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June 6, 2011

Via E-Mail

Adam Laputz  
Assistant Chief Counsel  
California Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive, #200  
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Re: Short-Term Renewal of the Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges From Irrigated Lands

Dear Mr. Laputz,

Please accept these comments of the California Sportfishing Protection Alliance and California Water Impact Network (collectively "CSPA") regarding Regional Board staff's proposal to renew the existing Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands. CSPA continues to oppose the existing waiver and staff's proposed renewal. Renewing the waiver is not consistent with either the evidentiary record available to the Regional Board or applicable law. As described in detail in CSPA's previous comments on both the "Draft Program Environmental Impact Report for the Long-term Irrigated Lands Regulatory Program within the Central Valley Region" (July 28, 2010) ("PEIR") and the accompanying "Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (July 2010) ("Staff Report") and the subsequent proposed framework, continuing the existing waiver program is inconsistent with applicable law and State Board policies as follows:

1. Renewing the existing waiver program for two more years is inconsistent with the State of California's antidegradation policy or "Statement of Policy With Respect to Maintaining High Quality of Waters in California," Resolution 68-16 (Oct. 28, 1968). CSPA Sept. 27, 2010 Comment, pp. 16-17.
2. Renewing the existing waiver program for two more years is inconsistent with the State Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (May 20, 2004) ("NPS Policy"). CSPA Sept. 27, 2010 Comment, pp. 18-20.
3. Renewing the existing waiver program for two more years is inconsistent with the public interest and Water Code § 13269 because, among other flaws, it fails to identify best management practices or their efficacy, fails to identify the location of polluting discharges, fails to monitor the effectiveness of BMPs, has failed to prevent chronic toxicity throughout large swaths of the Central Valley, fails to address groundwater

pollution from irrigated lands, and relies on an informal bureaucracy, i.e. “coalitions,” that further obscure the key discharger information necessary for an effective regulatory program. *See* CSPA Sept. 27, 2010 Comment, pp. 51-55, 57-62.

In addition, the Regional Board cannot rely upon the PEIR to comply with the California Environmental Quality Act for the proposed waiver renewal because the PEIR is legally and factually deficient as explained in detail in CSPA’s previous comments and testimony, all of which are equally applicable here. The PEIR’s deficiencies include, but are not limited to the following:

1. The PEIR fails to include a stable project description - indeed, no proposed project is included.
2. The defined objectives are inadequate.
3. The PEIR fails to identify the superior alternative.
4. The PEIR does not provide meaningful comparative analysis of the selected alternatives because the assumption that all five alternatives would be equally effective at implementing BPTC and achieving standards is unsupported by any evidence.
5. The PEIR’s range of alternatives is inadequate because the Regional Board may not approve four out of five of the proffered alternatives because they would conflict with other laws, i.e. Porter-Cologne.
6. The PEIR fails to consider a reasonable range of alternatives because most of the alternatives are weighted down with components that render them ineffective.
7. The PEIR overlooks a number of important significant impacts, including impacts to recreation and aesthetics; cultural impacts re: traditional uses of salmon or other fish, and; the public health impacts of authorizing continued discharges of pesticides and other pollutants from irrigated lands’ effluent to groundwater.
8. PEIR’s analysis of many key potential impacts and the alternatives’ proposed mitigations are not supported by substantial evidence including the analysis of impacts to water quality and fisheries are flawed because there is no evidentiary support for the assumption that mitigation measures proposed by each alternative would be equally effective at addressing those impacts.
9. The PEIR fails to discuss numerous cumulative impacts to water quality and fisheries habitat currently plaguing the Delta and other areas of the Central Valley.
10. The PEIR’s discussion of possible agricultural impacts is inadequate because it relies on a flawed economic analysis. The economic analysis relied upon by the PEIR and staff report is substantially deficient and biased toward the least effective and coalition-preferred alternatives.

Each of these and other comments on the faults in the existing irrigated lands waiver program already were presented to the Regional Board in CSPA’s previous written comments as

Adam Laputz

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well as oral comments provided during the public hearings held April 7, 2011, on both the PEIR and the proposed long-term irrigated lands program framework. CSPA hereby incorporates as if fully set forth herein the attached CSPA and C-WIN September 27, 2010 comment letter including each of its exhibits, the attached CSPA and C-WIN March 21, 2011 comment letter, the attached comments of G. Fred Lee, Ph.D. dated September 25, 2010, the attached presentations of former Regional Board staff Jo Anne Kipps, Richard McHenry and Steven Bond made at the April 7, 2011 hearing, the attached CSPA comments presented at the April 7, 2011 hearing, the two attached Powerpoint presentations from June 2005 and June 2006 submitted by CSPA to the Board reviewing the effectiveness of the existing waiver program, the attached comments of numerous environmental organizations submitted to the Regional Board on April 6, 2011 and the attached comments of the Pacific Coast Federation of Fishermen's Associations dated April 7, 2011. In addition to the attached, CSPA also incorporates by reference as if fully set forth herein the tapes and any transcripts of testimony provided during the several agenda items at the April 7, 2011 hearing on both the PEIR and the long-term irrigated lands program framework. CSPA also is attaching for inclusion in the record on the proposed waiver renewal the comments of the Community Water Center and other groups dated September 27, 2010 and the comments of American Rivers and other organizations submitted on March 21, 2011.

Thank you for this opportunity to comment on the proposed waiver renewal. CSPA and C-WIN look forward to participating at the upcoming hearing scheduled for June 9 or 10, 2011.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Lozeau". The signature is fluid and cursive, with a large initial "M" and "L".

Michael Lozeau

cc: Bill Jennings (via e-mail)



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September 27, 2010

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Re: California Sportfishing Protection Alliance Comments on Draft Irrigated Lands  
Regulatory Program - Program Environmental Impact Report

Dear Ms. Smith, Ms. Creedon and Mr. Laputz,

On behalf of the California Sportfishing Protection Alliance and California Water Impact Network (collectively "CSPA"), thank you for this opportunity to provide comments on the "Draft Program Environmental Impact Report for the Long-term Irrigated Lands Regulatory Program ("ILRP") within the Central Valley Region" (July 28, 2010) ("PEIR") and the accompanying "Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (July 2010) ("Staff Report") and the "Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program" (July 2010) ("Technical Memo") prepared by ICF International. On 26 May, 2006, CSPA previously submitted comments on the Draft Central Valley Existing Conditions Report released in February 2006 and finalized in December 2008 and on 30 May, 2008 CSPA submitted scoping comments on the Long-term Irrigated Lands Regulatory Program and Associated Programmatic Environmental Impact Report, which are hereby incorporated by reference.

We have prepared these comments with the assistance of EcoNorthwest, SWAPE (Soil/Water/Air Protection Enterprise) and Steven Bond & Associates, Inc. ECONorthwest has reviewed and prepared a critique of the Technical Memo prepared

by ICF International. See ECONorthwest, "An Economic Review of the Draft Irrigated Lands Regulatory Program Environmental Impact Report" ("ECONorthwest Review") (Sept. 27, 2010). SWAPE and Steven Bond & Associates have reviewed and prepared comments regarding the proposed monitoring and management practice implementation. Their comments are attached hereto as Exhibits A through C and are incorporated herein in their entirety. The experts' comments require separate responses in the Final EIR.

## **I. INTRODUCTION.**

As the Staff Report acknowledges, "a regulatory program that is lax or allows too much time for compliance can lead to an exacerbation of water quality problems and prolonged impacts on beneficial uses." Staff Report, p. 2. This is in fact the result of the first seven years of the current ILRP. Impacts have been prolonged while staff spends all of its time wrangling with informal coalitions over which the Regional Board has no enforcement authority and which have cornered a vast majority of the fees thus far provided for the ILRP from the regulated dischargers. No improving trend in water quality impacts has been reported. Instead, for seven years, the coalitions have managed to steer the program to focus exclusively regional monitoring while avoiding farm-specific monitoring or information collection. The regional monitoring has further documented the extensive pollution already apparent in November 2000 when CSPA first petitioned the Regional Board to terminate the obsolete and water quality-damaging agricultural waiver from 1982.

Since the inception of the ILRP in 2003, staff and the Regional Board have been reticent in mandating that best practicable controls and technology ("BPTC") be installed and implemented by individual farms, reported to the Board and monitored for their effectiveness. Since 2003, CSPA and numerous experts have stated the obvious – any program that refuses to require dischargers to implement BPTC and confirm its effectiveness is bound to fail or at least delay for a very long time compliance with the Central Valley's water quality standards and antidegradation requirement.

CSPA has now stood by for seven years and observed each of its concerns coming true. After seven years, the Regional Board does not have any idea whether any farms have implemented any specific management measures. Assuming some measures are in place, the Board does not know whether they are working to reduce pollution, comply with applicable water quality standards or qualify as BPTC. And the current program's exclusive reliance on regional monitoring will never inform the Regional Board about the presence or effectiveness of management measures miles upstream.

The various coalitions have produced watershed management plans but, invariably, each of those plans fizzles in its follow-up to enforce implementation of management measures by specific farms. The plans indicate the coalitions will coordinate various meetings with a subset of farms and perhaps do some follow-up visits on site. However, because the coalitions exist in some extra-legal realm, none of their members need to do anything they say. The Board may or may not know about

which farms failed to implement any effective management measures. And it is virtually certain that the Regional Board, having based its entire program on coalitions, would not likely eliminate a coalition for an entire section of the Central Valley.

According to staff, after seven years, the Board is preparing to proceed with a single enforcement action including proposed civil penalties for one recalcitrant discharger. It is CSPA's understanding that enforcement action apparently is based on a tip from a water district and the violations could not have been discovered by the Regional Board based on the information required under the existing coalition-based program.

Now, staff is proposing to build on this record of lack of progress by proposing more of the same. It is clear from the PEIR, the bias evident in the accompanying economic analysis and staff's interpretations of the objectives identified by the coalition-dominated stakeholder group to promote the status quo, that staff is not focused on a program that achieves water quality objectives and protects beneficial uses consistent with the Regional Board's primary mission. Instead, staff is focused on proposing a program that is acceptable to the irrigated lands dischargers. The current program and staff's proposal unfortunately give real meaning to the phrase, "letting the fox guard the hen house." If the Regional Board chooses an ILRP alternative that does not have all individual farms reporting to the Regional Board on their specific management measures, *i.e.*, a farm water quality management plan ("FWQMP"), the Regional Board will not know in a timely manner or perhaps at all what any specific farm is planning on implementing. If the ILRP does not require individual farms to report on what measures they in fact implemented or installed, then the Regional Board will not know in a timely manner or perhaps at all what BMPs have been implemented throughout the Central Valley. And if the Regional Board does not require dischargers to gather water quality data that evaluates the performance of installed management measures, the Regional Board will never know what if any pollution reductions have resulted and whether the measures achieve the BPTC standard.

CSPA's frustration is exacerbated by staff's decision to circulate an environmental impact report that snubs its nose at CEQA's requirements and fails to provide the Regional Board the basic comparative tool to assist it in devising an ILRP that will work to protect water quality while balancing – not pandering – to the possible costs that the agricultural dischargers may have to bear for their pollution. CSPA, however, is not interested in simply critiquing every step that staff takes. CSPA, with the help of its consultants and almost a decade of constructive engagement on the irrigated lands pollution problem, has prepared its own alternative that balances the needs for firm regulatory action while allowing prioritization based on already measured regional pollution problems and basic monitoring needs to balance and alleviate some of the potential costs. We appreciate the Board's and staff's consideration of the following comments and proposals.

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## II. CSPA'S PROPOSED (EFFECTIVE, PROTECTIVE AND LEGALLY ADEQUATE) IRRIGATED LANDS REGULATORY PROGRAM.

As is described below in CSPA's comments on the PEIR, the PEIR's proposed alternatives do not evaluate or provide the Regional Board a reasonable range of alternatives to the current ILRP. The following alternative should be included in the PEIR's evaluation. This alternative could be appropriately labeled "Direct Oversight and Prioritized Farm Monitoring," and on the spectrum of alternatives presented in the PEIR falls somewhere between Alternatives 3 and 4 and Alternative 5, depending on the specific component that is being addressed.

1. Individual Growers Covered Not Third Parties: Individual growers would apply for coverage. No third-party applications would be authorized. CSPA generally agrees with the application information outlined in the PEIR. See PEIR, p. 3-15.
2. Farm Water Quality Management Plans (FWQMPs): Under this alternative, growers would be required to develop and implement individual FWQMPs in order to minimize discharge of waste to groundwater and surface water from irrigated agricultural lands. FWQMPs for surface water should be completed within 6 months of issuance of the WDR/conditional waiver and submitted to the Board. The groundwater component could be phased to be completed not later than one year from the WDR/conditional waiver issuance date. The contents of the FWQMPs would be consistent with the contents described in the PEIR. PEIR, p. 3-15. Even though each farm would have its own plan, neighboring farms could still agree on joint practices that address multiple farms. As described in PEIR, "[m]anagement practices could be instituted on an individual basis or could be installed to serve a group of growers discharging to a single location." PEIR, p. 3-16. As the State Board's Policy For Implementation And Enforcement of The Nonpoint Source Pollution Control Program (May 20, 2004) ("NPS Policy") states, "[a] first step in the education process offered by these programs often consists of discharger assessment of their lands or operations to determine NPS problems, followed by development of a plan to correct those problems." NPS Policy, p. 11 (emphasis added). The Board already has ignored this first step for the last 7 years. In regard to agriculture, the NPS Policy effectively requires a FWQMP: "MPs must be tailored to a specific site and circumstances, and justification for the use of a particular category or type of MP must show that the MP has been successfully used in comparable circumstances. If an MP has not previously been used, documentation to substantiate its efficacy must be provided by the discharger." NPS Policy, p. 12 (emphasis added).

3. Tiered Approach: This alternative would regulate the discharge of waste to surface water and groundwater using a tiered approach. Fields would be placed in one of three tiers based on their threat to water quality. The tiers represent fields with minimal (Tier 1), low (Tier 2), and high (Tier 3) potential threat to water quality, along the lines proposed in the PEIR for Alternative 4. PEIR, pp. 3-17 – 3-18. The tiers would be used to adjust the monitoring requirements, assist the dischargers in determining the level of management measures necessary to meet BPTC, and assist the Regional Board in prioritizing enforcement inspections.
4. Non-Water Quality Monitoring: As proposed in the PEIR's Alternative 4, all growers would conduct nutrient tracking, pesticide tracking and implemented tracking of management practices. Again, this information is necessary for a discharger or the Regional Board to evaluate the rationale of a discharger's FWQMP. As the NPS Policy emphasizes, "[i]t is important to recognize that development of a plan is only the first step in developing an implementation program that addresses a discharger's NPS pollution discharges. Implementation of the plan, including any necessary iterative steps to adjust and improve the plan and/or implementation must follow the planning stage." NPS Policy, p. 11.
5. Surface Effluent Quality Monitoring: Within areas where Coalitions are currently required to prepare and implement a management plan, all Tier 2 and 3 farms within that management area that are discharging any pollutant which triggered the management plan, must prepare and implement a discharge monitoring plan for the pollutants governed by the management plan as well as basic parameters that serve as indicators of pollution discharges. The basic parameters would include, for example, flow, toxicity, total nitrogen, nitrate-nitrite, total ammonia, total phosphorous, soluble ortho-phosphate, temperature, turbidity, pH, electrical conductivity, coliform if livestock is present and any applied pesticides and metals. If no toxicity is identified in the initial year, toxicity testing could be dropped for several years. The monitoring plan would include monitoring of effluent discharges at a point downgradient of implementation of BMPs. Where possible, monitoring of influent to any BMP also must be included. CSPA agrees with the proposed number of samples per season outlined in the PEIR. PEIR, p. 3-24. However, like Tier 3, sampling by Tier 2 growers should be every year. Only by direct monitoring of site-specific BMPs can the Regional Board comply with the NPS Policy, where it states that "if the program relies upon dischargers' use of MPs, there should be a strong correlation between the specific MPs implemented and the relevant water quality requirements." NPS Policy, p. 11. Likewise, effluent data of BMP effectiveness within areas known already to be degraded is necessary to implement the state

antidegradation requirement, Resolution No. 68-16, in particular its BPTC requirement as well as its nondegradation provision.

6. Groundwater Monitoring: Growers who qualify as Tier 2 or Tier 3 for groundwater pollution should be required to conduct individual monitoring annually as described for the Tier 3 groundwater growers in the PEIR. PEIR, p. 3-25. All farms should do one season of sampling any existing wells on their property to determine their tier level. All farms also should be required to evaluate any existing public water supply data regarding the presence of pesticides or other pollutants in nearby groundwater. Any regional monitoring should be conducted by the Regional Board or its consultants or other qualified governmental research entities and paid for by a portion of the permit fees collected annually from the dischargers.
7. No Agency "Approval" of Plans: Although staff should review FWQMP or monitoring plans in general, this alternative would not require the Regional Board to approve either an FWQMP or monitoring plan. The minimum conditions of the FWQMP should be clearly set forth in the conditional waiver or general WDRs and staff should "review" as part of their enforcement follow-up. By employing the Board's enforcement options to address any violators who, for example, fail to prepare a good faith FWQMP, the Board also would be in a position to recover the staff costs of those enforcement efforts.
8. Coordination With Dischargers Folded Into Prioritized Inspection and Enforcement by Regional Board: Along those same lines, any follow-up or coordination with growers re compliance would be part of the annual inspection effort. Compliance inspections would include appropriate compliance advice and be implemented consistent with State Board's existing enforcement policy. Growers would have to allow the Regional Board access to inspect. Prioritization of inspections and level of enforcement actions would be up to the Regional Board. Prioritization would be much easier because staff would already have farm specific FWQMPs and effluent data within the management areas where problems already have been identified, which data would make it much easier for Board staff to prioritize inspections and possible enforcement.
9. Regional Monitoring By Board Expanded to All Dischargers: There is no reason why WDRs or waivers in the ILRP should incorporate a regional monitoring program. No NPDES permits require all municipalities to conduct regional monitoring as part of their permits (CSPA is not suggesting any changes to receiving water quality monitoring currently required by most major NPDES permittees). The industrial storm water and construction storm water permit also do not include such a component. That being said, all of these dischargers should be

contributing a portion of their permitting fees toward an objective and agency-controlled (not discharger-controlled) regional monitoring program. Fees for all of these permittees should be assessed annually. Regional monitoring, including toxicity monitoring, would be conducted by the Regional Board, its consultants or other governmental research entities. CSPA believes regional monitoring is important to determining the overall health of waterways in the Central Valley. However, its inclusion in permits for irrigated lands dischargers takes away resources that need to be focused on implementing BMPs and evaluating their effectiveness at the points of discharge. It also would be fairer that all sources of pollution to the Valley's ambient waters contribute a proportionate share of the funds necessary to conduct regional monitoring. Lastly, by consolidating that program within the Regional Board and other non-discharger agencies – rather than under the current program with inexperienced coalitions made up of discharger representatives – the objectivity of the program will be maintained. Placing regional monitoring in another program outside of the ILRP will of course free up a vast quantity of time currently spent by staff attempting to track the coalitions' various monitoring efforts.

10. Request Additional Fee Authority: Critical to any alternative selected by the Regional Board is a frank request to the State Board to increase current fees to cover all of the costs of the program. It is unreasonable to base a regulatory program regulating the largest source of pollution to Central Valley waters on the political reluctance of the Board or Administration to assess appropriate fees to support a regulatory program that is capable of enforcing statutory and regulatory requirements. The fees for the irrigated lands dischargers, as well as fees on existing NPDES permittees, including stormwater permittees, should also be adjusted to accommodate a separate regional monitoring program.

The Regional Board's review and selection of the above alternative would address many of the legal flaws that currently hamper staff's proposal as well as most of the PEIR's alternatives, discussed at length below. More importantly, CSPA believes that, unlike staff's proposal or Alternatives 1 through 4 of the PEIR, the above alternative would have a reasonable chance of achieving significant reductions in irrigated lands pollution, achieving water quality standards and improving the region's overall economy and quality of life without any significant impact on the agricultural industry.

### **III. THE PEIR FAILS TO COMPLY WITH CEQA'S PROCEDURAL AND SUBSTANTIVE REQUIREMENTS.**

The PEIR fails as an analytical document under CEQA. Arguably, rather than assist the Regional Board with making the tough decisions required to properly regulate the irrigated farm dischargers and ensure compliance with the high quality waters policy

and water quality standards, the PEIR erects a barrier to objective evaluation. Several flaws are worth noting right up front. First is the PEIR's failure to identify a proposed project or an environmentally superior alternative. These omissions make the PEIR unrecognizable as an EIR under CEQA.

The second most egregious flaw stems from the PEIR's premise that the current waiver (Alternative 1) will lead to implementation of the same best practicable control technologies as, for example, Alternative 5. This is entirely baseless given the fact that seven years into implementing Alternative 1, the Regional Board's staff cannot point to a single piece of evidence documenting the implementation of any management practices. Even the much touted management plans that already have been approved by staff under the existing waiver each address management practices by bobbing and weaving – replacing BPTC implementation and effectiveness monitoring with informal office meetings with groups of growers. Occasional meetings cannot verify the implementation or effectiveness of a management practice on a specific farm.

Similarly, the PEIR assumes that the four alternatives that rely on regional monitoring, rather than farm specific monitoring, will be able to evaluate the implementation of BPTC equally as well as Alternative 5, the one alternative that requires edge of field monitoring. Although as explained above, CSPA does not believe the universal and expansive monitoring proposed by Alternative 5 is necessary to take the program to its next effective level, CSPA believes it is obvious that only by monitoring the effectiveness of a claimed BPTC at its point of discharge can the Regional Board or its staff claim to ensure it is in fact BPTC and know what effect the discharge is having on compliance with water quality objectives. It also is even more evident that a regional monitoring location 10, 20, or 30 miles downstream of a specific farm tells neither the agency, the farm nor the general public about the presence or effectiveness of any management measures that may be installed there and whether they amount to BPTC.

These few concerns are only the highlights of a long list of deficiencies in the PEIR. The following addresses each of CSPA's concerns in turn.

#### **A. General Purposes and Standards Under CEQA.**

CEQA requires that an agency analyze the potential environmental impacts of its proposed actions in an environmental impact report ("EIR") (except in certain limited circumstances). See, e.g., Pub. Res. Code § 21100. The EIR is the very heart of CEQA. *Dunn-Edwards v. BAAQMD* (1992) 9 Cal.App.4th 644, 652. "The 'foremost principle' in interpreting CEQA is that the Legislature intended the act to be read so as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language." *Communities for a Better Environment v. Calif. Resources Agency* (2002) 103 Cal.App.4th 98, 109.

CEQA has two primary purposes. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental effects of a project.

14 Cal. Code Regs. ("CEQA Guidelines") § 15002(a)(1). "Its purpose is to inform the public and its responsible officials of the environmental consequences of their decisions before they are made. Thus, the EIR 'protects not only the environment but also informed self-government.'" *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal. 3d 553, 564. The EIR has been described as "an environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return." *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm'rs.* (2001) 91 Cal.App.4th 1344, 1354 ("Berkeley Jets"); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

Second, CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and all feasible mitigation measures. CEQA Guidelines § 15002(a)(2) and (3); See also *Berkeley Jets*, 91 Cal.App.4th 1344, 1354; *Citizens of Goleta Valley*, 52 Cal.3d at 564. The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced." Guidelines §15002(a)(2). If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns." Pub.Res.Code § 21081; CEQA Guidelines § 15092(b)(2)(A) & (B).

While the courts review an EIR using an "abuse of discretion" standard, "the reviewing court is not to 'uncritically rely on every study or analysis presented by a project proponent in support of its position. A 'clearly inadequate or unsupported study is entitled to no judicial deference.'" *Berkeley Jets*, 91 Cal.App.4th at 1355 (emphasis added), quoting, *Laurel Heights Improvement Assn. v. Regents of University of California*, 47 Cal. 3d 376, 391 409, fn. 12 (1988). As the court stated in *Berkeley Jets*, 91 Cal.App.4th at 1355:

A prejudicial abuse of discretion occurs "if the failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process." (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal. App. 4th 713, 722]; *Galante Vineyards v. Monterey Peninsula Water Management Dist.* (1997) 60 Cal. App. 4th 1109, 1117; *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal. App. 4th 931, 946).

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**B. The PEIR fails to include a stable project description - indeed, no proposed project is included.**

The PEIR does not evaluate a proposed project. The PEIR attempts to portray this omission as a benefit: "Rather than the typical EIR approach of starting with a project and then looking at alternatives to that project, this draft PEIR will be used as a tool to inform decision makers during the selection process." PEIR, p. 2-1. See also p. 2-5 ("In this document, ... no preferred project has been identified by the Lead Agency from among the considered alternatives"). The drafters overlook, however, that CEQA sets forth the necessary contents of an EIR that can properly serve as a tool to inform the Regional Board. The drafters, staff and the Regional Board do not have any authority to omit a description of the proposed project from the PEIR.

"An accurate, stable and finite project description is the *sine qua non* of an informative and legally adequate EIR." *County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 192; *Berkeley Jets*, 91 Cal.App.4th at 1354; *Sacramento Old City Assn. v. City Council* (1991) 229 Cal. App. 3d 1011, 1023; *Stanislaus Natural Heritage Project v. County of Stanislaus* (1996) 48 Cal. App. 4th 182, 201. "[A] curtailed or distorted project description," on the other hand, "may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental costs, consider mitigation measures, assess the advantage of terminating the proposal (*i.e.*, the "no project" alternative) and weigh other alternatives in the balance." *Id.* See also, CEQA section 15124; *City of Santee v. County of San Diego*, 263 Cal.Rptr 340 (1989). As one commenter has noted:

The adequacy of an EIR's project description is closely linked to the adequacy of the EIR's analysis of the project's environmental effects. If the description is inadequate because it fails to discuss the complete project, the environmental analysis will probably reflect the same mistake. (Kostka and Zischke, "Practice Under the California Environmental Quality Act," p. 474 (8/99 update).)

A "rigorous analysis" is required to dispose of an impact as insignificant. *Kings County Farm Bureau v. City of Hanford*, 221 Cal.App.3d 692 (1990). Such a rigorous analysis is not possible if the project description is inaccurate, inconsistent, misleading or, in the case of the PEIR, completely absent.

**C. The Objectives Borrowed From The Stakeholder Process Attempt To Lend Support To Purported Benefits of Elements of Alternative 1 – Including Its Regional Planning Basis And Lack Of Farm Specific Information of Any Sort – Which Are Its Main Faults.**

The PEIR's objectives rely heavily on objectives formulated through the stakeholder process coordinated by the Regional Board's staff. The stakeholder process was dominated by agricultural interests. [http://www.swrcb.ca.gov/centralvalley/water\\_issues/irrigated\\_lands/long\\_term\\_program\\_development/advisory\\_](http://www.swrcb.ca.gov/centralvalley/water_issues/irrigated_lands/long_term_program_development/advisory_)

wrkgrp\_member\_1st.pdf; See, e.g. 11 May 2010 Long-term ILRP Meeting Attendees ([http://www.swrcb.ca.gov/centralvalley/water\\_issues/irrigated\\_lands/long\\_term\\_program\\_development/11may10\\_stakeholder\\_mtg/11may10\\_sum.pdf](http://www.swrcb.ca.gov/centralvalley/water_issues/irrigated_lands/long_term_program_development/11may10_stakeholder_mtg/11may10_sum.pdf)). Although CSPA, for example, nominally is identified as one of the stakeholders involved in the process, CSPA was one of many groups that did not have the resources to attend numerous meetings, conduct multiple reviews of numerous documents, and participate actively in the stakeholder process. Possibly as a result of the lack of representation from a broader spectrum of stakeholders, CSPA is concerned with language included in the objectives that biases the selection of an alternative in favor of those that do not address compliance with all water quality objectives throughout the region, that water down the high quality waters policy requirement that implementation of BPTC be ensured, and that include only regional monitoring.

An overly narrow definition of project objectives renders the alternatives analysis inadequate. To narrowly define the primary "objective" of the proposed project itself constitutes a violation of CEQA since such a restrictive formulation would improperly foreclose consideration of alternatives. See *City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438 (holding that when project objectives are defined too narrowly an EIR's treatment of analysis may also be inadequate). As a leading treatise on CEQA compliance cautions, "[t]he case law makes clear that...overly narrow objectives may unduly circumscribe the agency's consideration of project alternatives." (Remy, Thomas, Moose & Manley, Guide to CEQA (Solano Books, 2007), p. 589).

**1. The project's objective to restore or maintain "appropriate" beneficial uses qualifies the Regional Board's duty to maintain all existing or designated beneficial uses.**

The first objective identified for the ILRP is to "[r]estore and/or maintain appropriate beneficial uses established in Central Valley Water Board water quality control plans by ensuring that all state waters meet applicable water quality objectives." PEIR, p. 1-2. CSPA is concerned with the PEIR's inclusion of the term "appropriate." Neither the Water Code nor the Basin Plan qualify the Regional Boards' or dischargers' obligation to assure attainment of water quality standards by deeming some designated beneficial uses as inappropriate. This language should be revised to clarify that all designated or existing uses must be protected, including those designated by way of the Basin Plan's tributary rule.

**2. The objective to encourage implementation of BMPs is inconsistent with Resolution No. 86-16's duty that the Regional Board ensure implementation of all best practicable control technologies.**

The second objective is to "[e]ncourage implementation of management practices. . ." PEIR, p. 1-2. The notion that the Regional Board should limit its authority to "encouraging" the implementation of BMPs appears inconsistent with its duties under Porter-Cologne. The Regional Board must establish requirements that implement the

water quality objectives. Water Code § 13263(a) (“[t]he requirements shall implement any relevant water quality control plans. . . .”); § 13269(a) (waivers must be “consistent with any applicable state or regional water quality control plan . . .”). Merely encouraging BMPs will not achieve objectives.

**3. The objective to provide incentives to minimize waste discharges cannot be construed to allow less monitoring without any proof that waste discharges have been minimized.**

The third objective includes to “[p]rovide incentives (i.e., financial assistance, monitoring reductions, certification, or technical help) for agricultural operations to minimize waste discharge to state waters from their operations.” PEIR, p. 1-2. By specifying the incentives, CSPA believes this objective greases the skids for an alternative that trades away important components of any successful program. In particular, by specifically trading away monitoring of specific discharges, the objective directly undermines the Regional Board’s ability to implement the high quality waters policy’s BPTC requirement as well as the Nonpoint Source Plan’s monitoring requirements. CSPA believes an order with clear requirements is incentive enough and this objective merely opens the door to alternatives that violate relevant law and will once again prove ineffective. Any incentives should be based on encouraging growers to pollute less, not, for example, agreeing to give up essential site specific monitoring for participation in a less effective regional monitoring program.

**4. If the objective to coordinate with other regional programs means to mimic the regional scope of other ineffective pollution control programs, then this objective is inconsistent with the other three objectives.**

The fifth objective is to “[p]romote coordination with other regulatory and non-regulatory programs associated with agricultural operations . . . to minimize duplicative regulatory oversight while ensuring program effectiveness.” PEIR, p. 1-2. This objective, although sounding innocuous, is interpreted by staff as favoring alternatives that take a regional perspective like other programs referenced in the objective. See Staff Report, p. 103 (Alternatives 1 and 2, “[r]egional configuration for water quality plans and monitoring would facilitate efficient coordination with other programs operating at the regional level” and Alternatives 3-5, “...the farm-level management would not promote this coordination.”) Unfortunately, the record is clear that none of the other regional efforts have been successful at preventing the widespread surface water pollution and toxicity from irrigated lands. If coordination with regional programs means that the program must replicate the regional scales of other unsuccessful programs and thus replicate their inability to protect water quality since their inception, then this objective is inappropriate and inconsistent with the objective to restore water quality and meet water quality standards. The objective should be clarified to promote coordination without necessarily copying the ineffective regional programs already in place.

**D. The PEIR fails to identify the superior alternative.**

By choosing not to propose a project, it is hardly surprising that the PEIR does not identify the superior environmental alternative. One of CEQA's fundamental requirements is that the DEIR must identify the "environmentally superior alternative." CEQA Guidelines §1526.6(e)(2); Kostka & Zischke, *Practice Under the California Environmental Quality Act* §15.37 (Cont. Educ. Of the Bar, 2008). Typically, a DEIR identifies the environmentally superior alternative, which is analyzed in detail, while other project alternatives receive more cursory review.

The lead agency is required to select the environmentally preferable alternative unless it is infeasible. A "feasible" alternative is one that is capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. Pub. Res. Code § 21061.1; CEQA Guidelines § 15364. California courts provide guidance on how to apply these factors in determining whether an alternative or mitigation measure is economically feasible.

Since the PEIR fails to identify the environmentally superior alternative, there is not adequate analysis of its impacts or feasibility. See *Burger v. County of Mendocino* (1975) 45 Cal.App.3d 322 (county's approval of an 80 unit hotel project over a smaller 64 unit alternative was not supported by substantial evidence); *County of El Dorado v. Dept. of Transp.* (2005) 133 Cal.App.4th 1376 (agency must consider small alternative to casino project). Here, although suffering from its own defects (see *infra*, Section IV), the economic analysis prepared for the Regional Board indicates that all of the alternatives identified in the PEIR are economically feasible. Indeed, the alternatives with the most regulatory oversight expand the overall economy of the Central Valley. Because the alternatives are all feasible, the PEIR needed to select an environmentally preferable alternative.

**E. The PEIR Does Not Provide Meaningful Comparative Analysis of the Selected Alternatives Because the Assumption That All Five Alternatives Would Be Equally Effective at Implementing BPTC and Achieving Standards is Unsupported by Any Evidence**

As noted above, the PEIR fails to facilitate the Regional Board's selection of a new ILRP because the PEIR is based on a fiction that any program – no matter how far removed from the discharge locations and no matter how hard it may avoid documenting and measuring the implementation and effectiveness of BMPs – will result in the same level of pollution control. That core fiction does not allow for a meaningful comparative analysis by the Regional Board of the various alternatives.

CEQA requires that an EIR provide a discussion of project alternatives that allows meaningful analysis. *Laurel Heights I*, 47 Cal.3d at 403. The analysis of project alternatives must contain an accurate quantitative assessment of the impacts of the

alternatives. In *Kings County Farm Bureau*, 221 Cal.App.3d at 733-735, the court found the EIR's discussion of a natural gas alternative to a coal-fired power plant project to be inadequate because it lacked necessary "quantitative, comparative analysis" of air emissions and water use.

The PEIR does not attempt to estimate the relative effectiveness of the five alternatives. It generally assumes that they will all lead to sufficient pollution reductions. For example, the PEIR "assume[s] that continuation of the program would result in implementation of a greater number of surface water management practices than are present under baseline conditions, due to continued use of the program's monitoring feedback loops." PEIR, p. 5.7-45. Given the current absence of information about any BMPs actually installed, never mind whether they amount to BPTC, after seven years of implementing Alternative 1, the PEIR's assumption is entirely unsupported. The PEIR also asserts that "[u]nder all program alternatives, when a constituent of concern is identified through monitoring, management practices would be used to reduce the level of that constituent in surface water or groundwater." PEIR, p. 5.7-43. The PEIR repeats that, for each alternative, the "[p]otential impacts related to vegetation and wildlife under Alternative 3 are expected to be as described for Alternative 2. Like Alternative 2, Alternative 3 would implement water quality management plans that would result in a beneficial impact on surface water quality and groundwater quality, which would ultimately benefit both vegetation and wildlife communities." PEIR, p. 5.7-48. By making believe that all of the alternatives will have a beneficial effect on water quality – despite their obvious differences – the PEIR makes no effort to compare the relative effectiveness and certainty of each alternative in meeting standards or reducing pollution.

Obviously, of the flawed alternatives included in the PEIR, some have more certainty of achieving pollution reductions than others. Nothing in the record demonstrates that Alternative 1, seven years after its enactment, has reduced the volume or toxicity of pollution discharges from irrigated lands. There is no evidence in the Regional Board's files or discussed in the PEIR of what, if any, management practices have been or will be installed under the existing program. There is no discussion of evidence of any observable trends in ambient water quality conditions related to the existing program. There is certainly no evidence of any data showing any trends in pollution reductions at the edge of fields based on management measures applied to those fields. As a result, all of the evidence is that implementation of Alternative 1 and the even weaker Alternative 2 will most likely allow increases in pollution.

Contrary to the claims that all of the alternatives are interchangeable from a water quality perspective, one section of the PEIR discussing impacts to fish acknowledges that some alternatives (Alternatives 4 and 5) will "probably be greater." PEIR, pp. 5.8-52-53. Although still sorely lacking in providing the "quantitative, comparative analysis" required by CEQA, the fisheries section does at least

acknowledge that additional monitoring and additional management practices will result in less pollution being discharged.

given the probability of increased monitoring of individual farms, and especially those at higher risk of generating significant impacts—in addition to wellhead protection, nutrient management plans, tracking of nutrient and pesticide application, and monitoring of individual wells—the positive benefit of Impact FISH1 (improved water quality) would probably be greater under Alternative 4 than under Alternative 2 or Alternative 3.

PEIR, p. 5.8-52. Likewise, contrary to the discussion of water quality, the PEIR does acknowledge in the fisheries discussion that “the positive benefit of Impact FISH1 (improved water quality) probably would be greater under Alternative 5 than under any other alternative.” PEIR, p. 5.8-53. These acknowledgements contradict the PEIR’s earlier unreasonable assertions that the water quality benefits of each of the alternatives are similar despite their drastic differences in monitoring requirements and management practices oversight. The PEIR’s refusal to acknowledge the failure of the existing program to document any BMP implementation or water quality improvements frustrates rather than facilitates the Regional Board’s decision-making. A true quantitative comparison of alternatives 2, 3, and 4 incorporating one or more of the main flaws of Alternative 1, including for example reliance solely on regional monitoring to detect and evaluate BMPs, would demonstrate they will prove equally ineffective. CSPA believes the PEIR should be rewritten to include the required comparative analysis on staff’s proposed alternative (perhaps with some improvements – see Section V below), CSPA’s proposed alternative (Section II above), and perhaps one or two other of the existing alternatives.

**F. The Regional Board May Not May Not Approve Four Out Of Five Of The Preferred Alternatives Because They Would Conflict With Other Laws, i.e. Porter-Cologne.**

A lead agency may not approve a project with significant unavoidable impacts unless it is “otherwise permissible under applicable laws and regulations.” CEQA §21002.1(c). Likewise, as the PEIR acknowledges, “[t]o be considered as an alternative under CEQA, ILRP alternatives . . . must . . . meet statutory requirements established in applicable state policy and regulations (e.g., . . . , the State Water Resources Control Board *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* [State Water Board 2004], and the State Antidegradation Policy [State Water Board 1968]).” PEIR, p. 2-8.

The PEIR states that all of the alternatives will have a significant unavoidable impact on prime agricultural lands. PEIR, Summary, p. 1-13. CSPA also believes that every alternative considered in the PEIR will have unavoidable impacts to water quality and fisheries, at least in the near term and for several of the alternatives for the indefinite future. As discussed below, Alternatives 1 through 4 all violate the State’s antidegradation policy and the Nonpoint Source Control program. Therefore, only one

of the alternatives considered by the Regional Board (at least as currently formulated) can be approved despite any significant unavoidable impacts – Alternative 5.

**1. The first four alternatives all violate the state's antidegradation policy.**

The State Board's "Statement of Policy With Respect to Maintaining High Quality of Waters in California" provides, in relevant part, that:

Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Resolution No. 68-16 (Oct. 28, 1968) (emphasis added). As Regional Board staff explains, "In determining BPTC, the discharger should compare the proposed method to existing proven technology; evaluate performance data (through treatability studies), compare alternative methods of treatment or control, and consider the method currently used by the discharger or similarly situated dischargers." Staff Report, p. 62 (citing SWRCB Order Nos. WQ 81-5, WQ 82-5, WQ 90-6, and WQ 2000-07)." To comply with Resolution No. 68-16's BPTC mandate, the Regional Board "must require the discharger to demonstrate that the proposed manner of compliance constitutes BPTC." *Id.* (citing SWRCB Order No. WQ 2000-7) (emphasis added). See also *id.* p. 67 ("where degradation is occurring, irrigated agricultural operators must *demonstrate* that any set of practices proposed for implementation represents BPTC and will be required to consider existing water quality data or conduct monitoring in support of this demonstration").

Under the existing program, not one irrigated lands discharger has complied with Resolution No. 68-16's BPTC requirement. The Regional Board is entirely in the dark regarding what, if any, measures have been implemented never mind whether they amount to BPTC. Given that the existing management plans' only map out a series of meetings between coalitions and groups of dischargers to discuss measures the dischargers may have planned, there is nothing in Alternative 1 or its mirror proposal, Alternative 2, that would cure these universal violations of the BPTC requirement. See Staff Report, p. 115 ("Alternative 1 would not implement the iterative BPTC and monitoring process for addressing degradation to groundwater").

Alternatives 3 and 4 also succumb to the absurd notion that downstream regional monitoring alone can somehow implement Resolution No. 68-16's BPTC requirement. Although these alternatives both close some of the gap in implementing the BPTC requirement by requiring irrigated lands dischargers to prepare farm-specific Farm Water Quality Management Plans ("FWQMPs"), the omission of monitoring to determine the effectiveness of those measures means the Regional Board will not know whether

the measures are BPTC. Alternative 3 omits any surface or groundwater quality monitoring, essentially erasing the BPTC requirement. See Staff Report, p. 116 (“Surface and/or groundwater quality monitoring would not be required under Alternative 3 to determine effectiveness of BPTC and whether degradation is occurring”). Alternative 4, to the extent it allows dischargers to forego farm specific monitoring in exchange for participating in regional monitoring, cannot reasonably be claimed to identify BPTC many miles upstream of the monitoring location. Nor would measurements of pollution downstream at levels below applicable criteria indicate whether or not waters upstream – shallower and perhaps closer to various pollution discharges – were being degraded by irrigated lands discharges. Any resort to regional monitoring without a farm-specific monitoring component cannot meet Resolution No. 68-16’s requirement. The Staff Report does not explain how regional monitoring would suffice to determine whether upstream measures are BPTC or the presence and extent of upstream degradation. See Staff Report, p. 116.

Of the five alternatives considered in the PEIR, only Alternative 5 is consistent with Resolution No. 68-16. That alternative requires discharges to identify the measures they are installing or implementing and it requires monitoring of the measure’s effectiveness (though as CSPA notes below, Alternative 5 is weighted down with too much monitoring).

As the staff acknowledges, “With regard to selection of measures and practices, the Central Valley Water Board and USEPA recognize that there is often site-specific, crop-specific, and regional variability that affects the selection of appropriate management measures, as well as design constraints and pollution-control effectiveness of various practices.” Staff Report, p. 66-67. Because BPTC and compliance with the state’s antidegradation policy is ultimately a farm specific question, there is no getting around the fact that to implement the policy, one must identify and measure BPTC at the farm level. See *PEIR*, p. 3-9 (“The appropriate management practice is typically selected on a site-specific or property-specific basis”). It is simply ridiculous to claim that one can determine that a discharger has installed BPTC by measuring ambient water quality many miles downstream. If that were the case, the regional monitoring that has occurred under Alternative 1 for the last seven years would already allow the Regional Board to evaluate BPTC throughout the region. Of course, the opposite is true. The Regional Board has no idea what, if any, measures have been installed and whether they amount to BPTC. Alternatives that continue the current failure to apply Resolution No. 68-16 to tens of thousands of dischargers of toxic and impairing pollutants and vast swaths of the State’s inland waters amount to licenses to degrade water. CSPA agrees that farmers can have flexibility but they have to tell the Boards and the public what they decided to implement and then measure its effectiveness to comply with the BPTC requirement.

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## 2. Alternatives 1 through 4 violate the NPS Policy

Alternatives 1 through 4 also are inconsistent with the State Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (May 20, 2004) ("NPS Policy"). Any NPS program must be consistent with five key elements of the NPS Policy. Alternatives 1 through 4 are all inconsistent the NPS Policy's element requiring compliance with Resolution No. 86-16. Alternatives 1 and 2, as well as the staff's recommended program, fail to comply with second and fourth key elements as well. Alternatives 3 and 4 also fall short of the second and fourth elements to the extent they call for no water quality monitoring or only regional water quality monitoring. Each of the four relevant elements is discussed in turn.

Key element 1 states that "[a]n NPS control implementation program's ultimate purpose shall be explicitly stated. Implementation programs must, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements." NPS Policy, pp. 11-12. As discussed above, Alternatives 1 through 4 do not comply with Resolution No. 68-16. Hence, they also cannot comply with Key Element 1 of the NPS.

Key element 2 provides that: "[a] nonpoint-source control implementation program must include a description of the management practices and other program elements that are expected to be implemented to ensure attainment of the implementation program's stated purpose, the process to be used to select or develop management practices, and the process to be used to ensure and verify proper management practice implementation." NPS Policy, p. 12. "A RWQCB must be convinced there is a high likelihood the MP will be successful." *Id.* In regard to discharges from irrigated lands, this element of the NPS Policy effectively requires farm-based water quality management plans, or their equivalent. "MPs must be tailored to a specific site and circumstances, and justification for the use of a particular category or type of MP must show that the MP has been successfully used in comparable circumstances. If an MP has not previously been used, documentation to substantiate its efficacy must be provided by the discharger." *Id.*, p. 12. In this case, the dischargers are the individual farms and the only way to document the efficacy of a specific management practices for their particular lands is for them to tell the Regional Board what they are doing and why. Likewise, in order "to ensure and verify proper management practice implementation" for irrigated lands, the farms must report on their implementation, including pollutant specific monitoring of the BMP's resulting effluent. Because Alternatives 1 and 2 do not include FWQMPs, they cannot comply with key element 2. Likewise, Alternatives 1 and 2 and Alternative 4's reliance on regional monitoring also cannot comply with key element 2's verification requirement. Alternative 3 has no water quality monitoring at all and, thus, in the context of irrigated lands management practices, cannot verify the effectiveness of any management practice.

Key element 3 of the NPS Policy provides that “[w]here the Regional Water Board determines it is necessary to allow time to achieve water quality objectives, the nonpoint-source pollution control implementation program must include a specific time schedule and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements.” NPS Policy, p. 13. Although CSPA may not be opposed to reasonable time frames for irrigated lands dischargers to come into compliance with the requirements of a revised program, the PEIR and staff report need to be clarified to acknowledge that the Regional Board may not have authority to include schedules of compliance in either WDRs or conditional waivers because the Central Valley Basin Plan fails to include any such authority in its program to achieve the applicable water quality standards. See Water Code § 13242(b) (program to achieve standards must include “[a] time schedule for actions to be taken” – if no time schedule provided in Basin Plan, no authority); Basin Plan, p. IV-16 (compliance schedules only authorized for NPDES permits). The Board’s authority appears to be limited to adopting time schedules through enforcement orders. The documents also should be careful to emphasize the NPS Policy’s requirement that, assuming such schedules are authorized in the Basin Plan, the schedules “may not be longer than that which is reasonably necessary to achieve an NPS implementation program’s water quality objectives.”

Key element 4 requires that “[a]n NPS pollution control implementation program must include sufficient feedback mechanisms so that the Regional Water Board, dischargers, and the public can determine whether the program is achieving its stated purpose, or whether additional or different management practices or other actions are required.” NPS Policy, p. 13. “In all cases the NPS control implementation program should describe the measures, protocols, and associated frequencies that will be used to verify the degree to which the MPs are being properly implemented and are achieving the program’s objectives, and/or to provide feedback for use in adaptive management.” *Id.* “[I]f the program relies upon dischargers’ use of MPs, there should be a strong correlation between the specific MPs implemented and the relevant water quality requirements.” *Id.*, p. 12. In the context of irrigated lands, this key element requires reporting and monitoring. It is impossible to describe the management practices that were used and a “strong correlation” between the management practices and water quality standards without FWQMPs and annual reporting. And it is impossible to determine that the management practices are effective without reports from the discharger that they have been properly implemented and monitored to confirm they have reduced pollution. Alternatives 1 through 4 do not achieve this level of comprehensible feedback.

Key element 5 requires that “[t]he Regional Water Board must make clear, in advance, the potential consequences for failure to achieve a nonpoint-source pollution control implementation program’s stated objectives.” Neither Alternative 1 nor 2 make clear the consequences of any failures by coalitions. No coalition or discharger takes seriously the notion that a coalition will be dissolved for failing to comply with the program’s requirements. In essence, the coalition-based alternatives require the Regional Board to dissolve an entire watershed program – with nothing in place to back

it up once it is gone. The Regional Board would appear to punish itself as much as the dischargers under these scenarios. Likewise, as for Alternatives 3 and 4, the consequences of failure also are not clear because the proposals do not include monitoring of the individual dischargers. Although these alternatives have the Regional Board involved (CSPA believes unrealistically) in the development of the FWQMPs, without management practice effluent data and only sporadic site inspections by staff, there are no clear consequences for noncompliance by individual dischargers.

**G. The PEIR Fails To Consider a Reasonable Range of Alternatives Because Most of the Alternatives are Weighted Down With Components That Render Them Ineffective.**

Because four out of the five alternatives considered in the PEIR are not viable because they violate some of the elemental water quality regulations, the Regional Board is left with only a single feasible alternative – Alternative 5. See PEIR, p. 2-8 (“Alternatives must ... meet statutory requirements established in applicable state policy and regulations”). This is not a reasonable range of alternatives. Even assuming one additional alternative – Alternative 4 – comes close to being legal and thus feasible, the Board is still left with only two options. The Regional Board should redraft the PEIR to focus on feasible alternatives. These would include in addition to Alternative 5, staff’s proposed program (although as discussed below, staff’s proposal is also inconsistent with the PS Policy and Resolution No. 68-16), CSPA’s proposed alternative above, and at least one other variation that includes FWQMPs and farm-specific monitoring for at least some portion of the discharging farms.

An EIR must describe a range of reasonable alternatives to the Project, or to the location of the Project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. “An EIR’s discussion of alternatives must contain analysis sufficient to allow informed decision making.” *Laurel Heights I*, 47 Cal.3d at 404. An EIR must also include “detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.” *Id.* at 405.

In addition to their failure to comply with Resolution No. 68-16 and the NPS Policy, CSPA also believes the alternatives considered in the PEIR suffer from the following defects.

**1. The ILRP Should Not Rely on Coalitions to Implement or Comply with Irrigated Lands Program.**

What, if any, value the existing coalitions may have brought to the program to facilitate some of the regional monitoring and performing outreach to growers, has now passed. The ILRP, to be effective, must now concentrate on getting individual farmers to take actions necessary to control their pollution discharges and document implementation of BPTC. CSPA’s review of the coalitions’ management plans approved

by the Regional Board under the existing program shows that the coalitions have no intention of documenting each farm's management measures or their effectiveness. Instead, as their management plans make clear, the coalitions propose to replace various office meetings with groups of growers as a surrogate for documenting each farm's BMPs and their effectiveness. Of course, to confirm the selection, implementation and monitoring of BPTC on each farm, each farm must provide that information. Adding a layer of unofficial bureaucracy with an interest in obscuring information from both the Board and the public does not add any efficiency to the program. In 2003, CSPA pointed out that:

If one thing is clear, the existing Coalition program has managed to mask from the Regional Board what is going on on-the-ground at most of the farms around the Valley. As several Board members commented and as is painfully evidenced from reviewing the available documents, we still do not have the most basic information about what, if any, BMPs are being applied in the fields, where they're being applied, whether they are working or improving the quality of discharges and what other BMPs might be tried in the future.

Letter from Law Office of Michael R. Lozeau on behalf of Deltakeeper, pp. 5-6 (Nov. 4, 2005). Remarkably, seven years later, the mask erected by the coalitions remains in place. Neither the Board nor the public has any idea what if any management practices have been proposed or implemented by any of the estimated 30,000 farms in the Central Valley. See e.g., Technical Memo, p. 1-2 ("Although Alternative 1 represents the continued implementation of current Central Valley Water Board policies, limited information was available to determine the extent of management practice implementation to date"); *Id.*, p. 2-2 ("Conceptually, the best source of this type of information would be growers or grower coalitions. Because this information was not widely available, other sources were used to estimate the existing conditions (NRCS 2005; DWR 2001)"); Staff Report, p. 117 (explaining that only effort to date by coalitions to "track the progress of management practice implementation through the results of periodic surveys sent to growers"). Nor does the informal effort of the coalitions to collect the farm-specific data appear to have changed since the Regional Board's approval of management plans. See, e.g. East San Joaquin Water Quality Coalition Web Site ("Properties adjacent to or in close proximity to each waterway sampled by the Coalition are the primary focus of mailings and notices for local workshops that cover BMPs to solve the water quality problem"); San Joaquin County and Delta Water Quality Coalition, 2010 Annual Monitoring Report, p. 4 (March 1, 2010) (focused outreach in three subwatersheds consists of asking growers to complete surveys and then conducting unspecified follow-up with growers). The next phase of the ILRP cannot allow coalitions to continue and further obstruct the Board's collection of discharger information.

