Agricultural Expert Panel Questions

Call for an Expert Panel

Chapter 1 of the Second Extraordinary Session of 2008 (SBX2 1, Perata), required the State Water Board to develop pilot projects focusing on nitrate in groundwater in the Tulare Lake Basin and Salinas Valley, and to submit a report to the Legislature on the scope and findings of the pilot projects, including recommendations. The State Water Board made 15 recommendations in 4 key areas to address the issues associated with nitrate contaminated groundwater. The key areas to address these issues are:

1. Providing safe drinking water.
2. Monitoring, notification, and assessment.
3. Nitrogen tracking and reporting.
4. Protecting groundwater.

Recommendation 14 of the State Water Board's report to the Legislature was to convene a panel of experts to assess existing agricultural nitrate control programs and develop recommendations, as needed, to ensure that ongoing efforts are protective of groundwater quality.

The State Water Board in its subsequent adoption of Order WQ 2013-0101 also tasked the Expert Panel with certain issues related to impacts of agricultural discharges on surface water.

Regulatory Context

The charge and questions below directed to the Agricultural Expert Panel are done so in the context of the State Water Resources Control Board's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program, May 20, 2004,* and Regional Water Quality Control Boards' Irrigated Lands Regulatory Programs as implemented through various separate orders.

Agricultural Expert Panel Questions

Charges to the Expert Panel

Assess existing agricultural nitrate control programs and develop recommendations, as needed, to ensure that ongoing efforts are protective of groundwater quality. (Recommendations Addressing Nitrates in Groundwater, State Water Board's Report to the Legislature, February 20, 2013)

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Provide a more thorough analysis and long-term statewide recommendations regarding many of the issues implicated in State Water Board Order WQ 2013-0101, including indicators and methodologies for determining risk to surface and groundwater quality, targets for measuring reductions in risk, and the use of monitoring to evaluate practice effectiveness.

Questions for the Panel

Vulnerability and Risk Assessment

Regulatory programs are most effective when they are able to focus attention and requirements on those discharges or dischargers (i.e. growers) that pose the highest risk or threat because of the characteristics of their discharge or the environment into which the discharge occurs. The various Irrigated Lands Regulatory Program (ILRP) orders issued throughout the state by the Regional Water Boards have taken different approaches in their prioritization schemas, some using specific criteria or methodologies, others utilizing measurements of previous known impacts.

1. How can risk to or vulnerability of groundwater best be determined in the context of a regulatory program such as the ILRP?
2. Evaluate and develop recommendations for the current approaches taken to assessing risk to or vulnerability of groundwater:
    a. Nitrate Hazard Index (as developed by the University of California Center for Water Resources, 1995),
    b. Nitrate Loading Risk Factor (as developed by the Central Coast Regional Water Quality Control Board in Order R3-2012-0011),
    c. Nitrogen Consumption Ratio,
    d. Size of the farming operation,

   e. High Vulnerability Areas Methodology (as developed by the Central Valley Regional Water Board in a series of Waste Discharge Requirements issued to agricultural coalitions in the ILRP).
3. How can risk to or vulnerability of surface water best be determined in the context of a regulatory program such as the ILRP?
4. Evaluate and develop recommendations for the current approaches taken to assessing risk to or vulnerability of surface water:
   a. Proximity to impaired water bodies.
   b. Usage of particular fertilizer or pesticide materials.
   c. Size of farming operation.
   d. High Vulnerability Areas Methodology (as developed by the Central Valley Regional Water Board in a series of Waste Discharge Requirements issued to agricultural coalitions in the ILRP)

Application of Management Practices

The application and use of management practices for the control of nonpoint source pollution is a fundamental approach taken by many Water Board orders, and considered a key element in the State Water Board's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program, May 20, 2004.* Management practices that are cost-effective and are easy to implement have the best chance of being adopted and successful. However, when comparing management practices, consideration should also be given to the likelihood that a management practice will be effective in reducing nitrogen loading to surface and groundwater. The Regional Water Boards have included specific management practices in their various orders, as well as requiring the growers to identify and implement management practices on their own.

5. What management practices are expected to be implemented and under what circumstances for the control of nitrogen?
6. What management practices are recommended for consideration by growers when they are selecting practices to put in place for the control of nitrogen?
7. Evaluate and make recommendations regarding the usage of the following management practices:
   a. Nitrogen mass balance calculations and tracking of nitrogen applied to fields. This should include consideration of measuring and tracking Nitrogen:
      i. Applied to crops or fields.
      ii. In soil.

   iii. In irrigation water.
   iv. Removed from field.
   v. Estimation of losses.
   b. Templates for determining nitrogen balance.
   c. The usage of nitrogen balance ratios.
   d. Nutrient management plans.
8. Evaluate and make recommendations regarding the most effective methods for ensuring growers have the knowledge required for effectively implementing recommended management practices. Consider the following:
   a. Required training.
   b. Required certifications.
   c. Workshops sponsored by third parties such as: CDFA, County Agricultural Commissioners, Farm Bureau, UC Cooperative Extension.
   d. Usage of paid consultants – e.g., CCAs/PCAs.
   e. UC Cooperative Extension specialists.

Verification Measures

Utilization of verification measures to determine whether management practices are being properly implemented and achieving their stated purpose is another key element to the success of a nonpoint source control program. Because of the nature of nonpoint source discharges, direct measurements are often difficult or impossible to obtain and other means of verifications may be required.

9. What measurements can be used to verify that the implementations of management practices for nitrogen are as effective as possible?
10. Evaluate and make recommendations regarding the usage of the following verification measurements of nitrogen control:
    a. Sampling first encountered groundwater via shallow monitoring wells.
    b. Direct sampling of groundwater from existing wells, such as an irrigation well or domestic drinking water well, near the field(s) where management practices for nitrogen are being implemented.
    c. Sampling of the soil profile to determine the extent to which nitrogen applied to a field moved below the root zone.
    d. Representative sampling of a limited area and applying the results broadly.
    e. Sampling water in surface water containment structures for their potential discharge to groundwater.

f. Estimating discharge to groundwater based on nitrogen balance model and measured irrigation efficiency.

11. Evaluate the relative merits, and make recommendations regarding the usage of, surface water measurement systems derived from either receiving water or a discharge monitoring approach to identify problem discharges.

Reporting

The ILRP orders issued by the Regional Water Boards require reporting to both determine compliance and inform overall management of the discharges associated with agriculture. Also, specifically in regards to nitrogen, the California Department of Food and Agriculture convened the Nitrogen Tracking and Reporting System Task Force, called for by Recommendation 11 of the State Water Board's report to the Legislature, which makes recommendations on a potential reporting system.

12. Evaluate and make recommendation on how best to integrate the results of the Nitrogen Tracking and Reporting System Task Force with any above recommendation regarding management practices and verification measures.
13. Evaluate and make recommendations on the reporting requirements to report budgeting and recording of nitrogen application on a management block basis versus reporting aggregated numbers on a nitrate loading risk unit level. (Definitions of "management block" and "nitrate loading risk unit" are contained in State Water Board Order WQ 2013-0101.)