment 2:

In viewing the previously referenced figure, it is suggested that Federal requirements should be illustrated as an input to the State bubble or included as part of the Actions/Strategies/Recommendations bubble as compliance with Federal law is implicit.

#### Comment 3:

In reviewing the Concept Paper, it may be appropriate to include a discussion or reference to the regulatory definition of the wording used. For example, pollutant and contaminant may have a difference in regulatory meaning, especially when associated with the words regulated or unregulated. We suggest that the Concept Paper be reviewed for accuracy and consistency of terminology as 1) the term pollution and pollutant is generally considered dated and not commonly used and 2) the interchange and inconsistencies between the uses of the words



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chemical, contaminant and constituent will be confusing to the reader. In some circumstances, the wording may not be correct when compared to the regulatory definition.

Comment 4:

In Section 3.1, the wording “threshold” is stated to be “establish protective levels” but is also extended to include other regulatory aspects including the development of Plans, Policies, Criteria and Goals. Thus, the term “threshold” is ascribed to be broader and all-encompassing aspect of the regulatory framework, whereas its more common use is that which is associated with the setting of a level or limit. It is suggested that the use of the term threshold in this manner will be confusing to those not familiar with the definition provided, is not intuitive, and simpler alternative wording (e.g. Regulatory Framework or Regulatory Development) may more appropriate.

Comment 5:

As a general comment, the Concept Paper includes numerous references that are related to Surface Water, Storm Water, Recycled Water, Wastewater and other “waters of the State”. It is suggested that the applicable entities provide formal review and comment. It is suggested that such a review may identify other elements of the Concept Paper which may be inconsistent with the concepts and terminology presented.

Please contact me if you have any questions regarding the comments above.

Sincerely,

A handwritten signature in blue ink that reads "James C. Vickers".

James C. Vickers, P.E.  
Vice President  
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