The use of coalitions also will continue to undermine the Regional Board's enforcement discretion. As the staff acknowledges, by relying on coalitions, the Board effectively limits the availability of all of its enforcement tools. 'The Central Valley

Water Board does not have any direct enforcement authority over a third-party group that is not responsible for the waste discharge (i.e., the Board cannot take enforcement against the coalition.” Staff Report, p. 117. The only option available to the Regional Board to address coalitions’ noncompliance is not to enforce the requirements, but to eliminate the entire program within large areas of the Central Valley. Rather than a readily available and precise tool available to the Regional Board, like a notice of violation or an administrative civil liability, a decision to dismantle the ILRP for an entire area would be the least likely response the Board would want to take and would not be commensurate with the scope and seriousness of most of the violations the Board was trying to address. The coalitions also undermine the Board’s ability to effectively enforce against individual dischargers as well by failing to collect the necessary data regarding management practices on individual farms and otherwise obstructing or slowing down the review and analysis of that information. See Staff Report, p. 140 (discussing Alternative 1, “the Board . . . would not have information regarding the method(s) and practices the operation has or plans to implement to work toward solving identified water quality concerns”).

Staff’s proposal argues that the presence of coalitions will “take advantage of local knowledge and administrative/cost efficiencies in dealing with a few groups versus thousands of individual operations.” Staff Report p. 3. The only administrative/cost efficiencies visible from the record are those realized by the coalitions’ successful effort to date to avoid gathering the key information and data that is necessary to implement a successful program – farm-specific management practices and monitoring data to prove they have been implemented and are effective at reducing the pollutants of concern. It makes no sense that establishing an intermediate layer of bureaucracy between the dischargers who have the information and the agency that needs to know the information makes that process more efficient.

Nor do the coalitions bring the local knowledge necessary for a successful ILRP. If anything, the coalitions are preventing local knowledge of each farm from reaching the Board. As far as CSPA can tell, staffing by the coalitions consists of a few staff for each coalition. There is no reason that the Regional Board itself could not provide the same local presence by modestly expanding its staff and gain efficiencies by cutting out the middleman. To the extent any alternative proposes to rely on coalitions who are not themselves dischargers to conduct sampling, gather information, and prepare plans and reports pursuant to a conditional waiver or WDRs, the program will continue to fail to measurably reduce any pollution discharges and perpetuate or worsen the existing pollution discharges from irrigated lands.

**2. Alternatives that rely solely on regional monitoring to determine the adequacy of BPTC or enforcement of individual farms are destined to fail and do not meet CEQA’s duty to mitigate impacts.**

The four alternatives that rely on regional monitoring to determine that the program is reducing, rather than increasing, pollution discharges and that management

practices are installed and equal to BPTC, do not provide for the mitigation of impacts required by CEQA. CEQA requires public agencies to avoid or reduce environmental damage when "feasible" by requiring "environmentally superior" alternatives and mitigation measures. CEQA Guidelines § 15002(a)(2) and (3); *See also, Berkeley Jets*, 91 Cal. App. 4th 1344, 1354; *Citizens of Goleta Valley*, 52 Cal.3d at 564. The EIR serves to provide agencies and the public with information about the environmental impacts of a proposed project and to "identify ways that environmental damage can be avoided or significantly reduced." CEQA Guidelines §15002(a)(2). If the project will have a significant effect on the environment, the agency may approve the project only if it finds that it has "eliminated or substantially lessened all significant effects on the environment where feasible" and that any unavoidable significant effects on the environment are "acceptable due to overriding concerns." Pub. Res. Code § 21081; CEQA Guidelines § 15092(b)(2)(A) & (B).

In general, mitigation measures must be designed to minimize, reduce or avoid an identified environmental impact or to rectify or compensate for that impact. CEQA Guidelines § 15370. Where several mitigation measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. *Id.* at § 15126.4(a)(1)(B). A lead agency may not make the required CEQA findings unless the administrative record clearly shows that all uncertainties regarding the mitigation of significant environmental impacts have been resolved. A public agency may not rely on mitigation measures of uncertain efficacy or feasibility. *Kings County Farm Bureau*, 221 Cal.App.3d at 727 (finding groundwater purchase agreement inadequate mitigation measure because no record evidence existed that replacement water was available). "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. CEQA Guidelines § 15364. Mitigation measures must be fully enforceable through permit conditions, agreements or other legally binding instruments. *Id.* at § 15126.4(a)(2).

By not requiring any farm-specific mitigation measures, Alternatives 1 and 2 fail to meet CEQA's mitigation requirements. These two alternatives make no effort to resolve the vast uncertainties surrounding the selection and implementation of management practices on irrigated lands throughout the Central Valley, the very mitigation measures relied upon by the PEIR to find that impacts to water quality will be less than significant. Despite the PEIR's acknowledgement that "[t]he appropriate management practice is typically selected on a site-specific or property-specific basis[.]" Alternatives 1 and 2 do not include any site-specific BPTC requirements that are or will be fully enforceable.

Similarly, Alternatives 3 and 4, although requiring FWQMPs that would require, in the future, individual farms to describe their management practices, the absence of any farm specific and BMP-specific monitoring to confirm their implementation and effectiveness also fails to eliminate the rampant uncertainty regarding BMP implementation and their effectiveness at reducing pollution from specific farms. And, again, making believe that one can monitor for the implementation and effectiveness of

management practices on a specific farm from several miles downstream makes any management practice mitigation unenforceable, never mind fully enforceable.

**3. Alternative 3 includes components that begin to address the shortcomings of the current program but is weighed down with odious requirements and illegal delegation of Board responsibilities.**

Although flawed, some of the alternatives described in the PEIR include components that CSPA believes are necessary to an effective ILRP. However, in each instance, the PEIR weighs down the effective components with various poison pills and odious requirements that stifle any serious consideration of alternatives that substantially change the current program. Additional comments and flaws in Alternative 3, in addition to the absence of any effluent quality monitoring discussed above, include the following.

Alternative 3 does include the important requirement that all irrigated land dischargers prepare a FWQMP. CSPA believes this requirement is fundamental to a program that will achieve BPTC, achieve water quality standards and allow proper oversight by the Regional Board. However, the 2-year time period for developing a FWQMP should be shortened to 6 months for surface water discharges and one year for groundwater discharges.

Alternative 3's proposal that the Regional Board review and approve every FWQMP is unrealistic and unnecessary. See PEIR, p. 3-14 ("Review applications and determine priorities for FWQMP review and approval"); p. 3-16 ("Submit the FWQMP for review and approval by the Central Valley Water Board"). As proposed, the task of reviewing in advance each and every FWQMP is unrealistic. Moreover, such review and approval would be a desk top review of whatever information is included in the FWQMP without the benefit of any field observations. This process would simply repeat the currently inadequate surveys and informal meetings which the coalitions claim can accurately evaluate management practice implementation and effectiveness. Rather than requiring review of and approval of all FWQMPs, the program should specify in sufficient detail the contents of the FWQMP and require them to be submitted under penalty of perjury. CSPA also believes there is a role for an iterative process. The requirements for the FWQMP should include requiring additional management practices wherever effluent data indicates that pollutant discharges are not decreasing or standards are being violated. Any review by the Board staff would be in the context of reviewing for compliance and prioritizing any inspections and enforcement investigations. Staff also could, of course, require additional measures or monitoring for specific problem farms.

Similarly, because such up front review and approval is unnecessary, any resources expended to review proposals by third-parties to take over such review and approval of FWQMPs is also unnecessary. To the extent the Board thought it was

possible to review and approve every FWQMP, farming that task out to third parties would be an illegal delegation of discharge requirements. Water Code § 13223.

CSPA certainly agrees that the Regional Board should prioritize and conduct a significant number of site inspections every year. It is through this oversight and enforcement process that CSPA believes the Regional Board can realistically and accurately review a specific farm's FWQMP to determine its compliance with the program requirements. Likewise, to the extent the Board staff wanted to "coordinate" with a specific farmer or even a group of farmers, such an inspection would be the opportunity for coordination. By including effluent monitoring, the Regional Board would have a better means of prioritizing its inspections and evaluating whether management practices are BPTC. By publicizing through Board meetings and the web site the outcome of these inspections including any "certifications" issued or, equally important, enforcement responses by the Board or staff, CSPA believes that the Regional Board would be taken seriously by a much larger percentage of individual dischargers who would then seek to comply with BPTC and water quality standards.

As discussed in various sections of these comments above, Alternative 3's failure to require any farm-specific water quality monitoring is a fatal flaw. See PEIR, p. 3-16 ("unless specifically required in response to water quality problems, owners/operators would not be required to conduct water quality monitoring of adjacent receiving waters or underlying groundwater"). CSPA believes that monitoring of discharged effluent is what needs to be required to determine compliance with both the BPTC requirement and applicable water quality standards. As outlined in CSPA's proposed alternative, such monitoring should be limited to Tier 2 and Tier 3 dischargers within areas covered by management plans and limited to basic parameters plus any pollutants triggering the management plan. CSPA agrees that visual monitoring does have a role but cannot be the only monitoring. CSPA has many years of experience reviewing annual reports and initiating enforcement actions under the Statewide General Industrial Storm Water Permit. The visual monitoring conducted under that permit is of limited value to documenting pollution discharges or BMP effectiveness (though with appropriate photographs, visual monitoring can document the installation of BMPs and their condition).

**4. Alternative 4 includes fewer poison pills but its failure to require BMP and effluent monitoring means that it would not achieve water quality objectives or ensure implementation of BPTC.**

Alternative 4 also includes a number of components that CSPA believes are key components to a successful ILRP, including FWQMPs and a tiering component to guide both BMP implementation and different levels of monitoring. Alternative 4 proposes the same procedures for preparing, reviewing and approving FWQMPs. CSPA agrees with requiring all dischargers to prepare and implement FWQMPs but CSPA has the same concerns with the FWQMP procedures discussed for Alternative 3 above.

The key difference proposed in Alternative 4 would be the inclusion of a tiering system to guide dischargers on the proper levels of BMPs they should be considering as well as the intensity of monitoring that is required. PEIR, p. 3-17 ("The tiers represent fields with minimal (Tier 1), low (Tier 2), and high (Tier 3) potential threat to water quality. Requirements to avoid or minimize discharge of waste would be the least stringent for Tier 1 fields and the most stringent for Tier 3 fields"). CSPA agrees that a tiering system is important to controlling the costs of implementing and overseeing the program and assuring that limited resources are aimed at potentially significant pollution dischargers. CSPA believes that the three tiers proposed in the PEIR for both surface and groundwater make sense in providing some initial guidance on the selection and implementation of BMPs. However, CSPA believes both Tier 2 and 3 should conduct similar levels of farm-specific water quality monitoring, albeit not as extensive as that proposed for Alternative 5 and, at least theoretically, for Alternative 4. In addition, CSPA also would use the information gleaned from the ambient monitoring and water quality management plans to further prioritize the farms that must conduct effluent water quality monitoring.

Alternative 4's monitoring requirements for both Tier 2 and 3 dischargers fail to implement Resolution 68-16, evaluate management practice effectiveness and assure compliance with water quality standards by allowing regional monitoring by discharger coalitions to replace the outlined farm-specific monitoring. See PEIR, p. 3-19. The inclusion of farm specific monitoring is an illusion as every discharger obviously will opt for the cheaper monitoring far away from their activities and effluent. Monitoring required by the ILRP should be focused on effluent monitoring and BMP effectiveness.

Likewise, for groundwater monitoring the Alternative should focus on onsite wells and leave the regional monitoring to the Regional Board and its consultants. Regional monitoring could also be supplemented by use of the California Department of Public Health public drinking water supply database. Use of the database, in selecting for pesticide and nitrate concentrations in Central Valley wells, would allow for an analysis of the effectiveness of the Alternative as implemented. CSPA believes the monitoring of existing wells is a reasonable proposal and should be implemented by both Tier 2 and 3 groundwater dischargers. Most farms will have one or more functional wells already in place. It is a simple step to require nutrient and pathogen monitoring of those existing wells. The data also would be much more relevant (though perhaps initially not sufficient to define the scope of any water quality exceedances) to that particular discharger. Any regional groundwater problem would simply measure in that locale and say little if anything about dischargers several miles away.

The proposed monitoring frequency for Tier 2 dischargers of once every five years is also woefully inadequate, whether considered on a farm-specific or regional basis. It is already difficult enough to make determinations about compliance with standards or implementation of BPTC based on edge of field monitoring four times in a single year. To then wait five more years before the next set of samples would prevent

any determination of trends and any improvements to BMPs for that amount of time or longer. Sampling needs to occur every year, whether a discharger is in Tier 2 or Tier 3.

Although not ideal, CSPA believes the proposed number of sampling events in any given year strikes a proper balance. PEIR, p. 3-24 ("Tailwater discharges during the first discharge of the irrigation season and once mid-season. Storm water discharges during the first event of the wet season (between October 1 and May 31) and once during the peak storm season (typically February). Discharges of subsurface (tile) drainage systems annually"). CSPA incorporates this proposal into its preferred alternative.

Alternative 4 again discloses staff's penchant for encouraging the formation of intermediate bureaucracies and entities over whom they have no enforcement authority by inviting groups of dischargers to form "legal entities that could serve a group of growers who discharge to the same general location and share monitoring locations." PEIR, p. 3-20. CSPA agrees that there exist opportunities for neighboring farms to work together to monitor shared irrigation ditches and implement joint control measures. CSPA does not see any reason for the individual dischargers to have to form a separate entity to accomplish this goal. Each of them could incorporate the measure into their respective FWQMPs and each would simply be jointly and severally responsible for its implementation and effectiveness. The Regional Board could respond to one or all, though obviously any inspection and follow-up would want to be with all of the cooperating farms.

**5. Alternative 5's aggressive agency reviews and approvals and expensive monitoring proposals go beyond the reasonable next step but it is the one alternative reviewed in the PEIR that, if implemented would dramatically reduce irrigated lands pollution discharges.**

Of the five alternatives described in the PEIR, Alternative 5 is the only one that proposes an effective framework that (1) would comply with Resolution 68-16's requirement that each discharger demonstrate BPTC and prevent degradation, (2) assure the attainment of water quality standards not only miles downstream but in the immediate area of a discharger's effluent, and (3) provide information sufficient for the Regional Board staff to properly prioritize its inspections and enforcement. Alternative 5 is modeled on the successful industrial and construction site storm water permit programs, with a few important exceptions. Unfortunately, in their apparent excitement, the PEIR drafters could not refrain themselves from layering in too many requirements the sole purpose of which appears to be to make the alternative so expensive that it would never be selected. CSPA believes that, although the regulatory framework of Alternative 5 is sound, the monitoring frequency and constituents (at least as defined in the accompanying economic analysis) are excessive and the absence of any tiering that would prioritize the riskier dischargers also misses a reasonable method of reducing costs.

Alternative 5 proposes monitoring that goes well beyond, for example, the storm water general permits' focus on basic parameters and representative metals monitoring. Technical Memo, pp. 2-17 – 2-19. See Kings River Coalition Annual Monitoring Report (2010) (according to the Technical Memo, the monitoring constituents are based on the regional samples taken by the Kings River Coalition). This is overkill for site specific monitoring. The frequency of monitoring also is dramatically increased in this Alternative for tailwater discharges. For example, Alternative 5 would require monthly sampling of tailwater as compared to Alternative 4's proposal of twice per irrigation season (albeit with its regional monitoring exception). CSPA believes the extensive and costly monitoring parameters proposed for Alternative 5 go well beyond what is necessary for the Board and a discharger to determine whether they have installed BPTC and are protecting water quality objectives.

The most obvious poison pill in Alternative 5 is the proposal that every farmer drill and install groundwater monitoring wells. Focusing on existing wells would be much more reasonable. Additionally, use of the California Department of Public Health public drinking water supply database would allow for an analysis of the effectiveness of Alternative 5 as implemented. The database could be queried for pesticide and nitrate concentrations in wells in the Central Valley to determine if concentrations are increasing or decreasing. The database could also be used for analysis to determine the role of the Alternative in contributing to trends (*i.e.* what role the Alternative plays in increases or decreases).

As for the FWQMPs, CSPA does not believe there is any basis for allowing dischargers two-years to prepare and implement FWQMPs. PEIR, p. 3-27. They have been on notice for the last seven years that they need to implement management measures. In many areas, management plans that supposedly will not lead to implementation of BMPs have been in place for some time. CSPA believes that all dischargers should prepare and implement FWQMPs within 6 months.

Alternative 5 does drop the proposal to have the Regional Board coordinate with dischargers regarding their FWQMPs and review and approve each plan as well. CSPA believes this is a reasonable omission. However, the FWQMPs need to be submitted to the Regional Board, ideally as pdfs that could be posted on-line. The proposal to have them on-site and available upon the Regional Board's request would eliminate their utility for staff to rely upon them to make decisions about enforcement priorities, undercuts the public's ability to review FWQMPs, precludes other dischargers from reviewing similar dischargers' plans, and sends a message to dischargers that they need not worry until the Board shows up.

Alternative 5 states that Board staff will "[f]ollow up and coordinate with growers to ensure that FWQMPs and implemented management practices are addressing identified water quality problems." PEIR, p. 3-26. The economic analysis presumes that by merely interacting directly with growers, Board staff will have to provide them

technical assistance on their FWQMPs. See Technical Memo, p. 2-24 (“Board staff will be required to interact directly with growers and provide technical assistance when requested”). In so presuming, the economic analysis comes up with an estimated staffing level of 356 staff. *Id.* This number completely exaggerates the level of staff necessary to implement this alternative. Indeed, the industrial and construction storm water program covers more than 7,500 facilities throughout the Central Valley. Currently, the Regional Board assigns fewer than a dozen staff to implement and enforce that entire program, which also includes overseeing the 93 Phase I and II municipal stormwater permits. More staff is clearly necessary to more effectively implement that program. Even with those few staff however, it is clear that almost all of the 7,500 facilities have implemented some level of management measures.

Alternative 5 itself does not suggest that Board staff are obliged to act as dischargers’ consultants. That notion, expressed in the economic analysis, is entirely improper. Any follow-up by staff should be pursuant to its oversight and enforcement authority. The Regional Board need not add 356 staff to effectively implement this alternative. As CSPA also proposed for Alternatives 3 and 4, the Board should focus its limited resources by using the monitoring data and FWQMPs to prioritize site inspections and distribute the results – providing examples of good compliance and issuing enforcement orders and penalties where compliance falls short.

**6. The PEIR fails to consider the true no project alternative – automatic termination of the waiver and implementation of individual WDRs**

The PEIR’s formulation of the no project alternative is wrong because the PEIR incorrectly treats the existing general waivers as continuing in perpetuity. PEIR, p. 3-4 (“no project alternative” identified as future renewal of existing program and continued implementation) (emphasis added). The PEIR claims that a future extension or renewal of the existing waiver is of a “ministerial nature.” *Id.* Both of these assertions are incorrect as a matter of law. If the Board takes no action, the existing waiver terminates on June 30, 2011. Order No. R5-2006-0053, p. 17; Water Code § 13269(a)(2). Any renewal of the existing waiver is not ministerial but discretionary, requiring the Regional Board to hold a hearing and exercise its discretion to determine whether renewing an existing waiver complies with the Basin plan, is in the public interest and includes adequate monitoring. Water Code §§ 13269(a)(2), (f). Hence, the no project alternative is allowing the existing waiver to automatically terminate on June 30, 2011 and what would reasonably be expected to occur once that happens.

The PEIR cites out-of-context a single sentence from the CEQA Guidelines relating to revising a regulatory plan. The PEIR quotes the following sentence from CEQA Guideline § 15126.6(e)(3)(A) – “When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the ‘No Project’ Alternative will be the continuation of the existing plan, policy, or operation into the future.” PEIR, p. 1-3. The PEIR suggests that guidance allows the Regional Board to make believe that

doing nothing somehow magically renews the existing waivers come June 20, 2011. That, of course, is not a "no action" or "no project" alternative. Renewing the waivers would be selecting a discretionary action.

CEQA requires that an EIR consider a no project alternative. CEQA Guidelines § 15126.6(e)(1) ("The specific alternative of "no project" shall also be evaluated along with its impact"). "The purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." *Id.* "The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. CEQA Guidelines § 15126.6(e)(2). "The [no project] description must be straightforward and intelligible, assisting the decision maker and the public in ascertaining the environmental consequences of doing nothing; requiring the reader to painstakingly ferret out the information from the reports is not enough." *Planning & Conservation league v. Dept. of Water Resources* (2000) 83 Cal.App.4th 892, 911 (emphasis added).

The Guidelines note that "[a] discussion of the "no project" alternative will usually proceed along one of two lines . . . CEQA Guidelines § 15126.6(e)(3). The PEIR attempts to rely on the first category, which states in full that:

When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the "no project" alternative will be the continuation of the existing plan, policy or operation into the future. Typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan.

CEQA Guidelines § 15126.6(e)(3)(A) (emphasis added). However, the existing waiver, unlike a typical land use or general plan (or for example the Regional Board's Basin Plan) that does not expire by a date certain, expires as a matter of law on a date certain, June 30, 2011. The Guidelines make clear that the Regional Board cannot treat one of its alternatives to a proposed project (assuming the PEIR included a proposed project) as a no project alternative:

After defining the no project alternative . . . , the lead agency should proceed to analyze the impacts of the no project alternative by projecting what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.

CEQA Guidelines § 15126.6(e)(3)(C). The current relevant plans germane to the PEIR are the existing waivers. If the Regional Board were to do nothing by June 30, 2011, *i.e.*, a true no project alternative, the waivers will automatically expire. The Board cannot assume it will select one of the project's alternatives and pretend it is not approving the project. This methodology was firmly rejected by the Court in *Planning & Conservation League*:

A no project description is nonevaluative. It provides the decision makers and the public with specific information about the environment if the project is not approved. It is a factually based forecast of the environmental impacts of preserving the status quo. It thus provides the decision makers with a base line against which they can measure the environmental advantages and disadvantages of the project and alternatives to the project. By contrast, the discussion of alternatives is evaluative.

*Planning & Conservation League*, 83 Cal.App.4th at 917-918. The PEIR fails to project out an actual no project alternative, incorporating the reality that the existing waivers are temporary with only 10 months to live.

The PEIR's assertion that the existing waivers can be ministerially extended or renewed is blatantly incorrect. See PEIR, p. 3-29 ("If the Central Valley Water Board fails to take the ministerial action to extend or renew the waiver program, regulation of irrigated agriculture would not cease"); *id.*, p. 1-3 ("Given the ministerial nature of the extension or renewal of the ongoing waiver, which would allow continuation of the existing program, Alternative 1 is best characterized as the "No Project" Alternative"). Pursuant to Water Code § 13269, the Regional Board must apply its discretion to adopt or renew a conditional waiver. Water Code §§ 13269(a)(2), (f). See CEQA Guidelines §§ 15002(i)(2) ("[w]hether an agency has discretionary or ministerial controls over a project depends on the authority granted by the law providing the controls over the activity"). The initial decision as to whether to renew a waiver or adopt waste discharge requirements or a prohibition are highly discretionary. Assuming the Regional Board chooses to pursue issuance of a conditional waiver, the Regional Board wields considerable discretion in adopting the necessary conditions of the waiver. The Regional Board must employ its discretion to make the fundamental determinations that the conditional waiver will be consistent with the Basin Plan and in the public interest. Lastly, Section 13269 precludes the Regional Board from renewing any waiver without holding a public hearing where it must review the terms of the waiver.

Porter-Cologne's waiver renewal process cannot be equated even remotely with a ministerial action. "Ministerial" describes a governmental decision involving little or no personal judgment by the public official as to the wisdom or manner of carrying out the project. The public official merely applies the law to the facts as presented but uses no special discretion or judgment in reaching a decision." CEQA Guidelines, 14 CCR § 15369. "A ministerial decision involves only the use of fixed standards or objective

measurements, and the public official cannot use personal, subjective judgment in deciding whether or how the project should be carried out.” *Id.* As we are all well aware, having gone through this waiver process several times now, the decisions to be made by the regional Board are loaded with subjective, personal judgment. See CEQA Guidelines § 15357 (“Discretionary project’ means a project which requires the exercise of judgment or deliberation when the public agency or body decides to approve or disapprove a particular activity, as distinguished from situations where the public agency or body merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations”); § 15002(i) (“[a] project subject to . . . judgmental controls is called a ‘discretionary project’”). See also CEQA Guidelines § 15268(d) (“Where a project involves an approval that contains elements of both a ministerial action and a discretionary action, the project will be deemed to be discretionary and will be subject to the requirements of CEQA”).

The PEIR must be revised and recirculated with a properly defined and evaluated no project alternative.

#### **H. The PEIR Ignored CSPA’s and Others Scoping Comments.**

As the PEIR recognizes, “[i]n accordance with State CEQA Guidelines Section 15123(b)(2), the areas of controversy known to the lead agency, including issues raised by agencies and the public, shall be identified in the EIR.” PEIR, p. 1-8. See CEQA Guidelines § 15123 (“(a) An EIR shall contain a brief summary of the proposed actions and its consequences. . . . (b) The summary shall identify: . . . (2) Areas of controversy known to the lead agency including issues raised by agencies and the public. . . .”).

CSPA and others have participated in the development of the EIR from its inception, submitting detailed scoping comments that fully advised the Regional Board of CSPA’s long-standing criticisms of the existing ILRP and the need for FWQMPs, farm-specific monitoring and compliance with antidegradation requirements. See CSPA/Baykeeper Scoping Comments (May 30, 2008); CSPA et al. Scoping Comments (March 12, 2003). In those comments, CSPA emphasized the main controversies surrounding the ILRP – embellished further by these PEIR comments – that the ILRP and EIR “must directly address and eliminate . . . violations of water quality standards in light of the fact that, under the present program, the Regional Board cannot know who is actually discharging pollutants, what specific pollutants are being discharged, what are the localized water quality impacts in the vicinity of the discharge, who has or has not implemented best management practices (BMPs) and whether any reductions in pollutant loading or improvements in water quality have occurred.” CSPA/Baykeeper Scoping, p. 3 (May 30, 2008). CSPA also reiterated the ongoing controversy “that Reports of Waste Discharge and individual farm-based management plans (similar to pollution prevention plans under the industrial or construction stormwater permits) are fundamentally necessary for any meaningful program addressing discharges from irrigated lands.” *Id.*, p. 4. The scoping comments also highlighted the ongoing controversy that the ILRP, to be successful and comply with Resolution No. 68-16, must

include farm specific water quality monitoring. See *id.*, p. 2 (“[EIR] cannot rely on information collected far downstream to adequately address and mitigate upstream adverse impacts to sensitive biological resources, *i.e.*, it must identify localized impacts in the vicinity of actual discharge locations”). Many of these same issues have been raised by CSPA and others in their comments on the previous waivers as well, debated by the Regional and State Boards, and been the subject of previous litigation. See, *e.g.* CSPA et al. Comments (May 23, 2003); Deltakeeper et al. Comments (November 4, 2005).

Despite these well-known areas of controversy, the PEIR fails to include them in the summary as required by CEQA. This blatant omission underscores the bias built into the PEIR and ultimately informing staff's separate recommendation in its staff report. Indeed, the few controversies listed in the summary are for the most part restricted to those articulated by the coalitions. PEIR, p. 2-9. The PEIR's summary needs to be rewritten to comply with the CEQA Guidelines.

## **I. The PEIR Overlooks a Number of Important Significant Impacts.**

The PEIR opts not to discuss any impacts on at least three issue categories – recreation, aesthetics, public health and cultural impacts – which common sense would indicate will be adversely affected by the Regional Board's selection of an ILRP that is ineffective and fails to significantly reduce pollution discharges from irrigated lands. PEIR, p. 1-8. Since the EIR fails entirely to analyze the impact of the alternatives on these issues, these impacts are subject to the fair argument, rather than the substantial evidence standard. Fair argument standard applies even to EIRs if the EIR fails entirely to analyze a particular impact. *Bakersfield Citizens For Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1208.

Under the “fair argument” standard, an EIR must analyze an impact if *any* substantial evidence in the record indicates that a project may have an adverse environmental effect – even if contrary evidence exists to support the agency's decision. CEQA Guidelines § 15064(f)(1); *Pocket Protectors*, 124 Cal.App.4th at 931; *Stanislaus Audubon v. Stanislaus* (1995) 33 Cal.App.4th 144, 150-151 (1995); *Quail Botanical Gardens Found., Inc. v. City of Encinitas* (1994) 29 Cal. App. 4th 1597, 1602. The “fair argument” standard creates a “low threshold” favoring environmental review through analysis in an EIR. *Pocket Protectors*, 124 Cal.App.4th at 928.

### **1. The PEIR fails to address impacts to Recreation and Aesthetics.**

In its scoping comments, CSPA pointed out the need to evaluate the ILRP's alternatives on recreational uses in the Central Valley. See CSPA et al. Scoping Comments (March 12, 2003) (EIR should analyze impacts on “recreational, tourism and beneficial uses”). There is clearly a “fair argument” that any version of the ILRP may have significant impacts on both recreation and aesthetics in the Central Valley,

especially within the Delta. By authorizing irrigated lands discharges without FWQMPs or "edge-of-field" effluent quality monitoring, any new ILRP could further exacerbate pollution discharges from irrigated lands. Discharges of both nutrients and pesticides likely would have adverse effects on recreational and aesthetics by continuing to support the growth of nuisance aquatic species, including for example water hyacinth. The growth of water hyacinth in turn results in further water quality impacts to the Delta, including depressed dissolved oxygen levels, increased herbicide spraying, including toxic surfactants, and other pollution concerns. None of these potential impacts were discussed in the PEIR. See PEIR, p. 5-11-2 ("It is not anticipated that the program alternatives would substantially increase or decrease the use of recreational facilities, create the need for such facilities, or result in any other foreseeable significant impact on recreational opportunities in the program area"); p. 5.11-1 (no review of impacts to aesthetics).

Discharges of nutrients from farms contribute to the explosive growth of water hyacinth (*Eichhornia crassipes*) and Brazilian elodea (*Egeria densa*) in the Sacramento-San Joaquin River Delta. Both Brazilian elodea *Egeria densa* and water hyacinth *Eichhornia crassipes* "form dense growths that block waterways and destroy natural habitat by slowing water flow and drastically changing water quality. <http://www.dbw.ca.gov/PDF/Egeria/WHSciProbsExcerpts.pdf>. As the San Francisco Estuary Institute reports, "[d]ense contiguous mats" of water hyacinth "create navigation and safety concerns in waterways, harbors, and marinas." <http://legacy.sfei.org/nis/hyacinth.html>. Hyacinths "[i]nterfer[e]" with irrigation and power generation by clogging pumps and siphons." *Id.* Hyacinth "[c]an completely exclude native floating and submerged vegetation, shade habitat, change water temperature [and] ... deplete dissolved oxygen." *Id.* As Dr. G. Fred Lee has summarized,

Delta waters experience excessive growths of aquatic plants such as water hyacinth and *Egeria densa*. These water weeds interfere with recreational use of Delta waters for boating, swimming, water skiing, fishing, etc. The water weeds develop on nutrients added to Delta tributaries from urban, agricultural and wetlands sources in the Delta watershed, and from Delta island discharges. The California Department of Boating and Waterways spends several hundred thousand dollars per year to apply chemicals for controlling water weeds. There is concern about the potential toxic and other impacts of these chemicals on non-target organisms, such as fish food organisms, in the water column and sediments.

Lee, G. Fred and Anne Jones Lee, "Overview of Sacramento-San Joaquin River Delta Water Quality Issues," p. v (June 24, 2004). Because of the significant contribution of nutrients from irrigated lands, there is plainly a fair argument that the Regional Board's authorization of irrigated lands discharges may have a significant impact on recreational boaters and persons recreating in the Delta and observing vast areas of water hyacinth.

Because of the navigational, recreational and aesthetic impacts resulting from excessive water hyacinth growth, the State of California expends resources every year spraying herbicides into Delta waterways. See Lee, p. 19 ("large amounts of aquatic herbicides are used in the Delta to control excessive growths of water hyacinth this could be an important issue impacting Delta water quality"). See Dept. of Fish & Game, "Acute Toxicities of Herbicides Used to Control Water Hyacinth and Brazilian Elodea on Larval Delta Smelt and Sacramento Splittail (June 8, 2004).

In addition to increasing herbicide discharges to the Delta, water hyacinths also provide habitat for other nonnative crabs and parasites, which ultimately may affect endangered salmon in the Central Valley. As one recent study reports,

[t]he newfound presence of these crustaceans could have significant ramifications apart from just adding their names to the already lengthy list of non-indigenous species in the Delta. Amphipods and isopods are known to be intermediate hosts of a number of parasites, including acanthocephalan parasites of fish (Nagasawa et al. 1983, Yasumoto and Nagasawa 1996). *Asellus hilgendorffii* has specifically been shown to serve as an intermediate host for numerous species of acanthocephalans that parasitize salmonids and other fish in waters of Japan (Nagasawa and Egusa 1981, Nagasawa et al. 1983, Mayama 1989). Infection occurs when fish prey upon *A. hilgendorffii* that contain acanthocephalan larvae. Adult acanthocephalans parasitize the intestinal tract of the definitive host fish (Nagasawa et al. 1983). Studies have shown that salmonids can have infection levels of 83-100% depending on the season, when *A. hilgendorffii* is only 2.1 % of the total wet weight of food items in the fish diet (Nagasawa et al. 1983). Thus, even though *A. hilgendorffii* occurs in low abundance in the diets of fish in the Sacramento/San Joaquin Delta, it could still potentially infect the entire population of salmonids with acanthocephalan parasites."

Toft, Jason David, "Community Effects of the Non-Indigenous Aquatic Plant Water Hyacinth (*Eichhornia crassipes*) in the Sacramento/San Joaquin Delta, California" (2000). All of these direct and indirect effects must be discussed and analyzed in the PEIR.

In addition, the presence of bacteria in samples collected by the existing ILRP obviates the need to address the affect of PEIR's alternatives and their ability to reduce fecal discharges on recreation, especially swimming, and human health. In CSPA's experience, it is not possible to keep kids from playing in water. As the staff report summarizes:

The fecal pathogen indicator *E. coli* is the most common parameter with surface water exceedances of water quality objectives in the ILRP; it was detected in 99 percent of all samples. Fecal contamination is a concern

because certain pathogenic bacteria found in feces can cause gastrointestinal illness.

Staff Report, p. 33. Indeed, 24 and 55 management plans in the Sacramento River and San Joaquin, respectively, have been triggered because of exceedances of *E. coli* standards in those rivers. Staff Report, p. 26, Table 3. The PEIR makes a passing reference to the fecal coliform problem, noting that “[t]oxicity, and bacteria are also known water quality problems in the Sacramento River Basin.” PEIR, p. 5.9-6. The obvious impacts of fecal coliform discharges on recreational uses like swimming and boating in the Delta and other waters of the Central Valley must be addressed in the PEIR.

Lastly, CSPA is aware of numerous individuals who once recreated in and on the Delta and other Central Valley waters who have stopped or reduced such recreation because of fears of contaminants and experiencing health effects that were associated with exposure to Central Valley waters. For example, one of CSPA's members, Linda Forbes, reports:

I was a frequent visitor to the Delta region for five years, enjoying water skiing, camping, boating and swimming. I experienced several strange skin rashes after weekends of recreation at the Delta, with the severity increasing over time. Two summers ago I began to feel more and more uncomfortable about the risks of pursuing my water sports passion there; I have not gone swimming or skiing in Delta waters for over a year.

E-mail from Linda Forbes to Bill Jennings, CSPA (Sept. 23, 2010). Another example is from Barbara Barrigan-Parrilla, a CSPA member and the Director of Restore the Delta. She tells of her daughter's first swim in the Delta as an infant resulting in an emergency room visit and her refusal to swim in the Delta since that day. E-mail from Barbara Barrigan-Parrilla to Bill Jennings, CSPA (Sept. 25, 2010). Kari Burr, a fisheries biologist, also describes the adverse impacts of agricultural discharges on her professional and recreational activities. E-mail from Kari Burr to Bill Jennings, CSPA (Sept. 26, 2010). See *also* E-mail from Frank T. Rauzi to Bill Jennings (Sept. 26, 2010) (Mr. Rauzi, a lifelong resident and fisherman of the Delta, recounts his refusal to eat fish and concerns about swimming in the Delta). Based on conversations between Bill Jennings and other CSPA members over the years, CSPA does not believe Ms. Forbes,' Ms. Barrigan-Parilla's, Ms. Burr's or Mr. Rauzi's experiences are isolated incidents but unfortunately are shared by numerous people who would recreate in waters of the Central Valley but for the incredible levels of toxic and health-threatening pollution that is discharged from irrigated lands.

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**2. PEIR fails to analyze cultural impacts re: traditional uses of salmon or other fish.**

The PEIR opts not to evaluate any cultural impacts of the various ILRP alternatives. PEIR, p. 5.3-9. Contaminants affecting Central Valley salmon and contributing to their decline have adverse impacts on Native American culture and religious practices. It is widely acknowledged by scientists and government agencies that agricultural runoff is one of the factors adversely affecting Chinook salmon. See PEIR, p. 5.8-22 (“Other factors affecting the fall-run/late fall-run Chinook salmon include . . . pollution (e.g., municipal discharges and agricultural runoff), . . . (Moyle et al. 2008:141–143)”). *Id.* at 5.8-39 (“NMFS (2008) concluded that EPA registration of chlorpyrifos, diazinon, and malathion would jeopardize the continued existence of, and destroy or adversely modify critical habitat for, the Central Valley spring-run Chinook salmon ESU, the Sacramento River winter-run Chinook salmon ESU, and the California Central Valley steelhead DPS”); National Academy of Sciences, “A Scientific Assessment of Alternatives for Reducing Water Management Effects on Threatened and Endangered Fishes in California’s Bay–Delta,” p. 42 (2010) (“It has long been recognized that contaminants are present in the delta, have had impacts on the fishes, and may be increasing (Linville et al., 2002; Davis et al., 2003; Edmunds et al., 1999).

Native American traditional uses and religious ceremonies involving salmon continue on the Sacramento River and, to a lesser degree, the San Joaquin River, and their tributaries. As the United States District Court for the Eastern District of California recently ruled, “salmon have sustained the Winnemem Wintu and have formed the foundation of the Tribe’s cultural and spiritual ceremonies and beliefs.” Order, p. 88. (May 18, 2010). Judge Wanger specifically recognized the “significant cultural and spiritual interests of the Winnemem Wintu” tied to the health of salmon. *Id.*, pp. 88-89. The District Court relied upon the declaration of Gary Hayward Slaughter Mulcahy, the Governmental Liaison and a Tribe member of the Winnemem Wintu Tribe. As Mr. Mulcahy testified to the Court,

For centuries, the Winnemem Wintu have had a deep cultural and spiritual relationship with the salmon that utilize the Sacramento River and its tributaries. We sing to the salmon and the waters that sustain them. Our history, traditions, ceremonies, and culture are filled with respect, reverence, appreciation, and dependence on the salmon and these waters. Salmon were the staple of the Winnemem Wintu. Salmon are the food necessary to complete and fulfill many of the Winnemem Wintu’s very special sacred ceremonies. Salmon are the sustainer of health and life of the Winnemem Wintu. We believe that when the first spirits were choosing what form they would take (i.e., Salmon, Eagle, Bear, Human, etc.), when Human chose to be human, the Grandfather spirit said that these Humans will need lots of help, and each of the other spirits gave something to Humans to help them through life. We believe that Salmon gave us speech and in return we promised to always speak for them. This

is remembered and celebrated in ceremonies on the McCloud River, Sacramento River, Squaw Creek and at Mt. Shasta several times a year. We believe that if the salmon go, the Winnemem Wintu will also disappear.

Declaration of Gary Hayward Slaughter Mulcahy, ¶ 3 (March 12, 2010). The Tsi-Akim Maidu Tribe conducts a "calling back the salmon" ceremony on the Yuba River. <http://www.callingbackthesalmon.com/ceremony.php>. The PEIR must gather in and discuss relevant information regarding Native American cultural and religious uses of salmon that may be affected by the Regional Board's proposal to authorize contaminants affecting salmon in the Central Valley.

**3. The PEIR fails to address public health impacts of authorizing continued discharges of pesticides and other pollutants from irrigated lands effluent to groundwater.**

As early as March 2003, CSPA and others urged the Regional Board to consider human health impacts of authorizing irrigated land discharges in its EIR. CSPA et al. Scoping Comments (March 12, 2003) (EIR must consider "human health throughout the Central Valley and California in terms of both acute and chronic impacts including, but not limited to: - children, including residents and school children - laborers, including farmworkers, farmers, pesticide applicators, etc. – residents – anglers - pregnant women - newborn infants"). Despite that request, the PEIR has opted to ignore potential human health impacts of the various ILRP alternatives approval of continuing irrigated land discharges.

More than two million Californians have been exposed to harmful levels of nitrates in drinking water over the past 15 years and the population of those exposed keeps growing. The PEIR acknowledges the extent of nitrate contamination and includes, as Figure 5.9-17, a map that shows nitrate contamination to be concentrated in the Central Valley. Incredibly, however, the PEIR makes no attempt to analyze how nitrogen-based fertilizer application in the Central Valley results in the exposure of the public to contaminated groundwater, the health impacts of that exposure, or how implementation of any of the five alternatives would reduce exposure, other than to say, for Alternative 1:

Nutrient management would improve both surface water quality and groundwater quality by improving the use of chemicals and using improved application techniques, and by limiting the use of nutrients as fertilizer that could potentially seep to groundwater and add nitrate to the groundwater table.

PEIR, p. 5.9-14.

The assertion that ongoing nutrient management efforts would somehow improve water quality is not borne out by recent data. In fact, the status quo, as proposed in Alternative 1, has resulted in an increase, statewide, in the number of wells that exceeded the health limit for nitrates, from nine in 1980 to 648 by 2007. [http://articles.sfgate.com/2010-05-17/news/20901575\\_1\\_nitrate-contamination-water-supply-water-systems](http://articles.sfgate.com/2010-05-17/news/20901575_1_nitrate-contamination-water-supply-water-systems). In Tulare County, more than 40% of private domestic water wells exceed the drinking water standard for nitrate. [http://www.swrcb.ca.gov/gama/docs/ekdahl\\_gra2009.pdf](http://www.swrcb.ca.gov/gama/docs/ekdahl_gra2009.pdf). On the basis of more than 25 years of data, the number of wells that exceed the drinking water standard for nitrate is growing as a percentage of all nitrate detections. [http://www.swrcb.ca.gov/gama/docs/ekdahl\\_gra2009.pdf](http://www.swrcb.ca.gov/gama/docs/ekdahl_gra2009.pdf) Clearly the status quo is not working.

Health effects of exposure to nitrates most notably results in methemoglobinemia or "blue baby syndrome." Toxic effects of methemoglobinemia occur when bacteria in the infant stomach convert nitrate to more toxic nitrite, a process that interferes with the body's ability to carry oxygen to body tissues. Infants with these symptoms need immediate medical care since the condition can lead to coma and eventually death. Pregnant women are susceptible to methemoglobinemia and should be sure that the nitrate concentrations in their drinking water are at safe levels. Additionally, some scientific studies suggest a linkage between high nitrate levels in drinking water with birth defects and certain types of cancer. [http://www.swrcb.ca.gov/water\\_issues/programs/gama/docs/coc\\_nitrate.pdf](http://www.swrcb.ca.gov/water_issues/programs/gama/docs/coc_nitrate.pdf).

The PEIR should be rewritten to include an assessment of the potential for the public to be exposed to nitrates in drinking water from agricultural practices in the Central Valley and measures implemented as a result of the ILRP. This is especially important to the extent the Regional Board anticipates the installation of numerous tailwater recovery systems. See Technical Memo, p. A-2. The assessment of each alternative should include an estimate of nitrogen loading to fields; nitrogen fate and transport in soil, surface water, and groundwater; nitrogen monitoring; and a summary nitrogen impacts to water supplies. Linking monitoring to measurement of each of the alternatives is critical. An annual assessment of the performance of the alternative that is selected should be required and use of the 10,000-well California Department of Public Health database should be required as a tool for evaluation.

Another potential health impact unaddressed by the PEIR is the potential threats from fecal contamination of wells and surface waters. As the Existing Conditions Report tells us:

The presence of pathogen indicators, such as fecal coliform and *E. coli*, are ubiquitous in water samples collected throughout the Central Valley and are frequently measured at levels higher than the EPA recommended criterion for *E. coli*. Not all strains of *E. coli* are pathogenic, but the presence of *E. coli* or fecal coliform is an indicator of fecal contamination.

Several coalitions funded a study to determine the sources of *E. coli* contamination.

Existing Conditions Report, p. 3-11. See also U.S. EPA, "Conceptual Model For Pathogens and Pathogen Indicators in The Central Valley and Sacramento-San Joaquin Delta - Final Report," p. ES-1 (Aug. 24, 2007) (highest concentrations of *E. coli* data "were observed for waters affected by urban environments and intensive agriculture in the San Joaquin Valley") ([http://www.swrcb.ca.gov/rwqcb5/water\\_issues/drinking\\_water\\_policy/concept\\_path\\_indicators/cover\\_toc\\_es.pdf](http://www.swrcb.ca.gov/rwqcb5/water_issues/drinking_water_policy/concept_path_indicators/cover_toc_es.pdf)). As the California Department of Public Health's health notices explain:

Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

DPH, Tier 1 Fecal Coliform or *E. coli* Notice Template (<http://www.cdph.ca.gov/certfic/drinkingwater/Documents/Notices/Tier%201%20Fecal%20Coliform%20or%20E%20coli%20Notice.doc>). Despite its ubiquitous presence and clear connection to irrigated land discharges, the only mention of pathogens in the PEIR is a passing reference in the Fisheries section. PEIR, p. 5.8-49 ("Pathogens are monitored for potential exceedance of trigger limits in relation to human health. Pathogens of concern to fish may affect fish populations in the program area, but data are insufficient to draw any conclusions about existing effects"). Like nitrates, no effort is made in the PEIR to discuss the obvious human health and recreational impacts that are adversely affected by an ILRP that authorizes coliform discharges from farms.

Lastly, the PEIR fails to consider any human health impacts PEIR associated with discharges of other pollutants, including certain metals, that will be authorized through the ILRP. The Existing Conditions Report acknowledges that irrigated land discharges authorized by the ILRP will mobilize various metals that can pose serious human health risks, including lead and arsenic. Existing Conditions Report, p. 3-55 ("elevated levels of naturally occurring metals that are mobilized and suspended in agricultural return flows are common in these watersheds—such as copper, arsenic, cadmium, boron, nickel, lead, and selenium"). The PEIR also should explore the human health impacts of ILRP-authorized discharges of metals.

#### **J. PEIR's Analysis of Many Key Potential Impacts and the Alternatives' Proposed Mitigations Are Not Supported by Substantial Evidence.**

The alternatives, at their core, are projects by which the Regional Board proposes to authorize discharges of polluted effluent from irrigated lands to surface and

groundwater throughout the Central Valley. Each alternative includes various program elements which are the mitigations proposed to purportedly reduce the effect of the Regional Board authorizing the discharge of hundreds of millions of gallons of polluted effluent. The PEIR's discussion of impacts boils down to a discussion of the alternatives' proposed mitigation measures. In addition to those proposed mitigations, the actual dischargers would have to implement site-specific mitigation measures, *i.e.* BPTC, in order to address the impacts of discharging to the State's waters.

The PEIR fails to substantiate or properly analyze the alternatives' programmatic-level mitigation measures, including for example the effectiveness of any FWQMPs and reporting requirements, monitoring requirements, and third party actions. Nor does the PEIR adequately discuss the effectiveness in reducing pollution of any of the BMPs that are listed and which might achieve BPTC. The PEIR leaves out any discussion of numerous management measures that likely will be applied on irrigated lands. Lastly, the PEIR fails to analyze cumulative impacts of the alternatives when considered with numerous other projects in the Central Valley relating to water diversions, dam operations, proposed development, pending pesticide registration proceedings, dredging projects and others that are and will affect water quality, fisheries, and other impacts.

Mitigation measures must be designed to minimize, reduce or avoid an identified environmental impact or to rectify or compensate for that impact. CEQA Guidelines § 15370. Mitigations may be proposed as part of the project but must still be fully discussed and analyzed. "The discussion of mitigation measures shall distinguish between the measures which are proposed by project proponents to be included in the project and other measures proposed by the lead, responsible or trustee agency or other persons which are not included but the lead agency determines could reasonably be expected to reduce adverse impacts if required as conditions of approving the project." CEQA Guidelines § 151126.4(a)(1)(A)

Where several mitigation measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. *Id.*, § 15126.4(a)(1)(B). A lead agency may not make the required CEQA findings unless the administrative record clearly shows that all uncertainties regarding the mitigation of significant environmental impacts have been resolved. A public agency may not rely on mitigation measures of uncertain efficacy or feasibility. *Kings County Farm Bureau*, 221 Cal.App.3d at 727 (finding groundwater purchase agreement inadequate mitigation measure because no record evidence existed that replacement water was available). "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. CEQA Guidelines § 15364.

CEQA requires the lead agency to adopt feasible mitigation measures that will substantially lessen or avoid the Project's potentially significant environmental impacts and describe those mitigation measures in the CEQA document. Pub. Res. Code §§ 21002, 21081(a), 21100(b)(3); CEQA Guidelines § 15126.4. Mitigation measures must be fully enforceable through permit conditions, agreements or other legally binding

instruments. *Id.* at § 15126.4(a)(2). If a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed. CEQA Guidelines § 15126.4(a)(1)(D).

**1. The analysis of impacts to water quality is flawed because there is no evidentiary support for the assumption that mitigation measures proposed by each alternative would be equally effective.**

The most obvious impact of the Regional Board authorizing discharges of waste from irrigated lands to surface or groundwater is impaired water quality. The PEIR, however, takes an entirely cavalier approach to evaluating this obvious impact. No effort is made in the PEIR to discuss the efficacy and uncertainty of the various monitoring and management plans proposed by each alternative. The PEIR makes no effort to quantify or compare the actual pollution reductions that would be likely to occur under each alternative. Nor does the PEIR discuss whether the monitoring proposed or omitted by each alternative would be effective in informing the Regional Board and public about whether irrigated lands pollution in specific areas is increasing or decreasing. Nor does the PEIR compare how long it would take to figure out pollution trends based on the level of monitoring proposed or omitted in each alternative.

As mentioned above, a fundamental flaw in the PEIR is its failure to estimate the relative effectiveness of the five alternatives. It generally assumes that they will all lead to sufficient pollution reductions. This flaw is magnified in the discussion of impacts to water quality. In addressing water quality impacts, the PEIR assumes that surface water quality improvements under Alternative 1 would be the same as all of the other alternatives, including Alternative 5. As for groundwater, the PEIR makes a similar assumption – that Alternatives 2 through 5 will be equally effective at reducing pollution to groundwater (the PEIR does acknowledge that not addressing groundwater at all would be less effective).

Thus, for Alternative 1, the PEIR states that “[i]t is expected that existing water quality conditions, such as the surface water quality impairments detailed in the environmental setting section above and in the ECR, would improve over time as the program would continue to implement surface water management practices and management plans.” PEIR, p. 5.9-14. The same is said for Alternatives 2 and 3, even though the former reduces water quality monitoring and the latter eliminates water quality monitoring. *Id.*, pp. 5.9-16 (“Under Alternative 2, existing water quality impairments are expected to improve over time as third parties develop and implement surface water and groundwater quality management plans”), 5.9-17 (“Alternative 3, existing surface water quality and groundwater quality impairments are expected to improve over time as the FWQMPs are developed and implemented”). The same unexplained expectation is stated for Alternatives 4 and 5, simply incorporating the assertion made for Alternative 2. *Id.*, p. 5.9-18 (Alternative 4) (“Potential impacts to water quality and hydrology under Alternative 4 would be similar to those described for

Alternative 2"); p. 5.9-18 ("Potential impacts to water quality and hydrology under Alternative 5 would be similar to those described for Alternative 2").

These expectations are unsupported by any evidence in the record. The Regional Board cannot point to anything in its current record that "clearly shows that all uncertainties" of the mitigations set forth in each alternative will eliminate the well-documented significant environmental impacts of allowing irrigated lands to discharge waste to surface and ground water.

The PEIR's simplistic and conclusory assertions fail to assist the Regional Board or the public in discerning the real life differences in pollution discharge rates that the different mitigations incorporated into each of the proposed alternatives will have. For example, in regard to FWQMPs, it is simply not realistic to assume that the two alternatives that do not require FWQMPs – Alternatives 1 and 2 – will be as effective at identifying and implementing measures as the alternatives that do require dischargers to prepare FWQMPs and, at least for two of them, require them to be submitted to the Regional Board. Likewise, for the alternatives that require FWQMPs, there would have to be some difference in effectiveness and pollution reductions between the two alternatives (3 and 4) that would have the Regional Board review and approve FWQMPs and Alternative 5's provision that FWQMPs not be reviewed or approved. Conversely, if the proposal to have the Regional Board approve every FWQMP before they go into effect slows down their implementation, then there would undoubtedly be an impact during the term the Board did not act on any FWQMPs. Until the PEIR can remove the uncertainty of how the Regional Board can assure BPTC is implemented without requiring FWQMPs, the Regional Board may not rely on alternatives that do not propose FWQMPs.

In terms of monitoring, no evidence could support the PEIR's assumption that Alternative 3's omission of any water quality monitoring for surface or groundwater discharges could somehow be as effective as any of the alternatives that do provide some water quality monitoring. And as between Alternative 5's farm-specific monitoring requirement and Alternatives 1, 2 and in effect 4's proposal to rely on regional monitoring, no evidence could support the PEIR's assertion that the regional monitoring measures will tell the Board or anyone whether a particular dischargers' management measures in fact reduce any pollution discharges and would address specific dischargers' pollution problems as promptly as a measure that required them to monitor their discharges. Until the PEIR sufficiently discusses and eliminates the obvious uncertainty of a regional monitoring mitigation measure to evaluate the effectiveness of an on-site management measure miles upstream, the Regional Board cannot rely on alternatives relying on such regional monitoring.

As noted above, the PEIR's assumption that the monitoring required by each of the proposed alternatives is equally effective, is inconsistent with the PEIR's acknowledgment in its discussion of fisheries that more farm-specific monitoring results in more pollution reductions and fewer impacts. PEIR, p. 5.8-52 ("given the probability

of increased monitoring of individual farms, and especially those at higher risk of generating significant impacts—in addition to wellhead protection, nutrient management plans, tracking of nutrient and pesticide application, and monitoring of individual wells—the positive benefit of Impact FISH1 (improved water quality) would probably be greater under Alternative 4 than under Alternative 2 or Alternative 3”); *Id.*, p. 5.8-53 (Alternative 5) (“Given the emphasis on monitoring of individual farms, wellhead protection, nutrient management plans, tracking of nutrient and pesticide application, monitoring of individual wells, and potential installation of monitoring wells, the positive benefit of Impact FISH1 (improved water quality) probably would be greater under Alternative 5 than under any other alternative”). Although as discussed below, these analyses also must be better analyzed, the general observation is obvious and the PEIR’s failure to discuss these differences in the water quality section renders it inadequate.

Nor is there any attempt in the water quality discussion to quantify the effectiveness of management measures that will likely be employed by individual farms. The PEIR lists a handful of likely measures. This list is incomplete, omitting numerous measures that one can find by reviewing some of the management plans that have been developed. Of particular note is the complete omission in the PEIR of any discussion of integrated pest management options to reduce the use or rate of pesticide applications. Until the Regional Board can sufficiently discuss the available management measures and whether any of them, alone or in combination will effectively eliminate the significant impacts of the Board authorizing waste discharges from irrigated lands, then the Board cannot rely on them.

**2. The analysis of impacts to fisheries is flawed because there is no evidentiary support for the assumption that all alternatives would be equally effective at protecting fisheries**

The PEIR’s handling of impacts to fisheries suffers from flaws similar to those described in the discussion of water quality above. The PEIR’s discussion of fisheries impacts, again without any evidence or common sense, simply assumes that the same level of management measures and surface water pollution control effectiveness will result with implementation of any of the alternatives, with or without FWQMPs and without regard to how far away some water quality monitoring may (or may not) be occurring. PEIR, p. 5.8-50 (“Under this alternative, management practices would be implemented to reduce the levels of identified constituents of concern below the baseline conditions. Monitoring and management plan requirements of Alternative 1 are expected to result in further implementation of management practices by growers”) As for groundwater, the same is true with the exception of Alternative 1.

The PEIR’s assertion that Alternative 1 will improve surface water quality is entirely unsupported by any evidence. Alternative 1, now in its seventh year of implementation, has failed to result in the Regional Board documenting the installation of a single management measure anywhere in the Central Valley. Nor is there any evidence of a trend that the rampant violations of water quality standards throughout the

Central Valley resulting from irrigated lands discharges are on the mend. Nevertheless, the PEIR asserts that “[i]mprovements to surface water quality from implementation of management practices [under Alternatives 1] in impaired water bodies receiving inputs from lands in the program area are likely to benefit fish (e.g., by reducing contaminant loads and decreasing sedimentation and total suspended solids).” PEIR, p. 5.8-50. The PEIR makes the same assertion for Alternative 2. *Id.*, p. 5.8-52. As discussed above, the coalitions’ current plans are to have informal meetings with some farms to discuss BMPs. See *supra*, Section F.1. The coalitions have no legal authority to require implementation of any BMPs by any of their members. What, if any, BMPs may result from the proposed meetings is anybody’s guess. And, without FWQMPs, whether or not the Regional Board would even be aware of a specific farmer’s installation of measures is not clear. The PEIR’s cavalier assertion that Alternatives 1 and 2, despite omitting any FWQMPs or farm-specific monitoring could somehow lead to the certain implementation of pollution reduction measures, does not resolve the uncertainties that coalitions and regional monitoring will resolve irrigated land’s water pollution impacts.

Although the PEIR does acknowledge some relevant benefit from the mitigations included in Alternatives 4 and 5 farm-specific monitoring proposals, coupled with the farm-specific plan requirements, the discussion is still insufficient to remove uncertainties about the efficacy of Alternative 4’s proposal. See PEIR, pp. 5.8-52; 5.8-53. Specifically, because a discharger may opt out of farm-specific monitoring in exchange for participation in regional monitoring, it is uncertain whether any discharger will conduct farm-specific water quality monitoring. As a result, and as discussed above, there is no certainty that the Regional Board will be able to determine that any measures installed on that farm will amount to BPTC or assure compliance with water quality standards. In addition, the PEIR’s discussion of the relative benefit to water and additional pollution reductions one should expect from requiring FWQMPs coupled with farm-specific monitoring is not specific enough for the Regional Board to compare those benefits to the other alternatives.

Even assuming all of the alternatives may have some benefit on water quality, the PEIR also makes no effort to determine the time frames within which any such improvements would be realized under the various alternatives. Given the frames of reference in each alternative, it appears clear that some, for example, Alternative 5, would result in measures being installed faster and hence pollution reductions being achieved more quickly, as compared to any other alternative.

The PEIR cannot succeed in achieving the goals of CEQA if it shies away from frankly addressing the mitigations proposed in each alternative and comparing their ability or inability to reduce pollution that will be discharged to surface and groundwater from irrigated lands.

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**3. The PEIR fails to discuss numerous cumulative impacts to water quality and fisheries habitat currently plaguing the Delta and other areas of the Central Valley.**

The PEIR attempts to pass on evaluating the cumulative impacts of the ILRP. PEIR, p. 6-1 ("Because of the unidentified location of potential impacts, the Lead Agency has not identified any projects or programs adequately similar in nature, location, and type to result in a meaningful comparative analysis"). The notion that either the geographic area or obvious water quality and fisheries impacts of allowing discharges of irrigated lands waste is unknown is patently incorrect, as the preceding sections of the PEIR make clear despite their obvious flaws. The PEIR recognizes a number of specific categories of actions in the Central Valley that are contributing to impacts to fisheries and water quality, in addition to discharges from agricultural lands. Of particular note is the operation of the massive state and federal water projects, which are having obvious cumulative impacts to fish in the Central Valley by killing massive numbers of fish at their respective pumping facilities. See [http://www.swr.noaa.gov/ocap/Executive\\_summary\\_to\\_NMFS'\\_CVP-SWP\\_operations\\_BO\\_RPA.pdf](http://www.swr.noaa.gov/ocap/Executive_summary_to_NMFS'_CVP-SWP_operations_BO_RPA.pdf); 5.8-17 ("water projects have adversely modified [longfin smelt's] habitat, distribution, food supply, and probably abundance"); See NMFS Biological Opinion Regarding Proposed Long-Term Operations of the Central Valley Project And State Water Project (June 4, 2009) ([http://www.swr.noaa.gov/ocap/NMFS\\_Biological\\_and\\_Conference\\_Opinion\\_on\\_the\\_Long-Term\\_Operations\\_of\\_the\\_CVP\\_and\\_SWP.pdf](http://www.swr.noaa.gov/ocap/NMFS_Biological_and_Conference_Opinion_on_the_Long-Term_Operations_of_the_CVP_and_SWP.pdf)). Both EPA's registration of various pesticides that the National Marine Fisheries Service has determined will jeopardize the continued existence of listed salmon must be considered, especially considering NMFS's proposed mitigation requirements prohibiting pesticide application on irrigated lands within 1000 feet of water. PEIR, p. 5.8-39 ("NMFS (2008) concluded that EPA registration of chlorpyrifos, diazinon, and malathion would jeopardize the continued existence of, and destroy or adversely modify critical habitat for, the Central Valley spring-run Chinook salmon ESU, the Sacramento River winter-run Chinook salmon ESU, and the California Central Valley steelhead DPS"); NMFS Biological Opinion on the Effects of the U.S. Environmental Protection Agency's Proposed Registration of Pesticide Products (Nov. 18, 2008) ([http://www.nmfs.noaa.gov/pr/pdfs/pesticide\\_biop.pdf](http://www.nmfs.noaa.gov/pr/pdfs/pesticide_biop.pdf)).

The proposed Peripheral Canal being pursued by various agencies also is a reasonably foreseeable project that will enormously exacerbate water quality and fisheries impacts within the Delta. See Bay Delta Conservation Plan, Status Update 3 (June 2010). Likewise, the Regional Board is in the best position to evaluate the cumulative impacts of the hundreds of discharge permits it has issued to dischargers throughout the Central Valley. See Central Valley Regional Board Web Site, Adopted Orders ([http://www.swrcb.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/index.shtml](http://www.swrcb.ca.gov/centralvalley/board_decisions/adopted_orders/index.shtml)). The PEIR also should evaluate, for example, cumulative bacterial issues resulting from rampant sewage overflows from municipalities throughout the Valley in combination with the bacteria coming from farms. [http://www.waterboards.ca.gov/water\\_issues/programs/sso/sso\\_map/sso\\_pub.shtml](http://www.waterboards.ca.gov/water_issues/programs/sso/sso_map/sso_pub.shtml) (accessed September 27, 2010).

These and other cumulative impacts must be addressed in the PEIR. Recognizing that several projects may together have a considerable impact, CEQA requires an agency to consider the "cumulative impacts" of a project along with other projects in the area. Pub. Resources Code §21083(b); CEQA Guidelines §15355(b). It is vital that an agency assess "the environmental damage [that] often occurs incrementally from a variety of small sources . . ." *Bakersfield Citizens*, 124 Cal.App.4th at 1214. This requirement flows from CEQA section 21083, which requires a finding that a project may have a significant effect on the environment if "the possible effects of a project are individually limited but cumulatively considerable. . . . 'Cumulatively considerable' means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." CEQA Guidelines §15355(a). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." CEQA Guidelines § 15355(a).

"The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." *Communities for a Better Environment v. Cal. Resources Agency* ("CBE v. CRA") (2002) 103 Cal.App.4th 98, 117. A legally adequate cumulative impacts analysis views a particular project over time and in conjunction with other related past, present, and reasonably foreseeable probable future projects whose impacts might compound or interrelate with those of the project at hand.

As the court recently stated in *CBE v. CRA*, 103 Cal. App. 4th at 114:  
Cumulative impact analysis is necessary because the full environmental impact of a proposed project cannot be gauged in a vacuum. One of the most important environmental lessons that has been learned is that environmental damage often occurs incrementally from a variety of small sources. These sources appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact.

In *Kings County Farm Bureau v. City of Hanford*, 221 Cal.App.3d at 718, the court concluded that an EIR inadequately considered an air pollution (ozone) cumulative impact. The court said: "The [ ] EIR concludes the project's contributions to ozone levels in the area would be immeasurable and, therefore, insignificant because the [cogeneration] plant would emit relatively minor amounts of [ozone] precursors compared to the total volume of [ozone] precursors emitted in Kings County. The EIR's analysis uses the magnitude of the current ozone problem in the air basin in order to trivialize the project's impact." The court concluded: "The relevant question to be addressed in the EIR is not the relative amount of precursors emitted by the project

when compared with preexisting emissions, but whether any additional amount of precursor emissions should be considered significant in light of the serious nature of the ozone problems in this air basin.”<sup>1</sup> The *Kings County* case was recently reaffirmed in *CBE v. CRA*, 103 Cal.App.4th at 116, where the court rejected cases with a narrower construction of “cumulative impacts.”

Similarly, in *Friends of Eel River v. Sonoma County Water Agency*, (2003) 108 Cal. App. 4th 859, the court held that the EIR for a project that would divert water from the Eel River had to consider the cumulative impacts of the project together with other past, present and reasonably foreseeable future projects that also divert water from the same river system. The court held that the EIR even had to disclose and analyze projects that were merely proposed, but not yet approved. The court stated, CEQA requires “the Agency to consider ‘past, present, and probable future projects producing related or cumulative impacts . . .’ (Guidelines, § 15130, subd. (b)(1)(A).) The Agency must interpret this requirement in such a way as to ‘afford the fullest possible protection of the environment.’” *Id.*, at 867, 869. The court held that the failure of the EIR to analyze the impacts of the project together with other proposed projects rendered the document invalid. “The absence of this analysis makes the EIR an inadequate informational document.” *Id.*, at 872.

The court in *Citizens to Preserve the Ojai v. Bd. of Supervisors* (1985) 176 Cal.App.3d 421, held that an EIR prepared to consider the expansion and modification of an oil refinery was inadequate because it failed to consider the cumulative air quality impacts of other oil refining and extraction activities combined with the project. The court held that the EIR’s use of an Air District Air Emissions Inventory did not constitute an adequate cumulative impacts analysis. The court ordered the agency to prepare a new EIR analyzing the combined impacts of the proposed refinery expansion together with the other oil extraction projects.

As the PEIR notes, water quality standards already are not being met in locations throughout the Delta. As the National Academy of Sciences report and a plethora of other reports and agency decisions make clear, fisheries and water quality already are adversely affected by the massive water diversions of the State and Federal water projects and flow reductions caused by dams throughout the Valley. As NMFS makes clear, pesticide use currently approved by EPA registrations throughout the Valley is

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<sup>1</sup> *Los Angeles Unified v. City of Los Angeles*, 58 Cal.App.4th at 1024-1026 found an EIR inadequate for concluding that a project's additional increase in noise level of another 2.8 to 3.3 dBA was insignificant given that the existing noise level of 72 dBA already exceeded the regulatory recommended maximum of 70 dBA. The court concluded that this "ratio theory" trivialized the project's noise impact by focusing on individual inputs rather than their collective significance. The relevant issue was not the relative amount of traffic noise resulting from the project when compared to existing traffic noise, but whether any additional amount of traffic noise should be considered significant given the nature of the existing traffic noise problem.

threatening salmon with extinction throughout the Central Valley. In short, the need for a cumulative impact analysis of water quality, fisheries, and other related impacts like human health, cultural, recreational, air quality, and aesthetic cannot be seriously questioned. It is plain that massive cumulative impacts from water diversions, pesticide use approvals and, with the ILRP, massive pollution from irrigated lands are occurring throughout the Central Valley and particularly in the Delta.

**4. The PEIR's discussion of possible agricultural impacts is inadequate because it relies on a flawed economic analysis.**

CSPA retained the economic consulting firm ECONorthwest to evaluate and comment on the economic analysis accompanying the PEIR. See *infra*, Section IV. The PEIR's consideration of agricultural impacts relies almost exclusively on the economic analysis. PEIR, p. 5.10-1 ("The catalyst for these impacts is the cost of achieving and maintaining compliance with the alternatives as discussed in *Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program* (ICF International 2010) (Draft ILRP Economics Report), incorporated herein by reference"). Because the economic analysis is not reliable, as is discussed in detail below and in the accompanying ECONorthwest Review, the PEIR's discussion of asserted impacts to agricultural production is unsupported by substantial evidence.

**IV. THE ECONOMIC ANALYSIS RELIED UPON BY THE PEIR AND STAFF REPORT IS SUBSTANTIALLY DEFICIENT AND BIASED TOWARD THE LEAST EFFECTIVE AND COALITION-PREFERRED ALTERNATIVES.**

Both the PEIR, especially in its discussion of potential agricultural impacts, and the Staff Report rely extensively on ICF International's Technical Memo. A review of that analysis by ECONorthwest, a firm exclusively dedicated to expert economic consulting, reveals fundamental errors and biases. Because of the following errors, any reliance on the Technical Memo by the Regional Board and its staff would be an abuse of discretion. The Regional Board cannot substantiate a finding under Resolution No. 68-16 or the federal antidegradation policy that under a newly adopted ILRP, "the highest water quality consistent with maximum benefit to the people of the State will be maintained." Resolution No. 68-16 (emphasis added). Similarly, to the extent the Board intends to rely on any conditional waivers to implement the next version of the ILRP, a finding by the Regional Board pursuant to Water Code § 13269 that such waiver is in the public interest also would not be supported by substantial evidence.

The ECONorthwest Review discloses the following fundamental errors in the preparation of the Technical Memo.

1. **The Analytical Objectives and Approach:** ECONorthwest demonstrates that the Technical Memo ignores generally accepted guidelines for this type of analysis, including for example guidelines prepared by the California Department

of Water Resources, an agency with, of course, considerable experience interfacing with California's agricultural community. Because of this failure, ECONorthwest concludes that the Technical Memo "provides decision-makers and stakeholders with biased and unreliable descriptions of the economic outcomes likely to materialize if the Board were to implement any of the alternatives in the EIR." ECONorthwest Review, pp. 1, 2-5.

2. **Baseline:** ECONorthwest's review establishes that ICF International's analysis "does not compare the alternatives against an appropriate baseline that describes potential future conditions absent implementation of each alternative" further biasing its conclusions. Hence, it provides an incomplete, biased representation of the alternatives' economic consequences. ECONorthwest Review, pp. 1, 5-7.
3. **Management Practices:** ECONorthwest's review discloses that ICF International only considered a truncated range of the more expensive management practices in determining projected costs of the various alternatives and excluding the less expensive and more efficient practices. ECONorthwest Review, pp. 1, 7-9. As a result, "the EIR and *Technical Memo* provide an incomplete and biased representation of the choices that realistically are available to the [Regional] Board." *Id.*, p. 1.
4. **Costs and Benefits:** ECONorthwest's review shows that the Technical Memo incorrectly calculates the costs of adopting practices that improve water quality and completely overlooks major categories of economic costs and benefits, once again skewing its conclusions to support the less rigorous and coalition-preferred alternatives. See ECONorthwest Review, pp. 1, 9-11.
5. **Risk and Uncertainty:** ECONorthwest also criticizes the Technical Memo for failing to provide information and analysis of the risks and uncertainty facing irrigators and others from each proposed alternative. The omission of this standard component of any complete economic analysis of a program such as the IRLP is a fatal flaw in the Technical Memo. See ECONorthwest Review, pp. 1, 11.
6. **Regional Impacts:** Lastly, ECONorthwest's review demonstrates that the Technical Memo's discussion of regional impacts "emphasize[s] negative outcomes and ignore[s] the analytical assumptions that overstate costs and the resulting negative outcomes." ECONorthwest Review, p. 1. Even with this built-in bias, the Technical Memo still must acknowledge the improvement to the Central Valley's economy by implementation of Alternatives 3 through 5. An accurate economic analysis likely would further support the economic benefit of the alternatives that incorporate farm specific measures.

Because of these fundamental flaws, the Technical Memo, as well as the portions of the PEIR and Staff Report that rely upon it, must be redone and recirculated in order to provide the Regional Board with substantial evidence upon which it may rely.

**V. THE STAFF REPORT FAILS TO ACKNOWLEDGE THE LEGAL AND POLLUTION CONTROL SHORTCOMINGS OF THE CURRENT ILRP**

The Staff Report disingenuously seeks to justify a predetermined and environmentally non-protective course of action by misrepresenting the present program and carefully crafting a needlessly expensive and overly bureaucratic strawman to reject alternatives that would better protect water quality. Water quality problems and the adverse impacts resulting from the continuing discharge of agricultural pollutants are largely ignored while the Staff Report focuses on potential impacts to farmers from having to comply with water quality standards.

**A. Rather Than Keep Its Eye On The Regional Board's Primary Mission To Protect Water Quality, Staff's Analysis And Proposed Alternative Make Believe The Serious Flaws In The Current Program Are Actually Benefits.**

The "elements" from each of the alternatives selected by Regional Board staff to be included in the long-term irrigated lands program (or recommended alternative) are flawed and represent the continuation of a program that has failed to protect water quality.

There can be no doubt that, after seven years, the ILRP has not demonstrated any success at protecting or even reducing the rampant pollution of Central Valley waters by irrigated land dischargers. According to the *Revised Draft of the 2007 Review of Monitoring Data for the Irrigated Lands Conditional Waiver Program*, 12 July 2007, between 2003 and 2007, agricultural coalitions and the U.C. Davis Irrigated Lands Monitoring Project collected data from 313 sites throughout the Central Valley. Coalitions or individual water agencies monitored 148 sites and U.C. Davis monitored the remaining 165 sites. While the adequacy of monitoring (*i.e.*, frequency and comprehensiveness of monitoring) varied dramatically from site to site, the report presents a dramatic panorama of the epidemic of pollution caused by the discharge of agricultural wastes. Toxicity to aquatic life was present at 63% of the sites monitored for toxicity (50% were toxic to more than one species). Pesticide water quality standards were exceeded at 54% of sites monitored for pesticides (many for multiple pesticides). One or more metals violated criteria at 66% of the sites monitored for metals. Human health standards for bacteria were violated at 87% of sites monitored for coliform. More than 80% of the locations reported exceedances of general parameters (dissolved oxygen, pH, salt, TSS). It would be difficult for anyone reading the Surface Water Summary (p. 23-44) of the Staff Report to appreciate the extent of pollution caused by irrigated agriculture. An Examination of the Draft 2007 Review of Monitoring Data, Irrigated Lands Condition Waiver Program, CSPA, p. 1-2. The PEIR

Staff Report discussion of surface water quality also fails to describe and discuss the monitoring results from other programs (i.e., NPDES, SWAMP, etc.).

After seven years of the irrigated lands program, the Central Valley Regional Water Quality Control Board still does not know who is actually discharging pollutants, the points of discharge, the constituents discharged, receiving water impacts, whether management measures have been implemented or if those measures are BPTC that are effective in reducing pollutant discharges. The Board cannot enforce against recalcitrant dischargers because it cannot know who they are and dischargers have little incentive to comply because they know that monitoring far downstream cannot produce the evidence to hold them accountable.

The irrigated lands waiver adopted by the Central Coast Regional Board in 2004 is illustrative. The Central Coast Board conditional waiver is substantially more rigorous than the waiver adopted by Region 5. The Central Coast Board had hopes that, because there were fewer irrigated lands dischargers in the region, they would be able to see significant water quality improvements within the first term of the waiver. The Central Coast waiver requires farmers to enroll with the Board, prepare individual farm management plans, attend water quality education courses and participate in a third-party watershed monitoring program. Yet, it has proved incapable of protecting water quality, even in that smaller region, because it fell short of requiring farm-specific monitoring. If that more robust program in a smaller region could not protect water quality, the less stringent program currently in place and proposed to be continued by staff for the much larger Central Valley will certainly fall even further short of protecting water quality.

Unlike the Central Valley staff's report, the Central Coast staff frankly addressed their existing program's shortcomings. As the Central Coast *Preliminary Draft Staff Recommendations For An Agricultural Order* (February 2010) puts it, "[t]he current Conditional Waiver . . . lacks clarity and does not focus on accountability and verification of directly resolving the known water quality problems" and "[c]urrently, the Water board and the public have no direct evidence that water quality is improving due to the 2004 Conditional Waiver." Central Coast Staff Report, p. 6. It goes on to note, "[t]he current watershed monitoring program only indicates long-term (multi-year), receiving water changes without measuring: 1) if individual agricultural dischargers are in compliance with Conditional Waiver conditions or water quality standards, or 2) if short-term progress towards water quality improvements on farms or in agricultural discharges is occurring" and "[c]urrently, information that provides evidence of on-farm improvements and reductions in pollutant loading from farms is not required, and therefore probably does not exist for most farms. The public, including those who are directly impacted farm discharge, and the Water Board, do not have the necessary evidence of compliance or improvements. This is unacceptable given the magnitude and scale of the documented water quality impacts and the number of people directly affected. At a minimum, we continue to observe that agricultural discharges continue to severely impact water quality." *Id.*, 7.

Acknowledging the failure of its present program (i.e., "Most of the same areas that showed serious contamination from agricultural pollutants five years ago are still seriously contaminated," (*id.* Page 11), Central Coast Board staff has recommended a revised program where dischargers must; 1) enroll to be covered by the order, 2) develop and implement a farm plan that includes management practices, 3) eliminate non-storm water discharges, or use source control or treatment such that non-storm water discharges meet water quality standards, 3) demonstrate through water quality monitoring that individual discharges meet certain basic water quality targets (that are or indicate water quality standards that protect beneficial uses), 4) demonstrate through water quality monitoring that receiving water is trending toward water quality standards that protect beneficial uses or is being maintained at existing levels for high quality water and 5) farm operation must support a functional riparian system and associated beneficial uses. *Id.*, p. 20. Individual monitoring is in addition to the watershed monitoring program. *Id.*, p. 23.

Inexplicably, Central Valley Board staff persists in the illusion that inserting an unaccountable bureaucracy between the Board and actual dischargers and relying upon a monitoring program that ignores numerous waterways and collects ambient data far removed from the point of actual discharges will somehow protect water quality. Right from the opening paragraphs, the Staff Report predetermines its analysis by conjuring up five "[e]lements of the long-term ILRP alternatives found to best achieve evaluation measures are summarized below." Staff Report, p. 2. Four out of five of these elements are baseless. Staff boldly asserts that unaccountable coalitions' "local knowledge" and claimed efficiencies somehow trump the Regional Board taking a lead role in implementing an ILRP; that regional monitoring is more effective at implementing measures than farm-specific monitoring; that providing incentives is better than requiring; and that in order to coordinate with other failed regional programs, the ILRP must also avoid focusing on individual dischargers and only address problems from a distance. As is discussed above in CSPA's comments on the PEIR, these are not attributes of an effective or legal program. Staff's generalizations dramatically conflict with the Central Coast Regional Board staff's more objective and frank assessment. Contrary to Central Valley staff's blind optimism that doing less equals more, the evidence in the record demonstrates that the staff's recommendation will not be able to document any improvements in water quality, the effectiveness of applied management measures or compliance with water quality standards by individual dischargers.

- 1. Staff cannot continue to pretend that relying on discharger coalitions conducting regional monitoring and management plans with no plan to require BMPs by dates certain will implement BPTC on individual farms and achieve standards in a timely manner.**

The first element that staff claims best achieve its "evaluation measures" is the reliance on "[t]hird-party lead or coalitions groups, as opposed to Central Valley Board lead, to take advantage of local knowledge and administrative/cost efficiencies in dealing with a few groups versus thousands of individual operations."

There is no evidence coalition groups have successfully used their purported "local knowledge" to secure and verify implementation of management measures at the farm level and quantitatively reduce the mass loading of agricultural contaminants. See *supra*, Section G.1. Nor is there any evidence of cost efficiencies that would materialize if coalitions actually instituted a comprehensive program that successfully complied with regulatory requirements and held farmers accountable for implementing management measures and reducing pollutant loading.

Other Central Valley Board regulatory programs with inadequate resources have been far more successful in protecting water quality than the irrigated lands program. For example, the Board has less than a dozen staff to manage a stormwater program that oversees more than 7,500 industrial and construction operations and more than 93 Phase I and Phase II municipal permits. *State of the Central Valley Region*, slide 32, presentation by Executive Officer Pamela Creedon at the Central Valley Water Board meeting of August 2007. The stormwater program requires industrial and construction program applicants to submit a Notice of Intent, develop a comprehensive Stormwater Pollution Prevention Plan (SWPPP), implement BMPs, monitor individual discharges, revise BMPs, iteratively install new BMPs as needed and submit annual reports. Municipal permits are complicated, resource draining and consume the majority of staff time. However, CSPA has reviewed the files of literally hundreds of industrial and construction program permittees and found that the severely understaffed program (the program has less than 12% of needed staff, *Id.*) has been able to routinely review annual reports, conduct many routine site evaluations, send corrective and enforcement notices to numerous facilities. The relative successes of the stormwater program stand in stark contrast to the black hole of the irrigated lands program that remains unable to document any implementation of management measures or reduction of pollutant mass loading. For staff to claim still unproven coalitions as a key element to success is contrary to the available evidence.

**2. Staff cannot protect water quality by making believe that regional monitoring results in clear expectations for dischargers or by putting reducing paperwork ahead of protecting water quality.**

The next key element to success identified by the Staff Report is to rely upon "[r]egional surface and groundwater quality management plans, as opposed to individual water quality management plans, to minimize paperwork/administrative burdens while clearly defining the expectations and approach for addressing water quality problems." Staff Report, p. 2. Again, staff cannot cite to any evidence that this statement is reliable. Avoiding paperwork is simply a euphemism for not collecting information. At some point, staff has to acknowledge that the Board cannot claim to regulate 30,000 farms without at some point gathering information from them about their pollution discharges. The notion that the requisite information becomes less bureaucratic and involves less paperwork by inserting fictitious entities – with their own layers of management and paperwork – between the Regional Board and the dischargers is nonsensical. And staff has no explanation as to how plans devised on a

regional basis can clearly define expectations of all relevant dischargers in that area. Especially where, as the PEIR acknowledges, “[t]he appropriate management practice is typically selected on a site-specific or property-specific basis.” PEIR, p. 3-9. Even the Staff Report admits that “[w]ith regard to selection of measures and practices, the Central Valley Water Board and USEPA recognize that there is often site-specific, crop-specific, and regional variability that affects the selection of appropriate management measures, as well as design constraints and pollution-control effectiveness of various practices.” Staff Report, p. 66-67. Only by addressing site-specific measures that are at least BPTC and assure compliance with standards can expectations and water quality measures be clearly defined. To rely exclusively on regional management plans rather than FWQMPs, the Board will only continue to maintain the existing fog that obscures individual farm’s actions or, more likely, inactions. See *supra*, Section F-2.

**3. Staff cannot protect water quality by making believe that repeating the regional scale of other monitoring efforts that have not curtailed irrigated lands’ pollution dischargers will miraculously characterize effluent quality and BPTC implementation at individual farms.**

Staff continues to regulate in a dream state by claiming a third element to achieve success is that “[r]egional surface and groundwater quality monitoring, as opposed to individual or no water quality monitoring, to take advantage of cost efficiencies in coordinating with other monitoring efforts while providing sufficient information to characterize water quality.” Once again, staff’s claim that regional monitoring miles downstream from a farm’s discharge location would characterize that discharger’s water quality is absurd. It is not clear what monitoring efforts staff is referring to, but there is no evidence that any regional monitoring effort to date has reduced any irrigated lands pollution in the Central Valley. For example, the Rice Pesticide Program has not succeeded in reducing pesticide discharges from rice fields by relying on regional monitoring. Rice farmers monitor specific fields before releasing their irrigation waters. As discussed above, like the absence of FWQMPs, allowing farm dischargers to rely solely on regional monitoring to determine water quality impacts occurring near their discharge locations or to evaluate whether their management measures are BPTC defies common sense. See *supra*, Sections F.1 - .2, G.2. No current monitoring program is monitoring only farm discharges. Nor has any existing program, including even the current ILRP regional monitoring, reduced the massive pollution from irrigated farms. Any “cost efficiencies” claimed by staff are simply another way of saying they do not want the most relevant information necessary to implement BPTC and achieve water quality standards.

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**B. The “Goals and Objectives” selected by a stakeholder group dominated by agriculture protect the regulated community more than they protect water quality, in contrast to virtually every other regulatory program.**

As discussed in Section III.C above, CSPA is concerned with the language of the objectives selected by the coalition-dominated stakeholder process. CSPA's concerns are heightened by the further spin placed on the objectives by staff's interpretations of those objectives applied in the staff report. Invariably, staff's interpretation of each objective favors the status quo and avoiding any site specific regulation of farms and trumping resolution 68-16.

Staff restates the PEIR's goals and objectives. Staff Report, pp. 98-99. The objectives, other than the objectives of restoring and/or maintaining beneficial uses, ensuring that all state waters with the Central Valley meet applicable water quality objectives and ensuring that irrigated agricultural discharges do not impair Central Valley communities' and residents' access to safe and reliable drinking water are flawed. In fact, the other four objects work against the successful attainment of restoring beneficial uses and meeting standards. Yet, invariably, the non-water quality or public safety objectives are the hooks which staff uses to propose an ineffectual ILRP recommendation.

For example, the goal of maintaining the economic viability of agriculture in California's Central Valley is highly subjective because it contains no yardsticks by which to measure impacts to irrigated agriculture and is buttressed by a seriously deficient economic analysis. Retirement of some farmland may be an overall economic benefit where overproduction has depressed commodity prices. Retirement of lands because of an inability to continue externalizing adverse costs of production benefits farmers who internalize those costs and comply with regulatory requirements. Economic viability of agriculture cannot be considered in a vacuum where the costs of agricultural pollution are simply transferred to other economic sectors, *i.e.*, recreation, commercial fishing, public health, municipalities, etc. It is unreasonable to establish a program goal of maintaining the economic viability of agriculture at the expense of other sectors of society who comply with requirements to protect water quality.

Also for example, the objective of maintaining “appropriate” beneficial uses ignores mandates to protect all identified beneficial uses. Encouraging “implementation of management practices that improve water quality in keeping with the first objective without jeopardizing the economic viability for all sizes of irrigated agriculture” ignores the fact that discharging pollutants is a privilege allowable only so long as measures are implemented to reduce or eliminate conditions of pollution. Likewise, providing “incentives for agricultural operations to minimize waste discharge to state waters” ignores that this is a mandated requirement. The objective to coordinate with other programs, such as the Grasslands Bypass Project, TMDLs, CV-Salts and WDRs for dairies is simply a non sequitur as none of those programs have been effective in cleaning up polluted waterways. For example, the Central Valley Board recently

extended the compliance schedule for the Grasslands Bypass Project to more than 20 years. To “promote coordination with other regulatory and non-regulatory programs associated with agricultural operations” is simply an attempt to replicate other regional programs that have failed to protect water quality. The Central Valley Board has apparently forgotten the failures of the Management Agency Agreement with the Department of Pesticide Regulation (DPR), where after the five-year agreement had expired, DPR claimed it didn't have the authority to implement the measures it had agreed to.

The last four objectives simply provide Regional Board staff the rationale to avoid rigorously implementing what staff believes to be a politically unpalatable program that would meet the first objective of maintaining beneficial uses and meeting water quality standards. Consequently, staff dismisses individual edge-of-field monitoring because it would be expensive, *i.e.*, subject farmers to the same requirements applicable to every other segment of society that discharges pollutants to waters of the state. However, without individual discharger monitoring, the Board will never know the impacts of individual discharges or whether implemented management measures are effective.

Direct Regional Board administration is rejected because it would require the Regional Board to candidly acknowledge the politically unpalatable need to assess additional fees to provide sufficient staff to regulate 30,000 plus farms spread over eight million acres. In 2002-05, Regional Board staff estimated that 40 to 70 staff would be needed to effectively implement the program. This seems to be a reasonable estimate based upon the stormwater program.

**C. Staff's Recommended Alternative Continues The Existing Flaws Of The Existing Program.**

**1. The “recommended alternative” cannot identify sources of pollution, localized water quality impacts, the implementation of Best Management Practices (BMPs) or the effectiveness of BMPs.**

The reality is that the regional monitoring approach embraced by staff has been woefully inadequate, as revealed by even a cursory review of coalition monitoring reports. What staff characterizes as cost efficiencies is simply insufficient monitoring that is incapable of characterizing all receiving waters, let alone identify specific sources or quantify the effectiveness of management measures. Coalition monitoring only represents a small percentage of irrigated acres. For example, review of recent monitoring reports submitted to the Regional Board by coalitions representing irrigated lands that discharge into the Sacramento-San Joaquin Delta estuary or waters tributary to the estuary shows that:

The San Joaquin County and Delta Water Quality Coalition comprises approximately 609,134 acres of irrigated land. SJCDWQC Annual Monitoring Report

2010, p. 6. Between October 2008 and March 2009, the Coalition monitored 10 sites and six sites from April 2009 through December 2009. In addition, three sites were monitored for Management Plan monitoring. *Id.*, p. 1. The report observes, "...water quality is still not protective of beneficial uses across most of the Coalition." *Id.*, p. 4. Rough calculations reveal that irrigation season monitoring represented approximately one site for every 60,000 plus acres.

The East San Joaquin Water Quality Coalition comprises approximately 919,730 acres of irrigated land. ESJWQC Annual Monitoring Report 2010, p. 5. Between October 2008 and December 2009, the Coalition monitored 20 sites and eleven additional sites were monitored for Management Plan monitoring. *Id.*, p. 1. Fourteen sites were monitored during the 2009 irrigation season and 12 sites were monitored during the 2009 wet season. *Id.*, p. 23-24. The report observes, "...water quality is still not protective of beneficial uses across most of the Coalition." *Id.*, p. 4. Rough calculations reveal that irrigation season monitoring represented approximately one site for every 54,000 plus acres.

The Westside San Joaquin River Watershed Coalition comprises approximately 460,500 acres. Westside Coalition Semi-Annual Report, 15 June 2010, p. 3. The Coalition monitors 17 discharge sites during the irrigation and wet seasons. *Id.*, Table 3, p. 5. This represents approximately one site for every 27,000 acres.

The Sacramento Valley Water Quality Coalition comprises approximately 27,000 square miles and contains over a million acres of farms. SVWQC Annual Monitoring Report 2009, March 2010, p. 3. Apparently, the Coalition monitored 32 sites, of which 18 were sampled during the irrigation season. *Id.*, Table 5, Planned Annual Sampling Frequency, p. 19. This would represent irrigation season monitoring of one site for approximately every 55,000 acres.

Monitoring a downstream point draining thousands of acres accomplishes little other than long-term trend analysis. And trend analysis requires a program that consistently monitors the same set of constituents over many years. Most coalition sites are not monitored every year for the same parameters and, consequently, existing coalition monitoring programs are unreliable even for trend analysis. In any case, trend analysis of downstream monitoring points can never establish whether an individual upstream discharger is in compliance with water quality standards or implementing BPTC.

Staff has apparently forgotten that the 2003 waiver originally required coalitions to yearly monitor all major drainages, 20% of intermediate drainages on a yearly rotating basis and minor drainages where downstream problems are identified. Those requirements have been substantially relaxed and currently large areas of the Central Valley are not monitored and have never been monitored, despite identification of serious downstream water quality problems.

Monitoring of actual discharge points is important because upstream waterways are disproportionately important as their increased energy inputs, higher invertebrate production, spawning, nursery and rearing habitat and lower discharge make these smaller aquatic systems vital to the overall health of the aquatic system. Larval fish and their food supplies found in these areas also are particularly vulnerable to adverse impacts of pesticides and other pollutants. Monitoring at the edge-of-field is crucial for evaluating the presence of BPTC and determining if recommended management practices are being implemented properly or if benefits from adopted practices are actually being realized.

**2. The “recommended alternative” cannot ensure that dischargers will demonstrate that they have implemented Best Practical Treatment and Control (BPTC) or prevent degradation of water quality.**

The Staff Report states, “... the Regional Water Board still must require the discharger to demonstrate that the proposed manner of compliance constitutes BPTC (SWRCB Order No. WQ 2000-7).” Staff Report, p. 62. And that, “...implementation of the program must work to achieve site-specific antidegradation requirements through implementation of BPTC and representative monitoring to confirm the effectiveness of the BPTC measures in preventing or minimizing degradation. Any regulatory program adopted will rely on implementation of practices and treatment technologies that constitute BPTC, based to the extent possible on existing data, and require monitoring of water quality to ensure that the selected practices in fact constitute BPTC where degradation of high quality waters is or may be occurring.” *Id.*, p. 66  
However, staff’s recommended alternative abandons any effort to implement staff’s own admonition. See *supra*, Section C.2.

**3. The “recommended alternative” cannot ensure that the Regional Board can enforce program requirements.**

As discussed above, any enforcement efforts by the Regional Board will be hampered by staff’s recommendation. See *supra*, Section F.2. Staff’s concept that enforcement will be vigorous by not having information available in the form of FWQMPs and individual monitoring data to assist in prioritizing inspections and enforcement cannot be rationalized. Without this information, staff’s enforcement efforts will be as nominal as we have seen for the last seven years. Instead of enforcing water quality requirements, staff will be lead down a well-papered path of regional coalition monitoring – none of which will identify a single potential violator.

**4. The “recommended alternative” is clearly inconsistent with the state’s Non-Point Source Control Policy.**

For the same reasons discussed above, staff’s recommendation fails to comply with the NPS Policy. See *supra*, pp. Section F.2. Like the PEIR’s first four alternatives,

staff's recommendations falls well short of all five key elements required by the NPS Policy. *Id.*

**5. The "recommended alternative" cannot be in the public interest.**

Staff continues to treat irrigated agriculture as a privileged sector by allowing farmers to externalize adverse production impacts by transferring the costs of pollution from the polluter to the general public. The recommended alternative does not serve the interests of California's 35 million residents. It arguably does not even serve the interests of the discharger's it seeks to immunize from monitoring, reporting and permitting requirements applicable to everyone else.

Central Valley fisheries are experiencing catastrophic collapse. The team of federal and state scientists investigating the decline of fisheries has identified toxic pollutants as one of the three major suspected causes of the collapse of the Delta's pelagic fishery. This collapse has cost the recreational and commercial fishing communities tens upon tens of millions of dollars.

The degraded aquatic ecosystem in the Delta threatens the reliability of the delivery system that supplies water to 23 million Californians. Polluted waters have forced municipalities to spend hundreds of millions of dollars on increased wastewater and drinking water treatment. Degraded waters threaten public health and have diminished the aesthetic and recreational enjoyment of millions of individuals.

Central Valley agriculture is a relatively small part of the California community. According to the July 2010 (revised) employment data by the California Employment Development Department, total employment in the 34 Central Valley counties under the ILRP and analyzed in the PEIR's economic analysis is 3,509,620, of which farm labor comprises 237,000 or 6.758%. EDD, Employment by Industry Data at: <http://www.labormarketinfo.edd.ca.gov/?pageid=166>. Statewide, the agriculture production and processing industry directly accounts for approximately 4.3% of the state output, 3.8% of the jobs, 2.5% of labor income and 2.9% of value added in the state. The Measure of California Agriculture, 2006, Agricultural Issues Center, University of California, Chapter 5, Table 5.5, p. 10.

The PEIR's severely deficient economic analysis with its unrealistic assessment of the cost impacts of potential management measures, acknowledges that Alternative 5, despite being burdened with absurd administrative and monitoring requirements, would be of negligible cost to the overall economy. In fact the economic analysis predicts that, under Alternative 5: 1) jobs in the Central Valley would increase, 2) personal income and industrial output would increase in the Tulare Lake Basin, 3) personal income would only decrease by 0.013% in the Sacramento River Basin and by 0.019% in the San Joaquin River Basin and 4) industrial output would only decrease by 0.045% in the Sacramento River Basin and by 0.043% in the San Joaquin River Basin. And the economic analysis inexplicably failed to analyze the cost benefits of reduced pollution. Had the advantages of better water quality been evaluated, implementation of

Alternative 5 would be shown to result in significant economic benefit across the spectrum for the entire Central Valley.

The recommended alternative will not reduce agricultural pollution any time in the near future. Nothing in the recommended alternative precludes agricultural dischargers from continuing the historic trend to discharging wastes into the foreseeable future. At its core, the recommended alternative will perpetuate substantial discharges of wastes from thousands of farms to impaired waters throughout the Central Valley, causing irreversible and substantial harm to degraded and stressed ecosystems, threatening public health and imposing increased costs to millions of Californians.

It cannot be in the public interest to exempt one small segment of the California economy from regulatory requirements applicable to everyone else. It clearly cannot be in the public interest, as the recommended alternative does, to exempt farmers from having to monitor their discharges in order to establish compliance with water quality standards and BPTC requirements.

**6. CSPA agrees ILRP must restrict groundwater pollution but unfortunately staff's proposed reliance upon regional efforts is unlikely to be more successful than existing programs that have chaperoned groundwater degradation.**

Groundwater pollution is a serious problem and relying upon regional efforts is unlikely to address site-specific sources of groundwater pollution. The staff alternative of requiring farmers to participate in a regional groundwater program once every five years ignores the obvious protective step of requiring individual farms to monitor their own wells to evaluate groundwater pollution. The staff recommendation also contains no specific measures to identify and prevent contamination of groundwater from management measures implemented to prevent surface water pollution.

The California Department of Water Resources (DWR) has concluded that water from California's groundwater basins "has been the most important single resource contributing to the present development of the state's economy." Between 25% and 40% of California's water supply comes from groundwater. That figure can rise to as much as two-thirds during critically dry years. Fifty percent of California's population depends upon groundwater for all or part of their drinking water. Data from the waterboards, USGS, Department of Health, DPR and others, demonstrate that groundwater has been severely degraded. DWR has stated that three-fourths of the impaired groundwater in California was contaminated by salts, pesticides, and nitrates, primarily from agricultural practices. Thousands of public drinking water wells have been closed because of pollution. Many of California's more than 71,000 agricultural irrigation wells are degraded or polluted. USGS data collected over a ten-year period in Fresno County showed that some 70% of the wells sampled exceeded the secondary MCL and agricultural goal for total dissolved solids. Kings County was even worse, with 87% exceeding criteria. Even the State Board's own data indicates that more than one third of the areal extent of groundwater assessed in California is so polluted that it

cannot fully support at least one of its intended uses, and at least 40 percent is either impaired by pollution or threatened with impairment.

For example, a study conducted by the United States Geological Survey documented extensive contamination of groundwater by pesticides applied to rice fields. Dawson, B., USGS, "Shallow Ground-Water Quality Beneath Rice Areas in the Sacramento Valley, California 1997" (2001). Pursuant to an existing Basin Plan prohibition, rice growers are required to hold their irrigation waters for up to 30 days in order to facilitate the breakdown of toxic pesticides. Rice fields are typically flooded from April to September with some significant portion also flooded during winter months to help break down leftover straw. Detections of pesticides and nitrites in groundwater beneath rice fields were attributed to pesticide and fertilizer applications to the fields. The study explains that holding irrigation waters on the fields in order to protect surface water may be allowing more recharge containing the pesticides molinate and thiobencarb to reach shallow groundwater. Another study in the record documents routing of pesticide-contaminated surface runoff from orchards into drainage wells that drain the contaminated runoff into groundwater. Troiano, J, et al., Cal. Dept. of Pesticide Regulation, "Movement of Simazine in Runoff water from Citrus Orchard Row Middles as Affected by Mechanical Incorporation" (1998) ("evidence linked contamination [of groundwater] to movement of [pesticide] residues in orchard runoff water that was directed into drainage wells"). See also Ingalls, Charles A., U.C. Davis, pp. 5-10, "Movement of Chemicals to Groundwater," of "Protecting Groundwater Quality in Citrus Production" (1994)).

The USGS study and other studies show that one potential negative environmental impact of a management measure that stores polluted water as a means of protecting surface water quality is an acceleration of the pollutants discharged into groundwater through recharge or existing pathways such as wells. Nevertheless, staff's proposed alternative relying upon regional monitoring efforts is unlikely to identify impacts from implementation of management measures and specific monitoring requirements must be included to prevent redirected impacts of management measures employed to protect surface waters.

## **VI. CONCLUSION.**

After seven years of the irrigated lands program, the Central Valley Regional Water Quality Control Board still does not know who is actually discharging pollutants, the points of discharge, the constituents discharged, receiving water impacts, whether management measures (or BMPs) have been implemented or if those BMPs have been effective in reducing pollutant discharges. The Board cannot enforce against recalcitrant dischargers because it cannot know who they are and dischargers have little incentive to comply because they know that monitoring far downstream cannot produce the evidence to hold them accountable. The PEIR continues the theme of not providing the Regional Board the necessary information to make a decision that will protect water quality and human health. Staff proposes an alternative that perpetuates the existing program's flaws, including basic compliance with the NPS Policy and Resolution No. 68-

16. On the other hand, CSPA's alternative sets forth a reasonable program that would comply with statutory requirements, protect water quality and, where it is consistent with those two goals, reduce the potential burden on the farming community. CSPA respectfully requests that the Regional Board instruct staff to redraft their recommended program, send the PEIR back to be supplemented with necessary elements and include detailed analysis of an improved staff recommendation, CSPA's recommendation, and other required elements. We appreciate staff's and the Regional Board's consideration of these comments.

Sincerely,



Michael R. Lozeau  
Lozeau Drury LLP



Bill Jennings  
California Sportfishing Protection  
Alliance

Encls.

# **An Economic Review of the Draft Irrigated Lands Regulatory Program Environmental Impact Report**

September 27, 2010

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ECONorthwest specializes in the economic and financial analysis of public policy. ECONorthwest has analyzed the economics of resource-management, land-use development, and growth-management issues for municipalities, state and federal agencies, and private clients for more than 30 years.

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## I. INTRODUCTION

The Central Valley Water Board (Board) authorized the preparation of an Environmental Impact Report for the Irrigated Lands Regulatory Program (ILRP). The ILRP regulates water discharges from irrigated agricultural lands. ILRP goals include preventing agricultural discharges from impairing receiving waters. At the Board's direction, consultants prepared the *Draft Irrigated Lands Regulatory Program Environmental Impact Report (Draft EIR)*. Appendix A to the *Draft EIR* is the *Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program (Technical Memo)*.

Michael Lozeau of Lozeau Drury LLP, contracted with ECONorthwest (ECONW) to review and provide preliminary comments on the *Technical Memo*. Specifically, he asked that we review the economic analysis described in the *Technical Memo*, including the analytical approach, simplifying assumptions, data, analyses and conclusions, to determine if it provides reliable information on which the Board can base decisions regarding the alternatives described in the *Draft EIR*. In this report we describe our preliminary findings to date. If we are asked to review additional information, or address additional topics, we may revise our critique and findings.

## II. OVERVIEW OF RESULTS

The following discussion substantiates our conclusion that the *Technical Memo* developed in support of the *Draft EIR* has serious errors of omission and commission that violate the generally accepted standards of practice that apply to this type of economic analysis. Because of these errors, the report does not provide a reliable basis for understanding the full potential economic consequences of each the five alternatives the *Draft EIR* considers. It also does not fully depict the differences in potential economic consequences among the five alternatives. The various errors are interrelated but, to facilitate our discussion of them, we separate them into these six categories:

- A. **The Analytical Objectives and Approach:** The study's analytical objectives and approach do not follow generally accepted guidelines. The analysts ignored standards and procedures developed by the California Department of Water Resources specifically for this type of economic analysis. The resulting analysis is flawed and incomplete, and, hence, it provides decision-makers and stakeholders with biased and unreliable descriptions of the economic outcomes likely to materialize if the Board were to implement any of the alternatives in the *Draft EIR*.
- B. **Baseline:** The economic analysis described in the *Technical Memo* does not compare the alternatives against an appropriate baseline that describes potential future conditions absent implementation of each alternative. Hence, it provides an incomplete, biased representation of the alternatives' economic consequences.

- C. **Management Practices:** The management practices considered in the *Draft EIR* and *Technical Memo* do not reflect the full range of options available to irrigators. They particularly exclude low-cost, high-benefit options. Hence, the *Draft EIR* and *Technical Memo* provide an incomplete and biased representation of the choices that realistically are available to irrigators or the Control Board.
- D. **Costs and Benefits:** The analysis described in the *Technical Memo* incorrectly calculates the costs of adopting practices that improve water quality. The analysis also overlooks major categories of economic costs and benefits that would be affected by the alternatives. Hence, it provides an incomplete, biased representation of the alternatives' economic costs.
- E. **Risk and Uncertainty:** The *Technical Memo* provides no information on how each of the five alternatives would affect the risks and uncertainty facing irrigators and others. Economic analyses of the scale and scope described in the *Technical Memo* typically include analyses of risk and uncertainty as a matter of course. The analysts' failure to comply with this generally accepted standard of practice gives decision-makers and stakeholders incomplete descriptions of the economic significance of the alternatives' outcomes.
- F. **Regional Impacts:** The *Technical Memo* provides a biased and incomplete description of the regional impacts of the alternatives. The conclusions in this section emphasize negative outcomes and ignore the analytical assumptions that overstate costs and the resulting negative outcomes.

We describe each category in the following sections.

### III. ANALYTICAL OBJECTIVES AND APPROACH

The study's analytical objectives and approach do not follow generally accepted guidelines. In particular, the analysts ignored standards and procedures developed by the California Department of Water Resources specifically for this type of economic study. The resulting analysis is flawed and incomplete, and provides decision-makers and stakeholders with biased and unreliable descriptions of the economic outcomes likely to materialize if the Board were to implement any of the five alternatives in the *Draft EIR*.

The *Technical Memo* gives this description of its analytical objectives and approach:

"The analysis of economic (and fiscal) effects for the long-term Irrigated Lands Regulatory Program (ILRP) focuses on addressing the following three analytical questions.

- "How much currently is being spent annually by growers, landowners, and administering entities in the Central Valley on compliance with the ILRP pollution control implementation program?"

- “What are the expected additional costs, both to growers and administering entities, of compliance with the long-term ILRP alternatives?”
- “How is imposition of these additional costs expected to affect the economic viability of farming in the Central Valley? (*Technical Memo* p. 1-1)

By focusing on just these three questions, the study’s authors restricted their analysis to a subset of the economic issues the Board must consider to satisfy its obligations. Hence, the *Technical Memo* cannot provide an adequate basis for the Board’s consideration of these issues. The Board’s responsibilities extend well beyond the narrow set of costs described in the *Technical Memo*. For example, the Board’s website describes its mission as, “To preserve, enhance, and restore the quality of California’s water resources, and ensure their proper allocation and *efficient use* for the benefit of present and future generations.”<sup>1</sup> [emphasis added] The Board can assess the extent to which the *Draft EIR*’s alternatives promote efficient water use only if it weighs all of their relevant economic costs and benefits, not just those that are the focus of the *Technical Memo*.

The Board’s website also lists the strategic goals for California’s nine water boards, including the Central Valley Board. These goals include:

- “Goal 1 - The Boards’ organizations are effective, innovative and responsive.”
- “Goal 2 - Surface waters are safe for drinking, fishing, swimming, and support healthy ecosystems and other beneficial uses.”
- “Goal 3 - Groundwater is safe for drinking and other beneficial uses.”
- “Goal 6 - Water quality is comprehensively measured to evaluate protection and restoration efforts.”<sup>2</sup>

From an economic perspective, the analysis described in the *Technical Memo* is neither effective nor innovative given the study’s limited and incomplete focus relative to the generally accepted guidelines for these types of economic analyses. We describe these guidelines below. For example, the study ignores the economic benefits of the *Draft EIR*’s alternatives on drinking water, fishing, swimming, ecosystems and other beneficial uses. A comprehensive assessment of the changes in water quality brought about by the *Draft EIR* alternatives would include these and other relevant costs and benefits.

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<sup>1</sup> California Water Boards web site  
[http://www.swrcb.ca.gov/centralvalley/about\\_us/water\\_boards\\_structure/index.shtml](http://www.swrcb.ca.gov/centralvalley/about_us/water_boards_structure/index.shtml),  
 accessed September 22, 2010.

<sup>2</sup> California Water Boards web site  
[http://www.swrcb.ca.gov/centralvalley/about\\_us/water\\_boards\\_structure/index.shtml](http://www.swrcb.ca.gov/centralvalley/about_us/water_boards_structure/index.shtml),  
 accessed September 22, 2010.

Specific to the study at issue, the *Existing Conditions Report (Existing Conditions)* referenced throughout the *Technical Memo*, describes the regulatory setting for the economic analysis and notes the purpose of water quality regulations in California:

“Water quality regulation and permitting processes are designed to limit the discharge of pollutants to the environment in an effort to achieve the highest surface water and groundwater quality, protect fish and wildlife and their habitats, and protect other beneficial uses (e.g., domestic and agricultural water supply and recreational resources).” (*Existing Conditions* p. 2-1)

The study’s analytical approach focuses on a narrow subset of the full range of potential economic outcomes of the *Draft EIR’s* alternatives, and, hence, provides limited and biased information regarding the proposed regulations’ overall economic costs and benefits. Board members and others interested in furthering the Board’s goals will find little useful information in the economic analysis described in the *Technical Memo*. This study does not serve these groups well.

Those interested in an unbiased and comprehensive assessment of the economic outcomes of adopting the *Draft EIR* alternatives will find the study’s deficiencies especially troubling, given the fact that the study area includes a large part of California. It also includes the majority of the state’s irrigated land. The study leaves uncounted many of the economic costs and benefits that would occur throughout much of the state with the adoption of the *Draft EIR* alternatives. The *Existing Conditions* describes the geographic extent of the Board’s responsibilities.

“The jurisdiction of the California Regional Water Quality Control Board, Central Valley Region ... extends from the Oregon border to the northern tip of Los Angeles County and includes all or part of 38 of the State’s 58 counties. ... The three basins [major watersheds included in the study area] cover about 40% of the total area of the State and approximately 75% of the irrigated acreage [citation omitted].” (*Existing Conditions*, page ES-1)

An economic study of this magnitude should conform to generally accepted analytical guidelines. Many such guidelines apply here.<sup>3</sup> The California Department of Water Resources’ *Economic Analysis Guidebook (Guidebook)*, is particularly relevant, given the study area and topic. The *Guidebook* notes,

“... the Department of Water Resources (DWR) has a policy that all economic analyses conducted for its internal use on programs and projects be fundamentally consistent with the federal *Economics and Environmental*

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<sup>3</sup> Examples include: California Department of Water Resources. 2008. *Economic Analysis Guidebook*, January; U.S. Army Corps of Engineers. 1983. *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*. March – and 2009 Draft Update; U.S. Environmental Protection Agency. 200. *Guidelines for Preparing Economic Analyses*. EPA 240-R-00-003. September.

*Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G) ...*

“It is also DWR policy to adopt, maintain, and periodically update its own Economics Analysis Guidebook, which is consistent with the P&G but can also incorporate innovative methods and tools when appropriate.”

“*The Economic Analysis Guidebook (Guidebook)* was developed to assist DWR economists in performing economic analyses ...” (*Guidebook*, p. vii)

Comparing the approach described in the *Technical Memo* with the *Guidebook's* recommended approach shows the extent of the study's analytical deficiencies. For example, the *Guidebook* describes generally accepted methods of conducting economic analyses of public policies that affect water. The *Guidebook* describes three methods of economic analysis (*Guidebook* p. 12):

- A cost-effectiveness study identifies the least cost method of achieving the stated goals. The analysis in the *Technical Memo* is not a cost-effectiveness analysis because, as the *Memo* states, the analysis did not include information on the effectiveness of the management practices in the *Draft EIR* alternatives.
- A benefit-cost (B-C) analysis compares the social benefits of a proposed action with the social costs. The economic analysis at issue is not a B-C analysis because it considered only a subset of relevant costs and benefits. This narrow focus yields a biased and incomplete description of the direct or initial economic outcomes of adopting the *Draft EIR* alternatives.
- A socioeconomic impact (SI) analysis describes a broader set of impacts than a B-C study because it considers regional or indirect impacts in addition to direct benefits and costs. Given that an SI analysis is more comprehensive than a B-C analysis, the economic analysis in the *Technical Memo* falls far short of the generally accepted standards for SI analyses.

The approach described in the *Technical Memo* does not satisfy the *Guidebook's* standards. The *Technical Memo's* description of analytical methods also lacks foundation or citation to relevant economic literature that supports the approach.

## IV. BASELINE CONDITIONS

The *Technical Memo* does not compare the alternatives against an appropriate baseline that describes potential future conditions absent implementation of each alternative. Hence, it provides an incomplete, biased representation of the alternatives' economic consequences.

Generally accepted standards applicable in this context include establishing a baseline against which analysts compare the economic outcomes of policy alternatives. Analysts calculate the amount of economic change attributed to a policy by comparing economic conditions that would result with the policy against baseline economic conditions. A properly defined baseline takes into

account economic changes that will occur for reasons other than the policy alternative. Analyses that lack a baseline, or use an improperly defined baseline, yield biased results because costs or benefits that would have otherwise occurred are mistakenly attributed to the policy alternative. The *Guidebook* describes the importance of establishing a baseline using a *with* and *without* analytical approach.

“The objective of economic analysis is to determine if a project represents the best use of resources over the analysis period ...:

The test of economic feasibility is passed if the total benefits that result from the project exceed those which would accrue without the project by an amount in excess of the project costs. It is important that the comparison be *with* and *without* rather than *before* and *after* because many of the after effects may even occur without the project and can thus not properly be used in project justification. ...”

(*Guidebook* p. 5)

The *Technical Memo* lacks a clear and concise description of baseline conditions. The available information indicates that analysts did not control for factors other than the *Draft EIR's* alternatives that can affect irrigators' costs of managing water quality. For example, the analysis incorrectly attributes costs of management practices previously implemented to the future costs of adopting the *Draft EIR's* alternatives. This overstates the costs of adoption.

“Although Alternative 1 represents the continued implementation of current Central Valley Water Board policies, limited information was available to determine the extent of management practice implementation to date. Further, the existing conditions information used as a baseline for analysis dates from the early 2000s. As a result, changes from Alternative 1 relative to existing conditions do not capture implementation that has already occurred at the time of this report, and thus likely overstate the impacts of further implementation of Alternative 1.” (*Technical Memo* p. 1-2)

The analysis also incorrectly attributes adoption costs to the *Draft EIR's* alternatives in cases where growers adopt management practices for reasons other than the alternatives. The authors recognize the importance of accounting for costs attributable to other factors:

“Existing conditions corresponds to the level of water quality management practices that are in the baseline. It is acknowledged that most practices are not implemented to improve water quality but rather to provide for another agronomic or economic need. ... Therefore adjustments were made to best capture costs attributable only to improvements in water quality. ....” (*Technical Memo* p. 2-2)

Here they describe the adjustment:

“Potential cost savings or other benefits from the irrigation system changes also were considered. These included estimates of savings in grower’s costs for water, fertilizer, and labor and revenue increases resulting from improved crop yield and quality. These benefits were subtracted from the implementation cost of the irrigation system or management changes, so the analysis considered only the net cost to growers of implementing a change.”  
(*Technical Memo* p. 3-1)

This “adjustment,” however, ignores the fact that the management practices at issue were adopted for reasons *other than* the *Draft EIR* alternatives. Such changes belong in the baseline conditions and not the *Draft EIR* alternatives. The authors provide no citations to economic literature or other relevant sources that support such an adjustment. The resulting adjusted costs overstate the true costs of the alternatives.

Our critique of the *Technical Memo’s* treatment of the alternatives’ costs (see below) notes that the analysts selected some of the most expensive management alternatives available. Assuming for the sake of argument that we agree with the described adjustment— which we do not— using more realistic adoption costs would yield lower or negative “net” costs of adopting the practices in the *Draft EIR* alternatives.

Had the analysts used a *with vs. without* analytical approach they could have isolated the extent to which irrigators adopt management practices that have water-quality impacts, but were adopted for other reasons. For example, they may change irrigation practices from flood to drip or sprinkler systems not to improve water quality but to reduce their fertilizer and pesticide costs. The analysts acknowledge the likelihood that irrigators make such changes for purposes other than to accomplish the Board’s water-quality goals. But they then do not account for these changes in a manner that yields an accurate, unbiased representation of the costs of the alternatives being considered by the Board.

A similar conclusion applies to the *Technical Memo’s* treatment of various laws that affect irrigators’ behavior. Chapter 2 of the *Existing Conditions* report, for example, notes that the Federal Endangered Species Act (ESA) could affect future irrigation practices. The *Technical Memo*, however, makes no provision for the potential impacts of the ESA or other laws and regulations on irrigation methods and costs. Instead, it attributes all future irrigation changes and costs to the *Draft EIR* alternatives. A *with vs. without* analytical approach would acknowledge that regulations other than the *Draft EIR* alternatives can influence irrigators’ practices and costs in the future.

## V. MANAGEMENT PRACTICES

The management practices considered in the *Draft EIR* and *Technical Memo* do not reflect the full range of options available to irrigators. Instead, they consider seven practices that emphasize high-cost options and exclude low-cost, high-

benefit options. Hence, the *Draft EIR* and *Technical Memo* provide an incomplete and biased representation of the choices that realistically are available to irrigators and the Control Board.

The *Technical Memo* identifies the management practices in the analysis but provides no justification for how the analysts selected these practices.

“Although a wide variety of management practices could be used to reduce impacts on water quality, this suite [the seven practices selected and listed in Table 2-1] of management practices is deemed sufficient from a programmatic point of view to encompass all flow path and management needs that must be addressed to reduce impacts on water quality.” (*Technical Memo* p. 2-2)

The *Technical Memo* provides no assessment of how these practices were “deemed sufficient” for the analysis. More fundamentally, the authors provide no discussion of selection criteria they applied to reach their conclusion. Without this information, the Board, other decision-makers and stakeholders cannot assess the appropriateness of the selected practices. This is especially important given that, as we describe in our critique of adoption costs, the selected practices are some of the most expensive available.

As described in the *Existing Conditions* report, over 100 practices exist with proven potential to improve water quality.

“This section provides a summary of the management and hardware actions that have been proven to provide a water quality benefit. ... The single most comprehensive reference for individual management practices is the NRCS [citation omitted]. This website lists over 100 proven practices, that provide information for physical actions that apply to several of the management measure categories. Although the NRCS guides were developed for general use, they contain sufficient guidance for local implementation.” (*Existing Conditions* p. 5-5)

Without information on the “deemed sufficient” selection criteria, the choice of management practices appears arbitrary, and lacks analytical rigor.

The *Technical Memo* also provides no information on the effectiveness of the management practices in the analysis.

“Management practices were assumed to be 100 percent effective.” (*Technical Memo* p. 2-1)

Assuming complete effectiveness strays outside the bounds of rational expectations. The analysts make this assumption without support or citation to relevant studies. The assumption thus appears arbitrary and devoid of analytical veracity.

Given these considerations, the standard analytical approach applicable to the *Draft EIR* and *Technical Memo* would entail describing the full range of options before the Board and their respective consequences. The *Draft EIR* and *Technical Memo* exhibit neither of these characteristics. Consequently, they do not (and cannot) provide a reliable basis for the Board to make decisions that will satisfy its obligations to “preserve, enhance, and restore the quality of California’s water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations”.<sup>4</sup>

## VI. COSTS

The *Technical Memo* incorrectly calculates the costs associated with irrigators adopting practices that reduce their impacts on water quality. The analysis also overlooks major categories of economic costs and benefits that the *Draft EIR* alternatives would affect. Hence, it provides an incomplete, biased representation of the alternatives’ overall economic costs.

The *Technical Memo* describes that the management practices in the *Draft EIR* alternatives are “relatively expensive.” The report provides no information about the criteria the authors used to reach this judgment, no evaluation of the extent to which the projects included in the *Draft EIR* are more expensive than those excluded from it, and no justification for why those who constructed the alternatives selected the more expensive projects. The inclusion of more expensive projects and exclusion of less expensive ones has an important impact on the economic analysis and biases its conclusions, insofar as the large majority of the acres in the study produce field, forage, grain, and other crops whose value is lower than crops in other categories. By selecting more expensive projects, the analysis also increases the number of acres that growers take out of production as operating costs increase.

“Some key analytical assumptions and data limitation contributed to the relatively large estimated change in acreage.

“More importantly, management practices assumed to be implemented for the analysis are relatively expensive, especially for lower-revenue crops ... As a result, crops such as irrigated pasture, hay, and some small grains would have difficulty supporting such costs. The analysis indicated large reductions in their acreages in the regions where those costs were incurred.”

“Irrigated pasture, hay, and other field crops ... accounted for more than 95 percent of the acreage reductions shown in Table 3-7. To the extent growers of these crops could identify less-expensive ways to comply, such as avoiding

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<sup>4</sup> California Water Boards web site  
[http://www.swrcb.ca.gov/centralvalley/about\\_us/water\\_boards\\_structure/index.shtml](http://www.swrcb.ca.gov/centralvalley/about_us/water_boards_structure/index.shtml),  
accessed September 22, 2010.

the use of certain pesticides, the acreage and revenue impacts would be substantially reduced.” (*Technical Memo* p. 3-8, 3-9)

“... acreage revenue and net income changes were *relatively sensitive to the implementation cost assumptions*. The same general conclusion applies to the results for all alternatives. If growers can identify and implement more cost-effective methods to comply with ILRP requirements, impacts on production and income can be reduced substantially, especially for lower-value field and forage crops.” [emphasis added] (*Technical Memo* p. 3-19)

With this conclusion, the authors, themselves, acknowledge the underlying flaws and biases in the *Technical Memo*. These characteristics render it and its findings unsuitable as a basis for decision-making by the Board, or any other entity.

The analysts who conducted the economic work described in the *Technical Memo* apparently ignored existing models that describe economic outcomes of changes in water quality. The *Guidebook* describes two such models specific to water-quality assessments in California:

“The maintenance of good water quality is an important project objective [and the focus of the study at issue in our critique]. The State Water Resources Control Board (SWRCB) and the Metropolitan Water District of Southern California (MWD) in cooperation with the US Bureau of Reclamation (Bureau) and other agencies have developed economic models to assess the impacts of changes in water quality.” (*Guidebook* p. 37)

- SWRCB Lost Beneficial Use Value Calculator estimates the lost benefits attributed to diminished water quality.
- MWD Salinity Economics Impacts Model estimates regional economic impacts of changes in salinity of water sold by the Metropolitan Water District of Southern California. (*Guidebook* p. 37)

The analysis in the *Technical Memo* also overlooks major categories of costs and benefits that the *Draft EIR* alternatives will affect. Given the Board’s mission and goals (which we cite above) regarding efficient use of water and protecting beneficial water uses, this omission constitutes a fatal deficiency in the study.

Improving water quality may increase irrigators’ costs relative to baseline conditions – though, as we note above, the analysis in the *Technical Memo* grossly overstates these costs – but it will also generate economic benefits for other water users by lowering the costs they incur from water polluted by farm runoff. The current analysis ignores these benefits. For example, improving water quality can reduce filtration costs for downstream users. Recreational-water users, including sport and commercial fishing interests, can also benefit from improved water quality. Board members and other interested parties will find no information in the *Technical Memo* on these economic benefits of the *Draft EIR* alternatives.

Readers can look no further than the Central Valley Region’s own Water Quality Control Plan (Plan) for information on the significance of beneficial water uses. Chapter II of the Plan describes these uses.

“Beneficial uses are critical to water quality management in California. State law defines beneficial uses of California’s waters that may be protected against quality degradation to include (and not be limited to) ‘...domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources of preserves’ [citation omitted]. Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning.”<sup>5</sup>

The *Technical Memo* provides a biased and incomplete assessment of the economic outcomes of adopting any of the *Draft EIR* alternatives. This is especially true regarding the economic benefits of the alternatives. Consideration of these benefits is essential, given the “primary goal” of water quality planning, as described by the Central Valley Region. Because of these flaws, Board members cannot not rely on the analysis and conclusions in the *Technical Memo* for a balanced, comprehensive, or informed assessment of the relevant economic outcomes of the *Draft EIR* alternatives.

## VII. RISK AND UNCERTAINTY

The *Technical Memo* provides no information on how each of the five alternatives would affect the risks and uncertainty facing irrigators and others. Economic analyses of the scale and scope described in the *Technical Memo* typically include analyses of risk and uncertainty as a matter of course. The analysts’ failure to comply with this generally accepted standard of practice gives decision-makers and stakeholders incomplete descriptions of the economic significance of the alternatives’ outcomes.

The *Guidebook* describes the importance of accounting for risk and uncertainty in economic analyses of policies that affect water management.

“Although it is impossible to account for all sorts of uncertainty and risk in a planning study, there are techniques that can be used to acknowledge their existence and to assign some quantitative importance to them in the analysis. These techniques include ....” (*Guidebook*, p. A-17)

The economic analysis described in the *Technical Memo* violates generally accepted standard by not assessing how the *Draft EIR* alternatives affect the risks and uncertainty that irrigators and other water users face.

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<sup>5</sup> California Regional Water Quality Control Board Central Valley Region. 2009. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region Fourth Edition. Page II-1.00.

## VIII. REGIONAL IMPACTS

The *Technical Memo* provides a biased and incomplete description of the regional impacts of the alternatives. The conclusions in this section emphasize negative outcomes and ignore the analytical assumptions that overstate costs and the resulting negative outcomes.

In spite of the fact that the analysis described in the *Technical Memo* overestimates the costs of adopting the alternatives in the ILRP, Alternatives 3, 4, and 5 yield *net positive* impacts on employment and personal income. According to the *Technical Memo*, total personal income and total regional employment would *increase* with the adoption of Alternatives 3, 4, or 5. (*Technical Memo* p. 4-35)

The Conclusions subsection of the Regional Impacts portion of the *Technical Memo* describes reasons why the analysis likely underestimated the net adverse effects of the alternatives, which overstates the positive impacts on employment and personal income. A more balanced summary of this portion of the analysis would also comment on the reasons why the analysis likely overstates – perhaps significantly – the estimated costs of the alternatives.

The analysts present their IMPLAN assessment of regional impacts without disclosing the limitations of these types of multiplier models, or the implications of these limitation for their conclusions. For example, IMPLAN and other input-output models assume a static economy, or an economy that cannot respond to economic forces and trends, e.g., increasing market pressure to improve irrigation efficiency by switching from flood to sprinkler irrigation. In this example, the IMPLAN limitation compound the deficiencies associated with the study's baseline, which we describe above.

## MARK BUCKLEY

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Ph.D., Environmental Studies, University of California, Santa Cruz  
B.A., Economics, Davidson College

**Mark Buckley** joined ECONorthwest in 2008. Dr. Buckley develops economic models and analytical methods for planning and behavior involving water resources and land use. In particular, he combines microeconomic and game-theoretic techniques with competence in the biophysical aspects of natural systems. Dr. Buckley specializes in bringing a disaggregated behavioral approach to economic analysis so as to capture the important differences and interactions that drive demand for natural resources. His work includes assessment of cost-effective approaches to restore Puget Sound; landscape-scale restoration in the Sacramento River valley, coordinating agriculture with development and habitat goals along the Skagit River, water planning with reclaimed water for King County, Washington; cost and risk management on large wildfires for the U.S. Forest Service, development of tools for communities to select appropriate water portfolios in California, sustainable forestry and carbon accounting for public and private forests, levee setbacks for urban rivers, and water quality trading in the Lake Tahoe basin. Buckley's research has been published in peer-reviewed journals and edited books and he is an adjunct professor for environmental economics at Portland State University.

### **Environmental Policy and Resource Management**

#### **Restoration and Allocation of Water Resources**

- Described the economic benefits and costs associated with producing and using reclaimed water and worked with King County to incorporate this information into a benefit-cost analysis of potential reclaimed water projects, King County, Washington
- Designed and implemented interviews and surveys to identify obstacles and opportunities for participation in stormwater incentive programs and identified the costs and benefits to individuals that encourage or discourage participation for Portland's Bureau of Environmental Services
- Analyzed the costs and benefits of various options for restoring Puget Sound, including low-impact development projects, and assessed the feasibility of various market-based mechanisms for project evaluation and implementation
- Analyzed feasibility and developed mechanism characteristics for water quantity trading in the Yakima River basin, Washington
- Analyzed the potential economic consequences of public investments in existing and proposed irrigation systems for the Montana Department of Natural Resources
- Assessed impacts of lower levels for Lake Roosevelt and increased downstream flows in the Columbia River
- Compiled and analyzed costs and benefits of pollutant reduction opportunities for Lake Tahoe clarity restoration efforts

- Surveyed and interviewed farmers and restoration project managers in the Sacramento River Conservation Area. Built decision and behavior models to identify strategies and outcomes for collaboration on landscape scale ecological restoration
- Designed tools and techniques to help coastal communities compare the costs and benefits of water supply options, including desalination and water recycling and compared the equity and distribution of options
- Estimated the costs and benefits of various options for use of reclaimed water for King County, Washington
- Estimated costs and benefits influencing individual decisions by farmers to participate or not in watershed-scale water quality management

### **Environmental Markets**

- Analyzed options for farmers to sell ecosystem services in the Skagit River watershed
- Estimated revenue potential from carbon and other ecosystem service markets for public forests in Clackamas County, OR
- Conducted feasibility study, case study comparisons, and program design for water quality crediting and trading to support the Lake Tahoe TMDL
- Analyzed market-based mechanisms and opportunities for disaggregated and behavioral approaches to restoring Puget Sound
- Assessed financial opportunities for multi-credit sales of single-site conservation efforts addressing wetland, water quality, habitat, and coverage markets
- Assessed feasibility of revenues from publicly-owned forests via environmental markets for Clackamas County, OR
- Assessed potential for farmers participate in ecosystem service-based markets in Skagit County, WA

### **Forest Management**

- Assessed the public and private costs and benefits for public forest sustainable certification and ecosystem market participation for Clackamas County, OR
- Assembled and lead the Secretary of Agriculture's Large Wildfire Independent Review on cost and risk, investigating tools, behaviors, and incentives for improving federal fire suppression efforts
- Identified market and non-market costs and benefits for possible logging strategies on publicly owned watershed forest for city of Santa Cruz, California

### **Endangered Fish and Wildlife**

- Estimated cost of offsetting impact of once-through cooling operations for power plants on California's central coast. Target habitats include estuaries and near-shore marine with endangered bird and marine mammal species
- Identified types of impacts of potential endangered species establishment on private lands. Provided strategies for species restoration compatible with private land use

## **Sustainable Management of Ecosystems and Communities**

- Assessed the drivers for sustainability of agriculture and developed indicators in Skagit County, WA
- Analyzed the economic impacts of the effects of a proposed energy transmission line through Montana and Idaho
- Designed database tool for estimating costs of monitoring activities for indicators and desired conditions in the Lake Tahoe basin
- Analyzed costs and benefits influencing cooperation decisions for private landowners for invasive plant control programs

## **Economics of Regulations**

- Operated simulation models and conducted econometric analyses to estimate firm-specific impacts of Clean Air Act regulations on the iron and steel industry
- Estimated the costs of a business-as-usual approach to climate change for Washington, Oregon, and New Mexico.
- Estimated national costs of Clean Water Act compliance net of state and local water quality requirements
- Operated simulation models and conducted econometric analyses to estimate firm-specific impacts of Clean Air Act regulations on the reinforced plastics industry

## **Complex Systems Analysis**

- Developed indicators and model mechanisms for Alternative Futures model of Skagit County, WA
- Created agent-based models of restoration activities in agricultural landscapes to identify successful spatial strategies for project site selection
- Developed agent-based models to simulate learning and criminal behavior based on nearby activity
- Collaborated on spatially-explicit agent-based models of cooperation and competition for limited resources

## **Expert Testimony and Support**

### **Economic Damages to Natural Resources**

- Estimated value of damages to ecosystem services via Habitat Equivalency Analysis for Superfund mining site
- Estimated the costs of damages to fisheries and estuary ecosystem from coastal power plant expansion in Moss Landing, California
- Conducted economic analyses to compare damages of proposed power plant expansion to benefits of proposed restoration activities for Morro Bay, California, including use and improvement of standard Habitat Equivalency Analysis techniques

## Publications

- Buckley, M. and K. Holl. Forthcoming. "Tools from Game Theory for Improving Ecological Restoration Outcomes." *Social Dimensions of Ecological Restoration*, D. Egan, E. Hjerpe, J. Abrams (eds). Island Press.
- Buckley, M. and E. Crone. 2008. "Negative Off-Site Impacts of Ecological Restoration: Understanding and Addressing the Conflict." *Conservation Biology*. 22(5): 1118-1124.
- Buckley, M. 2008. "Ecosystem Service Trading Markets: An Important Conservation Tool." *Conservation Science Institute Quarterly*.
- Buckley, M. 2007. "The Problem of Restoring Natural Systems Among Social Systems: Strategic Considerations and the Sacramento River." Ph.D. Dissertation. University of California, Santa Cruz.
- 2007. Encyclopedia entries for Cost-Benefit Analysis, Efficiency, Riparian Rights, and Nash Equilibrium. *Encyclopedia of Environment and Society*. P. Robbins (ed). Sage: Thousand Oaks, CA.
- Langridge, S.M., M. Buckley, K. D. Holl. 2007. "Strategies for overcoming obstacles to restoring natural capital: Large-scale restoration on the Sacramento River". *Restoring Natural Capital*, J. Aronsen, S. Milton, J. Blignaut (eds). Island Press.
- Buckley, M. and B. Haddad. 2006. "Socially Strategic Restoration: A Game-Theoretic Analysis of River Restoration." *Environmental Management* 38(1): 48-61.
- 2005. "Economic Analysis of Environmental Impacts of Cooling Operations and Proposed Restoration Mitigation for Morro Bay Power Plant." Prepared for Earthjustice Legal Defense Fund.
- Buckley, M., M. Cloutier, S. Daley, V. Dossetti, T. Gieseke, and D. Rojas. 2005. "Criminal's Dilemma: Modeling Criminal Decision-making as a Complex System." New England Complex Systems Institute. Working Paper. [www.necsi.org](http://www.necsi.org).
- Buckley, M., D. DeLaurentis, H. Goldstone, K. Jeev, D. Orlando, and D. Whitney. 2005. "Emergence of Cooperation in an Agent-Based Predator-Prey Model." New England Complex Systems Institute. Working Paper. [www.necsi.org](http://www.necsi.org).
- Buckley, M. 2004. "Strategic Restoration: Game Theory Applied to the Sacramento River Conservation Area". Proceedings of the 16<sup>th</sup> International Conference of the Society for Ecological Restoration. Victoria, BC.
- Haddad, B, M. Buckley, A. Richards, and J. Scorse. 2001. "Economic Issues and Nonmarket Values." Watershed Resources Management Plan. Prepared for the City of Santa Cruz Water Department.
- Van Houtven, G., T. Bondelid, M. Buckley, and R. Figueroa. 1999. "National Surface Water Toxics Study – Status Report on Model Development." Prepared for the U.S. Environmental Protection Agency.
- Brunnermeier, S., M. Buckley, and G. Van Houtven. 1999. "Cost Assessment of Clean Water Act." Prepared for the U.S. Environmental Protection Agency, Office of Water.
- Bingham, T., B. Depro, M. Buckley. 1999. "Economic Impact Analysis for Air Pollution Regulations on the Reinforced Plastics Industry." Prepared for the U.S. Environmental Protection Agency.

## Presentations

- Buckley, M. 2010. "Identifying and Estimating Economic Benefits from Antidegradation - the Clean Water Act." Invited. River Network Annual Conference. Snowbird, UT.
- 2010. "Economics and Uncertainty for Restoring Ecosystem Services in Puget Sound." Society for Ecological Restoration - Northwest. Tukwila, WA.
  - 2009. "Markets and Incentives for Restoring Water Quality in Puget Sound." 2009 Annual Water Resources Conference. American Water Resources Association. Seattle, WA.
  - 2009. "Potential Economic Costs of a Business-as-Usual Approach to Climate Change: Implications for Water Resources in Three Western States." 2009 Annual Water Resources Conference. American Water Resources Association. Seattle, WA.
  - 2009. "Water Quality Trading as a Tool for Puget Sound Recovery: Lessons, Obstacles and Opportunities." 2009 Puget Sound Georgia Basin Science Conference.
  - 2009. "Water Resources and Markets for Ecosystem Services." Invited. Oregon State University.
  - 2009. "Valuing Ecosystem Services from Beaver Restoration." Invited. Working Beavers Conference. Liberty Lake, WA.
  - 2008. "Restoring Puget Sound with an Incremental Market-Based Approach." A Conference on Ecosystem Services. Naples, FL.
  - 2008. "Instream Value Considerations for Watershed Restoration." Invited. Instream Values Symposium, Washington State Department of Ecology. Lacey, WA.
  - 2007. "Addressing Risk, Uncertainty, and Behavioral Effects to Inform the Viability and Design of a Water Quality Trading Program for Lake Tahoe." Truckee River Headwaters Symposium: Headwaters to Terminus. Reno, NV.
  - 2007. "Strategic Interactions Across Property Boundaries in Invasive Plant Control and Implications for Cooperation." Invited Plenary. California Invasive Plant Council Meeting. San Diego, CA.
  - 2007. "Restoring Natural Systems Among Social Systems: Strategic Considerations from the Sacramento River." Ecological Society of America Meeting. San Jose, California.
  - 2007. "Increasing the Ecological Gains from Water Quality Crediting and Trading: Disaggregated Strategic Responses and an Application to the Lake Tahoe Basin." U.S. Society for Ecological Economics Biannual Conference, New York, NY.
  - 2007. "Ecological Restoration and Local Landowner Responses: a Survey and Game Theory Simulations From the Sacramento River." 7th Meeting on Game Theory and Practice Dedicated to Energy, Environment and Natural Resources. GERAD, University of Montreal, Montreal, QC.
  - 2007. "Negative Off-Site Impacts of Ecological Restoration: Understanding and Avoiding Conflict." The Nature Conservancy Sacramento River Science Conference, Sacramento, CA.
  - 2006. "Local Scale Game-Theoretic and Landscape Scale Agent-Based Models of Social Conflict for Restoration of the Sacramento River." CALFED Science Conference, Sacramento, CA.
  - 2006. "A Comprehensive Economic and Environmental Framework Tool to Fully Assess the Benefits and Costs of Desalination." CALFED Science Conference, Sacramento, CA.

- 2005. "Local Strategic Interactive Models and Landscape Scale Agent-Based Simulation for Conservation and Restoration Planning." American Water Resources Association Conference. Seattle, WA.
- 2005. "Extending local interactive models to the landscape scale using agent-based simulation for the Sacramento River Conservation Area." U.S. Society for Ecological Economics Biannual Conference, Tacoma, WA.
- 2005. "Socially Strategic Restoration: Survey Data and Decision Models for the Sacramento River Conservation Area." Sacramento River Conservation Area Technical Advisory Committee. Invited.
- 2005. "Distribution of Weeds in an Agricultural-Natural Landscape Mosaic: Are Restored Forests Bad for Farmers?" U.S. Department of Agriculture Managed Ecosystems Conference. Washington, DC. Invited.
- 2004. "Farmers and Restoration: Strategic Decision Models Using Survey Data for the Sacramento River Conservation Area." CALFED Science Conference, Sacramento, CA.
- 2004. "Strategic Restoration." Northern California Environmental Economics Conference, CSU-Chico. Invited.
- 2004. "Economics, Games, and Policy Implementation." PrecipNet Climate Change Conference. Santa Cruz, CA. Invited.
- 2004. "Contingent Decision-Making and River Restoration." International Society for Ecological Economics Biannual Conference, Montreal, QC.
- 2004. "Strategic Restoration: Applying Game Theory to Conflict over Restoration on the Sacramento River." International Society for Ecological Restoration, Victoria, BC.
- 2003. "A Game-Theoretic Model of the Sacramento River Restoration." U.S. Society for Ecological Economics Biannual Conference, Saratoga Springs, NY.

## EDWARD MACMULLAN

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M.S. Agricultural Economics and International Agricultural  
Development, University of California at Davis  
B.S. Soil Science, Oregon State University

Edward MacMullan has been a senior economist with ECONorthwest since 1990. His areas of experience include litigation support for antitrust, intellectual property, right-of-way, and healthcare topics, and assessing the economic effects of public policies that affect natural-resource management. Before joining ECONorthwest he studied as a Fulbright Scholar at the Energy Studies Unit of the University of Strathclyde where he assessed the socioeconomic impacts of energy development projects in the highlands and islands of Scotland.

His recent consulting and litigation-support work includes calculating restoration costs at mining Superfund sites, assessing alleged anti-trust behavior in markets for hospital and health-care services, reviewing the literature on the economics of Low-Impact Development, conducting an economic benefit-cost analysis of greenroofs, assessing the economic effects of violations of trade secrets on manufacturing firms; studying the impacts of approving a hospital's Certificate-of-Need application on market concentration; evaluating municipal right-of-way fees challenged by telecommunications firms; and studying the economic factors associated with avoiding and complying with regional water quality regulations and county permitting processes.

### **Right-of-Way Studies**

- Conducted a valuation of a right-of-way occupied by a discharge pipeline from the Georgia Pacific facility in Toledo for the City of Newport
- Submitted an affidavit in support of the fee that the City charges to access the municipal right-of-way
- Analyzed the economic issues of telecommunications firms' challenge, under the Telecommunications Act of 1996, regarding Portland's franchise-fee agreements for right-of-way use, City of Portland
- Evaluated the fees that a city in California charged a telecommunications company to access the city-owned right-of-way, private client
- Reviewed economic issues specific to the Telecommunications Act of 1996 regarding the fees charged to telecommunications firms for right-of-way, City of Huntsville, Alabama
- Evaluated right-of-way fees that were challenged by a telecommunications company under the Telecommunications Act of 1996, City of Tucson, Arizona
- Provided economic analysis regarding the economic value of municipal rights-of-way and use of the rights-of-way by a telecommunications company, City of Portland, Oregon
- Analyzed the economic damages from trespass outside a right-of-way in a New Mexico Pueblo during the construction of a petroleum production pipeline, Kelly, Haglund, Garnsey & Kahn

## **Economic and Socioeconomic Impact Analysis**

- Reviewed the market for workers' compensation insurance in Oregon.
- Assessed the financial implications of switching from franchise fees to a gross-revenue tax on telecom services provided in the municipalities.
- Conducted an economic benefit-cost comparison of a conventional roof and a greenroof on a commercial building, for the City of Portland.
- Assessed the impacts of greenstreets in the Puget Sound on property values for adjacent properties.
- Analyzed the operations and financial performance of a timber company's cogeneration facilities and determined the profits earned by the company as a result of unfair competition stemming from violations of air-quality regulations
- Described the economic aspects of zoning incentives to protect natural resources, City of Corvallis, Oregon
- Conducted a market analysis for industrial products in regional and world markets, private client
- Evaluated the socioeconomic impacts of hospitals on rural economies, Mercy Medical Center
- Conducted a cost-benefit analysis of energy efficiency and renewable energy resources, Alaska Coalition
- Calculated the economic impacts of restricting snowmobiles from several national parks, The Wilderness Society
- Analyzed the potential economic impacts of designating a national monument on land currently managed by the Siskiyou National Forest and Bureau of Land Management, Siskiyou Educational Project
- Reviewed an economic impact assessment of a submarine cable and terminus at San Luis Obispo, California, North State Resources
- Assessed the socioeconomic impacts of the proposed Pelican Butte ski area, Winema National Forest
- Evaluated the economic consequences of new restrictions on Alaska's fishing industry, Earth Justice
- Analyzed the Interior Columbia River Basin Ecosystem Management Project to ensure it internalized the externalities of resource-extraction industries on federal lands in eastern Washington, eastern Oregon, and Idaho, W. Alton Jones Foundation

## **Microeconomic Analysis**

- For attorneys representing plaintiffs in a class action lawsuit, performed an analysis of the economic aspects of alleged violations by mortgage brokers of consumer truth-in-lending practices.
- For attorneys representing plaintiffs in a class action lawsuit, assessed the economic aspects of alleged inflated home appraisals.

- Determined the appropriate sample size required to confirm key characteristics about a phone pole population.
- Conducted an economic evaluation of a property at issue in a claim against a state.
- Provided economic analysis regarding litigation over a city's method of collecting user fees for stormwater services.
- Evaluated the financial feasibility of a proposed destination resort in Central Oregon on the Gould and Cline Buttes
- Calculated the plaintiff's lost profits and reasonable royalty in a patent infringement case, Schwabe, Williamson & Wyatt
- Studied the factors that determine the market price for grass seed grown in Oregon, private client
- Determined a royalty rate as compensation for economic damages in a breach of contract lawsuit, Schwabe, Williamson & Wyatt
- Provided economic analysis of a patent infringement claim regarding suspension systems for bicycles, Schwabe, Williamson & Wyatt
- Analyzed the national market for cookware items and the financial performance of firms that participate in the market, Schwabe, Williamson & Wyatt
- Evaluated the market for professional manuals used by attorneys and legal assistants in Oregon, private client
- Calculated the economic impacts associated with a proposed petroleum-products pipeline across Texas, George & Donaldson
- Assessed the economic effects associated with a proposed petroleum-products pipeline in Washington state, Schwabe, Williamson & Wyatt
- Determined the economic consequences of a breach of contract associated with a computer software program, Moore & Orr
- Calculated uncompensated expenses and lost profits associated with a contract dispute between a manufacturer of video lottery terminals and the Oregon State Lottery, Davis Wright Tremaine
- Analyzed lost profits from various patent infringement cases, Kolisch, Hartwell, Dickinson, McCormack, & Heuser

#### **Antitrust Economics**

- Assessed potential anti-trust behavior in the market for acute care and tertiary medical services.
- Assessed economic aspects of alleged patent infringement of computer toolbar technology.
- For the plaintiffs, assessed economic damages to patent holders of alleged patent infringement in the power equipment market
- Addressed the economic issues of class certification and damage calculations related to alleged antitrust violations in the market for residential lots

- Studied the market for MRI services in the Boise area and assessed alleged anticompetitive behavior in this market
- Analyzed claims of misappropriation of trade secrets, intentional interference with economic relations, and breach of contract, Schwabe, Williamson & Wyatt
- Analyzed the market for diagnostic-imaging services in the Portland metropolitan area, Haglund, Kirtley, Kelley & Horngren
- Calculated the economic impacts of alleged price fixing in the market for agricultural commodities, Tonkon, Torp, Galen, Marmaduke & Booth
- Provided economic consultation in preparation for litigation regarding workers' compensation insurance, private client
- Assessed the economic consequences of price discrimination and other antitrust behavior in the wholesale market for petroleum products in Cordova, Alaska, Condon Shoup

### **Economics of Health Care**

- Evaluated how the approval of a hospital's Certificate-of-Need application would influence market concentration, Thorp Purdy Jewett Urness & Wilkinson
- Studied economic aspects of defining a hospital's service area as it applied to Oregon's Certificate-of-Need requirement for new or relocated hospitals, Thorp Purdy Jewett Urness & Wilkinson
- Identified the relevant markets for hospital services and evaluated the extent to which hospitals exercised market power over insurance firms and competing hospitals, Schwabe, Williamson & Wyatt
- Studied the market for home intravenous care in preparation for a possible antitrust lawsuit, Watkinson Laird Rubenstein Lashway & Baldwin
- Provided economic consultation on the market for healthcare services in Southern Oregon, Schwabe, Williamson & Wyatt
- Evaluated damage claims, researched prices for hospital services, and provided advice on the distinction between fixed and variable costs, Schwabe, Williamson & Wyatt
- Calculated lifetime medical expenses and lost wages as part of various personal injury and wrongful death lawsuits, private clients
- Assessed the economic impacts of a breach of contract associated with a medical diagnostic technique, Stoel Rives
- Quantified the net present value of lifetime medical services associated with a medical malpractice suit, private client
- Evaluated the growth and discount rates of life care plans, Calkins & Calkins

### **Analysis of Economic Damages to Natural Resources**

- Assessed a construction company's ability to pay civil penalties associated with alleged violations of air-quality regulations.
- Described the economic value of water resources in California.
- Assessed the economic impacts on an oyster grower of the oil spilled from the grounding of the *New Carissa*, Davis Wright Tremaine

- Conducted an economic analysis of the damages stemming from the Wheeler Point fire in central Oregon, Kafoury & McDougal
- Calculated the economic impacts of the Exxon *Valdez* oil spill on Alaskan salmon fishermen, municipal governments, area businesses, and cannery workers, Stoll, Stoll, Berne, Lokting, Shlachter
- Evaluated damage claims by area businesses and property owners affected by a pesticide spill in the Sacramento River, Lieff, Cabraser & Heimann
- Assessed the economic consequences of a chemical spill on the municipality of Superior, Wisconsin, private client
- Determined the economic impacts on area businesses of an oil spill off Huntington Beach, California, Law Offices of Gretchen Nelson
- Evaluated the demand for recreational fishing in the Flathead Lake area of Montana, Montana Attorney General's Office

#### **Public Policy and Government Regulations**

- Calculated the economic damages to a seafood-related business as a result of a license dispute with the State of Washington, private client
- Studied the economic performance of the ski industry in the Lake Tahoe area, the market conditions that affect this sector of the region's economy, and the economic factors associated with avoiding and complying with regional water quality regulations and county permitting processes, California Attorney General's Office
- Provided economic analysis regarding a contract dispute between the City of Eugene, Oregon and a tenant leasing city-owned property, Harrang Long
- Calculated tobacco company profits associated with the consumption of cigarettes by under-age smokers, Attorneys General of Washington, Arizona, and Connecticut

#### **Labor and Welfare Economics**

- Calculated the economic loss resulting from the employment termination of a 56-year-old male, private client
- Quantified the economic loss to a regional bank associated with breach of contract by former employees, Arnold Gallagher Saydack Percell
- Provided economic analysis for wage arbitration with municipal employees, City of Coos Bay, Oregon

#### **Endangered Fish and Wildlife**

- Described the economic effects of designating critical habitat for two endangered species of fish in the Klamath Basin of Oregon and California, U.S. Fish and Wildlife Service
- Critiqued a draft report on the potential economic consequences of designating critical habitat for the Steller's and spectacled eiders, private client
- Evaluated the potential economic impacts of restricting Alaska's groundfishery in critical habitat for the endangered Steller sea lion, private client
- Analyzed the economic consequences of designating critical habitat in California, Oregon, and Washington for the marbled murrelet, U.S. Fish and Wildlife Service

- Assessed the economic effects of an injunction to protect salmon habitat on the Wallowa-Whitman and Umatilla National Forests, private client

### **Forest Resources**

- Prepared a critique of the U.S. Forest Service's estimated demand for timber from the Tongass National Forest, Alaska Rainforest Campaign
- Analyzed the economic consequences on southeast Alaska's economy of reduced timber harvest in the Tongass National Forest, Sierra Club Legal Defense Fund and the Alaska Rainforest Campaign
- Studied the relationships between forested ecosystems and regional economies in Oregon, Alaska, North Carolina, New Hampshire, New Mexico, and Wisconsin, National Science Foundation
- Evaluated the opportunities and threats facing timber-dependent communities affected by logging restrictions on federal land in Washington state, Washington Community Development Department

### **Water Resources**

- Developed an economic model to determine the economic benefits of riparian-restoration projects for Clean Water Services.
- Co-instructed a seminar at Portland State, "USP 505 Evaluating Low Impact Development (LID)," that focuses in part on the economic costs and benefits of managing stormwater by LID and conventional controls
- Calculated the value of ecosystem services that could be degraded by stormwater runoff from expanded urban and commercial developments in the East Butte area of Portland for the City of Portland
- Assisted the City of Portland staff in developing an approach to study the economic benefits and costs of alternative stormwater-management techniques in support of the City's Watershed Plan
- Conducted a review of the literature on the economics of Low Impact Development for Waterkeeper Alliance
- Analyzed the range of economic costs and benefits of projects and policy options affecting water quality and quantity in a Portland, Oregon watershed that drains to the Willamette River, City of Portland
- Described the economic tradeoffs of allowing, limiting, or prohibiting development in significant riparian areas and wildlife habitat in the Portland metropolitan area, Metro
- Developed a handbook on the economic factors associated with relicensing a hydroelectric dam, Hydropower Reform Coalition
- Developed an economic model to determine the net economic benefits of riparian-restoration projects in Oregon, Clean Water Services
- Reviewed the U.S. Army Corps of Engineers' *Final Environmental Impact Statement* on deepening the shipping channel in the Columbia and Willamette Rivers, private client

- Studied the economic issues associated with water management services and the economic implications associated with the federal Endangered Species Act and Clean Water Act, Clean Water Services
- Evaluated the economic impacts of bypassing four federal dams on the Lower Snake River and developed a plan to mitigate the negative consequences of the bypass, Trout Unlimited and Earthjustice
- Determined the direct and indirect economic impacts of economic development projects in the Columbia River Gorge funded by the National Scenic Area Act, Columbia River Gorge Commission
- Evaluated the potential impacts of a proposed gold mine in Montana's Blackfoot River watershed on employment and quality of life, Blackfoot Legacy
- Assessed the economic consequences of modifying hydroelectric dams to protect and enhance riparian habitat, private client
- Prepared a response to the Draft Environmental Impact Statement for the Columbia River System Operation Review, Confederated Tribes of the Umatilla Indian Reservation
- Assessed the economic consequences of alternative strategies for managing the Columbia River and its tributaries, Northwest Water Law and Policy Project

### Recent Presentations

- "Low-Impact Development Economics." October 22, 2008. NEMO University-6.
- "The Economics of Low-Impact Development." NY/NJ Baykeeper 2008 Low Impact Development Conference. January 23, 2008. New York City, New York.
- "Assessing Low-Impact Development Using a Benefit-Cost Approach." California Stormwater Quality Association (CASQA) 3<sup>rd</sup> Annual Stormwater Conference. September 11, 2007. Costa Mesa, California.
- "Valuing Ecosystem Services in Portland, Oregon: A Case Study." Emerging Issues Along Urban/Rural Interfaces II Conference. April 9-12, 2007. Atlanta, Georgia.
- "Assessing Low Impact Developments Using a Benefit-Cost Approach." 2<sup>nd</sup> National Low Impact Development Conference. March 12-14, 2007. Wilmington, North Carolina.

### Publications

"Low-Impact Stormwater Controls Can Increase the Bottom Line." *Home Building News*. August 2008.

*The Economics of Low-Impact Development: A Literature Review*. Waterkeeper Alliance. With S. Reich. November 2007.

"Cities Challenged in Their Economic Interpretation of the Telecommunications Act of 1996." *Municipal Lawyer*. With E. Whitelaw and A. Pearce. September/October 2006.

"A Framework for Estimating the Costs and Benefits of Dam Removal." *BioScience* 52 (8). With E. Whitelaw. August 2002.

*The Economic Benefits of Renewable Energy and Cost-Effective Energy Efficiency*. Alaska Coalition. With E. Niemi and A. Fifield. September 2001.

- An Economic Strategy for the Lower Snake River.* Trout Unlimited. With E. Whitelaw. November 1999.
- The Potential Economic Consequences of Designating Critical Habitat for the Marbled Murrelet: Final Report.* U.S. Fish and Wildlife Service, Portland Field Office. With E. Niemi, E. Whitelaw, and D. Taylor. 1996.
- The Potential Economic Consequences of Critical Habitat Designation for the Lost River Sucker and the Shortnose Sucker: Final Report.* U.S. Fish and Wildlife Service, Portland Field Office. With E. Niemi and E. Whitelaw. August 1995.
- Economic Consequences of Management Strategies for the Columbia and Snake Rivers.* Confederated Tribes of the Umatilla Indian Reservation. With E. Niemi and E. Whitelaw. July 1995.
- Economic Consequences of an Injunction to Protect Salmon Habitat on the Wallowa-Whitman and Umatilla National Forests: Preliminary Report.* With E. Niemi and E. Whitelaw. 1995.
- The Columbia River and the Economy of the Pacific Northwest.* With E. Niemi, E. Whitelaw, and A. Gorr. May 1995.
- The Potential Economic Consequences of a Reduction in Timber Supply from the Tongass National Forest.* With E. Whitelaw. December 1994.

## ERNEST NIEMI

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M.C.R.P. Urban Planning and Public Policy, Harvard University  
B.A. Chemistry, University of Oregon

**Ernest Niemi** has been a vice president and senior economist at ECONorthwest since 1978. He specializes in applying the principles of cost-benefit analysis, economic valuation, and economic-impact analysis in the context of natural-resource management, economic development, and public-policy decisions. He has presented analytical findings to congressional, judicial, arbitral, administrative, and scientific/professional bodies.

Niemi has taught cost-benefit analysis and economic development for the University of Oregon's Department of Planning, Public Policy, and Management. He is or has been a member of the Budget Advisory Committee for Lane Electric Cooperative, the Roads Advisory Committee for Lane County, the Board of Directors of the Pacific Rivers Council, the Board of Directors of the Center for Community and Watershed Health, the Budget Committee for the Pleasant Hill School District, the Technical Advisory Committee on Land Use and Economic Development for the Oregon Department of Land Conservation and Development, the Citizen's Task Force for Developing a Strategic Plan for the Oregon Department of Fish and Wildlife, and the Water Marketing Task Force for the Oregon Water Resources Department.

## Environmental Policy and Resource Management

### Forest Management

- Evaluated the feasibility of proposals to acquire forest land within a watershed and manage the forest and associated water resources to generate revenue, private client
- Described the economic value of resources at Cooper Spur, in the Mt. Hood National Forest, that would not be developed under a proposed land swap, Crag Law Center
- Described the economic costs that might materialize if logging occurred on national forest lands that had experienced wildfire, Cascade Resources Advocacy Group
- Evaluated economic analyses that had been developed to support the implementation of a proposed habitat conservation plan for private and state-owned forest lands, private client
- Reviewed a draft chapter of a forthcoming book regarding the socioeconomic consequences of the Northwest Forest Plan, private client
- Reviewed the economic elements of the U.S. Forest Service's draft environmental impact statement of salvage logging proposals for the burned areas within the perimeter of the Biscuit Fire in southern Oregon, Siskiyou Regional Education Project
- Evaluated the need for improved voluntary measures and new regulations regarding the application of aesthetic forestry principles and techniques to state and private lands in Washington, private client
- Described the economic issues underlying proposals to conduct salvage logging in areas burned by the Biscuit Fire, Conservation Biology Institute

- Described how forest-management approaches that emphasize sustainability and stewardship can have positive economic consequences, Washington Environmental Council
- Developed a method for determining the sediment-related costs imposed on the City of Salem and its industrial/commercial water users during and following a major flood event in the North Santiam watershed, U.S. Environmental Protection Agency and National Science Foundation
- Analyzed the impacts of wildfire and fire-related programs on communities in the wildland-urban interface and on low-income residents in particular, Center for Watershed and Community Health
- Described the potential economic impacts of the Roadless Initiative in Idaho and Montana, which would prevent commercial logging on roadless areas in national forests, Wilderness Society
- Analyzed economics and collaborative decision-making to make the process of competition for natural resources more efficient and effective, Bolle Center for People and Forests
- Described the potential economic impacts of reducing logging on the national forests, the non-timber benefits the nation enjoys from these forests, and the potential benefits that would materialize if Congress opted to restore damage from past logging, Sierra Club
- Evaluated the social and economic contributions of national forests and analyzed the externalized cost of logging on national forests, Forest Guardians
- Described the economy's response in the Pacific Northwest to logging reductions, Earthlife Canada Foundation and Sierra Club of British Columbia
- Evaluated alternatives for reforestation of marginal agricultural lands in the Lower Mississippi Delta, Business Council for Sustainable Development
- Described the economic effects of forest-management strategies to enhance salmon habitat on six national forests in Idaho, Pacific Rivers Council
- Analyzed the full economic costs of salvage logging on federal lands, Pacific Rivers Council
- Described the appropriate baselines for economic impact analysis related to forest policy alternatives in the Pacific Northwest, Wilderness Society
- Developed recommendations for improving the design and implementation of policies for managing complex forest resources, U.S. Forest Service
- Assessed local economic conditions with and without a change in forest management policy that would protect remaining old-growth forests on federal lands, Wilderness Society

### **Restoration and Allocation of Water Resources**

- Characterized the economic value of ecosystem services within the Green River's riparian corridor, quantified the marginal economic benefits and costs of several alternative levee setback scenarios for the Green River, and identified the equity and risk implications of each alternative, King County, Washington
- Described the economic benefits and costs associated with producing and using reclaimed water and worked with King County to incorporate this information into a benefit-cost analysis of potential reclaimed water projects, King County, Washington

- Analyzed the costs and benefits of various options for restoring Puget Sound, including low-impact development projects, and assessed the feasibility of various market-based mechanisms for project evaluation and implementation
- Constructed a net social and economic benefit analysis of four potential alternatives for future management of the Capitol Lake Basin in Olympia, Washington
- Analyzed the potential economic effects of a proposed water-bottling facility, including effects on local employment, population, public resources, and natural resource amenities, private client
- Performed an economic evaluation of watershed-restoration projects in northern California, focusing on the projects' impacts on coastal and estuarine resources, West Coast Watershed
- Conducted an independent technical review of the net social and economic benefit analysis studies informing the Deschutes Estuary feasibility study, Washington State Department of Fisheries
- Contributed to a draft planning report/environmental impact statement that examined the feasibility, acceptability, and environmental consequences of alternatives to create additional water storage within the Yakima River basin, Bureau of Reclamation and the Washington State Department of Ecology
- Analyzed issues associated with proposals to move toward sustainable use of water and other resources in Northern California, West Coast Watershed
- Prepared economic elements of an environmental impact statement for proposed drawdown of Lake Roosevelt, Washington State Department of Ecology
- Analyzed the relationship between irrigated agriculture and Montana's economy, Montana Department of Natural Resources
- Performed an economic evaluation of watershed restoration projects in northern California to facilitate a grant application, West Coast Watershed
- Described the value of water in the Green River Basin by taking an inventory of the various categories of uses and functions of water and determining the economic value of each use and function, Wyoming Water Development Commission
- Calculated the benefits that a public water utility could realize by relying on the protection and planting of trees rather than the expansion of its waste-water treatment facility to meet water-quality objectives, private client
- Analyzed the positive and negative economic consequences of restoring natural streamflows in the Eel River, Center for Environmental Economic Development
- Analyzed and commented on a draft report regarding economic, social, and institutional issues with water allocation in the Klamath Basin, Institute for Fisheries Resources
- Described the competition for water in the Upper Klamath Basin and the relationship between water and the economy, Public Interest Projects
- Determined the share of natural and actual streamflow that originates on national-forest lands in Oregon's Willamette River Basin, U.S. Environmental Protection Agency
- Assessed the potential economic benefits and costs of the reservoir, related infrastructure, and activities included in the proposed Animas-La Plata project in southwestern Colorado, Earthjustice

- Described economic dimensions of watershed restoration to provide baseline information for designing and evaluating proposals to restore watersheds in the Sierra Nevada, Pacific Rivers Council
- Developed an integrated system for identifying areas of greater ecological and socioeconomic potential for restoration of riparian areas, U.S. Environmental Protection Agency
- Prepared a response to the Draft Environmental Impact Statement for the Columbia River System Operation Review, Confederated Tribes of the Umatilla Indian Reservation
- Described the economic effects of state water-regulation policies, Bullitt Foundation and Water Watch
- Described the economic consequences of alternative hatchery-management programs, Columbia Basin Fish and Wildlife Authority
- Reviewed the proposed economic-evaluation procedures for allocating unappropriated water in the Snake River Basin, State of Idaho Office of the Governor
- Evaluated alternative plans to manage watersheds affected by the eruption of Mount St. Helens, Cowlitz County
- Evaluated recreational fisheries in the Flathead Lake area, State of Montana
- Evaluated proposed policies for leasing wetlands, Oregon Division of State Lands

### **Sustainable Management of Ecosystems**

- Described the potential economic costs to New Mexico, Oregon, and Washington of a business-as-usual approach to climate change.
- Directed a seminar aimed at providing staff with information, skills, and tools to apply adaptive management to the Missouri River Recovery Program, the U.S. Army Corps of Engineers
- Conducted an economic analysis of alternative plans associated with the restoration of sage-steppe ecosystems, California Bureau of Land Management
- Described the potential economic consequences of alternative uses of Nebraska's natural resources, State of Nebraska
- Described common errors in economic-impact studies that cause them to downplay the economic benefits and exaggerate the economic costs of environmental protection, Earthjustice
- Analyzed data on Oregonians' stated importance of and willingness to pay for salmon habitat recovery, U.S. Department of Agriculture, Forest Service
- Managed the drafting of a letter signed by more than 100 economists addressed to President Bush and the governors of eleven western states regarding the economic importance of the West's natural environment
- Provided technical assistance on a handbook for implementing the economic aspects of the Enlibra principles, adopted for managing natural resources, private client
- Described the economic tradeoffs of allowing, limiting, or prohibiting development in significant riparian areas and wildlife habitat in the Portland metropolitan area, Metro

- Described the economic benefits of protecting natural resources in the Sonoran Desert, Coalition for Sonoran Desert Protection
- Analyzed Louisiana's economy to help local stakeholders implement a strategy for moving the state toward conservation-based development, Ford Foundation
- Evaluated the economic consequences of different approaches to managing the environmental resources of Southern Louisiana, particularly its coastal wetlands, W. Alton Jones Foundation

### **Endangered Fish and Wildlife**

- Reviewed the government's economic analysis for the proposed designation of critical habitat for Marbled Murrelets, and provided comments, Earthjustice
- Described the economic consequences of a proposal to protect critical habitat for the Tidewater Goby, private client
- Conducted an economic analysis of proposed infrastructure improvements to enhance the seafood industry in Franklin County, Florida, private client
- Described the potential economic effects of federal decisions regarding the management of habitat for marbled murrelets and northern spotted owls in Washington, Oregon, and northern California, private client
- Analyzed the economic issues related to protection and restoration of habitat for the red-legged frog in California, Pacific Rivers Council
- Reviewed a draft analysis prepared by NOAA Fisheries of the potential economic consequences of designating critical habitat for 13 species of Pacific salmon and steelhead, Earthjustice
- Analyzed the U.S. Fish and Wildlife Service's draft proposal to designate critical habitat for the California gnatcatcher, Natural Resources Defense Council
- Analyzed the potential economic consequences of designating critical habitat under the federal Endangered Species Act for the cactus ferruginous pygmy-owl in Arizona, Defenders of Wildlife
- Outlined the economic issues that should be addressed in a proposal under the Endangered Species Act to designate critical habitat for bull trout in the Deschutes Basin, Deschutes Board of Control
- Evaluated alternatives for mitigating the potential adverse economic effects and for enhancing the potential positive effects of salmon recovery on the Columbia River Basin, Portland State University
- Reviewed the U.S. Army Corps of Engineers' *DRAFT Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement*, Trout Unlimited
- Described the economic consequences of salmon conservation along the Pacific coast of North America, Center for Watershed and Community Health
- Evaluated the economic components of the federal government's final supplemental environmental impact statement for spotted owl habitat, Sierra Club Legal Defense Fund
- Described the economic effects of designating critical habitat for the marbled murrelet in Oregon, Washington, and California, U.S. Fish and Wildlife Service

- Described the economic effects of designating critical habitat to support the recovery of two endangered species of fish in the Klamath Basin of Oregon and California, U.S. Fish and Wildlife Service
- Described the economic effects of designating critical habitat to support the recovery of an endangered species of fish in New Mexico, U.S. Fish and Wildlife Service
- Summarized existing studies on the role of fish (salmonids) in the Pacific Northwest economy, Pacific Rivers Council

## **Energy Resources**

- Analyzed the economic impacts of the effects of a proposed energy transmission line through Montana and Idaho
- Analyzed the economic costs and benefits of different management options to address the environmental problems associated with waste-coal piles
- Described the potential economic impacts of alternatives for generating electricity in Arkansas, Sierra Club
- Performed a cost-benefit analysis of energy efficiency and renewable energy resources, Alaska Coalition
- Evaluated the environmental externalities associated with electric utility regulation, National Association of Regulatory Utility Commissioners
- Described the impacts of proposed legislation restricting transfer of property between electric utilities, Oregon Public Utility District Association
- Assessed the environmental costs and benefits associated with emissions from one or more generic coal plants in the Pacific Northwest, Bonneville Power Administration
- Provided technical analysis and recommendations concerning incentive electric rates, special services to existing commercial and industrial customers, and recruitment, Emerald People's Utility District of Lane County, Oregon
- Calculated appropriate rates for electricity generated by small independent producers and sold to private utilities, private clients
- Reviewed policies for deregulating small-scale generation of electric power in Idaho, private client

## **Regional Economic Analysis**

### **Economics of Water Resources**

- Analyzed impacts to tourism and fishing due to LNG tankers coming into Coos Bay, Jordan Cove Energy Project L.P.
- Described the economic consequences of strategies proposed in the Columbia Basin Water Management Program, private client
- Detailed the financial implications and considerations of developing a regional wetlands mitigation bank in the Portland metropolitan area, Metro
- Reviewed the methodology for assessing the economic benefits from increased water delivery reliability during major system disruptions, Seattle Public Utilities

- Studied the economic benefits of protecting the water, wildlife, and other natural resources on a stretch of the Upper Mississippi River, private client
- Described the economic conditions in the Columbia River Basin, explained the reasons for the Basin's lagging economy, and highlighted potential transitions the Basin's economy may undergo, Columbia Conversations
- Reviewed the U.S. Army Corps of Engineers' *Final Environmental Impact Statement* on deepening the shipping channel in the Columbia and Willamette Rivers, private client
- Evaluated socioeconomic consequences of ecological restoration projects for the Vermillion River in South Dakota, U.S. Environmental Protection Agency
- Evaluated the economic consequences of alternative management strategies for the Virgin River, Grand Canyon Trust
- Reviewed water management and allocation policies in the Upper Rio Grande, Western Water Policy Commission
- Analyzed the role of the Columbia River in the economy of the Pacific Northwest, Northwest Water Law and Policy Project
- Analyzed the Interior Columbia River Basin Ecosystem Management Project to ensure it internalized the externalities of resource-extraction industries on federal lands in eastern Washington, eastern Oregon, and Idaho, W. Alton Jones Foundation
- Calculated the economic impacts of the Exxon Valdez oil spill on Alaskan businesses and municipalities, private client

### **Sustainable Economics**

- For the Montana Department of Natural Resource Conservation, performed an economic analysis of a proposed land exchange between a private land owner and the state near Whitefish, Montana.
- Examined the economic issues associated with a proposal to mine sand and gravel and construct a new pier and barge facility in a protected marine reserve on Vashon-Maury Islands in Puget Sound, private client
- For a private client, analyzed the potential economic consequences of alternatives regarding state and federal management of fishery resources in the Gulf of Alaska.
- Worked with representatives from organized labor, distressed rural communities, and urban neighborhoods to identify potential new sustainable industries and jobs, Center for Watershed and Community Health
- Developed an analytical framework for integrating resource-conservation and economic-development strategies, Ford Foundation Rural Poverty and Resources Program
- Developed recommendations for ensuring that governmental actions reinforce Oregon's strategic plan, Oregon Economic Development Department
- Evaluated economic issues associated with the Bureau of Land Management's request for an exemption from the Endangered Species Act, U.S. Fish and Wildlife Service
- Analyzed the economic impact of a plant closure and developed a strategy for a community-wide response, Dallas, Oregon, Mid-Valley Council of Governments

- Developed a comprehensive portrait of a corporation's role in Idaho's local and state economies, private client
- Prepared the socioeconomic component of draft environmental impact statements for proposed gold mines in Idaho and Montana, private clients
- Developed procedures for determining the taxable value of residential, commercial, and industrial property, Montana Department of Revenue
- Evaluated opportunities for growth in non-wood manufacturing, Lane County
- Described relationships between land-use policy and economic development, Oregon Department of Land Conservation and Development

### **Forest Management and the Timber Industry**

- Analyzed the pending closure of a lumber mill in northeastern Washington, Wilderness Society
- Developed a methodology for analyzing the economic impacts associated with changes in forest-practices rules, Washington Department of Natural Resources
- Described the economic consequences of sustainable forest management policies in the Southern Appalachia, U.S. Forest Service
- Evaluated the relationships between forested ecosystems and regional economies, National Science Foundation
- Developed a legislative plan for dislocated timber workers, Oregon Joint Legislative Interim Committee on Forest Products Policy
- Analyzed the strengths, weaknesses, opportunities, and threats of cities responding to mill closures, Oregon Economic Development Department
- Assessed the fiscal impact of proposed alterations to timber-sales contracts for state-owned timber, Oregon Division of State Lands

### **Energy Resources**

- Analyzed the socioeconomic issues in the Minerals Management Service's Nantucket Island Cape Wind project draft environmental impact statement, private client
- Compared the potential economic impacts of proposals to build coal-fired electricity generators in Nevada with the potential impacts of one or more alternatives, Western Clean Energy Campaign
- Developed a handbook on the economic factors associated with relicensing a hydroelectric dam, Hydropower Reform Coalition
- Evaluated the feasibility of energy-conservation measures for new homes, Oregon Department of Energy
- Described the economic impact of the development of independently owned, small electricity generators, Oregon Public Utility Commission
- Described the economic impacts of the formation and expansion of public utility districts, Oregon Public Utility District Association
- Analyzed the economic, demographic, fiscal, and community-service impacts of siting a high-level nuclear waste repository at Hanford, Washington Department of Ecology

- Assessed the local economic impacts associated with the construction, operation, and decommissioning of the coal-fired electric generating facility in Boardman, Oregon, Bonneville Power Administration

## **Expert Testimony**

- Analyzed the determination of wages for firefighters in Roseburg, 2007.
- Prepared a declaration on the economic consequences of proposed logging on the Umatilla National Forest subsequent to the School Fire, 2006.
- Provided testimony on the costs and benefits of water use by an energy company on the Hudson River, 2005
- Prepared a declaration regarding economic analysis of the U.S. Army Corps of Engineers' plan to deepen the channel of the Columbia River, 2004
- Evaluated the U.S. Army Corps of Engineers' *Final Supplemental Environmental Impact Statement* regarding the proposed Columbia River Channel Deepening Project, 2003
- Analyzed the determination of wages for firefighters in Coos Bay, 1994
- Evaluated damages stemming from the Exxon Valdez oil spill, 1994
- Evaluated claims that a manufacturer of snowmobiles violated antitrust laws, 1994
- Analyzed the determination of wages for Portland firefighters, 1985

## **Litigation Support**

### **Economic Damages to Natural Resources**

- Conducted a benefit-cost analysis of the State of California's ban on the use of MTBE as a gasoline oxygenate for a NAFTA arbitration matter
- Analyzed the economic damage to homeowners caused by hazardous waste pollution from mining and mineral processing activities
- Determined economic damages sustained from oil spilled from a grounded ship
- Analyzed the economic damages incurred by citizens of the State of Yap, in the Federated States of Micronesia, from a ship that grounded on the coral reef and spilled oil into the mangrove-reef ecosystem
- Reviewed economic analyses, prepared by the U.S. Department of Agriculture and the U.S. Environmental Protection Agency, of the potential economic impacts of court-ordered restrictions on the use of pesticides near salmon-bearing streams in the Pacific Northwest
- Determined the economic damages incurred by a Native American tribe after the building of a river dam
- Calculated the economic damages to the Oregon coast resulting from the abandonment of a section of the New Carissa shipwreck
- Evaluated the economic impacts to municipalities in Alaska of the oil spilled from the Exxon Valdez
- Analyzed the potential economic effects of mandatory medical monitoring for agricultural workers exposed to a toxic pesticide

- Evaluated damage claims by area businesses and property owners affected by a pesticide spill in the Sacramento River
- Calculated damages to a rose nursery from actions by a natural-gas utility

### **Microeconomic Analysis**

- Analyzed the formation of an integrated health care delivery system in the Portland-Vancouver area
- Assisted the City of Coos Bay in its wage arbitration with municipal employees
- Analyzed the market for new frozen-potato products
- Calculated the present discounted value of alleged damages sustained by Chrysler Corporation resulting from actions of a franchisee
- Evaluated patent-infringement claims for agricultural machinery
- Evaluated the economic substance of a property sale-lease-back scheme

### **Antitrust Economics**

- Analyzed relevant product and geographic markets for video superstores
- Evaluated potential antitrust violations by an association of licensed river pilots operating under state regulations
- Evaluated the relevant market, barriers to entry, and degree of competition in the production of maraschino cherries
- Analyzed the relevant market, impact on competition, and damages associated with alleged restrictions on the sale of replacement roller bearings for rock crushers
- Evaluated claims that a natural-gas pipeline corporation violated antitrust laws
- Evaluated claims that the suspension of a physician's hospital privileges constituted a violation of antitrust laws

### **Economics of Public Policy**

- Analyzed the potential condemnation of privately held generating facilities by a publicly owned electric utility
- Evaluated a state's economic interest in recreational fisheries on an Indian reservation and the tribal impacts of state regulation of these fisheries
- Analyzed a public agency's proposed property condemnation, which displaced a planned private-sector development

### **Publications**

*Fiscal Year 2008 Large-Cost Fire Independent Review.* U.S. Secretary of Agriculture. With Large-Cost Fire Independent Review Panel members: Sharon Caudle, Michael Frank, Richard Haynes, and Ian Munn. June 2009.

*An Overview of Potential Economic Costs to New Mexico of a Business-As-Usual Approach to Climate Change.* Climate Leadership Initiative, University of Oregon. With Mark Buckley, Cleo Naculae, and Sarah Reich. February 2009.

*An Overview of Potential Economic Costs to Oregon of a Business-As-Usual Approach to Climate Change.* Climate Leadership Initiative, University of Oregon. With Mark Buckley, Cleo Neculae, and Sarah Reich. February 2009.

*An Overview of Potential Economic Costs to Washington of a Business-As-Usual Approach to Climate Change.* Climate Leadership Initiative, University of Oregon. With Mark Buckley, Cleo Neculae, and Sarah Reich. February 2009.

*Irrigation in Montana: A Program Overview and Economic Analysis.* Montana Department of Natural Resources and Conservation. With Sarah Reich, Cleo Neculae, and Mark Buckley. September 2008.

*Natural-Resource Amenities and Nebraska's Economy: Current Connections, Challenges, and Possibilities.* Nebraska Game and Parks Commission. With Cleo Neculae and Tatiana Raterman. July 2006.

"Future Water Allocation and In-Stream Values in the Willamette River Basin: A Basin-Wide Analysis." *Ecological Applications* 14 (2): 355-367. With D. Dole. April 2004.

"The High Cost of Free Water." *Oregon Quarterly*. With E. Whitelaw. Spring 2003.

"Building Common Ground: Business, Labor, and the Environment in Louisiana." *LUCEC Miscellaneous Publications* (1): 34-44. With P. Templet. November 2002.

*The Potential Economic Benefits of Protecting Natural Resources in the Sonoran Desert.* With K. Lee. January 2002.

"The Sky Will Not Fall, Economic Responses to Protection of At-Risk Species and Natural Ecosystems." *Fisheries* 27 (1): 24-28. January 2002.

"Bridge Over Troubled Water." *Oregon Quarterly*. With E. Whitelaw. Winter 2001.

*Wildfire and Poverty: An Overview of the Interactions Among Wildfires, Fire-Related Programs, and Poverty in the Western States.* With K. Lee. December 2001.

*Coping with Competition for Water: Irrigation, Economic Growth, and the Ecosystem in the Upper Klamath Basin.* With A. Fifield and E. Whitelaw. November 2001.

*Sustainable Practices, Public Buildings, and Jobs.* With J. Knight. November 2001.

*The Economic Benefits of Renewable Energy and Cost-Effective Energy Efficiency.* Alaska Coalition. With E. MacMullan and A. Fifield. September 2001.

*Competition Matters: An Economist's Perspective of Collaborations and the National Forests.* With E. Whitelaw. January 2001.

*Protecting Roadless Areas and Montana's Economy: An Assessment of the Forest Service Roadless Initiative.* With A. Fifield. January 2001.

*Estimating Streamflows from National Forests in the Willamette River Basin, Oregon.* U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. With E. Whitelaw. 2001. (6654)

"Bird of Doom...Or Was It?" *The Amicus Journal* 22 (3): 19-25. With E. Whitelaw and E. Grossman. Fall 2000.

*Seeing the Forests for Their Green: Economic Benefits of Forest Protection, Recreation, and Restoration.* Sierra Club. With A. Fifield. August 2000.

*An Economic Assessment of the Proposed Animas-La Plata Project.* With E. Whitelaw. April 2000.

- "Salmon and the Economy." *Conservation Biology in Practice* 1 (1): 20-21. With E. Whitelaw. Spring 2000.
- Salmon, Timber, and the Economy*. Pacific Rivers Council, Oregon Trout, Audubon Society of Portland, and Institute for Fisheries Resources. With E. Whitelaw, M. Gall, and A. Fifield. December 1999.
- Salmon and the Economy: A Handbook for Understanding the Issues in Washington and Oregon*. With E. Whitelaw, D. Lindahl, A. Fifield, and M. Gall. November 1999.
- Assessing Economic Tradeoffs in Forest Management*. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. General Technical Report PNW-GTR-403. With E. Whitelaw. Revised July 1999.
- The Sky Did NOT Fall: The Pacific Northwest's Response to Logging Reductions*. Earthlife Canada Foundation and Sierra Club of British Columbia. With E. Whitelaw and A. Johnston. April 1999.
- An Economy in Transition: The Klamath-Siskiyou Ecoregion*. With M. Gall and A. Johnston. 1999.
- Southern Forests and the Economy: Asking the Right Questions*. 1999.
- An Economic Assessment of the Proposed Logging Project on the Bering River/Carbon Mountain Tract*. 1999.
- "An Economic Evaluation of Flood-Control Alternatives in the Vermillion River Basin, South Dakota." *Great Plains Natural Resources Journal* 3 (1). With T. Power. Fall 1998.
- The Economic Consequences of River and Wetland Restoration: A Conceptual Manual*. With T. Power. 1998.
- The Economics of ICBEMP: An Initial Assessment of the Draft Environmental Impact Statement for the Interior Columbia River Basin Ecosystem Management Project*. With M. Gall. 1998.
- The Ecosystem-Economy Relationship: Insights from Six Forested LTER Sites*. National Science Foundation. With P. Courant and E. Whitelaw. November 1997.
- An Analytical Typology for Examining the Economic Effects of Ecosystem Management*. University of Michigan, School of Public Policy. Working Paper No. 407. With P. Courant and E. Whitelaw. May 1997.
- Water Management Study: Upper Rio Grande River Basin*. Western Water Policy Review Advisory Commission. With T. McGucken. 1997.
- Facing the Tradeoffs: Economic Development and Resource Conservation in Louisiana*. With C. Heflin, A. Gorr, and E. Whitelaw. June 1996.
- The Potential Economic Consequences of Designating Critical Habitat for the Marbled Murrelet: Final Report*. U.S. Fish and Wildlife Service, Portland Field Office. With E. MacMullan, E. Whitelaw, and D. Taylor. May 1996.
- Pacific Northwest Regional Economic Elements Affected by Fish Hatchery Management Decisions*. Columbia Basin Fish and Wildlife Foundation. With E. Whitelaw. 1996.
- Facing the Tradeoffs: Economic Development and Resource Conservation in Louisiana*. With E. Niemi, C. Heflin, and A. Gorr. 1996.
- Environmental Protection and Jobs: A Brief Survey*. With E. Whitelaw. October 1995.

*Economic Consequences of Management Strategies for the Columbia and Snake Rivers.* Confederated Tribes of the Umatilla Indian Reservation. With E. MacMullan and E. Whitelaw. July 1995.

*Integrating Economics and Resource-Conservation Strategies.* With E. Whitelaw. June 1995.

*The Columbia River and the Economy of the Pacific Northwest.* With E. Whitelaw, A. Gorr, and E. MacMullan. May 1995.

*The Full Economic Costs of Proposed Logging on Federal Lands.* With E. Whitelaw. March 1995.

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September 27, 2010

Mr. Michael Lozeau  
Lozeau | Drury LLP  
1516 Oak Street  
Alameda, California 94501

**Subject:** Comments on the Draft Program Environmental Impact Report for the  
Long-term Irrigated Lands Regulatory Program

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Dear Mr. Lozeau:

I have reviewed the “Draft Program Environmental Impact Report (PEIR) for the Long-term Irrigated Lands Regulatory Program (ILRP) within the Central Valley Region” (“PEIR”) (July 28, 2010). I have also reviewed the “Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (July 2010) and the “Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program” (July 2010). I have prepared comments on the PEIR that address proposed surface water and groundwater monitoring and management practices.

### **1. The Alternatives are not Adequately Evaluated**

The PEIR does not evaluate the relative effectiveness of the five alternatives in the control of contaminated discharges from agricultural operations in the Central Valley. Furthermore, the PEIR provides no quantitative analysis of the amount of contaminant loading to surface water and groundwater that would result from implementation of the alternatives. These are fundamental flaws of the PEIR that leave the reader with no basis to judge the merits and shortcomings of the alternatives. Because contaminant loads are not quantified, the cumulative impact to water quality cannot be predicted, as discussed in Comment (2) below. Finally, the PEIR fails to provide a basis to determine best practicable control or technology (BPTC) as required by Resolution No. 68-16 (Oct. 28, 1968).

Our brief qualitative analysis of the alternatives is as follows.

Alternative 1, because it is the status quo would fail to reduce contaminant loads and improve water quality and, because it relies on regional or watershed scale monitoring, would not allow for a determination of BPTC. To determine BPTC, monitoring and data comparison is necessary upgradient and downgradient of points of control, i.e., where measures are implemented in the field. Because of the reliance on current management practices and because only regional monitoring is to be used, Alternative 1 would not result in measureable improvement to water quality and in fact foster further degradation of water quality.

Alternative 2, which includes some groundwater management practices, would not demonstrably reduce contaminant loads and improve water quality. The groundwater management practices include only token wellhead protection measures involve only the placement of dirt in berms adjacent to the wellhead to prevent movement of surface water to the wellhead. These minor improvements are already required under Title 3, California Code of Regulations Division 6 (effective May 27, 2004) for areas where pesticides are mixed, rinsed and stored.

<http://www.cdpr.ca.gov/docs/emon/grndwtr/gwregsinfo0702.pdf> Implementation of these measures more broadly, i.e., at all farms, is not likely to result in significant water quality gains because the berms would only marginally protect against pesticide and nitrate transport in stormwater in the areas where wellheads are located and would not address subsurface transport of pesticides and nitrates.

No farm-scale monitoring requirements are included under Alternative 2 and therefore, a determination of BPTC is not possible. Because only token wellhead protection measures are to be undertaken, Alternative 2, like Alternative 1, would not result in measureable water quality improvements and may be just as likely to result in water quality degradation.

Alternative 3 requires farm plans that use a tiered approach to address water quality concerns. This alternative is an improvement and may result in some gains in water quality; however, because no surface water or groundwater monitoring is required, the implementation of this alternative would not result in measureable improvement to water quality and the lack of monitoring does not allow for BPTC determinations.

Alternative 4 provides for nutrient management and regional or individual monitoring under a tiered hierarchy. Whereas use of tiering is acceptable in determining the intensity of monitoring, the option to participate in regional scale monitoring would not allow for the determination of BMP effectiveness nor BPTC. Costs under Alternative 4 could also be reduced by incorporating groundwater quality information from public water supply systems into a database to compliment the data obtained from Tier 2 and Tier 3 farms that would be required to participate in regional groundwater monitoring. As with Alternative 3, Alternative 4 may provide some gains in water quality; however, those gains would not be measurable because only regional monitoring is required.

Alternative 5 requires surface water and groundwater monitoring at individual farms and would likely be most protective of water quality. Because discharger-scale monitoring

would be required, BMP effectiveness could be evaluated and a determination of BPTC could be made. As monitoring data from BMPs are evaluated, BPTC can be determined and deployed in the field.

The monitoring under this alternative, however, is duplicitous and overly burdensome. Instead, use of a tiering scheme (i.e., to reduce monitoring at low risk farms in low risk environments) would reduce costs as would better coordination between farms in fulfilling monitoring requirements. For example, if groundwater wells were to be installed, groundwater monitoring at neighboring farms could be coordinated with one farm's downgradient well serving as the adjacent farm's upgradient location. Alternative 5, while inefficient, would result in the greatest potential for water quality gains because of the monitoring that would be required at farms.

To properly evaluate the five alternatives, a quantitative estimate of the contaminant loads to surface water and groundwater needs to be integrated into Chapter 3 of the PEIR, Program Description. Additionally, consideration of each alternative's capability to meet BPTC needs to be incorporated into Chapter 3, including specification of monitoring at a scale that allows for the determination of BPTC.

## **2. Cumulative Impacts on Downstream Ecologic Receptors are not Assessed**

The PEIR fails to consider cumulative impacts of the alternatives on ecologic receptors downstream of the agricultural discharges in the Central Valley, namely the Delta and the San Francisco Bay and Estuary. Wildlife in the Delta and the Bay at risk include, for example, special-status fish species such as the Delta Smelt and anadromous fish such as Chinook Salmon and Steelhead Trout. Clearly, contaminant loading of pesticides and nutrients to upstream waters impacts habitat for these fish and their prey yet no consideration of these or any individual species is given in Section 6, Cumulative and Growth-Inducing Impacts. The PEIR states only in Chapter 6:

Because many of the existing effects discussed in the section "Existing Effects of Impaired Water Quality on Fish" are cumulative, it is difficult to determine the relative contribution of irrigated lands and other sources. For example, low DO in the Stockton Deepwater Ship Channel is a result of contamination from upstream nonpoint sources (possibly including agricultural runoff) and discharges from the Stockton sewage treatment plant (Lehman et al. 2004; Central Valley Water Board 2005). Application of pesticides to non-agricultural lands such as urban parks and the resultant contaminant runoff also cumulatively contribute to impacts of inputs from irrigated lands.

This level of analysis is insufficient and provides no basis for comparison of the cumulative impacts that would result from the five alternatives. Section 6 should be re-written to estimate and incorporate contaminant loads from agricultural practices on irrigated lands to both surface water and groundwater under each alternative. The contaminant loads should be compared to other contaminant loads (other agricultural operations (e.g, dairies) and industrial discharge (e.g., treated sewage discharges) that are

contributed to downstream water bodies, including the Delta and the San Francisco Bay, to predict cumulative impacts from Central Valley irrigated agricultural operations.

Cumulative effects are essential to consider, given the impact of poor water quality on downstream ecologic receptors. For example, pelagic organisms such as the delta smelt are in decline in the upper San Francisco Estuary. The decline is not only because of direct smelt mortality from entrainment at pump intakes but also because of exposure of smelt and smelt prey to toxics and nitrogen.

(<http://www.sciencedaily.com/releases/2010/05/100517161144.htm> and [http://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/pelagic\\_organization/docs/pod\\_ieppodmt\\_2007synthesis\\_011508.pdf](http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/pelagic_organization/docs/pod_ieppodmt_2007synthesis_011508.pdf)) Studies have also shown that contaminants, including pesticides, have been linked to the decline of striped bass in the Upper Sacramento River

(<http://www.sciencedaily.com/releases/2008/12/081209100940.htm>). Cumulative impacts are also important to consider in the decline of anadromous fish, where contaminants are one factor contributing to significant population reductions (see, for example PEIR p. 5.8-20)

Cumulative impacts are also important to consider in impacts on recreation. For example, the growth of water hyacinth (*Eichhornia crassipes*) in the Sacramento-San Joaquin River Delta as a result of increased nutrient loads (nitrogen and phosphorus). (<http://www.dbw.ca.gov/PDF/Egeria/WHSciProbsExcerpts.pdf>) The rapid growth of water hyacinth has resulted in impacts to boating and recreational use by impeding waterway navigation and swimming.

Despite these and other well-known and significant impacts, the PEIR fails to discuss cumulative impacts to water quality, fisheries, and recreation from implementation of the five alternatives. The failure to consider cumulative impacts stems from the fact that contaminant and nutrient loads were not quantified in the PEIR, by alternative, as noted in Comment 1. The PEIR needs to conduct a thorough assessment of cumulative impacts that will include consideration of contaminant contributions from irrigated agricultural lands to surface water and groundwater under each alternative.

### **3. Surface Water Monitoring Required under Alternatives 4 and 5 is Vague**

The PEIR lacks fundamental detail regarding those alternatives where farm-scale surface water monitoring may be conducted (i.e., Alternatives 4 and 5). The PEIR describes Tier 2 and Tier 3 monitoring for Alternative 4 as follows (p. 3-19):

Tier 2: Individual tailwater, stormwater, tile drainage monitoring for constituents of concern 1 year of every 5 years

Tier 3: Individual tailwater, stormwater, tile drainage monitoring for constituents of concern

The PEIR describes surface water monitoring under Alternative 5 as follows:

Under Alternative 5, each operation would be required to conduct the following monitoring and tracking for each field and submit the results to the Central Valley Water Board annually.

- Discharge monitoring for constituents of concern
- Tailwater discharges monthly.
- Storm water discharges during the first event of the wet season (between October 1 and May 31) and once during the peak storm season (typically February).
- Discharges of subsurface (tile) drainage systems annually. (PEIR, p. 3-28)

The PEIR is vague on how surface water monitoring practices and resultant data would be reviewed stating only that the Regional Board would review and approve monitoring plans of third parties and legal entities and would review monitoring reports (PEIR, p. 3-21). The PEIR does not specify criteria that would define acceptable practices for monitoring including use of appropriate QA/QC, use of state-certified laboratories, methodology for selection of constituents of concern, and required locations for stormwater sampling (i.e., upgradient/downgradient, pre- and post BMP). We understand the PEIR is a programmatic EIR; however, some level of detail is needed in a revised PEIR to evaluate the effectiveness of the farm-scale surface water monitoring that is proposed in Alternatives 4 and 5.

#### **4. Public Health Impacts from Exposure to Contaminated Groundwater is not Considered**

More than two million Californians have been exposed to harmful levels of nitrates in drinking water over the past 15 years and the population of those exposed keeps growing. The PEIR acknowledges the extent of nitrate contamination and includes, as Figure 5.9-17, a map that shows nitrate contamination to be concentrated in the Central Valley. Incredibly, however, the PEIR makes no attempt analyze how nitrogen-based fertilizer application in the Central Valley results in significant exposure of the public to contaminated groundwater, the health impacts of that exposure, or how implementation of any of the five alternatives would reduce or increase exposure, other than to say, for Alternative 1:

Nutrient management would improve both surface water quality and groundwater quality by improving the use of chemicals and using improved application techniques, and by limiting the use of nutrients as fertilizer that could potentially seep to groundwater and add nitrate to the groundwater table. (PEIR, p. 5.9-14)

The assertion that ongoing nutrient management efforts would somehow improve water quality is not borne out by recent data. In fact, the status quo, as proposed in Alternative 1, has resulted in an increase, statewide, in the number of wells that exceeded the health limit for nitrates, from nine in 1980 to 648 by 2007. ([http://articles.sfgate.com/2010-05-17/news/20901575\\_1\\_nitrate-contamination-water-supply-water-systems](http://articles.sfgate.com/2010-05-17/news/20901575_1_nitrate-contamination-water-supply-water-systems)) Of 13,153 wells sampled statewide, 1,077 active and standby drinking water wells have

concentrations of nitrate above the drinking water standard of 45 mg/L. ([http://www.swrcb.ca.gov/water\\_issues/programs/gama/docs/coc\\_nitrate.pdf](http://www.swrcb.ca.gov/water_issues/programs/gama/docs/coc_nitrate.pdf)) In Tulare County, more than 40% of private domestic water wells exceed the drinking water standard for nitrate and statewide, the majority of nitrate exceedences appear to be in the Central Valley. ([http://www.swrcb.ca.gov/gama/docs/ekdahl\\_gra2009.pdf](http://www.swrcb.ca.gov/gama/docs/ekdahl_gra2009.pdf)) On the basis of more than 25 years of data, the number of wells that exceed the drinking water standard for nitrate is growing as a percentage of all nitrate detections. ([http://www.swrcb.ca.gov/gama/docs/ekdahl\\_gra2009.pdf](http://www.swrcb.ca.gov/gama/docs/ekdahl_gra2009.pdf)) Clearly the status quo is not working and implementation of Alternatives 1 and 2 would likely lead for further increases in nitrate drinking water violations in the Central Valley.

Health effects of exposure to nitrates most notably results in methemoglobinemia or “blue baby syndrome.” Toxic effects of methemoglobinemia occur when bacteria in the infant stomach convert nitrate to more toxic nitrite, a process that interferes with the body’s ability to carry oxygen to body tissues. Infants with these symptoms need immediate medical care since the condition can lead to coma and eventually death. Pregnant women are susceptible to methemoglobinemia and should be sure that the nitrate concentrations in their drinking water are at safe levels. Additionally, some scientific studies suggest a linkage between high nitrate levels in drinking water with birth defects and certain types of cancer. ([http://www.swrcb.ca.gov/water\\_issues/programs/gama/docs/coc\\_nitrate.pdf](http://www.swrcb.ca.gov/water_issues/programs/gama/docs/coc_nitrate.pdf))

The PEIR should be rewritten to include an assessment of the potential for the public to be exposed to nitrates in drinking water from agricultural practices in the Central Valley. The assessment of each alternative should include an estimate of nitrogen loading to fields; nitrogen fate and transport in soil, surface water, and groundwater; nitrogen monitoring; and a summary nitrogen impacts to water supplies. Linking monitoring to measurement of each of the alternatives is critical. An annual assessment of the performance of the alternative that is selected should be required and use of the 13,000-well California Department of Public Health database should be required as a tool for evaluation of nitrate trends.

Sincerely,



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## **Matthew F. Hagemann, P.G.**

**Geologic and Hydrogeologic Characterization  
Investigation and Remediation Strategies  
Regulatory Compliance  
CEQA Review  
Expert Witness**

### **Education:**

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.

B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

### **Professional Certification:**

California Professional Geologist, License Number 8571.

### **Professional Experience:**

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Senior Environmental Analyst, Komex H2O Science, Inc (2000 -- 2003);
- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);

- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

**Senior Regulatory and Litigation Support Analyst:**

With SWAPE, Matt’s responsibilities have included:

- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Manager of a project to provide technical assistance to a community adjacent to a former Naval shipyard under a grant from the U.S. EPA.
- Lead analyst in the review of numerous environmental impact reports under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions and geologic hazards.
- Lead analyst in the review of environmental issues in license applications for large solar power plants before the California Energy Commission.
- Stormwater analysis, sampling and best management practice evaluation at industrial facilities.
- Technical assistance and litigation support for vapor intrusion concerns.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on two cases involving MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.
- Expert witness in litigation at a former plywood plant.

With Komex H2O Science Inc., Matt’s duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.
- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

**Executive Director:**

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the discharge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

### **Hydrogeology:**

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.
- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nationwide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

### **Policy:**

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, *Oxygenates in Water: Critical Information and Research Needs*.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

### **Geology:**

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.

- Coordinated his research with community members who were concerned with natural resource protection.
- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

### **Teaching:**

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

In Fall 2010, Matt taught Physical Geology (lecture and lab) to students at Golden West College in Huntington Beach, California.

### **Invited Testimony, Reports, Papers and Presentations:**

**Hagemann, M.F.**, 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

**Hagemann, M.F.**, 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

**Hagemann, M.F.**, 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Colorado.

**Hagemann, M.F.**, 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

**Hagemann, M.F.**, 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.**, 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

**Hagemann, M.F.**, 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

**Hagemann, M.F.**, 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

**Hagemann, M.F.**, 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

**Hagemann, M.F.**, 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal representatives, Parker, AZ.

**Hagemann, M.F.**, 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

**Hagemann, M.F.**, 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

**Hagemann, M.F.**, 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

**Hagemann, M.F.**, 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

**Hagemann, M.F.**, 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

**Hagemann, M.F.**, 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

**Hagemann, M.F.**, 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

**Hagemann, M.F.**, 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

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**Hagemann, M.F.**, 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

**Hagemann, M.F.**, 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

**Hagemann, M.F.**, and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F.** 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

**Hagemann, M.F.**, 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

**Hagemann, M.F.**, 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

**Hagemann, M.F.**, and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

**Hagemann, M.F.**, Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

**Hagemann, M. F.**, Fukunaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

**Hagemann, M.F.**, 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

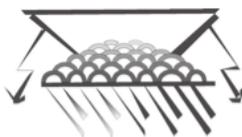
**Hagemann, M.F.** and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

**Hagemann, M.F.**, 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

**Hagemann, M.F.**, 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

**Other Experience:**

Selected as subject matter expert for the California Geologist licensing examination, 2009-2010.



**Steven Bond and Associates**

Consulting Geologists, Groundwater and Water Quality Experts

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27 September 2010

Bill Jennings, Executive Director  
California Sportfishing Protection Alliance  
3536 Rainier Avenue  
Stockton, CA 95204

Subject: Monitoring Requirements for Compliance with  
the Irrigated Lands Regulatory Program.

You've asked me my opinion in the form of several questions about water quality monitoring. These questions are within the context of the irrigated lands regulatory program that deals with farmland and the water runoff from these lands into receiving waters in the State of California.

I am a professional geologist specializing in water chemistry, water quality, groundwater, and engineering geology. I hold professional licenses and certifications issued by the State of California for these practices, and operate a private consulting business providing these services. I have more than twenty-five years experience evaluating natural and contaminant water chemistry problems and issues. Eleven of those years were working for the California State Regional Water Quality Control Board on water quality issues related to the impacts and remedies of water pollution from industrial and cultural activities. My experience includes the development, preparation, and review of hundreds of water quality monitoring programs involving surface water as well as groundwater systems. A true and correct copy of my curriculum vita is attached.

You asked if it is possible to protect the beneficial uses of waters of the State without monitoring those waters. The answer is a simple no. Protection of beneficial uses of waters of the State is function of the ability to monitor those waters to determine their quality. This done to verify their conformity to water quality standards and goals as defined in the Basin Plan.

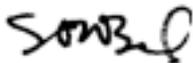
You asked if it was possible to evaluate the effectiveness of a water treatment system or of a management practice at a farm without monitoring the discharge. My answer is no. Evaluating the effectiveness of a technology or a practice requires that the change in water quality attributable to the specific practice or technology be verified. To do that a reference sample from the point of discharge and then a comparison sample taken from the same location after the technology or practice is implemented must be collected and analyzed. In actual practice, multiple samples over range of operating conditions must be collected to verify positive changes.

You also asked if it was possible to evaluate the effectiveness of a water treatment system or of a management practice at a farm from a distant downstream monitoring location. The basic answer is no. In such a case, before the samples are collected, the discharge is mixed and diluted in the receiving water with other sources of pollution from other farms. Any changes in water quality that may occur at the discharge are masked within this soup of waters and pollution and the performance of the technology or practice are essentially unknowable.

You asked if the downstream water quality of a complex watershed composed of multiple sub-watersheds, is a valid measure of the water quality in any or all of the individual sub-watersheds. My answer is no. While gross average conditions may be observed downstream, the conditions of individual upstream sub-watersheds will remain unknown. Between the downstream monitoring station and the various upstream watersheds, mixing and dilution occurs and the conditions at any upstream point are obscure to the downstream location.

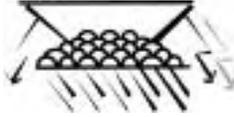
I've attached a 26 May 2003 letter from me to the Chairman of Central Valley Regional Water Quality Control Board on the subject of the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Central Valley Region. This letter also addresses many of the issues associated with water quality monitoring of irrigated lands.

Sincerely



Steve Bond PG, CEG, CHG  
Principal, Steven Bond and Associates

Attachments



**Steven Bond and Associates, Inc.**

Consulting Geologists, Groundwater, and Water Quality Experts

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26 May 2003

Mr. Robert Schneider  
Chairman, Central Valley Regional Water Quality Control Board  
3443 Routier Road, Suite A  
Sacramento, CA 95827-3003

Subject: Conditional Waiver of Waste Discharge Requirements for Discharges from  
Irrigated Lands within the Central Valley Region, 24 April 2003

Chairman Schneider and Members of the Board.

I have reviewed the proposed Monitoring and Reporting Programs (MRP) for the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Central Valley Region which was prepared for the 24 April 2003 Regional Board hearing. I prepared this letter on 23 May 2003 but was unable to transmit because I lacked various information available only on the Regional Water Quality Control Board Web Site, which was unavailable at that time. I was informed today that the deadline for comments was extended due to technical problems with that web site. I am submitting this letter on behalf of the DeltaKeeper and Water Keepers of Northern California.

I find that the proposed MRP and associated Quality Assurance Project Plan are impressive documents with many positive elements to offer for the protection of water quality. However, in certain respects the proposed MRP is too general and provides loop holes that may result in less than adequate monitoring data.

I am a professional geologist specializing in water chemistry, water quality, groundwater, and engineering geology. I hold professional licenses and certifications issued by the State of California for these practices, and operate a private consulting business providing these services. I have eighteen years experience evaluating natural and contaminant water chemistry problems and issues. Eleven of those years were working for the California State Regional Water Quality Control Board on water quality issues related to the impacts and remedies of water pollution from industrial and cultural activities. My experience includes the development, preparation, and review of hundreds of water quality monitoring programs involving surface water as

well as groundwater systems. A true and correct copy of my curriculum vita is attached.

The decades of growth and development of the Central Valley and its agricultural industry has coincided with the decline of the quality of the Central Valley waterways. Although this decline is a matter of record, discharges and runoff from irrigated agriculture and other agricultural operations have contributed to this decline in ways that are often difficult to quantify. They are not easily quantified because critical monitoring programs were not in place to require the collection of essential data.

### Water Quality Monitoring Fundamentals

Monitoring is the central supporting element of water quality protection and conservation. All actions to protect and safeguard our water resources rely on what the monitoring informs us about the conditions of the water bodies. Monitoring programs are like the physical senses; they are the faculties which we perceive the conditions of the water bodies. Without monitoring, we are blind to all but the grossest conditions in our rivers, streams, and lakes. Further, a poor or inadequate monitoring program provides us with questionable information and ambiguous clues to guide us in making intelligent decisions regarding water quality control.

A valid monitoring program usually begins as a well-reasoned plan. It will include an assessment of water flow onto and off of an area of possible or potential pollution, and contaminants. It will include an assessment of all the potential sources of pollution and contamination and identify the elements and constituents associated with the sources. The elements can include individual constituents as well as possible adverse effects of combinations of individual constituents and or conditions. These effects will be measured as toxicity. The well-reasoned plan will address the representativeness of sample collection by the method and timing of sample collection and measurement.

A well-reasoned water-quality monitoring plan is based on a thorough understanding of flow paths and physical and chemical quality of the water moving through a watershed. This will include an understanding of the variability of the flow and quality of the water over time, and at different locations within the watershed. This understanding of the watershed becomes the standard by which subsequent monitoring data can be measured or judged. Definition of existing conditions within a

watershed will require, at a minimum, the monitoring of a full annual cycle of climatic changes. However, multiple years of data are needed to address variations in the annual cycles.

A good understanding of a watershed (existing-conditions) is highly desirable; it is usually essential. Lacking good understanding of the existing-conditions, the only option left is to measure the quantity and quality of water before (background) it enters the critical area of the watershed (project area), and then conduct identical monitoring of water as it passes from the project area. In this latter case, the background water quality becomes the standard, or benchmark which the down-river water quality can be measured and judged.

#### *Monitoring Point Locations*

Valid monitoring data can only be collected from logical points of monitoring placed within the flow path of the discharges from the potential sources of pollution (the agricultural lands) into the receiving waters; the waters of the State.

#### *Monitoring Parameters*

A reasonable water-quality monitoring program will track physical and chemical constituents of interest (constituents of concern) specific to the discharge from a source and, will define the mass of contaminants discharging from the source. The constituents of concern will include each constituent reasonably expected to come from the agricultural operation. Constituents of concern will also have the potential to impair the beneficial uses of the receiving waters, or they will be indicators or surrogates of such pollutants.

#### *Sample Collection Timing*

Sample collection must coincide with the most likely period of time that discharge of pollutants would occur. In many cases pesticide and fertilizer application occurs only at certain times of the year and these times vary depending on the crop. Consequently a valid plan will address these variables.

#### *Monitoring Cost Estimates*

A wide range of alternative technologies exist to assist the responsible parties in efficient and cost conscious data collection. When attempting to assign a dollar cost to monitoring project, it is not reasonable to assume that the most labor intensive sampling and analytical techniques should be used.

*Monitoring Station versus Watershed Area*

The proposed MRP is excessively lenient where it indicates that 20 square kilometers (5000 acres) of watershed will be a maximum area allotted per monitoring point. This language will tend to encourage dischargers to design monitoring plans around this figure and in doing so will undermine the quality of monitoring data.

For example, a monitoring plan with a large watershed and few monitoring points will inevitably have a number of small tributary water bodies located between a single monitoring point and a potential source of pollution. These small tributaries will alter the character and quality of the water and the sampled water will not be representative of the water quality impairment immediately down stream of a particular discharge. Such a program will deliver misleading and incomplete information with respect to receiving-water water quality conditions. This will result in contradictory or ambiguous conclusions with respect to the performance of any mitigation measures, or lack thereof, at the project area.

Emphasis should be placed on the requirement that each discharge point be monitored and that each sample collected be representative of the discharge water quality. The size of an area represented by a monitoring station should be a function of the number of discharges from a specific agricultural operation.

Summary

An adequate monitoring program is a valid program. It will assess the impacts to the state's waters from agricultural operations and it will require monitoring stations at the point(s) of discharge. A valid monitoring program will monitor for all constituents of concern as well as toxicity. It will assess the total mass of pollutants discharging from individual agricultural operations and it will also include a comprehensive ambient (background) monitoring program.

Sincerely



Steve Bond  
Principal, Steven Bond and Associates, Inc.

Attachment

# STEVEN R. BOND

## Curriculum Vita

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bondassociates@mac.com

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### Profile

*Geologist / Engineering Geologist / Hydrogeologist / Aqueous-geochemist /*

- More than twenty-five years applied experience in groundwater and engineering geology.
- Twenty years practical experience defining hydrogeologic flow systems in crystalline, fractured rock systems, and porous sedimentary aquifers.
- More than twenty years practical experience evaluating natural and contaminant water chemistry problems and issues.
- Eighteen years applying geochemical techniques to hydrogeologic situations in humid, and semiarid hydrogeologic regimes, including water supply, and contaminant fate and transport analyses.
- More than twenty years experience investigating and evaluating geologic and hydrogeologic hazards related to slope stability, seismic hazards, hazardous materials, mine wastes, and soil and groundwater contamination.
- Five years experience defining and modeling stream and river flow, flooding analyses, and sediment transport systems.
- Ten years experience evaluating industrial impacts to water quality

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|---------------------|---|--------|
| <b>Professional</b> | Registered Geologist, <i>California, USA</i>            | # 5411 |
|                     | Certified Engineering Geologist, <i>California, USA</i> | # 1841 |
| <b>Licenses</b>     | Certified Hydrogeologist, <i>California, USA</i>        | # 0238 |

- Eleven years regulatory experience implementing California and U. S. water quality laws and regulations.

### Professional Experience

*January 1999 to Present*

Steven Bond and Associates, Santa Cruz, CA, President, Principal Geologist

Conducted investigations and assessments of geologic hazards, threats to surface water and groundwater quality from various industrial and natural sources, and groundwater supply investigations. Performed litigation support in cases involving potential impacts of geologic hazards, groundwater supply and pollution, surface water pollution, and State water quality policy review. Examples of such activities and projects include the following:

- *Engineering Geology*: Conducted investigations of geologic hazards, foundation studies, liquefaction potential assessments, fault trace analyses, slope stability assessments and prepared the associated engineering geology investigation reports for development and industrial projects in Monterey, San Mateo, Mendocino, and Santa Cruz Counties. ◇ Conducted foundation suitability study, seismic evaluation, and fault trace study for resort development, Big Sur (Monterey Co.) ◇ Conducted analysis of debris-slide hazard potential of properties near Loma Mar (San Mateo Co.) ◇ Did technical analysis of slope stability and soil erosion potential of timber harvest operations, and evaluated surface-water monitoring practices (Humboldt Co.) for permitting dispute. ◇ Evaluated landslide activation hazard analysis of cliff side development in Brisbane (San Mateo Co.) ◇ Evaluated potential erosion hazards and drafted technical remedies from impacts of extrajudicial logging activities (Mendocino, Co.) ◇ Prepared engineering geologic reports for various residential development projects (Santa Cruz Co. , San Mateo Co.).
- *Groundwater Investigations, Modeling, and Remediation System Design*: Designed and implemented original subsurface investigation technics, and remediation systems for a complex hydrogeologic environment of

volcanic sediments, for Sierra Nevada Mt. community drinking water contamination (Volcano, CA). ◇ Did aquifer analysis and computer simulation (Modflow) of contaminant flow and remediation system design (groundwater extraction) for MTBE site in Turlock, CA. ◇ Did groundwater transport and pollutant fate analysis of landfill for litigation support. (Colma, CA)

- *Groundwater Supply*: Conducted groundwater use sustainability study for Sonoma Valley winery (Valley of the Moon). ◇ Did evaluation of sustainability potential and impacts from groundwater extraction in Sierra Valley (Sierra and Plumas Counties) for litigation support.
- *Policy Review and Regional Studies*: Conducted technical review and analysis of CA State water policy (State Implementation Plan, California Toxics Rule) for litigation support. ◇ Technical consultant and committee member for San Francisco Bay Copper-Nickel TMDL impairment studies (north and south).
- *Storm Water*: Conducted technical reviews, and did litigation support in cases of storm water pollution regarding the adequacy of monitoring programs, BMPs, and treatment technology application (Alameda, Humboldt, Placer, Sacramento, San Joaquin, San Mateo, San Francisco, Sonoma, Yuba counties) for the following types of industry: aggregate, cement, asphalt, metal fabrication, metal forging, steel casting, recycling, ship breaking, wood treatment, sawmills, CAFOs, vehicle maintenance, auto wrecking, POTW, precious and heavy metal mines, landfills, fueling facilities, and port loading facilities for ammonia, fertilizer and petroleum coke.
- *Mining Projects*: Evaluated drinking water quality hazards posed to confined prisoners at an operating copper mine (United Nations ICTY, Bosnia-Herzegovina). ◇ Evaluated geochemical potential to produce acid and release arsenic from re-activated gold mine (Sutter Ck. CA), acid mine drainage water quality impacts. ◇ Evaluated WQ pollution potential from abandoned mercury and gold mines (Coastal Mts, central & north CA, Sierra Nev. Mts) for litigation purposes.
- *Land Discharge Projects*: Evaluated compliance with CCR Title 23, Title 22, Chapter 15 (CA) regulations for Winery wastes (Amador County), dredging spoils disposal (Port of Stockton), Class III landfill (San Mateo Co., Shasta Co., Lake Co.). Designed monitoring programs and budgets.

#### *March 1998 - January 1999*

Fall Creek Engineering, Inc., Santa Cruz, CA, Principal Geologist

Evaluated the risk from surface and groundwater contamination to public groundwater supplies (Big Sur); performed computer simulations of flow and geochemistry of ground and surface water interaction using Modflow, Minteq. Did hydrologic studies to evaluate the flood stages, water surface profiles, and erosion potentials; constructed a computer -based hydraulic model of the river using HEC-RAS (Salinas River, Monterey Co.); prepared water quality and flood control management plans (Pajaro River). Designed and conducted soil and groundwater sampling analysis programs at various sites in Monterey and Santa Cruz Counties (leaky underground fuel tanks, wastewater disposal systems).

#### *March 1997 - January 1998*

Water For People, Denver Colorado, Consulting Hydrogeologist

Conducted a synoptic hydrogeological survey of the Bay Islands, Honduras, Central America for the Bay Island Environmental Project. Conducted a study of the islands' resources and made recommendations for a comprehensive water supply investigation of the three main islands comprised primarily of fractured metamorphic rock. Conducted local interviews, literature review and a reconnaissance level survey, field trued geology in selected areas. Evaluated island-available drilling technology, characterized water quality and supply issues for several of the island communities, prepared investigative criteria for future work, wrote report.

#### *December 1986 - May 1998*

California Regional Water Quality Control Board, Sacramento, CA. Associate Engineering Geologist

Conducted investigations of all aspects of pollutant transport in the vadose zone and groundwater and surface water. Reviewed and evaluated the geologic, hydrogeologic, geochemical, and geophysical content of professional reports. Evaluated thoroughness of surface and groundwater investigations, the completeness of remedial efforts, and validity of monitoring programs. Provided expert technical assistance to State and local agen-

cies on issues of geochemical fate and transport of pollutants, well-head protection strategies, abandoned mine investigation and remediation methods, and contaminated groundwater and soil cleanup technics. Examples of such projects include the following:

- Analysis of groundwater impacts from organic solvents and fuels in sedimentary and fractured rock terrain. Evaluated investigative methods including drilling techniques, soil, water, and vapor sampling methods, and in situ and ex-situ remedial technologies using vapor transport, groundwater capture, extraction and treatment. Did deterministic computer modeling. Technical advisor and regulator for hundreds of facilities under authority of Federal and State underground tank statutes in the counties of Alpine, Amador, El Dorado, Calaveras, Lake, Napa, Mariposa, Placer, Sierra, Solano, Stanislaus, and Tuolumne California, and in Yosemite National Park.
- Analysis of groundwater flow and pollutant transport characteristics of polluted, high density waste water (industrial acids and heavy-metals) at Davis, CA. Evaluated water quality impacts, effectiveness of groundwater extraction schemes using numerical modeling methodologies for flow, and chemical fate and transport. Co-developed in situ leaching methods of contaminated soils to accelerate cleanup rates.
- Analysis of the underlying, geochemical causes of acid mine drainage at the Penn Mine in Calaveras Co., CA. Identified and evaluated groundwater flow paths in a faulted crystalline-rock aquifer and the applicability of water quality and hazardous waste laws to the toxic discharges. Conducted a geologic and fracture mapping project and developed conceptual flow groundwater model. Evaluated acid-mine and acid-rock drainage remedial alternatives and made recommendations for their use. Developed and composed work plan for the investigation of fractured-rock hydrogeological transport, and aquatic geochemical fate of heavy metals from Penn Mine to the adjacent Camanche reservoir. Authored numerous reports and a series of successful grant proposals, prepared annual budget and obtained funding for detailed groundwater and remedial waste rock investigations.
- In companion project to the above mine waste project, developed a conceptual model for the transport mechanisms of heavy-metal laden sediment in the Camanche water-supply reservoir, developed the conceptual methodology of investigation, and managed the project. Assembled a team of limnologists from the University of California at Davis and fluid mechanical engineers specializing in sediment re-suspension from University of California at Santa Barbara. Wrote a successful Federal Clean Lakes Grant proposal, and implemented the investigation at Camanche reservoir, California.

*May 1986 - September 1986*

U.S. Army Corps of Engineers, Sacramento, California, Engineering Geologist.

Conducted geologic and hydrogeologic investigations preparatory to the design of Deer Creek Water Supply Reservoir, Utah. Drafted groundwater investigation plan. Conducted geologic mapping. Designed monitoring wells, supervised drilling crews and well construction, conducted aquifer pumping tests.

*October 1983 - September 1984*

Dames and Moore, Los Angeles, California, Sedimentary Petrologist.

Conducted sedimentological investigation of near-shore sediments in western Arabian Gulf. Characterized sediment transport systems in the Arabian Gulf area of United Arab Emirates for Abu Dabi National Oil Company.

*May 1982 - April 1983*

U.S. Army Corps of Engineers, Portland, Oregon, Engineering Geologist.

Conducted geologic, geophysical and hydrogeologic investigations in the Columbia Gorge near Bonneville, Oregon. Conducted geophysical borehole investigation of Bonneville New Navigation Lock. Did detailed mapping of landslides, and drill core logging. Designed passive de-watering systems, and monitoring wells. Supervised drilling crews and the construction of water supply wells and monitoring wells; conducted and interpreted aquifer pumping tests.

*June 1981 - December 1981*

XCO, Denver Colorado, Petroleum Field Geologist (Mud logger)

Did drill core logging, conducted field screening of chemical composition of drill cores, interpreted geologic strata, and prepared drilling reports in several depositional basins in North Dakota, Colorado, and Oklahoma.

*September 1976 - September 1977*

U. S. Geological Survey, Menlo Park, California. Geologic Field Assistant.

Conducted geologic mapping and did geochemical sampling for Continentally Unified Strategic Assessment Program.

**Education  
&  
Training**

Master of Science (ABT) in Hydrogeology, Special Studies Program, California State University, Chico, California, 1985-1986

Bachelor of Arts in Geology, Humboldt State University, California, 1979 - 1981

Annual NWWA courses in Aqueous Geochemistry, Fluid Flow through Fractured Rock, In situ Fluid Extraction Systems, Ground-Water Isotope Geochemistry. 1987-1991.

Computer Modeling. EPA CEAM: MINTEQ geochemical speciation, 1990, 1991; WASP surface water flow and transport, 1991. General Sciences Corp.: SESOIL vadose zone pollutant transport, 1994, 1996; AT 123D groundwater pollutant transport, 1994, 1996; NWWA: Visual Modflow, Flowtrans, groundwater flow and transport, 1996. WHI: Modflow 2000, MTD3, groundwater and contaminant transport, 2002.

Constructed Wetlands Workshop and Seminar Series, Humboldt State University, California, 2002.

Soil Slope Stabilization, Embankment Design, National Highway Institute, Vail, CO, 2007

40 hour OSHA Health and Safety for Hazardous Waste Operations and serial 8 hour refresher courses.

Evaluated economic potential of proposed Federal Wilderness areas and abandoned mines including the Kalmiopsis Wilderness of southwestern Oregon; an ophiolite suite and recent volcanic terrain.

***Professional Associations***

Association of Engineering Geologists; Groundwater Resources Association of California  
Northern California MTBE and Fuel Oxygenates Committee

***Non-Profit Affiliations***

Valley Air Trust, Central Valley, Stockton California, Board Member 1993 - 1997

BayKeeper San Francisco Bay -Sacramento Delta, Technical Advisory Committee Member 1996 - present.

California Sportfishing Protection Alliance, Technical Advisory Committee Member 2000 - present

The Abandoned Mine Alliance, Sierra City, California, Board Member 2005 - present

***Expert Testimony***

- Before the United States Northern District of California Court, on issues of storm water pollutants associated with industrial ammonia and urea fertilizer production and storage operations in the case of California Sport Fishing Protection Alliance vs California Ammonia Company, September 2006.

***Expert Testimony cont.***

- Before the United States Northern District of California Court, on issues of surface water pollution associated with logging practices in the case of EPIC vs Pacific Lumber Company, May 2006.
- Before the United States Northern District of California Court, on issues of groundwater and storm water pollution associated with lumber milling and wood treatment operations in the case of Ecological Rights Foundation vs Sierra Pacific Industries, April, October, 2002.
- Before the United States Eastern California District Court, on issues of storm water pollution, confined animal feeding operations and industrial activities in the case of WaterKeeper of Northern CA. vs L. Vandhoef, Chancellor, University of California, Davis, June, August 2001.
- Before the CA State Water Resources Control Board hearing on the Appeal of Regional Water Quality Board's Actions regarding Pacific Lumber and the Elk Creek Timber Harvest Monitoring, July 2001.
- Before the United States Northern District of California Court, on issues of storm water pollution and ship-breaking in the case of WaterKeepers of Northern CA. et al, vs U.S. Dept. of Navy and Astoria Metals Corporation, June, August 2000.
- Before the California Superior Court on issues of groundwater pollution and crude oil in the case of Thompson Chevrolet vs Chevron Corporation et al., January, July, and November 1996.
- Before the California Superior Court on issues of acid mine drainage, water pollution, and groundwater flow through fractured crystalline rock in the case of California Sportfishing Protection Alliance vs State Water Resources Control Board, June 1994.
- Before the California Senate Natural Resource and Wildlife Committee Investigative Hearing on Conflicts of Interest in the California Environmental Regulatory System, June 1992.
- Before the California Senate Natural Resource and Wildlife Committee Investigative Hearing on Acid Mine Drainage, Water Pollution, and the California Regulatory Environment, Jan. 1992.
- Before the California State Water Resources Control Board hearing on the Appeal of Regional Water Quality Boards Actions regarding the Penn Mine, October 1991.

***Public Speaking and Presentations****Presentations before the State Water Resources and Regional Water Quality Control Boards.*

- Presented testimony and briefs before the State and Regional Boards on specific cases of regulatory enforcement actions, (1990 - 2007)
- Mediator of formal discussions regarding disputed technical issues about groundwater quality between responsible parties, (1988 - 1998)

*Workshop Presentations before professional societies, and local and State regulatory agencies:*

- The application and interpretation of discreet groundwater sampling methods and data collection.
- The use and interpretation of computer modeling simulations for vadose transport and mineral equilibria
- The effects and determination of vertical gradients on pollutant transport in groundwater.
- Contaminated soil cleanup criteria based on California State Water Code, regulations and policies.
- Acid Mine Drainage issues: the geology, mineralogy, and chemistry, the environmental effects, remediation, policies, and politics.

*Writings*

Author of scores of reports for private organizations, NGO's, Federal, State and local Agencies, on the subjects of (a. organic and inorganic pollutant transport in surface and groundwaters, (b. polluted groundwater remediation, (c. the investigation and analysis of the potential transport of soil contamination (metals, fuels, solvents) through the vadose zone, (d. unsaturated zone characterization including vapor-phase transport and cleanup technologies, (e. acid mine drainage causes, fate, and mitigation, (f. the logical elements of water quality monitoring, (g. regulatory compliance of state and federal environmental laws by federal, state and private parties, (h. metal mobility and mineral equilibria, (i. net-vertical transport of groundwater pollutants, (j. general surface water and groundwater resource protection, (k. water budget accounting in mixed geologic environments with multiple density fluid interfaces, (l. groundwater supply evaluations, (m. reconciliation of threats to water resources and risks to human health, (n. engineering geology, geological hazard analysis.



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March 21, 2011

Via e-mail

Regional Water Quality Control Board, Central Valley Region  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670  
Attn: Adam Laputz  
AWLaputz@waterboards.ca.gov

Re: California Sportfishing Protection Alliance Comments on the Recommended Irrigated Lands Regulatory Program Framework

On behalf of the California Sportfishing Protection Alliance and California Water Impact Network (collectively "CSPA"), thank you for this opportunity to comment on staff's "Recommended Irrigated Lands Regulatory Program Framework." The proposed ILRP Framework is a wholesale retreat from any meaningful changes to the existing failed irrigated lands program. In the Framework, staff proposes to authorize the continued degradation of Central Valley waters by the agricultural industry without any meaningful fear of Regional Board interference. Rather than acknowledge the obvious shortcomings of the existing irrigated lands program and propose changes to the program modeled on existing successful regulatory programs implemented in California, including the industrial and construction storm water program and others, staff has chosen to mirror the dischargers' concerns that it may cost time and money for them to reduce their gross discharges of pollutants. The Regional Board cannot solve the Central Valley's irrigated lands pollution problems by continuing to avoid regulating the dischargers responsible for the pollution. That avoidance approach has not worked for the last seven years since the current program was instituted. It certainly did not work for the twenty years prior to that when the Regional Board let the agricultural industry manage its water quality impacts itself and, as a result, caused the massive impairments that continue to be generated by agricultural discharges every year.

CSPA's previous comments on the initial staff report and draft PEIR outlined the minimum changes to the existing irrigated lands program that are necessary for the Regional Board to comply with the State's Antidegradation Policy (SWRCB Resolution No. 68-16), the State's Nonpoint Source Policy and the Regional Board's mandate to implement regulatory programs that comply with the applicable water quality objectives. None of CSPA's reasonable proposals are included in the vague Framework produced by staff. Staff's new Framework actually weakens staff's previous proposal and, if adopted, will only create a program that plainly violates each of the applicable

requirements and policies. The Regional Board should reject staff's recommended Framework and instead adopt a program that incorporates the following components.

**1. Third Party Coalitions Must Be Eliminated.**

Third party coalitions add bureaucracy, obfuscate information the Regional Board needs to collect and evaluate, create permanent lobbies to weaken or undermine any true regulation of farm dischargers (the proposed Framework being a case in point), and cannot be effectively enforced. The Regional Board has the duty to implement Porter-Cologne and to assure that farm dischargers do not unreasonably degrade and pollute the Central Valley's waters. See Water Code §§ 13146, 13247. The perpetuation of fictional coalition groups is a primary reason the Regional Board has failed to carry out its duties over the last seven years to protect water quality from irrigated agriculture waste discharges. Staff acknowledges that the existing coalitions have not succeeded in demonstrating any implementation of farm management practices designed to protect water quality and the regional data collected to date shows wide spread and prolonged violations of water quality objectives and no discernable progress in bringing the Central Valley waters into compliance. See Staff Report, p. 10 ("a number of factors that are not well known, including (1) the extent to which growers have already implemented management practices to protect water quality; [and] (2) whether the third-party framework will be successful or greater direct Board oversight will be required. . .").

Staff's Framework relies on a number of fallacies regarding the existing coalitions and entirely unrealistic premises about the Regional Board's ability to adjust to coalition shortcomings. For example, a typical head-in-the-sand proposal included in the Framework includes that "[a]ny requirements or conditions not fulfilled by the third party are the responsibility of the individual discharger participant to fulfill." Framework, p. A-10. This is almost meaningless in the context of a framework that does not require anything of individual dischargers, instead gearing its requirements and conditions to the coalitions. Even assuming some requirements apply to individual growers, staff cannot identify and has not exhibited any practicable ability to follow through on this notion and hold any individual grower accountable under a coalition-based program. The only actual response that staff could take is to eliminate a coalition when it fails and that is not a realistic outcome given that the entire program is proposed to continue to be based on abstract coalitions.

The absurdity of the Framework's reliance on coalitions is highlighted by staff's strained effort to make believe notices of violation passed on to some individual, unknown, coalition members by the coalition itself somehow stands in for a rational enforcement mechanism. *Id.*, p. A-10. This abdication of regulatory responsibility is not a reasonable or effective method to enforce the pervasive water quality violations already afflicting the Central Valley. Staff even envisions adding another layer of non-discharger entities to the mix, suggesting in the Framework to "[e]nsure that any activities conducted on behalf of the third party by a subsidiary group (e.g., subwatershed group) meet Board requirements" and that "[t]he third party must assume responsibility for any activities conducted on the third party's behalf." *Id.*, A-12. In other

words, another layer of unidentified, non-dischargers for the Board to peel away in order to address actual dischargers. One has to ask; can this scheme be any less enforceable?

2. **All Agricultural Dischargers Must Prepare an Individual Farm Water Quality Management Plan (FWQMPs) Available to the Regional Board and the Public.**

Instead of proposing a scheme that would eliminate the veil of secrecy erected by the Coalitions over what, if anything, their members have been up to over the last seven years, staff pays lip service to individual farm management plans, proposing that a watered down plan be prepared only if the discharger happens to be in a Tier 3 watershed and only “if the Central Valley Water Board determines that adequate progress in the implementation of the regional GQMP or SQMP has not been made.” *Framework*, p. A-16. This is another way of saying there will be no farm specific management plans. The Executive Officer and Board already have this authority and it has never been used. The Regional Board already is lacking, even after seven years, any evidence that any progress has been made by any coalition group members to implement in any significant way any pollution control measures.

The Regional Board should cut to the chase and not warrant another decade of delay waiting (or more accurately wishing) the dischargers will save the Board from its own duty to act. There is no reason that the Regional Board should not require all farm dischargers to prepare a farm-specific FWQMP. Nor should the Regional Board allow a farm discharger to prepare a plan and then delay for five years before determining whether the plan should be changed or improved. See *Framework*, p. A-16. And, although CSPA initially agreed it may make sense to allow FWQMPs to remain on the farm, and available to the Regional Board and the public, upon request, CSPA now believes that a copy of all the FWQMPs should be submitted to the Regional Board electronically (e.g., through an online database system similar to SMART, which serves the industrial and construction stormwater regulatory program). Given staff’s proposal, it is clear to CSPA that any expectation that the Regional Board itself might follow-up on ascertaining the contents of a significant number of FWQMPs is unlikely and only by making this essential information about what is actually happening in the field readily available to the public, especially researchers and advocacy groups, will assure that the dischargers prepare effective FWQMPs consistent with appropriate criteria.

The State Board’s Policy For Implementation And Enforcement of The Nonpoint Source Pollution Control Program (May 20, 2004) (“NPS Policy”) reliance on individual discharger’s assessment of their pollution contribution is worth repeating: “[a] first step in the education process offered by these programs often consists of discharger assessment of their lands or operations to determine NPS problems, followed by development of a plan to correct those problems.” NPS Policy, p. 11 (emphasis added). The Policy continues, emphasizing that “[management practices] must be tailored to a specific site and circumstances, and justification for the use of a particular category or type of MP must show that the MP has been successfully used in comparable

circumstances. If an MP has not previously been used, documentation to substantiate its efficacy must be provided by the discharger.” NPS Policy, p. 12 (emphasis added). The Regional Board has to stop putting off this first step and require FWQMPs be prepared by every discharger within 6 months of the termination date of the current waiver.

Staff’s proposed farm evaluations are not sufficient to identify the implementation of best practicable treatment or control (BPTC) or assure adequate protection of water quality. It would appear from the sparse description of the evaluations’ proposed contents and the proposed use of templates that the evaluations will be cursory and not provide details about specific measures and the rationale, if any, behind them. Framework, p. A-16. The evaluations should be elevated to full FWQMPs with sufficient detail for Board staff or any third party reviewer to determine whether the described measures are adequate for the type and size of farm being addressed. Although further details should be provided, the outline of the FWQMP contents proposed by staff appear to be a good start and should be required of all dischargers without contingencies. See Framework, p. A-32.

### **3. The Three Tiers Should Be Identified Now.**

CSPA does not have any objection to the Regional Board using a tiered system. We agree that the tiers are a rational mechanism to: adjust monitoring requirements; assist farm dischargers in determining the level of management measures necessary to protect water quality and, where waters are of high quality, meet BPRC; and assist the Regional Board in prioritizing inspections and enforcement actions. However, the information to specifically designate appropriate tiers is available now. Namely, any waterbody already subject to a Regional Water Quality Management Plan is already impaired and should be designated Tier 3. The Board also has sufficient information to specify the other two tiers of watersheds as well. See PEIR, pp. 3-17 – 3-18.

### **4. Non-Water Quality Monitoring.**

Our review of the recommended Framework turns up no mention of any scheme to track in any detail whether any management practices are being implemented and maintained, especially on a farm-specific basis. Nor does the Framework provide basic information about nutrients and pesticides being applied by specific farms for the Board to evaluate whether any installed measures are appropriate. The Framework makes no improvement on the current program, which has left the Regional Board and the public entirely naïve about what, if any, measures have been implemented by irrigated agriculture throughout the Central Valley. The proposed Framework resorts to vagaries that make it impossible for anyone to comment intelligently on its merits. Rather than think through and propose specific requirements for tracking the implementation of management practices, staff throws up its hands and simply proposes to let the coalitions tell us in a few years time. Framework, p. A-28.

CSPA believes that the PEIR Alternative 4 gets this piece correct by calling for the tracking of nutrients, pesticides, and implemented management practices by each

farmer. Again, the NPS Policy underscores the need for each discharger to track implementation of his/her management practices, “[i]t is important to recognize that development of a plan is only the first step in developing an implementation program that addresses a discharger’s NPS pollution discharges. Implementation of the plan, including any necessary iterative steps to adjust and improve the plan and/or implementation must follow the planning stage.” NPS Policy, p. 11. Leaving it entirely to the coalitions to devise this piece of the Framework will assure that the Regional Board remains in the dark about what management practices have actually been implemented in the Central Valley.

5. **Regional Monitoring of Surface Water Quality, By Itself, Will Not Assure The Implementation of BPTC or Tell The Board or Public Whether Any Management Practice is Proving Effective.**

If irrigated agriculture discharges waste that affects or has the potential to affect the quality of waters of the state, they like every other discharger in the state, should be required to characterize and monitor what they are discharging and be able to show that their discharge is not creating or contributing to a condition of pollution and degrading beneficial uses, whether the waters are flowing immediately adjacent to their fields or miles downstream. Staff’s Framework proposes a license to pollute that, like the current program, does not mandate that any farmer reduce or eliminate a single molecule of pollution in their discharges. Instead, it resorts to wishful thinking and window dressing – producing very limited surface water quality monitoring collected by discharger representatives, miles away from the pollution sources and without a prayer of informing anyone about the merits or demerits of any management practices implemented by any specific dischargers upstream. This non-monitoring scheme is not designed to drastically curb the gross pollution that continues to impair the beneficial uses of Central Valley waters. It is designed to prolong the status quo as long as possible.

The Framework calls for a vague proposal that coalitions in their regional management plans describe the coalition’s “approach for determining the effectiveness of the management practices implemented...” Framework, p. A-28. Likewise, the Framework says coalitions will “[d]evelop and implement plans to track and evaluate the effectiveness of management practices and provide timely and complete submittal of any plans or reports required by the Board.” *Id.*, p. A-11. The Framework also hints at coalitions “conduct[ing] required water quality monitoring and assessments and reporting the results to the Board. *Id.* See also p. A-20. The lack of any detail makes these generic proposals impossible to evaluate.

The Framework mentions possible field studies of some representative sites or somehow linking implementation of practices to changes in water quality. *Id.* Although some studies to evaluate management practice effectiveness would be welcome by CSPA, such isolated studies do not serve as a reasonable stand-in for measuring what is actually being implemented and achieved in the field. Even if a well thought through pilot study showed a management practice could be effective, that study says nothing about whether that practice is being implemented and maintained in any given field. As

for attempting to determine the effectiveness of a management practice by monitoring downstream receiving waters, given the regional nature of the monitoring proposed by staff, CSPA does not see how anyone could ever draw such a connection to a specific management measure. Even in those rare instances under the proposed Framework where a FWQMP may be required, staff still doesn't require any monitoring by individual dischargers. Framework, p. A-32. The only way to truly evaluate the effectiveness of a particular management practice in the real world is to monitor discharges from a sufficient number of representative farms that have implemented the practice, including pre-implementation and post-implementation samples, along with appropriate monitoring of receiving waters upstream and downstream of the area of farm discharge.

As CSPA proposed in its previous comments, within areas where Coalitions are currently required to prepare and implement a management plan, all farms within that management area that are discharging any pollutant which triggered the management plan, must prepare and implement a discharge monitoring plan for the pollutants governed by the management plan as well as basic parameters that serve as indicators of pollution discharges. The basic parameters would include, for example, flow, toxicity, total nitrogen, nitrate, total ammonia, total phosphorous, soluble ortho-phosphate, temperature, turbidity, pH, electrical conductivity, fecal coliform (if livestock is present or the land receives applications of animal manure), and any applied pesticides and metals. If no toxicity is identified in the initial year, toxicity testing could be dropped for several years. The monitoring plan would include monitoring of end-of-farm discharges at a point downgradient from areas where best management practices (BMPs) are implemented. Where possible, monitoring of surface water run-on to areas where BMPs are implemented also must be included. CSPA agrees with the proposed number of samples per season outlined in the PEIR. PEIR, p. 3-24. However, like Tier 3, sampling by Tier 2 growers should be every year. Only by direct monitoring of site-specific BMPs can the Regional Board comply with the NPS Policy, where it states that "if the program relies upon dischargers' use of MPs, there should be a strong correlation between the specific MPs implemented and the relevant water quality requirements." NPS Policy, p. 11. Likewise, discharge data of BMP effectiveness within areas known already to be degraded is necessary to implement the State Antidegradation Policy, in particular its BPTC requirement as well as its nondegradation provision. The Framework does not come close to implementing these key requirements and policies.

Even the regional monitoring proposed in the Framework falls well short of achieving staff's stated goals. Monitoring only every three years will hardly be capable of discerning trends in any reasonable period of time. Given the shifts in agricultural production and pesticide use, such an infrequent monitoring interval will not provide adequate data to detect any trends and any resulting conclusions will always be subject to debate.

As CSPA recommended in its comments on the draft Framework, there is no good reason that the irrigated lands program should be responsible for regional monitoring. No other dischargers in the region are individually responsible for conducting regional monitoring. All of the Region's dischargers should be contributing a

portion of their permitting fees toward an objective and agency-controlled (not discharger-controlled) regional monitoring program, conducted by the Regional Board and its consultants. CSPA agrees that regional monitoring is important to determining the overall health of waterways in the Central Valley. However, its inclusion in permits for irrigated lands dischargers takes away resources that need to be focused on implementing BMPs and evaluating their effectiveness at the points of discharge. It also would be fairer that all entities that discharge pollutants to Central Valley waters contribute a proportionate share of the funds necessary to conduct regional monitoring. Lastly, by consolidating that program within the Regional Board and other non-discharger agencies – rather than under the current program with inexperienced coalitions made up of discharger representatives – the objectivity of the program will be maintained. Placing regional monitoring in another program outside of the ILRP will of course free up a vast quantity of time currently spent by staff attempting to track the coalitions' various regional monitoring efforts which have failed to demonstrate the implementation of a single BPTC-level of management practices on any farm and have not established any meaningful trend that the irrigated lands program is improving water quality anywhere in the Region.

#### **6. Groundwater Monitoring.**

Again, the Framework resorts to vague suggestions rather than any specific proposals that the public can reasonably comment upon. For example, the Framework states that “[m]onitoring and other collected information would be used to assess the effectiveness of management practices and whether the BPTC or best efforts standard has been achieved. Additional practices/monitoring may be necessary, in an iterative process, to address water quality concerns.” Framework, p. A-18. The Framework should specify that growers who qualify as Tier 2 or Tier 3 for groundwater pollution should be required to conduct individual monitoring annually as described for the Tier 3 groundwater growers in the PEIR. PEIR, p. 3-25. All growers should be required to sample all existing functional wells on their property and provide that information to the Regional Board within six months of Framework adoption to determine their tier level. The Regional Board should incorporate this data with information from the counties or Department of Public Health to identify tier areas. As for surface water monitoring, the Regional Board should take charge of regional groundwater trend monitoring, not the dischargers' coalitions.

#### **7. Compliance Schedules Are Inappropriate.**

Staff proposes another three years to allow third-party coalitions yet another opportunity to show that whatever they are doing is resulting in implementation of effective management practices and improved water quality. Framework, p. A-3. The dischargers already have had seven years to show whether this awkward third-party scheme would work. They have failed to demonstrate any meaningful progress. Prior to the current program, growers had at least 20 years where they claimed they were not degrading water quality. Of course, the data collected over the years proved the very opposite. Enough is enough. The Board should abandon the coalitions and establish

clear requirements for individual growers, including implementation of BPTC where appropriate to protect high-quality waters and BMPs elsewhere to protect water quality, as well as farm-specific monitoring now without any schedules of compliance. Either the coalitions have done what they said they were going to do seven years ago, and they can readily show that their members have all implemented BPTC or BMPs, or they failed, and no such measures have generally been implemented. The fact that staff is now proposing another three years is just another way of acknowledging the program has failed. Staff should hold the dischargers responsible and not give them yet another three years to begin even the basic improvements necessary to effectively address the impairment of Central Valley waters caused by irrigated agriculture.

Staff's leisurely pace for existing coalition members to indicate that they will remain enrolled under the new requirements underscores the inefficiency created by vague, third-party coalitions. Why should it take three months for coalitions to tell their existing members of the new requirements? And why would it possibly be necessary to wait an entire year for existing members to reconfirm their membership? Two and a half years to attract a few new members also is extremely long. Given the failure of the coalition approach, the Regional Board should eliminate legally fictitious middlemen and issue individual or general WDRs that require all irrigated lands dischargers to immediately implement best management practices that are protective of Central Valley waters.

On top of an unreasonable program level compliance delay, staff then further proposes to delay compliance by each of the discharger categories by another five to ten years. Framework, pp. A-24-25. Of course, staff's anticipation that every discharger will need up to another decade to comply with any reasonable requirements is another plain admission that the coalition-based program to date is an utter failure. The dischargers should be held to the guarantees made by their representatives seven years ago – that they would be effective at reducing the impacts to Central Valley waters from irrigated agriculture discharges. No additional schedule of compliance is necessary or warranted.

Staff also introduces yet another vague concept linking those very long compliance schedule recommendations to "primary focus" waters. *Id.* This appears to suggest that non-primary focus waters would be subject to even longer or open-ended compliance schedules. The program should apply to all Central Valley waters.

#### **8. Staff's Proposed Framework Fails To Comply With The NPS Policy.**

Like its earlier strawman proposal, staff's new proposed Framework still fails to comply with the NPS Policy. Most importantly, staff has not placed the Regional Board in a realistic position to make the most fundamental determination required by the NPS Policy: "Before approving or endorsing a specific NPS pollution control implementation program, a RWQCB must determine that there is a high likelihood the implementation program will attain the RWQCB's stated water quality objectives." NPS Policy, p. 10. There is absolutely no evidence that an irrigated lands program relying upon third party

coalition groups has any likelihood, never mind a **high** likelihood of ever achieving any water quality objectives. Staff proposes a few small tweaks to the existing program, many of which, including the monitoring proposals, weaken the existing waivers. The existing program, after seven years of oversight by the Regional Board, has failed miserably. The Board staff cannot point to a single farm that has implemented BPTC. Staff certainly cannot describe or quantify the farm management practices, if any, that have been implemented throughout the Central Valley. The data collected during that seven-year period shows water quality continuing to be degraded throughout large areas of the Central Valley. Further weakening an already ineffective program does not provide the Regional Board any basis to determine that there is a high likelihood staff's Framework will achieve the program's objectives, especially meeting water quality objectives.

As the NPS Policy states, "[f]or implementation programs developed by non-regulatory parties, factors such as availability of funding, **a demonstrated track record or commitment to NPS control implementation**, and a level of organization and group cohesion that **facilitates NPS control implementation** are among the critical factors that must be taken into account." NPS Policy, p. 11 (emphasis added). As for the Central Valley's coalitions, there simply is no track record of implementation of control measures. No evidence of any implementation has been provided by the coalitions or presented by staff. Similarly, although the coalitions have shown cohesion in slowing down implementation of the program and added some additional ambient monitoring to the mix, the coalitions have shown no organizational effort or cohesion **facilitating implementation of controls** as is required by the NPS Policy. These abject failures of the existing program and coalitions to achieve these **critical factors** demonstrate that the Regional Board should develop and implement the irrigated lands regulatory program into one much like the industrial and construction storm water programs.

### **Key Element 1.**

Staff's Framework does not comply with Key Element 1 of the NPS Policy. In addition to meeting the goals of the program itself, the NPS Policy requires that the irrigated lands program's "implementation programs must, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements." NPS Policy, p. 12 (emphasis added). No such manner of addressing farm pollution is found in staff's Framework. It is clear that staff has no idea if the program will ever be effective in achieving water quality objectives and protecting beneficial uses. Indeed, they propose to extend compliance, albeit with what requirements is anyone's guess, out by another eight to 13 years. No reasonable person can project or assure compliance that far in the future. Indeed, the need to articulate such a lengthy compliance period is evidence that staff has no idea whether continuing the coalition model will ever work. Certainly, the Board cannot determine that staff's proposal for the Regional Board to continue the existing unsuccessful model for three years will assure the achievement and maintenance of water quality objectives. Seven years of failure proves otherwise.

## Key Element 2.

Staff claims their proposed Framework complies with Key Element 2 of the NPS Policy. Staff claims that “[i]mplementation of the ILRP Framework requires identification of specific practices that will be used to address constituents of concern and requires tracking of management practice implementation. Proper implementation of practices will be tracked through required monitoring and evaluation.” Framework, p. 27. The problem with each of these examples is that any identification and evaluation is only shared between the discharger and their relevant coalition group. The only information about measures that the Framework requires to be submitted to the Board is a presumably area-wide discussion of management measures that may be generally appropriate and a summary of the evaluations. There is no clear requirement in the proposed Framework that would assure that the Regional Board will know where and what management measures exist, nevermind their effectiveness. As for monitoring of measures, there is none. The regional monitoring will not measure the presence or effectiveness of any specific discharger implemented management measures. Without farm-specific monitoring, staff cannot reasonably be claiming to track implementation and effectiveness of practices.

The NPS Policy provides that:

MPs [management practices] must be tailored to a ***specific site and circumstances***, and justification for the use of a particular category or type of MP must show that the MP has been successfully used in comparable circumstances. If an MP has not previously been used, documentation to substantiate its efficacy must be provided by the discharger. A RWQCB must be convinced there is a high likelihood the MP will be successful. A schedule assuring MP implementation and assessment, as well as adaptive management provisions must be provided.”

NPS Policy, p. 12 (emphasis added). Nothing in the Framework tailors any management practices to specific sites or shows what, if any, management practices have been successfully used on farms in the Central Valley. To date, ***no documentation*** has been provided by any ***discharger***. Given staff’s complete ignorance about what, if any, management practices have been implemented in the Central Valley, they are in no position to convince the Regional Board there is a high likelihood those unidentified practices will be successful.

## Key Element 3.

Staff also is incorrect that extending compliance timelines out for another decade or more despite having already provided the coalitions seven years to demonstrate their ability to meet standards is consistent with the NPS Policy. “The time schedule may not be longer than that which is reasonably necessary to achieve an NPS implementation program’s water quality objectives.” NPS Policy, p. 14. The Regional Board cannot determine, based on any evidence, that additional time is reasonably necessary for

apparently recalcitrant dischargers who choose not to implement meaningful management practices to some day implement BPTC and meet the applicable water quality objectives.

#### **Key Element 4.**

Staff's description of Key Element 4 attempts to refocus this important Element on an overall program and deletes the NPS Policy's reference to specific management practices. Staff paraphrases Key Element 4 as requiring an NPS program to "include feedback mechanisms so that the Board, regulated operations, and the public can determine whether the program is effective." Framework, p. 27. The NPS Policy actually focuses much more on whether management practices are effective: "An NPS control implementation program shall include sufficient feedback mechanisms so that the RWQCB, dischargers, and the public can determine whether the program is **achieving its stated purpose(s)**, or whether **additional or different MPs or other actions are required.**" NPS Policy, p. 13 (emphasis added). Staff claims that management practices will be tracked and their effectiveness evaluated. Framework, p. 27. But almost all of the information, except for what small amount may be requested by the Executive Officer, will not be available to the public. Given the vagueness of staff's Framework, it is impossible to tell whether the referenced evaluations will provide any useful information (quantitative or otherwise). The only monitoring that will occur under the Framework is regional monitoring every three years. Framework, p. A-22. Downstream monitoring on such a long interval will not assure the effectiveness of any management measures. Had such ambient monitoring provided an effective feedback tool for the public and Regional Board to evaluate management measures, the public and the Board already would be able to know what measures were in place now and what if any reductions in pollutants they may have achieved. The Board and the public (and we would surmise the coalitions themselves) obviously do not know anything about the overall presence of management practices in the Central Valley never mind their effectiveness.

#### **Key Element 5.**

CSPA is unaware of any consequences that would possibly result to a farmer who did absolutely nothing for the last seven years as long as they could say they were enrolled in a coalition. As for the coalitions, the only consequences that have resulted from their missing deadlines or not achieving any measurable water quality benefits are receiving additional extensions of time or weakening of requirements. Staff's Framework continues this tradition. Staff's list of possible consequences bears no resemblance to the actual implementation to date of the irrigated lands program. Staff claims that "the individual irrigated land operations are responsible for compliance should the third party fail to fulfill its obligations." Framework, p. 28. This is what the Regional Board indicated in the previous waivers for the last seven years. The coalitions have not complied with the requirement to meet water quality objectives. Nevertheless, not one coalition member has been called to task by the Regional Board. Although it should be, this is not a realistic consequence of staff's Framework. Staff,

like in previous waivers, again states that “failure of regional planning efforts will result in the requirement to develop and implement individual farm plans.” *Id.* The coalition planning efforts already have failed and this consequence should have been triggered already. And, if the possible farm plans are parked on a shelf in the field, there will be no effective way of knowing again whether it was implemented or, if it was, whether it was adequate. Third, staff states that, “growers who do not comply under a third-party Order will be regulated individually.” If the seven-year dance with the coalitions and staff’s proposed Framework have made anything clear, it is that staff has no intention of regulating individual growers. In any event, this consequence also is not likely given that the Board will not have the information readily available to take action against coalition members. The only way farm dischargers will recognize any consequences of not complying with conditions of an irrigated lands program is for the Regional Board to remove the coalitions from the equation and regulate the dischargers directly.

**9. The Proposed Framework Guarantees Degradation Will Continue To Occur As It Has For The Last Seven Years.**

As CSPA emphasized in its original comments, it is not realistic for staff to assume that regional monitoring, by itself, will implement the high quality waters policy’s BPTC requirement or be able to address degradation in the hundreds of miles of waterways left unmonitored by such regional schemes. Staff sticks to its desire for regional monitoring based on its assertion that such monitoring will allow them and others to determine compliance with the BPTC requirement. Framework, p. 28. The simple fact is that the regional monitoring performed to date is incapable of accomplishing the results claimed by staff. Regional monitoring does not achieve BPTC. Indeed, contrary to staff’s claim, the monitoring to date has not identified one farm’s management practices and whether those practices amount to BPTC. See Framework, p. 28. Likewise, the simple farm evaluations proposed by staff and which will be largely unavailable to staff, as well as some unidentified monitoring of measures (presumably special studies referred to elsewhere in the Framework), are so vague that they will not provide any useful information about a particular farm’s effort to achieve BPTC.

Nor does staff’s reliance on regional monitoring take into account the ever-changing cropping patterns and chemical applications made by farmers based on market conditions and evolving technology. These changes in crops and chemical applications often lead to adverse impacts and increased water quality degradation. One clear example is grower’s observed switch to cheaper and more toxic pyrethroids, which bind to sediments. The coalition approach and regional monitoring lack mechanisms to identify and address these evolving problems. Staff’s focus on regional monitoring at three year intervals assumes that agriculture is static and that ambient water quality is always linked to improvements in BMPs when in fact it could be simply measuring pollutants that have been abandoned in favor of new, equally toxic, chemicals. Regional monitoring also focuses on certain commodities, waterways and watersheds and essentially ignores others. Additionally, agricultural pollutants are often discharged during episodic events as pulse flows. The low frequency of regional

monitoring frequently fails to capture these pulses of pollutants in ambient waters. The Board cannot address the Region's widespread degradation if staff does not know what is being applied and discharged by specific farms.

The program already is replete with ineffective regional management plans that fail to provide any information about BPTC. Staff should acknowledge that failure and jump to the next step they state is appropriate to respond to that failure – individual water quality management plans with farm specific monitoring. *Id.*, p. 29. Only then will staff be able to review a specific farm and determine whether BPTC is in place and whether its discharges are degrading adjacent waters.

**10. The Board Has No Authority To “Extend” The Existing Irrigated Lands Waivers.**

The Framework proposes that the Regional Board “extend the existing irrigated lands coalition group waiver until the new Orders are issued.” Framework, p. A-3. However, by its terms and as a matter of law, the existing waiver terminates as of June 30, 2011. See Water Code § 13269(f) (“[p]rior to renewing any waiver . . . , the regional board shall review the terms of the waiver policy at a public hearing”); 13269(a)(2) (“A waiver may not exceed five years in duration, but may be renewed by the . . . regional board”); Coalition Waiver, p. 17 (“[t]his Order . . . expires on 30 June 2011 unless rescinded or renewed by the Central Valley Water Board”). The Regional Board can only renew the waiver if the waiver still meets the criteria set forth in Section 13269 and is consistent with the Basin Plan, including the NPS Policy and antidegradation provisions. See also Water Code §§ 13146, 13247. As discussed above and in CSPA's previous comments, the existing waiver falls far short of the waiver criteria, is allowing discharges that are violating applicable water quality objectives, is inconsistent with the NPS Policy, and cannot meet the High Quality Waters Policy's requirement to implement BPTC. For all of these reasons, renewing the existing waiver is not in the public interest. In addition, reliance by the existing waiver on third party groups not subject to the state and local public records laws and requiring the Regional Board to request information in order for the public to access information required by the waiver is contrary to the public's right to know about discharges of pollution to the state's waters and the implementation of the waiver.

Thank you again for this opportunity to comment on staff's proposed framework. CSPA urges the Regional Board to direct staff to implement an irrigated lands program

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Adam Laputz  
March 21, 2011  
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adhering to CSPA's recommendations and begin at last to directly address the largest source of pollutants and toxicity to the Central Valley's waters.

Sincerely,



Michael R. Lozeau  
Lozeau Drury LLP  
Attorneys for CSPA



Bill Jennings, Executive Director  
CSPA

**California Sportfishing Protection Alliance**  
**Hearing in the matter of the Irrigated Lands Regulatory Program Framework**  
**Before the Central Valley Regional Water Quality Control Board**  
**Testimony of Steve Bond**  
**7 April 2011**

My name is Steve Bond, I'm a member of the California Sportfishing Protection Alliance, I am also a professional geologist specializing in water chemistry, water quality, groundwater, and engineering geology. I've professional licenses for these practices, and I have a private consulting business providing these services. I've more than twenty-five years experience evaluating natural and contaminant water quality issues, eleven of those years were in the employ of this Regional Water Quality Control Board. My experience includes the development, preparation, modeling and review of hundreds of water quality monitoring programs involving surface water and groundwater systems in the capacity of a regulator, as a consultant, and as an expert before State and Federal courts.

It is my professional opinion that the ILRP, as an enforceable program, is without merit. It lacks teeth, so-to-speak. The polluters are in effect not accountable for their actions or inactions. It is without actual monitoring associated with sources of pollution. The identity and location of the dischargers of pollution are allowed to hide behind the coalition shield, and are identified only through third party groups who are themselves not accountable. In Contrast, Traditional monitoring does have merit; traditional monitoring is enforceable, holds the makers of pollution accountable for their pollutants within a structure of goals and time schedules for compliance; the ILRP does not do these things.

My professional opinion is that one cannot protect WQ without representative monitoring. Protecting WQ is function of the ability to determine the condition of the State's waters and compare and contrast their quality with the standards and goals defined in the Basin Plan. . . It is not possible to protect the beneficial uses of waters of the State without monitoring the waters and the pollutants discharged into them. And yet, the current plan proposes no representative monitoring.

It is my professional opinion that one cannot evaluate the effectiveness a technology or practice without measurement. Evaluation requires that the change in water quality attributable to the specific practice or technology be measured. But, the ILRP fails to require this basic requirement.

My professional opinion is that it is not possible to evaluate the effectiveness of a water treatment system or of a management practice from some distant downstream monitoring location. In such cases, the discharge is mixed and diluted in the receiving water with other sources of pollution. Any changes in water quality from a practice or technology, that is discernible at the edge of field, are masked within a soup of other waters and pollution, and the performance of the BMP is essentially unknowable. Yet, that is the

state and condition of this program.

My professional opinion is that in a complex watershed composed of multiple sub-watersheds, water samples from distant downstream locations, such as most of the monitoring locations in this program, are not valid representations of the water quality in any or all of the individual sub-watersheds. While gross average conditions may be observed downstream, the conditions of individual upstream sub-watersheds will remain unknown. Between the downstream monitoring station and the various upstream watersheds, mixing and dilution occurs and the conditions at any upstream point are obscure to the downstream monitoring location. And yet, that is the state of the majority of the program's monitoring.

The most basic step towards rectifying the condition of degraded waters, is to identify all the points of discharges and monitor the quality and quantity of those waters from the edges of their fields. Traditional monitoring is enforceable, holds the makers of pollution accountable for their pollutants within a structure of goals and time schedules for compliance.

**California Sportfishing Protection Alliance  
Hearing in the matter of the Irrigated Lands Regulatory Program  
Before the Central Valley Regional Water Quality Control Board  
Testimony of Jo Anne Kipps  
7 April 2011**

I am Jo Anne Kipps and I am on the CSPA Advisory Counsel. I am a California-registered civil engineer. I worked for the Central Valley Water Board for over 12 years in the NPDES and WDR Regulatory Programs. As Senior Water Resource Control Engineer, I supervised staff's preparation of waste discharge requirements orders for surface water and land discharges. And, I supervised staff's evaluation and enforcement of dischargers' compliance with these requirements.

It is my professional expert opinion that the Framework's recommended Program will not protect water quality. To be effective, a regulatory program must include the following. It must identify, then directly regulate the persons responsible for discharging waste. It must require them to characterize their waste for both quality and quantity to yield mass pollutant loads. It must require them to comply with waste discharge requirements designed to protect and restore water quality. It must require them to submit representative and reliable data characterizing source water, discharge, and receiving water at specified locations. This data is critical to evaluate a discharge's effect on receiving water and compliance with water quality objectives. And, most importantly, it must subject them to enforcement should they violate Board-issued Orders.

The Framework's recommended program cedes the Board's regulatory responsibility to third parties. It defers waste characterization indefinitely. It proposes an inadequate regional monitoring scheme that cannot and will not provide information necessary to characterize current conditions, let alone monitor the effectiveness of best management practices as these are implemented. And, perhaps most importantly, it makes enforcement against those dischargers responsible for causing pollution improbable. Without enforceability, the Framework's recommended Program is essentially a voluntary one that cannot and will not protect water quality.

Because irrigated agriculture has caused widespread groundwater nitrate pollution, it is my professional expert opinion that the program must consider all irrigated agricultural operations as posing a high risk to groundwater unless proven otherwise. The program must require all growers to submit data on their supply wells for nitrate and other constituents of concern. This data is necessary to establish baseline conditions and to evaluate the effectiveness of improved nutrient management.

**California Sportfishing Protection Alliance**  
**Hearing in the matter of the Irrigated Lands Regulatory Program Framework**  
**Before the Central Valley Regional Water Quality Control Board**  
**Testimony of Richard McHenry**  
**7 April 2011**

Good Morning Board Members

I am Richard McHenry

I am a civil engineer

I am here today representing the California Sportfishing Protection Alliance.

I worked for the state and regional water boards for about 23 years. Much of that time was spent as a senior engineer in the NPDES unit overseeing permits for wastewater discharges to surface waters. My final assignment with the boards was as a senior engineering specialist in the Office of Enforcement at the State Water Board.

I have considerable experience in developing wastewater discharge permits, investigating water quality issues and developing enforcement actions for both permitted and unpermitted discharges.

The recommended Irrigated Lands Regulatory Program Framework proposes that regional monitoring be conducted, not monitoring at individual discharge points.

My professional opinion is that enforcement against an individual discharger cannot be based on regional monitoring. It must be proved that a specific discharger caused a specific violation. In this case, regional impacts could have been caused by any number of upstream dischargers or circumstances and cannot be directly linked to any specific discharge point.

Based on the regional monitoring that is being proposed, I cannot see any reasonable means of taking enforcement against individual dischargers to effectively protect water quality.

I also cannot see any means of utilizing regional monitoring to evaluate the effectiveness of farm specific best management practices.

In summary, there **is** currently sufficient data showing that agricultural discharges are degrading water quality,

But, the data is insufficient to show the precise point discharges causing the problem or to determine if any corrective measures are effective.

The Regional Board has qualified engineers, geologists and scientists. Given the right tools, they have the ability to solve the water quality problems. They do not have the proper tools now and the proposed program does not give them the proper tools.

Under the proposed program, it is unlikely that progress will be made to improve water quality.

Thank you.

## **California Sportfishing Protection Alliance**

### **Hearing in the matter of the Irrigated Lands Regulatory Program Framework**

#### **Before the Central Valley Regional Water Quality Control Board**

##### **Testimony of Bill Jennings**

**7 April 2011**

I would like to first mention that the Salmonid Restoration Federation and Grizzly Peak Fly Fishers joined our effort too late to be included in our letter. I include them by reference.

In the late 1990s, Mike Lozeau and myself prepared the initial petition, filed the initial lawsuit and wrote the legislation that, as chartered, sunset the existing 1982 waivers.

Eight years ago, I testified before this Board that the proposed 2003 conditional waiver was seriously flawed and would fail to improve water quality.

Today, this Board cannot quantify a single molecule of pollution that has been prevented, a single BMP that has been implemented or a single management measure that has been effective.

After eight dismal years, the best face the supervisor in charge of the program could present to the Stockton Record was, "It's difficult to just say, 'Have things improved, or have they not?' I would say it's too early to really quantify how much things have improved. We're not seeing water quality getting worse."

The Board's own report acknowledges that virtually all monitored sites downstream of agricultural areas have violated water quality standards: 63% experienced toxicity (50% for multiple species), pesticide standards were exceeded at more than half the sites (often for multiple pesticides), metals violated criteria at 66%, pathogens at 87% and more than 80% of the sites violated general parameters.

The proposed Framework is ineffective.

Under it, the Board can't know, on a site-specific basis, who is discharging, what or how much is being discharged, localized impacts, if BMPs have been implemented or if implemented BMPs are effective.

It will not provide the information necessary to establish and evaluate milestones, performance measures, feedback loops or consequences for non-compliance. Without it, improvement cannot be documented.

The proposed Framework is unaccountable.

The coalitions have served as shields preventing the Board from identifying which farmers are doing the right thing from the bad actors.

The Framework is unenforceable as the Board's enforcement powers are limited to actual dischargers. Staff's enforcement has been limited to requiring farmers to join coalitions – where they disappear behind a shield of anonymity.

And behind that shield, no farmer has ever been held accountable for failing to implement measures to reduce pollution.

The proposed Framework is inequitable.

Pollution isn't free. Someone always pays: in their health, in their pocketbook, in the degradation of their environment. The proposed Framework is simply a transference of adverse production costs from farmers to the general public.

This Board recently required the citizens of Sacramento to spend more than a billion dollars to improve their wastewater treatment. It also required that same from the City of Stockton and the results were dramatic and immediate.

Every other segment of society has to monitor discharges and document measures taken to reduce or eliminate pollution. Everyone but agriculture, which gets a free ride – a license to pollute.

Regulation works.

Drive past construction sites and you'll see the BMPs. Examine Board files and you'll find monitoring results and the measures implemented by municipalities, industry or the junkyard down the street.

We maintain a rotating docket of 20 to 30 stormwater enforcement actions against bad actors. But for every case we file, we find dozens of businesses in compliance – that can document their BMPs and demonstrate reductions in pollutant loading.

Irrigated agriculture remains an unaccountable black hole.

The coalitions have produced a blizzard of reports, management plans, inflated claims and wishful hopes, but no documented progress.

Our waterways are polluted. Central Valley fisheries are collapsing. The Delta's aquatic tapestry is disintegrating. It's time for this Board to regulate.

# Review of the Irrigated Lands Waiver

Deltakeeper Chapter of Baykeeper  
California Sportfishing Protection Alliance  
San Joaquin Audubon

June 2005

# Two Years After Adoption of the Irrigated Lands Waiver

- What do we now know about the quality of agricultural discharges?
- Have Coalitions complied with the explicit requirements of the adopted waiver?
- Have water quality conditions shown any actual or prospective improvement?
- Is the waiver salvageable or does it contain the seeds of its ultimate failure?

# Are Standards Protective?

- EPA Aquatic Life Standards are based upon a never to exceed more than once in three years.
- Water Quality standards do not consider multiple stressors, additive or synergistic effects, breakdown products or sub-lethal effects.
- Monthly monitoring (chemistry and toxicity) represents less than a six-hour snapshot of a years flow. Pollution is frequently a pulse event.

# Regional Board Monitoring

Phase I and II monitoring conducted by UC Davis.

- **Phase I. 2003:** 24 agricultural drains monitored for field parameters, flow, chemistry, pesticides, two-species toxicity testing. Eight events, 234 samples.
  - **29% of sites toxic (higher if sediment toxicity included). 100% of sites exceeded one or more water quality standards** (for example: 77% of sites had low dissolved oxygen, 42% of sites had low pH).
- **Phase II. 2004:** 30 agricultural drains monitored for field parameters, flow, chemistry, pesticides, three-species toxicity testing (chemistry not yet reported). Five events, 135 samples – missed early irrigation season - have not reported wet season.
  - **80% of sites were toxic. 97% of sites violated standards.**

# Sediment Testing

- In a parallel and cooperative effort with Regional Board monitoring, Don Weston (UC Berkeley) conducted a series of assessments of sediment toxicity in agriculturally dominated waterbodies.
- Dr. Weston found pervasive sediment toxicity.
  - For example, in 2003, acute sediment toxicity was found in major rivers, 8 of 19 creeks and sloughs sampled and 7 of 17 irrigation canals. *Environ. Sci. Technol.* **2004**, 38, 2752-2759
- Pyrethroids were found to be the major toxicant.

# Westside, San Joaquin River Coalition

550,000 acres (**32,353 acres per monitoring site**)

- Majority of sites are natural waterbodies rather than Ag drains.
  - 17 sites monitored twice during irrigation season.
  - Four sites were monitored monthly between September and January.
  - 15 sites monitored for two storm events.
  - 14 sites monitored for sediment toxicity in September.
- **100% of the sites violated one or more water quality standards. 59% of sites exhibited toxicity.**

# Eastside, San Joaquin River Coalition

660,000 acres (**165,000 acres per monitoring site**)

- Mixture of natural waterbodies and Ag drains (Ex. Merced River, Dutchman' Creek)
  - Four sites monitored three times during irrigation season.
  - Storm season not yet reported.
- **50% of irrigation season sites exhibited toxicity. 100% violated one or more water quality standards.**

# Sacramento-Valley Coalition

2,145,000 acres (**306,429 acres per monitoring site during irrigation season – 134,063 acres per monitoring site during storm season**).

- Mixture of natural waterbodies and Ag drains (Ex. Feather River, Butte Creek, Sacramento Slough, etc.)
  - 7 sites (of which 3 were approved) monitored twice during irrigation season.
  - 16 sites (14 approved) monitored for two storm events (only one data set submitted).
  - No sediment toxicity monitoring.
- **74% of sites violated one or more water quality standards. 47% of sites exhibited toxicity.**

# Rice Coalition

500,000 acres (**100,000 acres per monitoring site**)

- Unique truncated monitoring requirements approved by XO.
  - 5 sites monitored twice during irrigation season (Sept. & Oct.) for general parameters, toxicity, and rice pesticides.
  - Storm season sampling not yet reported.
  - No follow-up sampling where toxicity observed, no TIEs.
- **100% of sites exhibited toxicity.** Other parameters exceeded include low pH & dissolved oxygen.

# San Joaquin County-Delta Coalition

558,575 acres (**93,097 acres per monitoring site**)

- Natural waterbodies – (Ex. Mokelumne River, Calaveras River, Lone Tree Creek, Little Johns Creek).
  - Failed to monitor Delta Islands
  - Six sites sampled twice during irrigation season.
  - **No agricultural drains or delta islands monitored.**
- **50% of sites exhibited toxicity** (sampling occurred late in season).
- Storm season not yet reported (although the Board has been advised that significant toxicity was found).

# South San Joaquin Valley Coalition

4,400,000 acres (**440,000 acres per monitored site**)

## ■ Tule subgroup:

- Two sites monitored twice during irrigation season (late) and once during storm season. **Both sites exhibited toxicity, low dissolved oxygen, and high coliform.**

## ■ Kaweah subgroup:

- Four sites monitored once during irrigation season (late) and twice during storm season. **Three sites exhibited toxicity and one had low dissolved oxygen.**

## ■ Kings River subgroup:

- Two sites monitored twice during irrigation and storm season plus two sediment samples. **All four sites twice exhibited toxicity.**

# Other Coalitions

- Westlands Coalition has failed to comply with Waiver, NOA & MRPP.
- Root Creek Coalition has failed to comply with Waiver, NOA & MRPP.
- 5 Irrigation Districts (Modesto, Merced, Turlock, SSJID & OID).
  - Individual waiver unsuitable for irrigation districts.
  - Insufficient information exists to evaluate the submittals by water agencies.
  - No toxicity testing. However, data submitted by **Oakdale and Modesto Irrigation Districts** revealed that all monitored sites exceeded at least one water quality standard.

# Have Coalitions complied with the explicit requirements of the adopted waiver?

- The coalitions have failed to:
  - Comply with the monitoring and reporting provisions of the waiver.
  - Provide specific drainage schematics and identification of adjacent fields.
  - Monitor agricultural drains (instead of natural waterways).
  - Document specific sources of pollution.
  - Describe a detailed plan of actions that will be taken to address identified violations.
  - Identify currently applied BMPs, propose new BMPs or describe how BMP effectiveness will be monitored.

# Monitoring Sites

- The Monitoring and Reporting Program explicitly states that monitoring sites should not include mainstem waterbodies already on 303(d) list. Monitoring sites must be on waterbodies carrying agricultural drainage into natural waterbodies. M&R Program (I)(8).
- *Every single coalition has ignored this explicit requirement.*

# Monitoring Sites II

- The Monitoring and Reporting Program states that **all major drainages** shall be part of baseline monitoring. **20% of intermediate drainages** shall be monitored on a rotating basis each year. Smaller drainages must be monitored if data from larger drainages or receiving waters shows exceedances. Site selection shall be supported by detailed discussion and scientific rationale. M&R Program (I)(8).
- *Every single coalition has ignored these fundamental requirements.*

# Communication Reports

- Whenever monitoring indicates WQ exceedances, coalition groups must submit a Communication Report that describes how the group will evaluate the effectiveness of management practices. M&R Program 3.2
- Staff's 23 June 05 Information Report provides substantial insight into the failure of coalitions to furnish timely Communication Reports. However, **not a single coalition has provided details on how it will evaluate the effectiveness of selected management practices.**

# Management Plans

- The Waiver states, “When an exceedance of a receiving water limitation is identified, coalitions shall, upon notice by the Regional Board XO, submit a technical report called a Management Plan. The Management Plan – shall evaluate the effectiveness of existing management practices in achieving WQ objectives and identify additional actions (i.e., additional management practice implementation) the coalition proposes to implement to achieve water quality objectives. Shall include a waste specific monitoring plan and implementation schedule to address exceedances.” Resolution No. R5-2003-0105 (B)(6).
- *Despite massive and frequent exceedances of WQ standards throughout the Central Valley, no Management Plan has ever been requested by the Regional Board nor provided by the Coalitions.*

# Implementation Plans

- Coalitions groups are required to develop an implementation plan to identify and track the progress of water quality management practices within the watershed. The plans must include a schedule for implementation of management practices.
- *Not as single coalition has submitted an Implementation Plan.*

# Monitoring Parameters

- The Monitoring and Reporting Program specifies the constituents to be monitored and the frequency of sampling. Representative flow measurements (in cfs) must be obtained for each sample to allow for mass load calculations. M&R Program (I)(4).
- *Not all coalitions have monitored for all constituents. Most coalitions have failed to meet required monitoring frequency. Few have provided flow measurements. None calculated loads.*

# Annual Monitoring Report

- Coalitions are required to submit an Annual Monitoring Report by 1 March. The AMR includes 17 specific components. For example, it requires a summary of management practices used and actions taken to address identified water quality impacts (including revised or additional management practices to be implemented).
- *Not a single coalition has complied with the above mandatory requirements.*

## Have water quality conditions shown any actual or prospective improvement?

- Neither we nor Regional Board staff can identify a single BMP implemented as a result of the waiver.
- Coalitions are unable to identify who has or has not implemented specific management measures within a watershed.
- Coalitions have no legal authority to compel implementation of management measures.

**Is the waiver salvageable or  
does it contain the seeds of its  
ultimate failure?**

# Waivers turn Porter-Cologne on its head

- The bed-rock of Porter-Cologne is that everyone proposing to discharge wastes into waterways must:
  - Ask permission
  - Identify constituents to be discharged
  - Monitor the discharge to evaluate impacts
  - Comply with limits or implement measures to reduce or eliminate problems.
- The preceding applies to everyone - municipalities, industry, mom-and-pop businesses - except farmers.

# Problems I

- Board has essentially ceded its statutory responsibility to protect waterways to industry advocacy groups (i.e., “Coalitions.”)
- The Regional Board doesn’t know:
  - Who is discharging pollutants.
  - What pollutants are being discharged.
  - Who is participating in the waiver program.
  - Who has or has not implemented BMPs.

# Problems II

- Coalitions are legally fictitious entities.
  - Are not subject to Board enforcement.
  - Cannot require farmers to implement management measures.
  - Have no authority to enforce against violators.
- Coalitions have operated to impede staff efforts, hide the farmer and shield recalcitrant dischargers from potential Board enforcement.

# Problems III

- Lack of farm based pollution prevention plans ensure that individual farmers lack the nexus and incentive to focus on preventing pollution.
  - Note: farmers already required to prepare nutrient and pesticide plans.
- There is no mechanism in the waiver to require anyone to implement a single management measure or reduce a single pound of pollution.
- Since the Regional Board doesn't know who is discharging what, there can be no enforcement.

# Problems IV

- Failure to establish an independent third-party monitoring program has undermined efforts to identify and track water quality problems.
  - Coalitions have failed to comply with monitoring and reporting requirements.
  - Monitoring has focused on natural waterways rather than agricultural drains.
  - Monitoring has avoided numerous known hot spots (i.e., Butte Canal laterals, Delta Islands).
  - Lack of edge-of-field monitoring precludes identification of specific sources of pollution and assessment of BMP effectiveness.

# Problems V

- Regional Board lacks resources to administer and enforce a complicated voluntary program.
  - Work plan identifies 34 PYs as minimally necessary. 19 PYs are authorized, 13 PYs funded by waiver fees.
  - A General Order would require fewer resources and be fully enforceable.

# Waiver Extension?

- The Waiver expires in December. Board staff have indicated that they will seek a two year extension.
- If this waiver is to be extended, the Board, at a minimum, should require that:
  - All NOIs must be filed with the Board
  - Monitoring be conducted by an independent third party.
  - Enrollees prepare individual farm-based Pollution Prevention Plans.

***These items are included in the waiver adopted by the Central Coast Regional Board.***

# Recommendation

- We believe a General Order is the most effective and enforceable approach for addressing agricultural pollution.
- Board staff developed a potential General Order as an informational item, six months after the Waiver was adopted.
- Efforts to extend the existing Waiver must evaluate and compare the effectiveness, enforceability, costs and efficacy of the Waiver with the potential General Order.

# In any case...

- Any extension of the Waiver must consider that the fact set today is very different than it was two years ago. We now know that:
  - Agricultural pollution is pervasive. Cropping patterns and chemical usage are changing.
  - Coalitions have refused to comply with fundamental waiver requirements.
  - Pollution sources remain unidentified and no BMPs have been implemented.
  - Board staff have developed a proposed General Order that can be compared against the waiver.
- Regardless, the old Neg Dec will not suffice.

# Comments on the Irrigated Lands Waiver

California Sportfishing Protection Alliance

Deltakeeper Chapter of Baykeeper

San Joaquin Audubon

June 2006

# Staff Is Playing “Hide the Data”

- Over the last 10 months, we have repeatedly requested that staff provide Irrigated Lands Program monitoring results in a simple tabular form; i.e., site name, date, results, and water quality standard.
  - Include U.C. Davis Phase I & II and available coalition results.
  - Current data sets are in multiple unwieldy formats that include metadata making it difficult for the general public or decision makers to decipher and understand.
  - Recently, staff released partial pesticide and sediment results.
  - Yesterday, they posted metal results (astonishing number of violations).
  - We still lack field parameters, pathogens, full pesticide and toxicity, etc.
  - Consequently, the Existing Conditions Report included virtually no data collected under the Irrigated Lands Program.
- Frankly, we don't understand how the Board can make an informed decision regarding waiver renewal without reviewing and understanding the results from the last three years of program monitoring.

# Data Doesn't Tell the Whole Story

- EPA aquatic life standards are based upon a never to exceed more than once in three years to prevent irreparable damage to the ecosystem.
- Toxicity tests do not identify all toxicity.
- Toxicity tests do not reveal sub-lethal impacts that can have population level effects.
- Water quality standards don't consider multiple stressors, additive or synergistic effects or breakdown byproducts.
  - For example, OP pesticides are additive in toxicity to copper, cadmium and/or zinc.
- Monthly monitoring represents less than a six-hour snapshot of a year's flow; i.e., 0.14 or about one-tenth of one percent.
  - Consequently, any exceedance of a water quality standard is statistically significant: virtually ensuring that other violations occur.

# San Joaquin County-Delta Coalition

- 2005 Monitoring. **No approved plan.** 187 total exceedances of standards. Failed to report exceedances 19% of the time. **Only 11.7% of irrigated acres monitored.** (from data tables attached to staff's 17 May 06 AMR review)
  - French Camp Slough at Airport: EC, E-coli, TDS, chlorpyrifos, diazinon, **toxicity to selenastrum**
  - Grant Line Canal at Arnando: DO, EC, E-coli, turbidity, chlorpyrifos, **toxicity to hyalella**
  - Grant Line Canal at Calpack Rd: DO, EC, E-coli, TDS, chlorpyrifos and **toxicity to ceriodaphnia, selenastrum and hyalella**
  - Kellogg Creek at Hwy 4: pH, EC, E-coli, TDS, chlorpyrifos, permethrin and **toxicity to ceriodaphnia, pimephales, selenastrum and hyalella**
  - Little Johns Creek at Jacktone Rd: E-coli, turbidity, and **toxicity to pimephales and selenastrum**
  - Lone Tree Creek at Jacktone & Bernnan Rds (2 sites): DO, pH, E-coli, turbidity, chlorpyrifos, diazinon, cyhalothrin, cypermethrin and **toxicity to pimephales and selenastrum**
  - Marsh Creek at Balfour Ave: pH, EC, E-coli, TDS, Turbidity, and **toxicity to ceriodaphnia, pimephales and hyalella.**
  - Mokelumne River at Bruella: pH, TDS and **toxicity to ceriodaphnia and selenastrum**
  - Potato Slough at Hwy 12: pH and **toxicity to ceriodaphnia and pimephales**
  - Terminous Tract area (3 sites): DO, EC, E-coli, TDS and **toxicity to pimephales, selenastrum and hyalella**

# Three Years After Adoption of the Irrigated Lands Waiver

- We know that virtually every agriculturally dominated waterway exceeds water quality standards - most are toxic.
- Coalitions have flagrantly failed to comply with the explicit requirements of the adopted waiver.
- Coalitions have refused to identify their members.
- No coalition has documented a single source of pollution, a single implemented on-the-ground BMP or the effectiveness achieved.
- Despite massive noncompliance, the Regional Board has failed to initiate a single enforcement action against a coalition or discharger.
- The Board has failed to require coalitions to develop Management Plans to address violations (with two exceptions).

**By any objective standard, the Irrigated Lands Waiver has been a dismal failure.**

**It cannot point to a single documented improvement in water quality.**

**Under the tentative order, there is little likelihood of improvement over the next five years.**

# The Responses to Our Comments Simply Defy Logic

- In response to our 47 pages (plus attachments) of comments, staff reiterates ad nauseam:
  - The waiver requires compliance with Basin Plan and water quality standards.
  - The waiver requires implementation of BMPs.
  - The waiver is enforceable.
  - The Executive Officer may require preparation of Management Plans where standards are violated.
  - There are no significant changes since 2003 requiring a new CEQA document.
  - A coalition approach is the most efficient means of regulating large numbers of farms.

Contrary to Staff Claims

## Compliance is an Illusion

- Unsupported claims without implementation mechanisms are simply disingenuous.
  - Robbery and murder are prohibited but without an elaborate criminal justice system there is no compliance.
- Board files contain documentation of thousands of violations.
- However, the Board doesn't know who is discharging, what pollutants are being discharged, where they are being discharged, the localized impacts of discharges, who is participating in the waiver program or who has or has not implemented BMPs.
  - Coalitions have refused to provide required information.

## Contrary to Staff Claims

# Implementation of BMPs is not Required

- Again, conclusory claims lack creditability.
- Contrary to specific waiver requirements, coalitions have refused / failed to provide the Board with information on:
  - Who is, or is not, implementing BMPs.
  - What, if any, BMPs are being implemented.
  - Historical application of BMPs within a watershed.
  - What BMPs are available for implementation.
  - The effectiveness of implemented BMPs.
- Coalitions have no authority to require farmers to implement BMPs.
- Small education gatherings cannot be represented as BMPs in the absence of on-the-ground implementation & quantification.
- As the Board doesn't know who is required to implement BMPs, whether BMPs have been implemented or if they are effective; it cannot pretend that BMP implementation is a requirement.

## Contrary to Staff Claims

# The Waiver is Not Enforceable

- Coalitions, as legally fictitious entities, are not dischargers. How do you issue an ACL, C&D or C&A order against a non-discharger?
- The Board cannot issue an enforcement order against actual dischargers because it doesn't know who they are or what they're discharging.
- As the state's NPS Control Program Policy points out, “..under the Porter-Cologne Act, the RWQCBs cannot take enforcement actions directly against non-discharger third parties.”
- Despite massive noncompliance with fundamental waiver requirements, not one enforcement action has been initiated against a discharger or coalition.
- Any claims of enforceability succumb to the reality of the Board's failure/refusal to enforce waiver requirements.

## Contrary to Staff Claims

# Management Plans are Not Required

- Despite hundreds of water quality exceedances, the Executive Officer has only required two management plans to be prepared.
  - A Management Plan was the only way the Board could compel the Sac Valley Coalition to keep monitoring a site near Woodland where frequent toxicity had been observed.
  - A Management Plan was required to implement the Sac-Feather Diazinon TMDL (Classic catch-22, TMDL provides for a prohibition if standards not met unless a waiver had been adopted. Of course the waiver is toothless.
- Regardless of claims that Management Plans “may” be required, the reality is that the Executive Officer refuses to do so except on very rare occasions.

# There are Significant Changes Requiring Preparation of a New CEQA Document

- Since the waiver was adopted in 2003:
  - Coalitions have failed to comply with explicit waiver requirements. Board has failed to initiate enforcement.
  - Changing chemical application has led to pervasive sediment toxicity throughout the Valley.
  - New species have been listed pursuant to Endangered Species Acts. New Critical Habitat has been designated.
  - The Delta is experiencing a catastrophic crash in pelagic species. Poor water quality has been identified as one of the principal causes.
  - The renewed waiver is weaker than the one it replaces.
  - Water quality monitoring will be significantly reduced.

## Reductions in Monitoring are a Significant impact

- The U.C. Davis monitoring contracts are expiring and will not be renewed.
  - Consequently, the most comprehensive, independent and scientifically defensible monitoring program is being phased out.
- Many monitoring sites will either be abandoned or never monitored.
  - Coalitions have stated that they will not add new sites if required to keep monitoring present sites.
  - Because coalitions have failed to comply with requirements to monitor all major drainages, 20% of intermediate drainages (yearly rotating basis) and minor drainages where downstream problems are identified many crucial sites will never be monitored.
- A number of crucial water quality parameters are eliminated in Phase II.
  - For example, testing for pathogens, TOC and toxicity (both water column and sediment) are eliminated under Phase II.

Contrary to Staff Claims

# Coalitions are Ineffective Mechanisms for Controlling Pollution

- Are legally fictitious entities.
  - Not subject to Board enforcement.
  - Cannot require farmers to implement BMPs.
  - Have no authority to enforce against violators.
- Have operated to impede staff efforts, hide the farmer, and shield recalcitrant dischargers from potential Board enforcement.
- Their intransigence has forced the Board to expend far greater resources than would be required under a general order.
- Large unwieldy coalitions cannot effectively evaluate, monitor and manage pollution control efforts within a watershed.
- As self-appointed undemocratic oligarchies, they do not represent the dirt-under-the-nails farmer in the field.

# Eastside San Joaquin Coalition

- Regional Board AMR Evaluation, 19 May 2006:
  - “Monitoring efforts were incomplete. The Coalition did not meet the minimum monitoring requirements for flow, sediment toxicity, 303(d) pollutants, and prohibited pesticides.”
  - “The Coalition did not meet the minimum requirements for follow-up sampling after significant toxicity was observed.”
  - “The Coalition did not meet the requirements for load calculations.”
  - The Coalition did not submit Exceedance Reports for many of the water quality exceedances that occurred in 2005.”
  - “Actions taken to identify and address water quality issues identified through monitoring were inadequate.”
  - “The Coalition discontinued monitoring at a site with known water quality problems, despite staff direction otherwise.”
  - “The Coalition did not meet the requirement to submit a summary and valuation of management practice surveys conducted during the SAMR time period.
  - “The Coalition’s evaluation of progress towards meeting the five objectives of the Coalition Monitoring Program, which are listed in the SAMR, was inadequate”

## Contrary to Staff Claims, The Waiver Violates the Nonpoint Source Control Program

- Staff has selectively mischaracterized elements of the NPS Control Program.
  - Key Element 2 states “An NPS control implementation program **shall include a description of the MPs** (BMPs) and other program elements that are expected to be implemented to ensure attainment of the implementation program’s stated purpose(s), **the process to be used to select or develop MPs**, and the **process to be used to ensure and verify proper MP implementation**.”
  - Key Element 3 states “Where a RWQCB determines it is necessary to allow time to achieve water quality requirements, the NPS control implementation program **shall include a specific time schedule**, and corresponding **quantifiable milestones** designed to measure progress toward reaching the specified requirements.”
  - Key Element 4 states “An NPS control implementation program **shall include sufficient feedback mechanisms** so that the RWQCB, dischargers, and the public can determine whether the program is achieving its stated purpose(s), or whether additional MPs or other actions are required.”
  - Key Element 5 states “Each RWQCB **shall make clear, in advance, the potential consequences for failure** to achieve an NPS control implementation program’s stated purposes.”
- Management Plans are the NPS control program. However, the reluctance of the Board to require Management Plans where violations are identified makes a mockery of any claim that the waiver is consistent with the state’s NPS policy.

# The Waiver Misconstrues the Concept of Iterative Process

- An iterative process does not mean endless repetition of doing nothing.
- An iterative process requires:
  - Identification of a problem through monitoring.
  - Identification of the source or cause of the problem.
  - Implementation of on-the-ground BMPs that have a reasonable likelihood of eliminating the problem.
    - **Must include specific time schedules and quantifiable milestones, feedback mechanisms and consequences for failure.**
  - Site specific monitoring to verify and evaluate the effectiveness of the BMPs.
  - If problems persist, implementation of additional BMPs followed by additional monitoring to evaluate success.
- The iterative process requires aggressive implementation and evaluation of BMPs to ensure that problems are solved within a reasonable timeframe.
- Coalitions are using the iterative process as smoke and mirrors - like a Hollywood storefront that creates an illusion of substance where little exists.
- The Board has identified hundreds of problems.
- Unfortunately, it has no documented instances of actual on-the-ground implementation of BMPs or reductions of a single ounce of pollutants.
- Note: Education does not necessarily translate into changes in behavior.

## Contrary to Staff Claims

# The Waiver is Not Like an MS-4 Permit

- Municipal stormwater permits require:
  - Statistically significant end-of-pipe monitoring
  - Implemented BMPs to be identified and included as part of the permit.
- Most importantly, MS-4 permits are backstopped by the construction and industrial general orders requiring, among other things, that individual dischargers within the city must monitor discharges, maintain a SWPPP and iteratively implement BMPs on a yearly basis.
- A better case could be made if the Board required individual farmers to prepare, maintain and update on-the-farm pollution prevention plans.

# Voluntary Programs Don't Work

- We have repeatedly challenged the Board to provide a single instance of a voluntary program achieving significant, quantifiable, documented reductions in pollutant loading.
- The only successful agricultural programs in the Central Valley have been driven by regulatory certainty.
  - Rice Herbicide Program was based upon a prohibition.
  - Grasslands Program was based upon WDRs.
- Does anyone believe that society would be better served if compliance with our civil & criminal codes, building & zoning ordinances, educational & professional certifications were made voluntary?

# The Waiver Undermines Water Quality Protection

- Porter-Cologne makes clear that discharging wastes into waterways is a privilege and that everyone must:
  - Ask permission
  - Identify the constituents to be discharged
  - Monitor the discharge to evaluate impacts
  - Comply with limits or implement BMPs to reduce or eliminate problems
- The Board has applied this to everyone - cities, industry, mom-and-pop businesses - except farmers.
- Waivers should only be used for de minimus discharges that do not pose a threat to the state's waters. They're inappropriate for the largest source of toxic pollution.

# The Bottom Line

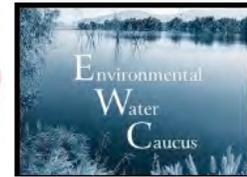
- In issuing a waiver, the Board has essentially ceded its statutory responsibility to protect waterways to industry advocacy groups.
- Pollution isn't free. Someone always pays - in health, cleanup costs, utility fees or a degraded environment.
- The waiver is simply a subsidy transferring the costs of pollution from the discharger to the public.
- Its time to hold agriculture to the same regulatory requirements applicable to virtually every other segment of society.
- Its time for this Board to show as much compassion for the victims of agricultural pollution as it does the polluter.
- The Board must decide whether it will protect the environment or continue to protect agriculture. **It cannot do both.**

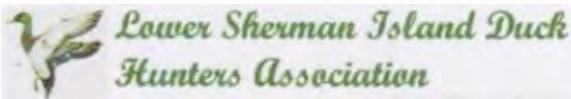
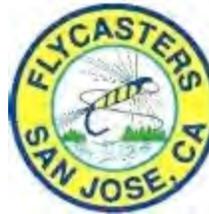
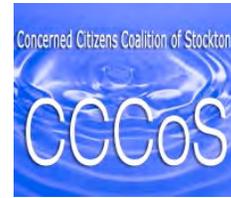
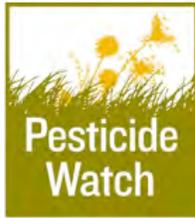
# Recommendations

- The surest way of avoiding the impending train wreck is to instruct staff to prepare a revised order comparing the waiver to a general order and incorporating suggestions long recommended by the environmental community.
- If the Board elects to proceed with waivers:
  - Dischargers should file “notices of intent” and reports of waste discharge.
  - Enrollees must prepare farm-based pollution prevention plans.
  - Coalitions must prepare management plans addressing all violations of water quality standards.
  - The monitoring component must provide for independent third-party monitoring.
  - Specific timelines, performance measures & yardsticks must be included.
  - Groundwater should be protected.
  - A new environmental review must be prepared
  - Any new waiver should sunset upon completion of the EIR that is presently being developed.

ENVIRONMENTAL, ENVIRONMENTAL JUSTICE, AND RECREATIONAL AND  
COMMERCIAL FISHING COMMUNITY JOINT COMMENTS ON PROPOSED  
IRRIGATED LANDS REGULATORY PROGRAM FRAMEWORK  
CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

6 April 2011





www.cserc.org



Shasta Mayflies

## Campaign for Common Ground



Sportsmen Yacht Club



Tuolumne River Trust



6 April 2011

Ms. Katherine Hart, Chair  
Regional Water Quality Control Board, Central Valley Region  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670

Re: Irrigated Lands Regulatory Program Framework

Dear Chairperson Hart and Board Members:

As representatives of environmental, recreational and commercial fishing and environmental justice communities in the Central Valley and throughout California, we write to encourage the Regional Board to embrace a regulatory framework that will meaningfully reduce the pollution caused by irrigated agriculture.

Runoff from irrigated agriculture is identified as the largest source of pollution to Central Valley waterways and the Delta. This pollution is documented to be one of the principal causes of the collapse of Central Valley fisheries. Inexplicably, irrigated agriculture remains exempt from requirements to monitor discharges and identify measures implemented to reduce or eliminate pollution that have long been applicable to every other segment of society, from municipalities to industry to mom-&-pop businesses.

The present approach to regulating irrigated agriculture has grievously failed. After two iterations of the present regulatory scheme, the Regional Board doesn't know who is actually discharging, what pollutants are being discharged, the localized impacts to receiving waters and whether management measures (BMPs) have been implemented to reduce pollution or if implemented BMPs are effective. The Board simply cannot continue to cede its regulatory responsibilities to third-party industry advocacy groups if it hopes to succeed in reducing pollutant discharges from irrigated agriculture.

We urge the Regional Board to reject the Irrigated Lands Regulatory Program Framework proposed by staff and, instead, embrace an approach that has a reasonable chance of success. Continuing to avoid direct regulation of pollution dischargers cannot reduce the pollution of ambient waters.

Restoration of degraded waters and protection of water quality requires the following changes:

1. Eliminate third-party coalitions and require instead that individual dischargers submit reports to the Regional Board identifying the location and content of discharges to both surface water and groundwater. The Regional Board has the duty to implement Porter-Cologne and to assure that farm dischargers do not pollute the Central Valley's waters. Third-party coalitions add bureaucracy, obfuscate critical information the Regional Board needs to have, create permanent lobbies to weaken or undermine any true regulation of farm dischargers, and cannot be effectively enforced.

2. Monitor discharges to surface water and groundwater and the effectiveness of measures implemented to reduce pollution. The blunt fact is that water quality cannot be protected if you do not measure actual discharges to quantify pollution and evaluate the effectiveness of implemented management measures. If irrigated agriculture discharges pollution, they, like every other discharger in the state, should be required to measure what they are discharging and be able to show that their pollution is not harming any water of the State, whether the waters are flowing immediately adjacent to their fields or miles downstream.
3. Require all farm dischargers to prepare individual farm water quality management plans (FWQMPs) that identify measures implemented to reduce pollution. These plans must be made available to the Regional Board and the public. The proposed Framework fails to provide any scheme to track whether any management practices are being implemented or maintained, especially on a farm-specific basis. Nor does the Framework provide basic information about nutrients and pesticides being applied by specific farms for the Board to evaluate whether any installed measures are appropriate. The Regional Board must not warrant another decade of delay waiting for dischargers to save the Board from its own duty to act. The Board has to stop putting off this first step and require FWQMPs be prepared by every discharger within 6 months of the termination date of the current waiver.
4. Require compliance with water quality standards in the near-term, not some uncertain distant future. Staff proposes three years to allow third-party coalitions yet another opportunity to show that whatever they are doing is resulting in implementation of effective management practices and improved water quality. The framework allows three months for coalitions to tell their existing members of the new requirements, an entire year for existing members to reconfirm their membership, and two and a half years to attract a few new members. Staff then further proposes to delay compliance by each of the categories of dischargers by another five to ten years. Given twenty-plus years of no regulation followed by seven years of failed regulation, additional delays are unacceptable.
5. Demonstrate consistency with the state's non-point source and antidegradation policies. An irrigated lands program relying upon third-party coalition groups has no likelihood of ever achieving any water quality objectives. After seven years of oversight by the Regional Board, staff cannot point to a single farm that has implemented Best Practical Treatments or Controls. Staff cannot describe or quantify the management practices, if any, that have been implemented throughout the Central Valley. The data collected during the last seven-year period shows water quality continuing to be degraded throughout large areas of the Central Valley. Furthermore, we are unaware of any consequences to a farmer who did absolutely nothing for the last seven years as long as they could say they were enrolled in a coalition. As for the coalitions, the only consequences of their missing deadlines or not achieving any measurable water quality benefits is receiving additional extensions of time or weakening of requirements. They have utterly failed to facilitate implementation of controls as is required by the Non Point Source Policy.

The only way farm dischargers will recognize any consequences of not complying with conditions of an irrigated lands program is for the Regional Board to remove the coalitions from the equation and regulate the dischargers directly. The abject failure of the existing program and coalitions to regulate agricultural runoff, the largest source of water pollution in California, demonstrates that the Regional Board should move the irrigated lands program into a regulatory system similar to the industrial and construction storm water programs. We urge the Board not to abdicate its responsibility to protect the quality of water discharged from irrigated lands.

Sincerely,



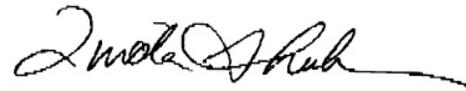
Bill Jennings  
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California Sportfishing Protection Alliance



Steve Evans  
Conservation Director  
Friends of the River



Jim Metropulos  
Senior Advocate  
Sierra Club California



Linda Sheehan  
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California Coastkeeper Alliance



Jonas Minton  
Senior Water Policy Advisor  
Planning and Conservation League



Connor Everts  
Southern California Watershed Alliance



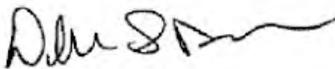
Gary Bobker  
Program Director  
The Bay Institute



David Nesmith  
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s/m \_\_\_\_\_

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Anne-Marie Bakker  
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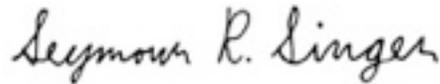
Laurel Firestone  
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Elanor Starmer  
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Dick Pool  
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Water4Fish



Roger Mammon  
President  
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Executive Director  
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Roger Thomas  
President  
Golden Gate Fishermen's Associations



Trevor Kennedy  
Executive Director  
Fishery Foundation



Steve Shimek  
Program Director  
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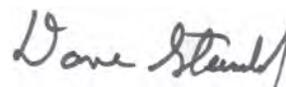
Mondy Lariz  
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Peninsula Fly Fishers



Todd Stiner  
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Dave Steindorf  
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David Lipscomb  
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Winnemem Wintu Tribe

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Humboldt Baykeeper

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West Marine

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Golden West Women Flyfishers

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Sue Young  
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Shasta Mayflies

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Santa Lucia Fly Fishers

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Victor Gonella  
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Steve Rothert  
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American Rivers

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Rosemary Moon Atkinson  
Chair  
Campaign For Common Ground

s/m \_\_\_\_\_

Frank Galusha  
My Outdoor Buddy

s/m \_\_\_\_\_

Angelo Pucci  
G. Pucci & Sons Mfg. Brisbane

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Aaron Newman  
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Queen of Hearts Charters  
Half Moon Bay

s/m \_\_\_\_\_

Brian Cutty  
Chubasco Charters  
Monterey

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Brian Guiles  
Flying Fish Charters  
Berkeley

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Chris Chan  
Ankeny Street Sportfishing Charters  
Half Moon Bay

s/m \_\_\_\_\_  
Chris Acecelo  
Chris' Fishing Charters  
Monterey

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Silver Fox Charters  
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David Ryan  
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Dennis Baxter  
New Captain Pete  
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Emeryville

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Don Franklin  
Soleman Sportfishing Charters  
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Johnson Hicks Marine  
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Bodega Bay

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Checkmate Charters  
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Harry Garabedian  
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Jack Chapman  
Lovely Linda Sportfishing  
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Jay Yokomozo  
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New Ray Ann Charters  
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s/m \_\_\_\_\_  
John Kluzmier  
Sir Randy Charters  
Monterey

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Stagnaro's Charters  
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s/m \_\_\_\_\_  
Ken Ellie  
Outdoor Pro Shop  
Cotati

s/m \_\_\_\_\_  
Nick Lemons  
Star of Monterey Charters  
Monterey

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Nick Menigoz  
Supper Fish Charters  
Emeryville

s/m \_\_\_\_\_  
Phillip Bentivegna  
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Robert Mazziti  
Connie-O Charters  
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Low's Fishing Adventures  
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Sherry Ingles  
Half Moon Bay Sportfishing  
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ILRP Comments

Ms. Megan Smith

630 K Street, Suite 400

Sacramento, CA 95814

September 25, 2010

Comments on  
Draft Program Environmental Impact Report for a Waste Discharge Regulatory Program for  
Irrigated Lands within the Central Valley Region  
Submitted by

G. Fred Lee, PhD, AAEE Bd. Cert. Env. Eng., F.ASCE  
Anne Jones Lee, PhD  
G. Fred Lee & Associates  
El Macero, California

In response to a request for comments on the Draft Program Environmental Impact Report for a Waste Discharge Regulatory Program for Irrigated Lands within the Central Valley Region we wish to submit these comments.

Overall we find that the five alternatives listed in the draft EIR are not necessarily appropriate for providing guidance for establishing the future direction of the Central Valley Irrigated Lands Regulatory Program (ILRP). Adoption or continuation of any of the five alternatives, including the current program, cannot be expected to achieve the regulatory goals of protecting the water quality/beneficial uses of Central Valley waterbodies that are impacted by discharges/runoff from irrigated lands. Based on my (G. Fred Lee) more than 40 years of experience in development and implementation of water quality programs some of which have been directed to agricultural sources of pollutants, whichever of those alternatives the Central Valley Regional Water Quality Control Board (CVRWQCB) may adopt, it will be challenged by environmental groups and, if not overturned at the state (State Water Resources Control Board-SWRCB) and federal (USEPA) levels, it will likely be found by the courts to fail to fulfill the regulatory requirement to protect the water quality of Central Valley waterbodies from adverse impacts of discharges from irrigated lands.

The CVRWQCB Monitoring and Reporting Program Order No. R5-2008-0005 for Coalition Groups under Amended Order No. R5-2006-0053 Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands Adopted in 2008 states:

*"MRP OBJECTIVES*

*The Water Code mandates that monitoring requirements for a Waiver be designed to verify the*

*adequacy and effectiveness of the Waiver's conditions. One of the conditions of the Waiver is that discharges of waste from irrigated lands to surface waters of the State shall not cause or contribute to an exceedance of an applicable water quality standard."*

This requirement means that, in accord with the Clean Water Act and the CWRWQCB, none of the water quality objectives (WQOs), including numeric and narrative objectives and covering all impairments of the designated beneficial uses of the state's waters, can be exceeded by any amount more than once in a three-year period. This requirement applies to all of the state's waters.

It is important to understand that just meeting all of the US EPA water quality criteria/CVRWQCB water quality objectives for potentially toxic chemicals as required in the ILRP does not ensure protection of aquatic life from toxicity of the known potential pollutants as well as of chemicals for which there are no water quality criteria; a combination of potentially toxic chemicals in concentrations less than their respective toxic concentrations can cause toxicity by additive and/or synergistic effects. While additive and synergistic toxicity impacts are well-known to occur, the US EPA does not incorporate that information in its aquatic life criteria for potentially toxic chemicals that are used for the regulation of toxic chemicals based on numeric water quality standards. The CVRWQCB WQOs only consider a very limited number of additive impacts of mixtures and do not address synergistic impacts. This deficiency can be addressed to some extent through the appropriate measurement of aquatic life toxicity, and highlights the need to evaluate aquatic life toxicity in establishing compliance with water quality criteria/objective to protect aquatic life resources of the Central Valley waterbodies from the impacts of toxic chemicals in irrigated agriculture runoff/discharges. However the use of toxicity measurements will need to be greatly expanded from the current use to achieve this approach.

Comments on proposed alternatives identified in the draft ILRP EIR for governing the future direction of the ILRP follow.

*Alternative 1 ("No Project" Alternative).* This alternative of continuing the current regulatory program falls far short of adequately defining the occurrence and water quality impacts of irrigated lands discharges/runoff. The current program is based on the "Monitoring and Reporting Program Order No. R5-2008-0005 for Coalition Groups under Amended Order No. R5-2006-0053 Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands Adopted on 25 January 2008." A copy of that program is available at:

[http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/waivers/r5-2008-0005\\_mrp.pdf](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2008-0005_mrp.pdf).

We provided detailed comments (see attached list of papers and reports) on significant technical deficiencies in that monitoring program for the development of an information base upon which it would be possible to reliably evaluate the occurrence and significance of the discharge of pollutants from irrigated lands that cause violations of water quality standards in the state's waters and/or impairment of the beneficial uses of Central Valley waters in the case of nutrients, TOC, and other contaminants for which no numeric water quality objectives have been adopted.

Our comments on technical deficiencies in that monitoring program are available on our website, [www.gfredlee.com](http://www.gfredlee.com), in the Surface Water Quality section, the Agricultural Impacts on Water Quality subsection. A copy of our specific comments on the then-final ILRP MRP is attached. Also attached is a discussion of some the issues that need to be considered in developing the ILRP to achieve the program requirements.

While some of the then-proposed water quality monitoring program deficiencies were corrected by the staff after receiving our comments, there were several major deficiencies that were allowed to be implemented in the current water quality monitoring/evaluation program the most important of which is the failure to adopt edge of the field and upstream monitoring. It appeared to us that the CVRWQCB took the position that it would ignore these deficiencies in order to reduce the cost of water quality monitoring/evaluation and thereby gain acceptance of the irrigated lands regulated community to participate even to a limited extent in the monitoring program. To now propose to continue what is obviously a significantly deficient monitoring/evaluation program as proposed in *Alternative 1* is not acceptable.

In our previous comments we stressed the need for monitoring at the edge-of-the-field and in nearby state waters to define the worst-case impacts of toxic and other chemicals discharged from agricultural activities. In some waterbodies the worst case impacts could be detrimental to fish spawning/rearing areas that would not be detected by the current downstream at a single monitoring location as practiced in the current monitoring program. This type of monitoring is also essential to evaluate the effectiveness of management practices to control WQO violations in the states waters. We also discussed the need to monitor downstream of the current monitoring locations to evaluate the impact of nutrients on downstream water quality.

The staff-recommended alternative analysis of costs and other impacts presented in the draft EIR does not reflect the true costs to achieve reasonably complete evaluation of the current water quality problems caused by irrigated agriculture discharges to surface and groundwaters. The deficiencies in the ability of the current water monitoring program to provide a proper description of the magnitude of the water quality problems caused by current agricultural discharges render the detailed analysis of these issues presented in the draft EIR unreliable. Without a technically solid assessment of water quality problems that arise at edge of the field and downstream, it is impossible to reliably estimate the control programs needed, much less the cost of implementation of control programs or their impacts on agricultural activities or water quality in the Central Valley. While a considerable amount of money has have been spent on limited aspects of the current downstream water quality monitoring, it is not possible to estimate the cost of a comprehensive water quality monitoring program that can detect essentially all the WQO violations that occur upstream, and for nutrients downstream, of the current water quality ILRP monitoring locations.

If this program is to fulfill the regulatory requirements of the program, the future water quality monitoring/evaluation program for the ILRP must include comprehensive monitoring of representative edge-of-the-field discharges and waters downstream from the discharge for the full range of potential pollutants that are likely to be in the agricultural discharge/runoff or to develop downstream as a result of the discharge. Where the discharge of pollutants (constituents that impair designated beneficial uses of the state's waters) is found, the discharger(s) should

evaluate and implement to the extent economically possible/feasible control measures for the pollutants at the source. The monitoring and evaluation of the pollutant control programs must be comprehensive such that it can provide a reliable foundation for developing and assessing the economic feasibility of implementing the pollutant control program.

*Alternative 2 — Third-Party Lead Entity* includes third-party monitoring of surface waters and is expanded to include some groundwater quality monitoring. The expansion of the ILRP to include evaluation and potential control of pollution of groundwater by irrigated lands is an important step toward beginning to protect the groundwater resources of the Central Valley. In our previous comments on deficiencies in the ILRP we have repeatedly pointed out that the control of groundwater pollution should be part of the program. Our comments on groundwater pollution in the Central Valley by irrigated agriculture are available on our website in the Groundwater Quality Protection section at <http://www.gfredlee.com/plandfil2.htm#gwprotection>. A list of our papers and reports that address issues of groundwater pollution by irrigated agriculture is attached to these comments. As discussed in those writings, it has been well-established that irrigated agriculture cannot be practiced without causing groundwater pollution by salts and nitrate. The best that can be achieved is the minimization of groundwater pollution. This should be the goal of this part of the program.

The draft EIR does not provide adequate information on the characteristics of groundwater monitoring program to develop a reliable early warning monitoring program to detect management activities by agriculture to protect groundwater from further pollution. This approach is discussed in our reports concerning the protection of groundwater quality in the Central Valley. Without this information it is not possible to estimate the costs for implementation of the program.

The claim made by several agricultural representatives at the CVRWQCB September 22, 2010 meeting, that nitrate and salts do not pollute deeper groundwater because of depth to groundwater, is not technically valid. Examination of the groundwater pollution that has occurred in the Delano and McFarland areas of the Central Valley readily demonstrates the invalidity of their claim. Having grown up in Delano, G. Fred Lee is well-aware of the pollution of the area groundwater by agriculture-derived nitrate to the point that the nitrate MCLs were exceeded in water in municipal water supply wells. While some pollutants have limited ability to penetrate the unsaturated zones of aquifers, others, such as salts, nitrate and some pesticides, have limited attenuation in the unsaturated zone; it is only a matter of time before such chemicals in the surface soils pollutant the saturated zone (water table) of the aquifer.

Alternative 2 is deficient, however, in its not requiring early-warning monitoring for groundwater pollution. Without reliable monitoring of that type it is not possible to evaluate the effectiveness of the groundwater management plans.

*Alternative 3 — Individual Farm Water Quality Management Program* is based on “visual” monitoring. This is not a technically valid approach for controlling water pollution by irrigated agriculture. Evaluation of Farm Water Quality Management plans must be based on comprehensive water quality monitoring at the edge of the field and for nutrients downstream of

the discharges where nutrients are impacting water quality such as in the Delta.

*Alternative 4—Direct Oversight with Regional Monitoring* is a potentially feasible approach provided that adequate surface and groundwater quality monitoring/evaluation and control of pollutant discharges are achieved including comprehensive edge of the field and downstream monitoring.

*Alternative 5 — Direct Oversight with Farm Monitoring* has the potential of being effective provided that comprehensive monitoring programs are implemented. However based on the past experience where the CVRWQCB adopted allowed water quality monitoring programs that were obviously technically deficient there is concern the needed programs would not be required. The cost of this approach would likely cause the approach to not be implementable by small farms. This approach could potentially be used by larger farming interests, but, again, there will be need for comprehensive surface and groundwater monitoring/evaluation and management.

Rather than adopt a single alternative, or a combination of the alternatives, the CVRWQCB needs to first implement a comprehensive water quality monitoring program for surface and groundwaters. With several years' data from such a program it would be possible to start to develop a draft EIR that could reliably assess and outline the cost and effectiveness of control programs for pollutants in surface and groundwaters.

## **Sources of Information on Lee and Jones-Lee Comments on draft ILRP EIR**

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION  
MONITORING AND REPORTING PROGRAM  
ORDER NO. R5-2008-\_\_\_ FOR COALITION GROUPS UNDER  
AMENDED ORDER NO. R5-2006-0053  
COALITION GROUP CONDITIONAL WAIVER OF WASTE DISCHARGE  
REQUIREMENTS FOR DISCHARGES FROM IRRIGATED LANDS  
Revision 26 November 2007

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The CVRWQCB staff's November 26, 2007 "Tentative" proposed revised Monitoring and Reporting Plan (MRP) for the CVRWQCB Irrigated Lands Conditional Waiver is a somewhat modified version of the staff's draft MRP issued on March 29, 2008. Lee and Jones-Lee in Lee, G. F., and Jones-Lee, A., "Comments on 'Working Draft - Draft Monitoring and Reporting Program -Order No. R5-2007-\_\_\_ for Coalition Groups under Amended Order No. R5-2006-0053 Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands' dated March 29, 2007," Report submitted to CVRWQCB, Sacramento, CA by G. Fred Lee & Associates, El Macero, CA, April 13 (2007).  
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provided detailed comments on some of the significant deficiencies in that draft MRP. In addition to comments on a number of technically invalid approaches proposed by the staff for monitoring parameters and related issues. The Lee and Jones-Lee April 13, 2007 comments focused on the unreliable approach that the staff had proposed for the basic monitoring approach of allowing the coalitions to satisfy the MRP requirements based on one grab sample per month at a downstream location. As Lee and Jones-Lee discuss, this monitoring approach cannot reliably provide the data needed to meet the MRP stated objective of detecting violations of CVRWQCB Basin Plan objective by agricultural runoff/discharges. Such a monitoring approach could readily fail to detect upstream adverse impacts of agricultural discharges that are not detected at downstream monitoring locations. It was pointed out that instead of a "hit and miss" MRP monitoring program, that in order to accomplish the MRP objectives it would be necessary to expand the monitoring program to include a highly focused upstream edge of the field monitoring program. If properly developed and implemented such a program would reliably detect agricultural runoff/discharges that cause violations of CVRWQCB Basin Plan water quality objectives. This information could more readily lead to the development of management practices that can control the water quality objective violations. A focused upstream monitoring program where studies are conducted at locations where there is the greatest potential for water quality objectives are likely to occur could save years of ineffective hit and miss downstream monitoring. While this approach could be somewhat more inexpensive than a hit and miss

monitoring approach, in the long term it will be more cost effective in controlling water quality impacts from agricultural discharges/runoff.

Several of the coalition representative objected to initiating a focused upstream edge of the field monitoring claiming that such an approach is more than required in the agricultural coalition.

William Thomas stated an email to the TIC of August 13, 2007 in response to an email from Lee and Jones-Lee regarding the need to expand the MRP to include upstream focused monitoring to accomplish the MRP stated objectives,

“Thanks for the explanation and I do agree that this is the forum for a far ranging discussion on any scientific issue and it does have some timely reference because we are trying to finalize a new MRP which offers greater flexibility to the coalitions to advance to the board their own long range notion of a monitoring program which reflects their local situation. The global picture however is that we have made fundamental agreements as to what this waiver would entail and the relative obligations of the coalitions who are the parties bearing the costs and actually doing the water quality efforts and those can't be changed unilaterally unless the regional board wants to go back to the original drawing board. The emerging MRP is true to that structure because it will be the coalitions who propose the amendments to the once a month structure if they wish to do so. The coalitions have to guard against governmental creep where programs morph into things which were not envisioned and agreed to.”

Basically some of the agricultural coalition representatives claimed that the MRP only needs to require monitoring program independent of its reliability and adequacy in accomplishing the overall purpose of the CVRWQCB Irrigated Lands water quality management program of controlling adverse impacts of irrigated lands runoff/discharges. Those agricultural interests that expose this approach want to continue to practice agricultural activities without controlling the adverse water quality impacts of runoff/discharges. Such an approach is obviously contrary to the public's interests and for that matter agricultural interests since their credibility as a responsible

Lee and Jones-Lee comments on the grossly inadequate proposed hit and miss one sample per month at a downstream location stimulated the TIC to discuss this issue. This discussion lead to the potential modification of the MRP as presented in the November 2007 “Tentative” revised MRP to allow the coalitions to adopt a basic agricultural waiver monitoring program that could include an upstream edge of the field focused monitoring program. The currently proposed MRP greatly strengthens the wording around the need for the coalitions to adopt an MRP that will present a documented program that will clearly accomplish the objectives of the MRP of reliably determining the water quality violations associated with irrigated agricultural runoff/discharges that occur at any location in a coalition's area of responsibility. Based on Dr. G. Fred Lee of 40 years of conducting studies of agricultural runoff/discharges it will not be possible to accomplish this requirement with just a hit and miss downstream once a month grab sampling program. This will require upstream focused edge of the field monitoring programs.

The proposed MRP places the responsibility for reviewing the adequacy of the coalitions monitoring program to meet the MRP requirements on the CVRWQCB Irrigated Lands staff and the Executive Officer. If this review is conducted in a technically valid manner, then implementation of this MRP will be effective beginning to adequately define the water quality objective violations that occur in the Central Valley associated with irrigated agriculture

runoff/discharges. If however the staff are not allowed to fully require the coalitions to conduct an appropriate MRP the irrigated lands conditional waiver will continue to be large ineffective in developing the information needed to begin to effectively control the adverse impact of Central Valley irrigated agriculture.

An alternative to the proposed approach of requiring that the staff being responsible for performing critical reviews of the adequacy of the coalitions proposed MRP, it would be appropriate for the CVRWQCB to appoint an independent advisory board that would have the responsibility of advising the Board on the whether a coalitions proposed MRP can be expected to develop the needed information in a reasonable period of time. This advisory panel would consist of individuals who are experts on water quality evaluation/ management issues. This approach would be a peer review process that could result a review process that would be subject to less political pressure than could occur in internal staff review.

One of the most significant deficiencies in the current MRP is that it repeatedly specifies that the requirements of the MRP apply to agricultural discharges and runoff in the “Coalitions Group Boundaries.” Thus far the coalitions monitoring programs and apparently could continue in the future to the monitoring location and if water quality objectives are detected at that location upstream of that location. This approach could result in the failure to evaluate the impact of agricultural runoff/discharges that occur downstream of the coalitions boundaries. As discussed in our previous comments to the CVRWQCB on deficiencies on the agricultural conditional waiver program several of the pollutants discharged by irrigated agriculture in the Central Valley, there are several pollutants discharged by irrigated agricultural activities upstream of the downstream monitoring location that are adverse to water quality a considerable distances downstream of the monitoring location. Irrigated agricultural activities in the Central Valley are the source of nutrients (N and P) that adversely impact water quality in the Delta and in water supply water reservoirs located in the San Francisco Bay area and southern California. Also runoff from irrigated agricultural lands is apparently responsible for excessive bioaccumulation of organochlorine legacy pesticides such as DDT.

**Issues in Regulating Water Quality Impacts from  
Irrigated Agricultural Runoff and Discharges  
in the Central Valley of California**

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**Introduction**

The Central Valley of California is one of the most productive irrigated-agriculture areas in the US. Irrigation practices in the Central Valley, however, result in the transport of a variety of pollutants to the state's waters through stormwater runoff, and tailwater and subsurface drainwater discharges. Pollutants from these sources are causing significant water quality problems in the Central Valley streams, rivers, Sacramento San Joaquin Delta (Delta), and in water supply reservoirs downstream of the Delta. The California State Water Resources Control Board (SWRCB) and the Central Valley Regional Water Quality Control Board (CVRWQCB) are implementing an Irrigated Agriculture Conditional Waiver from Waste Discharge Requirements ("Ag Waiver") program through which discharges/runoff from irrigated agriculture that cause violations of the Regional Board's Basin Plan objectives (water quality objectives (WQOs)-standards) are to be controlled.

The San Joaquin River (SJR) is one of the largest rivers in California and is one of the primary recipient waterways for discharges/runoff from Central Valley irrigated agriculture. Lee and Jones-Lee (2007a,b) discussed the 12 pollutants responsible for Clean Water Act (CWA) section 303(d) "listings" for the SJR for violations of water quality standards/objectives; 8 of those are pollutants derived from runoff/discharges from irrigated agriculture in the SJR watershed. Such listings trigger the development of total maximum daily loads (TMDLs) for the violating pollutants. Owing to these violations, the CVRWQCB has slated the following parameters for TMDL development in the SJR: selenium and boron that occur naturally in some Central Valley soils; salinity derived from soil leaching and accumulation of salts from irrigated agriculture; two organophosphorus pesticides, diazinon and chlorpyrifos, used for pest control in crop production; oxygen-demanding substances (nutrients that develop into algae) that contribute to low dissolved oxygen (DO) conditions in the Stockton Deep Water Ship Channel (DWSC); legacy pesticides (DDT, dieldrin, toxaphene, etc.) formerly used for pest control; unknown-caused aquatic life toxicity; and fecal coliforms (*E. coli*). TMDLs may also be needed to control the following irrigated agricultural discharge-related contaminants: nutrients (N and P compounds) that lead to excessive algae and aquatic weeds; currently used pyrethroid-based pesticides; elevated pH; low DO; TOC/DOC that leads to trihalomethane formation during domestic drinking water disinfection; excessive sediment associated with soil erosion; and sediment toxicity due to unknown causes.

Several of the SJR tributaries also have significant water quality problems due to agricultural discharges. The SJR and Sacramento River join to form the Sacramento San Joaquin Delta, which, as discussed by Lee and Jones-Lee (2007c) contains pollutants that violate WQOs. Many are the same as those noted above for the SJR as being from agricultural discharges to the Delta and tributaries to the SJR. The Sacramento River has 2006 303(d) TMDL listings [[http://www.swrcb.ca.gov/water\\_issues/programs/tmdl/303d\\_lists2006\\_epa.shtml](http://www.swrcb.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml)] that include mercury, and “unknown toxicity” which could be derived from agricultural sources.

In order to define and address these water quality problems, the CVRWQCB has developed an Ag Waiver Monitoring and Reporting Plan (MRP) as part of the Ag Waiver program. The goal of the MRP is to cause agricultural interests to monitor agricultural drains and other waterbodies that receive substantial amounts of runoff/discharges to determine if violations of WQOs attributable to agricultural runoff/discharges are occurring at those locations. The current CVRWQCB Ag Waiver MRP implementation plan requires that if a WQO violation attributed to irrigated agricultural runoff/discharges occurs more than once every three years, the agricultural sources must attempt to develop management plans to prevent future violations. This approach is tantamount to that which has traditionally been applied to point-source discharges, such as publicly owned treatment works (domestic wastewater treatment plants) and industrial wastewaters, whereby dischargers are required to not cause violations of US EPA water quality criteria and state standards (in California - water quality objectives) based on those criteria.

Lee and Jones-Lee (2007c) discussed issues that affect the potential effectiveness of the MRP to adequately and reliably define the magnitude and location of the WQO violations, and water quality impacts, caused by Central Valley irrigated agricultural runoff/discharges. They highlighted key shortcomings including that the monitoring and reporting program needs to be significantly expanded to include upstream monitoring locations, and to include greater frequency of monitoring, additional monitoring parameters, targeted event-based monitoring, and especially edge-of-the-field monitoring, to fully define the water quality impacts of irrigated agriculture in the Central Valley. They also discussed how irrigated agriculture in the Central Valley is being over-regulated for some chemicals, and under-regulated for others.

The Lee and Jones-Lee (2007c) comments followed the comprehensive report they developed (Lee and Jones-Lee, 2002a) on behalf of the CVRWQCB that discussed issues that need to be considered in developing an adequate water quality monitoring/water quality evaluation program for assessing water quality/beneficial-use impacts of runoff and discharges from irrigated agriculture. More recently, at the fall 2008 CALFED Science Conference, J. Swanson of the CVRWQCB Irrigated Lands Program discussed the characteristics of the current Ag Waiver program, the MRP as it is being implemented, and their recent findings (Swanson, 2008a,b).

In light of Ag Waiver and MRP undertakings and recent findings, this report revisits key issues that should be considered in regulating runoff/discharges from irrigated agriculture in the Central Valley of California. It is based on the senior author’s more than 40 years of experience in investigating the water quality impacts of agricultural runoff/discharges in various areas of the US and over the past 20 years in the Central Valley of California. Lee and Jones-Lee have developed papers and reports pertinent to the appropriate, technically sound regulation of potential pollutants in runoff/discharges from nonpoint sources. This report contains references

to those reports with internet links for their download. While the focus of this discussion is the Central Valley of California, many of the issues discussed are applicable to other locations as well, and, as discussed by Lee and Jones-Lee (2008a), are also pertinent to assessing and managing water quality impacts from urban-area and highway stormwater runoff.

### **Water Quality Criteria Issues: Application of US EPA Water Quality Criteria.**

Lee and Jones-Lee (2002a) discussed pitfalls and limitations in the use of US EPA worst-case-based water quality criteria in the evaluation and regulation of nonpoint-source runoff/discharges. The mechanical application of such criteria/objectives for this purpose, as is now being done in the CVRWQCB Ag Waiver MRP, can lead to over-regulation of such discharges/runoff.

In the 1972 amendments to the Federal Water Pollution Control Act, the “Clean Water Act” (CWA), the US Congress mandated that the US EPA develop national water quality criteria that would be protective in all waters. It had been long-known and well-established that many potential pollutants, such as heavy metals, phosphorus, and many organics, exist in aquatic systems in a variety of chemical forms, only some of which are toxic/available to aquatic life or other beneficial uses of the water. For example, it was understood in the 1960s that, unlike many of the dissolved forms, particulate forms of heavy metals and those that are complexed with organics are not toxic. It also was becoming clear that for many contaminants, impact is a function of the duration of organism exposure. Nevertheless, to meet that all-encompassing CWA objective, criteria were developed for the most toxic/available forms of the subject chemicals; they were established to be protective when organisms were exposed to the available forms for chronic durations (i.e., worst-case conditions). State regulations then became comparisons of such worst-case-based numeric criteria to total concentrations of chemicals in ambient waters for regulatory purposes, an approach that presumes that the subject potential pollutants are in their most toxic/available forms and that organisms stand to be exposed for chronic durations.

As the national water quality criteria began to be used and misused by states in their regulations, the US EPA (1993) finally updated its regulation of heavy metals to focus only on dissolved forms. However that adjustment did not address the fact that not all dissolved forms of heavy metals are toxic largely due to their complexation with organics in natural waters. The US EPA also recognized that application of the worst-case-based water quality criteria in regulations could readily lead to overregulation of potential pollutants; its Water Quality Criteria Handbook (US EPA, 1994) provides guidance on the site-specific adjustment of criteria for application to potentially toxic chemicals such as heavy metals.

In an invited review Lee and Jones-Lee (1996) discussed issues that need to be considered in the use of US EPA worst-case-based water quality criteria and standards/objectives based on them to protect the beneficial uses of waterbodies without significant over-regulation of wastewater discharges and stormwater runoff. In describing approaches that should be taken to reliably use those criteria, they recommended, in keeping with the US EPA-allowed approach, that when a worst-case-based numeric water quality criterion/state standard was found to be exceeded in an ambient water, specific-studies be undertaken to adjust that criterion/standard to reflect the site-specific conditions that impact the toxicity/availability of the chemical(s) of concern. Such

adjustment would be especially important in the regulation of runoff/discharges from irrigated agriculture owing to the typically high particulate levels in such discharges and the high costs of controlling some of the pollutants from those sources, including nutrients (N and P compounds), and organic carbon.

The site-specific Water Quality Handbook guidance for studies to adjust worst-case-based water quality criteria to consider organic complexing of heavy metals that creates non-toxic forms has been followed in a variety of situations. Work in the San Francisco Bay and New York Harbor, for example, has demonstrated that the national criteria for copper can be relaxed and still protect aquatic life from toxic conditions. Jones-Lee and Lee (2008) and the authors' Stormwater Runoff Water Quality Newsletter Volume 10, Number 9 [available at <http://www.gfredlee.com/Newsletter/swnewsV10N9.pdf>] reviewed that work.

As noted above, the current CVRWQCB Ag Waiver MRP implementation plan is based on application of worst-case-based water quality objectives. Without proper adjustment their use presents a significant problem for the appropriate regulation of sources such as agricultural and urban stormwater runoff in which substantial amounts of the chemicals are present in unavailable forms. Those types of runoff/discharges typically contain elevated concentrations of particulates from erosion and plant debris such as crop residues, and total organic carbon and dissolved organic compounds, all of which tend to detoxify contaminants rendering them non-toxic/unavailable. Further, aquatic organisms would typically receive short-term, episodic exposure to contaminants from those sources, which also lessens the potential for impact.

### **Specific Regulatory Issues in Ag Waiver Program**

**Legacy Pesticides.** The current US EPA guidance for site-specific adjustment of worst-case-based criteria does not address several issues critical to the technically valid, cost-effective regulation of runoff/discharges from irrigated agriculture. For example, organochlorine legacy pesticides, such as DDT, dieldrin, and toxaphene, are being regulated in the CVRWQCB Ag Waiver program based on their total concentrations in the water column. These chemicals are of concern because of their tendency to accumulate in the flesh of edible fish, where they can accumulate to levels that pose a threat to the health of people who consume the fish. It has been known for decades that the excessive bioaccumulation of these chemicals in edible fish cannot be reliably assessed or regulated based on their concentrations in the water. Instead, as discussed by Lee and Jones-Lee (2002b, 2007c) the regulation of legacy pesticides should be based on the measurement of the concentrations of those chemicals in edible tissue of fish relative to public health guidelines. This approach accounts for the myriad factors controlling bioaccumulation to define whether or not these chemicals are causing a water quality problem in a particular waterbody. It also enables the reliable evaluation of the sources of the legacy pesticides that are causing water quality problems.

Sediments, as well, may be a source of legacy pesticides and other chemicals that tend to bioaccumulate in edible fish. However, as discussed by Lee and Jones-Lee (2002b), it is not possible to mechanically translate concentrations of legacy pesticides and PCBs (which have many of the same chemical characteristics as legacy pesticides) in a sediment to concentrations in fish tissue. The bioavailability of the sediment-associated chemicals needs to be determined using US EPA-recommended bio-uptake procedures. Lee et al. (2002) described the use of such

procedures in the evaluation of the uptake of PCBs by the freshwater worm, *Lumbriculus variegates*, in their investigation of the bioavailability of PCBs in Smith Canal sediment in the city of Stockton slough.

**Nutrients.** While the CVRWQB Ag Waiver MRP requires that agricultural coalitions monitor for nutrients (N and P compounds), there are no numeric water quality objectives that can be used to reliably evaluate the occurrence or significance of WQO violations. While the CVRWQCB Basin Plan contains a narrative water quality objective for nutrients in its “biostimulatory substance” objective, the CVRWQCB has not provided guidance on how to implement that objective. This means that two of the most important pollutants (N and P compounds) in irrigated agricultural discharges/runoff are not now regulated in the CVRWQCB Ag Waiver program.

Lee and Jones-Lee (2002c; 2005; 2006a,b) provided guidance on the evaluation of nutrient concentration data for assessing whether a nutrient concentration at a particular monitoring location is adversely impacting water quality at the monitoring location or downstream of it. As they discuss, site-specific evaluation of nutrient impacts at a monitoring point and downstream must be made to establish nutrient criteria for a particular waterbody. In an effort to stimulate greater attention to this aspect of water quality management in the Delta, and draw on the expertise and experience of professionals involved in this issue, they worked with the California Water and Environmental Modeling Forum (CWEMF) to present the “Delta Nutrient Water Quality Modeling Workshop” in Sacramento on March 25, 2008. During the course of that workshop nutrient-related water quality problems in the Delta and in domestic supply reservoirs that receive Delta water were described and discussed to better define the impact of nutrients on Delta water quality. Lee and Jones-Lee (2007d; 2008b,c) provide a synopsis of the Delta Nutrient Water Quality Modeling Workshop and a summary of nutrient-related water quality problems in the Delta. Additional information on evaluating and managing the excessive fertilization of waterbodies is available on Drs. Lee and Jones-Lee’s website, [www.gfredlee.com](http://www.gfredlee.com) in the “Excessive Fertilization” section [<http://www.gfredlee.com/preclaim2.htm>].

**TOC.** Lee (2004) contains a summary of the author’s experience investigating the occurrence and impacts of total organic carbon (TOC) in natural waters. TOC is an operationally defined parameter that quantifies the amount of organic carbon in a water, independent of its reactivity or ability to affect water quality. This parameter is used by water treatment works to estimate the amount of organic matter from algae and other sources in a raw water that may react with chlorine to increase the chlorine needed for treatment and to produce trihalomethanes (THMs), a suspected human carcinogen. Information exists on critical concentrations of TOC above which domestic water treatment works face the development of THM levels that violate drinking water MCLs, and face additional expenditures for supplementary or alternative treatment to prevent violations in the finished water. However, the CVRWQCB has not adopted a WQO that can be used to determine if a TOC source is contributing to a THM violation.

Lee and Jones-Lee (2003, 2004) discussed the importance of evaluating and considering the refractory (non-reactive) aspects and nature of TOC in developing regulatory programs for excessive TOC in Delta waters that are used for domestic water supply. As they discussed, some of the TOC in Delta tributary and Delta waters is due to algae and other organic compounds that

are degradable – non persistent. Regulatory programs for TOC should be based on the TOC that persists in Delta waters and thus can contribute to excessive THMs in a treated water supply. To accomplish this, the CVRWQCB needs to amend the Basin Plan for TOC to incorporate appropriate TOC regulations.

**Mercury.** The bioaccumulation of mercury in edible fish to excessive levels is one of the most significant causes of water quality impairment in Central Valley waterbodies. The CVRWQCB has not addressed this issue as part of its Ag Waiver MRP despite the fact that runoff/discharges from irrigated agriculture can contain mercury in concentrations that can contribute to the excessive bioaccumulation of mercury in Central Valley waterbody fish. The CVRWQCB is not requiring that irrigated agricultural runoff/discharges, receiving waters, or receiving water fish be monitored for mercury to determine if irrigation water contributes to excessive mercury in Central Valley fish. Lee and Jones-Lee (2008d,e) have discussed these issues in connection with the use of Putah Creek water for irrigation of crop lands near the Yolo Bypass.

### **DO and pH**

Aquatic plant photosynthesis and waterbody respiration can have significant impacts on the dissolved oxygen and pH levels in a waterbody, and the diel changes (over a 24-hr period) in those parameters. These impacts can cause or contribute to violations of WQOs for those parameters and can adversely affect beneficial uses of waters. As discussed by Lee and Jones-Lee (2007c) and in prior comments to the CVRWQCB cited therein, the Ag Waiver MRP still does not advance a technically valid approach for evaluating whether aquatic plant photosynthesis stimulated by nutrients in agricultural runoff/discharges leads to violations of Basin Plan WQOs for pH and DO. Such violations should be regulated under the WQO for excessive “biostimulatory substances,” or the WQOs should be changed to avoid violations of the pH and DO WQOs. In order to properly evaluate WQO violations for DO and pH it will be necessary to require that the monitoring be conducting in early morning to examine for low DO and in the late afternoon for pH violations.

### **Sediment Quality Evaluation**

As required by the California legislature’s Bay Protection and Toxic Clean Up Program, the SWRCB staff is developing sediment quality objectives (SQOs) for assessment and control of sediment-associated pollutants. While thus far their focus has been on the sediments in coastal marine and enclosed bay areas, it has recently expanded to the sediments of the Sacramento San Joaquin Delta. Eventually it is expected that the SQOs will be applied to the sediments of all of the state’s waterbodies. The SWRCB staff has used a multi-component, “triad” approach for developing SQOs that incorporates information on sediment toxicity, benthic organism assemblages, and the chemical characteristics of the sediments. While this approach is sound in theory, the SWRCB staff has used the total concentrations of selected chemicals in sediments for the “chemical characteristics” portion of the assessment. It has been well-known since the mid-1970s that the total concentration of a chemical, or a group of chemicals, in a sediment is not a reliable indicator of the potential impact of that chemical on aquatic life or other beneficial uses of waterbodies. The incorporation of that parameter in sediment evaluation skews the result of the other more reliable aspects of the triad assessment in undeterminable ways, rendering the resultant assessment unreliable. The inclusion of this technically invalid component can readily lead to inappropriate sediment quality evaluation which can, in turn, lead to inappropriate

sediment classification, remediation, and source control requirements. Such unreliable SQOs could ultimately affect the regulation of Central Valley agriculture by leading to unreliable requirements for control of chemical constituents in runoff/discharge waters that accumulate in downstream sediment and contribute to violations of SQOs.

Lee (2008) discussed the technical issues surrounding the approaches that the SWRCB staff and board have adopted for sediment quality evaluation. Based on his more than 30 years of work on the nature and sediment/water-quality/beneficial-use impacts of sediment-associated chemicals, Lee recommends that sediment quality evaluation be based on sediment toxicity and alterations in benthic organism assemblages that are caused by chemicals in the sediments. The chemical component of the sediment quality evaluation should be based, not on total concentrations, but rather on properly conducted toxicity identification evaluations (TIEs) that determine the cause of observed toxicity. The total concentration of a chemical or group of chemicals should not be part of the evaluation. Additional information on these issues is available at [www.gfredlee.com](http://www.gfredlee.com) in the "Contaminated Sediment" section [<http://www.gfredlee.com/psedqual2.htm>].

#### **Development of Management Practices**

Lee and Jones-Lee (2002c) developed a report for the SWRCB/CVRWQCB that described management practices for controlling water quality impacts of potential pollutants in irrigated agriculture stormwater runoff and tailwater discharges in other areas of the US and discussed their potential effectiveness in the Central Valley of California. They reported that while some management approaches have shown some success in controlling pollutants in agricultural land runoff in other areas of the US, some conditions characteristic of the Central Valley, including weather and agricultural practices, raise questions about the effectiveness of those practices for controlling pollutants in this area. It will be important that a data base be developed to describe and track the approaches that are undertaken for controlling the runoff/discharges of each of the major types of potential pollutants, characteristics of the area in which the management approach is applied, and the results of the practice in reducing the discharge and most importantly in improving receiving water quality characteristics.

As discussed by Lee and Jones-Lee (2002d) the evaluation of any of the "best management practices" (BMPs) programs should include a comprehensive evaluation of the impact of the practice on the water quality characteristics of the waters receiving the BMP-"treated" runoff/discharge. The parameter of "percent removal of constituents of concern" from a discharge or runoff, especially the percent removal of the total concentration of a constituent, can provide misleading assessments of benefit; that parameter may have little relevance for assessing the impact of the action on water quality/beneficial uses of public waters. Lee and Jones-Lee (2002a; 2006a,b) discussed the characteristics of receiving-water studies that are essential to adequately define the impact of irrigated land runoff/discharges on receiving water quality at the point of discharge and downstream. For example, the regulation of nutrient discharges from agricultural and urban sources requires comprehensive studies of the downstream impacts of nutrients on water quality, including domestic water supplies, located at considerable distances downstream of the point of discharge. The water quality impact studies should be conducted for several years prior to implementing the management practice, and continued for several years after implementation of the management practice to account for variability in climate, agricultural practices and other factors that influence pollutant runoff and its impacts. It is only

through these types of studies that a proper evaluation can be made of potential water quality benefits that can be realized through specific management practices.

In their review of potential management practices for controlling water quality impacts of Central Valley irrigated agriculture, Lee and Jones-Lee (2002d) noted that the evaluation of the potential effectiveness of various types of management practices for contaminants in urban stormwater runoff is considerably ahead of that for those pollutants of concern in agricultural runoff/discharges. The experience with evaluation and management of contaminants in urban stormwater runoff can be of value to those concerned with evaluation and management of water quality impacts of agricultural discharges/runoff.

### **Groundwater Quality Impacts**

Lee and Jones-Lee (2007e,f,g) discussed the current state of groundwater quality protection from impacts of activities on land surface; particular attention was given to waste disposal practices permitted in the state by regulatory agencies and agricultural activities. As they discussed while California's Porter-Cologne Water Quality Act explicitly requires the protection of groundwater quality, the CVRWQCB, other regional boards, and the SWRCB continue to permit land surface activities, such as waste disposal, that will lead to groundwater pollution.

Experts in the topic report that it is not possible to practice irrigated agriculture in the Central Valley without polluting groundwaters with nitrate and salts; the best that can be achieved is a reduction in the amount of groundwater pollution by nitrate. Lee and Jones-Lee (2007e,f,g) discussed this finding and summarized suggested approaches for reducing the magnitude of nitrate pollution, including altering fertilization practices and the management of irrigation water.

Another group of chemicals that has impacted groundwater quality is pesticides used in irrigated agriculture. As discussed by Lee and Jones-Lee (2007e,f; 2009) the California Department of Pesticide Regulation (DPR) has been attempting to work toward eliminating groundwater pollution by pesticides through the evaluation of the potential of a new or expanded-use pesticide to cause groundwater pollution based on the structural characteristics of the pesticide and the geological characteristics of the area to which it would be applied. While its adoption of this approach has been impeded by pesticide users, DWR has adopted a modified approach to require such information be provided as part of pesticide registration (Lee and Jones-Lee, 2007e,f).

The regional boards should adopt a more effective process to evaluate the potential of a proposed or permitted land-surface activity to lead to groundwater pollution. As part of permitting an activity, the permittee should be required to conduct a comprehensive, pro-active monitoring program that would detect incipient groundwater pollution before widespread pollution occurs. The requirement of the Porter-Cologne Act to provide protection of groundwater quality needs to be met through the development of an implementable, statewide approach for protection of groundwater quality.

### **Designated Beneficial Uses**

One of the foundations of the Clean Water Act is the focus of regulation for discharges/sources on the prevention of adverse impacts on designated beneficial uses of receiving waters. Water

quality criteria/objectives were intended for the protection of specific beneficial uses, such as domestic water supply, propagation of aquatic life, wholesomeness of edible fish, and recreation. When the designated beneficial uses were assigned to waterbodies in the mid-1970s in accord with the requirements of the CWA, limited attention was given to whether the designated uses assigned could actually be attained. The US EPA recognized that regulation of contaminants based on the mechanical comparison of worst-case-based water quality criteria/objectives to ambient water concentrations, without attention to contaminant availability and the sensitivity of the designated beneficial uses of waterbodies, can lead to over-regulation of runoff discharges with the attendant wasteful spending on unnecessary management. In addition to developing the Water Quality Standards Handbook to address contaminant availability discussed above, the US EPA developed guidance on "Use-Attainability Analysis" to address the beneficial use component of criteria application and the need to consider the attainability of designated uses for receiving waters. Several years ago, the Agency periodically held water quality standards workshops that addressed use-attainability analysis as some states were making the process of updating and changing the designated uses of waterbodies far more difficult than was necessary. Some states, with US EPA approval, have developed approaches by which they can change the designated beneficial uses of parts of waterbodies to more appropriately reflect the actual beneficial uses that can be attained.

One of the issues of concern in implementing the CVRWQCB Ag Waiver Program MRP for detection of violations of water quality objectives is that the designated beneficial uses of a number of waterbodies that serve as agricultural drains have not been clearly defined. The significance of the exceedance of a numeric, worst-case-based WQO in a particular ag drain, channel, or other waterbody cannot be reliably evaluated absent appropriate designated beneficial use designation. This is of particular concern to agriculture in California since the SWRCB includes "domestic water supply" in the use-designation of every waterbody, even when a waterbody is not used for domestic water supply and does not contribute potential pollutants that could impair the use of downstream waters for domestic water supply. It is not technically justifiable to force agricultural interests control concentrations of chemicals and pathogen indicators to meet drinking water MCLs when the receiving waters are not, and cannot be reasonably expected to be, used for domestic water supply.

Another designated-use-related problem faced for ag drains and other waterbodies in which the flow is dominated by irrigated agriculture drainage/runoff, is their classification for "aquatic life propagation" through the "tributary rule." That "rule" requires that tributaries to waterbodies classified for aquatic life propagation meet WQO's protective of that use. In applying that rule for ag drains, inadequate attention is given to the potential impact of those sources on the propagation of aquatic life in the downstream waters of concern.

There is confusion in the CVRWQCB irrigated lands program on the designated beneficial uses of several waterbodies in the Central Valley whose designated beneficial uses have apparently not been classified. In resolving this issue it is important that the CVRWQCB and SWRCB consider the real value of creating and maintaining a given ag drain or other waterbodies whose flow is dominated by agricultural runoff/drainage, as an aquatic life resource. Obviously if a waterbody is a spawning area for anadromous fish then the applicable water quality criteria/objectives should protect the aquatic life propagation use. However, if the primary

beneficial use of a drainage-way or an otherwise dry or uninhabitable stream-course is the drainage of runoff from agricultural lands, and the water contributes little or nothing to the aquatic life-related beneficial uses of downstream waters, there is no technical justification for the classification of the drainage-way or drainage-dominated watercourse for aquatic life-related beneficial uses. If there are political or social reasons for greater control of those waters, those reasons should be acknowledged.

Some potential guidance on this issue is available in the current federal regulatory approach for implementing the Use Attainability Analysis (UAA).

According to Dr. Thomas J. Gardner of the US EPA National Water Quality Standards Branch Washington DC (Gardner, 2008 – personal communication):

*"The most recent thinking from EPA on UAAs can be found here: UAAs and Other Tools for Managing Designated Uses, March 2006  
<http://www.epa.gov/waterscience/standards/uaa/index.htm> (Click on "Case Studies" and then "Download all the case studies" (.pdf)) I would also click on the "Improving the Effectiveness of the UAA Process" memo The EPA Guidance from 1986 can be found at: Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses (EPA 440/4-86-037, 038, 039):  
<http://www.epa.gov/waterscience/library/wqstandards> Here is the Interim Economics guidance from 1995, which relates to 40 CFR 131.10 (g) (6) Interim Economic Guidance for Water Quality Standards: Workbook (1995): EPA 823/B-95-002  
<http://www.epa.gov/waterscience/library/wqstandards>*

*Available CSO guidance also contains useful information about UAAs: Guidance: Coordinating CSO Long Term Planning with WQS Reviews (EPA-833-R-01-002):  
[http://www.epa.gov/npdes/pubs/wqs\\_guide\\_final.pdf](http://www.epa.gov/npdes/pubs/wqs_guide_final.pdf) Many States have developed UAA guidance: For example, Colorado has developed Recreational Use classification guidance; Kansas has developed an Aquatic Life UAA Protocol."*

### **Overall Recommended Approach**

The first step in beginning to more appropriately regulate the real, significant water quality impairments caused by Central Valley irrigated agricultural runoff/discharges is to develop and implement a sound, comprehensive water quality monitoring/evaluation program in the Central Valley. As discussed by Lee and Jones-Lee (2007c) such a program must include much more than the currently prescribed one-grab-sample-per-month at a downstream location. It must include focused, upstream, event-based monitoring and edge-of-the-field monitoring/evaluation specifically targeted to identify and assess those agricultural practices/activities and locations that are likely to contribute discharges/runoff that cause WQO violations.

The focus of this monitoring/evaluation program should be on providing detailed information on selected watersheds that are representative of the types of agricultural areas in the Central Valley. The monitoring program should be carried out for several years, until there is reasonable certainty that the occurrence, location, and magnitude of violations of WQOs in Central Valley watersheds that have substantial amounts of irrigated agricultural runoff/discharges have been defined.

The second phase of the recommended approach is a detailed evaluation of the actual water quality impairments that would be expected to be caused by given WQO violations, and those which are in fact being caused by WQO violations, so as to distinguish administrative exceedances of WQOs from real water quality concerns. As discussed above, mechanical comparison of the worst-case-based, numeric national criteria/water quality standards and WQOs to concentrations in receiving water will lead to excessive over-regulation of agricultural discharges/runoff. Jones-Lee and Lee (1998) described an Evaluation Monitoring approach that is a more technically sound alternative for defining water quality issues that need to be addressed. It shifts the focus of monitoring from the total concentrations of potential pollutants to the water quality impairments that are caused by actual pollutants, i.e., those constituents that cause a beneficial-use-impairment. Employment of this approach will identify situations in which a WQO “exceedance” is simply an artifact of the worst-case nature of the WQOs and indicates that the WQO needs a site-specific adjustment. It will importantly, also reveal water quality impairments that were not known to exist owing to the limitations of the numeric WQO approach.

In the 1990s Lee and Taylor (2001a,b) studied stormwater runoff from various watersheds in the Upper Newport Bay - Orange County, CA area to evaluate the need to develop management practices (BMPs) for a new toll road in that watershed. Of particular concern was the potential for the heavy metals in stormwater runoff from highways and streets to cause aquatic life toxicity in the receiving waters. As expected, they found that the concentrations of several heavy metals in the highway runoff exceeded the worst-case-based water quality criteria, indicating that those chemicals had the potential to cause toxicity in the waters receiving the stormwater runoff. A focused, stormwater runoff event-based monitoring program conducted at the edge-of-the-highway and in nearby receiving waters showed that receiving waters were toxic to certain forms of aquatic life. However, the results of toxicity identification evaluations (TIEs) revealed that the toxicity was not caused by the heavy metals that exceeded the WQOs, but was rather due to organophosphate and pyrethroid-based pesticides that were used in urban and agricultural areas in the Upper Newport Bay watershed. The mechanical application of WQOs for water quality management in that situation would have resulted in massive expenditures for the construction of the detention basins and filters planned for the treatment of heavy metals, a non-problem, while missing the real cause of the toxicity, the pesticides that would not have been removed by the planned management practice. The evaluation monitoring approach showed that the construction of the detention basins and filters would not prevent the pesticide toxicity from occurring.

Agricultural interests and other dischargers that find that the discharges/runoff from their lands are being overregulated by imposition of worst-case-based water quality criteria/standards or inappropriate designation of a waterbody’s designated beneficial uses should be prepared to contribute significant funding to support the studies needed to establish site-specific objectives and/or update the designated beneficial uses to reflect the actual beneficial uses of ag drains. Without such support and such studies, agricultural runoff/discharges will likely be over-regulated and significant funds could be spent controlling chemicals that are not impairing the beneficial uses of waterbodies receiving the runoff/discharges.

## **Conclusion**

The current mechanical approach for regulating runoff/discharges from irrigated lands being

implemented in the Ag Waiver program should be revised to consider how the WQOs that are being used were developed and how they should be used to protect appropriately designated beneficial uses of waterbodies that are impacted by runoff/drainage from irrigated lands, without significant over-regulation of those discharges. Failure to take a more technically valid approach could result in serious damage to the economic viability of irrigated agriculture in the Central Valley with little or no improvement in the true water quality/beneficial uses in some Central Valley waterbodies. Funds to implement this program should be derived from irrigated agriculture and the public.

### **About the Authors**

G. F. Lee has been involved in the development, evaluation, and implementation of water quality criteria and state standards since the early 1960s. A summary of his experience is provided at <http://www.gfredlee.com/exp/wqexp.htm>. During the 1960s while he held the position of Professor of Water Chemistry and Director of the Water Chemistry Program at the University of Wisconsin, Madison he served as an advisor to the Wisconsin Department of Natural Resources on the development and implementation of water quality criteria and standards. During that time and subsequently he has served as an advisor to numerous governmental agencies including municipalities, industry, and environmental/citizen groups on water quality criteria issues. In the early 1970s Dr. Lee served as an invited peer reviewer for the National Academies of Science and Engineering's "Blue Book of Water Quality Criteria - 1972." In the late 1970s, he served as an invited member of the American Fisheries Society Water Quality Panel that conducted a review of the US EPA's 1976 Red Book of Water Quality Criteria. In the early to mid-1980s he served as a US EPA invited peer reviewer for the 1986 Gold Book of Water Quality Criteria development approach and for several of the specific chemical criteria. Drs. Lee and Jones-Lee have published extensively on the development of water quality criteria and their implementation into state standards to appropriately regulate water quality impacts without significant over-regulation of wastewater and other discharges. Many of those publications are available on their website, [www.gfredlee.com](http://www.gfredlee.com) in the Surface Water section, <http://www.gfredlee.com/pwwqual2.htm#criteria>.

The reference list provided in the draft ILRP EIR is deficient in failing to provide full disclosure or comments that have been submitted to the CVRWQCB on the problems with the existing monitoring providing the information needed to reliably determine the pollution of the states waters in the Central Valley by irrigated agriculture. Attached is a list of our previous comments on the deficiencies in this monitoring program.

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April 7, 2011

Ms. Katherine Hart, Chair  
Regional Water Quality Control Board, Central Valley Region  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670

**Re: Irrigated Lands Regulatory Program Framework Comments**

Dear Chairperson Hart and Board Members:

In America we hold a value that each of us must not foul downstream water supplies with our waste, just as we expect those upstream of us to do the same. The problem is, the proposed irrigated lands program falls short of this value and falls short of enforcing laws that require our waste to not degrade our neighbors' water or create a nuisance.

Some give praise to the program governing discharges from irrigated agricultural of polluted groundwater waste from the Grasslands Watershed Basin to the San Joaquin River. Since 1995, the San Luis Delta-Mendota Water Authority (SLDMWA) and United States Bureau of Reclamation (USBR) have been discharging polluted groundwater with high levels of selenium and other contaminants using the federal San Luis Drain for discharge to the San Joaquin River at levels lethal to fish and wildlife. Dilution flows downstream of the Merced River have been the method used to meet water standards downstream. From Mud Slough down to the Merced River, because of this discharge of polluted water, the river often has concentrations that exceed Clean Water Act standards. (See Figures 3-4 ).

The program where dischargers consolidate and concentrate these wastes toxic to fish and waterfowl, and then discharge them under a permit with some monitoring, is considered exemplary by the polluters. But it has relied on waivers of water quality rules and dilution to meet the law. (See Figure 1) Not enforcing water quality standards has its costs. But in this case the costs are passed along to others downstream. It is a case study of how irrigating toxic soils is proceeding largely unchecked, consolidating pollution and damaging downstream uses.

Selenium is a metalloid that can be very dangerous under some circumstances. Most significantly, it bio-accumulates in the food chain, concentrating as it moves up the food chain. This is what happened to Merced County cattle ranchers Jim and Karen Claus 30 years ago when selenium-tainted drainage water leaked from ponds at the Kesterson National Wildlife Refuge. The Claus's cattle,

along with that of other nearby cattle ranchers, started getting sick and dying, after consuming the tainted drainage water and eating tainted grasses.

Kesterson was ordered cleaned up and closed as a public nuisance in 1985, yet for a quarter of a century, some Westside irrigation districts have been permitted to continue draining their selenium-laced waste waters directly to the San Joaquin River where it flows to the Delta.<sup>1</sup>

Monitoring the impacts of this essentially unregulated drainage has been sparse.<sup>2</sup> Chinook fry and splittail who feed in the San Joaquin River sloughs and floodplains and intermittent flooded wetlands are exposed to lethal doses. Bottom fish along with white and green sturgeon are particularly threatened as they feed on aquatic life that collects selenium and further concentrates the impacts in these fish. Dungeness crabs were recently added to the list. The lethal deformities in waterfowl and migratory birds at Kesterson and the Tulare Basin caused by selenium have been well documented.<sup>3</sup>

We know the costs of spreading this contamination in sloughs, wetlands, estuaries and slow moving water is costly to clean up (if that is even possible) and if the selenium buildup and accumulation cannot be halted the consequences may be catastrophic to the downstream biosphere. And yet, we continue with a regulatory program that transfers these dangers to downstream users, both human and wildlife.<sup>4</sup>

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<sup>1</sup> USFWS November 8, 2002 Exceedances of Water Quality Objective for Grassland Wetland Supply Channels. [http://www.swrcb.ca.gov/rwqcb5/water\\_issues/grassland\\_bypass/usfws\\_att\\_c.pdf](http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf) & <http://www.pcl.org/files/USGSDrainageMgmt.pdf> pg 26.

Selenium removal from agricultural drainage from the western San Joaquin Valley is hampered by the large amounts of associated salt in any waste stream subjected to treatment. Extensive testing of technologies for removal of selenium from the water-column utilizing chemical and biological processes as part of the SJVDP achieved little operational success or cost-effectiveness (SJVDP, 1990c). Drainage treatment to remove selenium was not one of the strategies recommended by the SJVDP (1990a). In the *Preface* to the San Joaquin Valley Drainage Program final report (1990a), Edgar Imhoff, head of the program, wrote that “...*hopes for a master drain and expectations of a technological breakthrough in drainage water treatment are the reasons that the drainage problem has grown to nearly 500,000 acres and is adversely affecting the environment.*”

<sup>2</sup>See [http://www.swrcb.ca.gov/rwqcb5/water\\_issues/grassland\\_bypass/usfws\\_att\\_c.pdf](http://www.swrcb.ca.gov/rwqcb5/water_issues/grassland_bypass/usfws_att_c.pdf)

<http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf> pg 26. ... “*monitoring was not sufficiently frequent to accurately characterize loads during variable flows.*”...*annual data are not available from individual farm-field sumps to help qualify source-area shallow groundwater conditions and determine long-term variability in selenium concentrations...compliance monitoring sites are 50 and 130 miles downstream from the agricultural discharge. Pg 118-119.*

[http://wwwrcamnl.wr.usgs.gov/Selenium/Library\\_articles/Presser\\_etal\\_GBP\\_monitoring\\_plan\\_1996.pdf](http://wwwrcamnl.wr.usgs.gov/Selenium/Library_articles/Presser_etal_GBP_monitoring_plan_1996.pdf)

<sup>3</sup> <http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf> pg 2.

<sup>4</sup> <http://pubs.usgs.gov/fs/2004/3091/> U.S. Department of the Interior U.S. Geological Survey Fact Sheet 2004-3091 August 2004

At the same time state and federal budgets are being cut.<sup>5</sup> The hodge podge of treatment methods to stop this discharge of selenium pollution to downstream neighbors is unlikely to succeed. Monitoring budgets are being cut. In February 2011, Central Valley Regional Water Quality staff announced they would no longer conduct monitoring for the project at 12 sites and Fish and Game representatives indicated they also would no longer conduct biological monitoring. The Bureau promises to pick up the costs and yet, the proposed draft monitoring program suggests significant cuts in both water quality and biological monitoring, despite promises to the contrary.<sup>6</sup> Compliance monitoring for loads is very different from monitoring for water contaminants, sediment movements and biological impacts both for aquatic and wildlife. Cutting the days, time periods and parameters *can render the analysis from the monitoring useless in terms of analyzing the impacts from the spread of this pollutant and the synergistic impacts with other contaminants*. Averages minimize the peak exposures which are often lethal and stay in the aquatic system long after the discharge recedes.<sup>7</sup>

Relying on load measurements is a misleading measurement for compliance with Clean Water Act standards and pollution controls.<sup>8</sup> For example over more than a ten-year life of the discharges from the Grasslands Watershed to the San Joaquin River from Mud Slough, U.S. Geological Survey scientists estimate a cumulative hazard of 6.6 Kestersons (ksts) as the cumulative hazard load.<sup>9</sup> Uncontrolled discharge of selenium-tainted groundwater and storm water exceeding protective standards is

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*“The dry years and low flow seasons will be the ecological bottleneck (the times that will drive impacts) with regard to Se. Surf scoter, greater and lesser scaup, and white sturgeon are present in the estuary during the low flow season and leave before high flows subside. Animals preparing for reproduction, or for which early life stages develop in September through March, will be vulnerable.”*

<sup>5</sup> <http://www.assembly.ca.gov/acs/committee/c26/hearings/03012011/030111%20hearing%20materials%20-%20fed%20program%20cuts.pdf>

<http://www.nwf.org/News-and-Magazines/Media-Center/News-by-Topic/General-NWF/2011/02-22-11-House-Continuing-Resolution-Passes.aspx>

[http://wwwrcamnl.wr.usgs.gov/tracel/references/pdf/Estuaries\\_v26n4Ap956.pdf](http://wwwrcamnl.wr.usgs.gov/tracel/references/pdf/Estuaries_v26n4Ap956.pdf)

<sup>6</sup> Third Supplemental Declaration of Donald R. Glaser, CV-F-88-634-OWW/DLB, CV-F-91-048-OWW/DLB, Document 865 Filed 04/-1/11 Firebaugh Canal Water District et.al. v US at page 7

<sup>7</sup> <http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf>  
<http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/pollutants/selenium/fs.cfm>  
<http://wwwrcamnl.wr.usgs.gov/Selenium/library.htm>

<sup>8</sup> <http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf> pg 18 and 152.

“The selenium loads measured as the input to the system (drainage canals) are perpetually different from those measured as the outputs from the system (downstream in wetland sloughs or the San Joaquin River)” pg 153.

<sup>9</sup> <http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf> pg 119.

permitted in wetland areas during periods of wet weather.<sup>10</sup> (See Figure 2 ) In periods of low flows selenium concentrations increase, but loads typically go down.<sup>11</sup>

Under the proposed irrigated lands regulatory program upstream selenium waste water stored in ground water aquifers in the Westlands subarea will measure only electrical conductivity and elevation.<sup>12</sup> Previous USGS and USBR studies show vast ground water areas with selenium contamination that exceeds hazardous waste levels. ( See Figure 8 ) There is no requirement to monitor the spread of this pollution to downstream neighbors and to the San Joaquin River where eventually it accumulates in the Delta estuary, sloughs, wetlands, and temporal floodplains. State and federal scientists predict this pollution from irrigated agriculture unless halted, will harm beneficial use.<sup>13</sup> Mobilization of selenium by irrigation and contamination of ground water has resulted in concentrations of groundwater greater than hazardous waste levels. ( See Figure 8 ) This pollution violates federal (40 CFR 131.12) and state anti-degradation regulations.<sup>14</sup> Under worse case scenarios government scientists conclude that selenium contamination could create an ecological crisis in the Bay-Delta similar to that created at Kesterson National Wildlife Refuge in the 1980s.<sup>15</sup>

Scientists and water board staff estimate that more than 85% of the pollutant loads of selenium in the San Joaquin River that reach the Delta Estuary are from the west side irrigators.<sup>16</sup> They estimate the daily discharges of selenium to the Delta Estuary from the San Joaquin River is 10 to 30 times the combined total of selenium discharges from the combined Sacramento River sources and the Bay Area oil refineries.<sup>17</sup>

Selenium is also being exported to southern California's water supplies through the California Aqueduct threatening drinking water quality and likely is accumulating in fish and reservoirs in Southern California as a result.<sup>18</sup>

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<sup>10</sup> ibid pg 17.

<sup>11</sup> ibid pg 70-90.

*"During the first two years of the project, loads were above load targets. It is notable that drain water discharged to the San Joaquin River through the San Luis Drain is more consistently concentrated than were historic discharges to the wetlands channels system."* pg 121

<sup>12</sup> See proposed Waste Discharge Requirements for Westlands Water District & ibid. pg 25.

<sup>13</sup> <http://pubs.usgs.gov/pp/p1646/pdf/pp1646.pdf> pg 15 & 25.  
<http://www.pcl.org/files/USGSDrainageMgmt.pdf>

<sup>14</sup> ibid pg 14.

<sup>15</sup> ibid. pg 18.

<sup>16</sup> [http://esd.lbl.gov/files/about/staff/nigelquinn/comp\\_model.pdf](http://esd.lbl.gov/files/about/staff/nigelquinn/comp_model.pdf)

see also [http://www.swrcb.ca.gov/rwqcb5/water\\_issues/water\\_quality\\_studies/sjr9900.pdf](http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_studies/sjr9900.pdf)

<sup>17</sup> <http://pubs.usgs.gov/of/2000/ofr00-416/#pdf> ; pp 1-2.

<sup>18</sup> <http://calitics.com/tag/Selenium> Napolitano, Garamendi, et al., November 26, 2010.

Do we have enough water in California to continue to pollute it and expect dilution to meet clean water standards while clean up costs are passed on to downstream users? No. It is time to clean up the source of the pollution and enforce the law. It is time to enforce the law, including the State Board 1985 Kesterson cleanup or, WQ 85-1, which addressed San Joaquin River drainage pollution. Clean Water Act standards and state laws designed to protect water quality from unreasonable use, nuisance, and degradation need to be enforced. The proposed Irrigated Lands Regulatory program falls short of protecting water supplies and the public from contamination caused by irrigated agriculture.

Thank you for the opportunity to comment. Attached are the charts and figures referenced herein.



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Attachments Charts and Slides 1-9.

# Selenium Contamination of Groundwater & Surface Waters: A case history in the failure to enforce water quality standards

Irrigated Lands Framework  
Agenda Item #7  
April 7, 2011



## Permit History for Selenium Discharges From Grasslands Basin to Mud Slough and San Joaquin River: A Case History in the Failure to Enforce Water Quality Standards

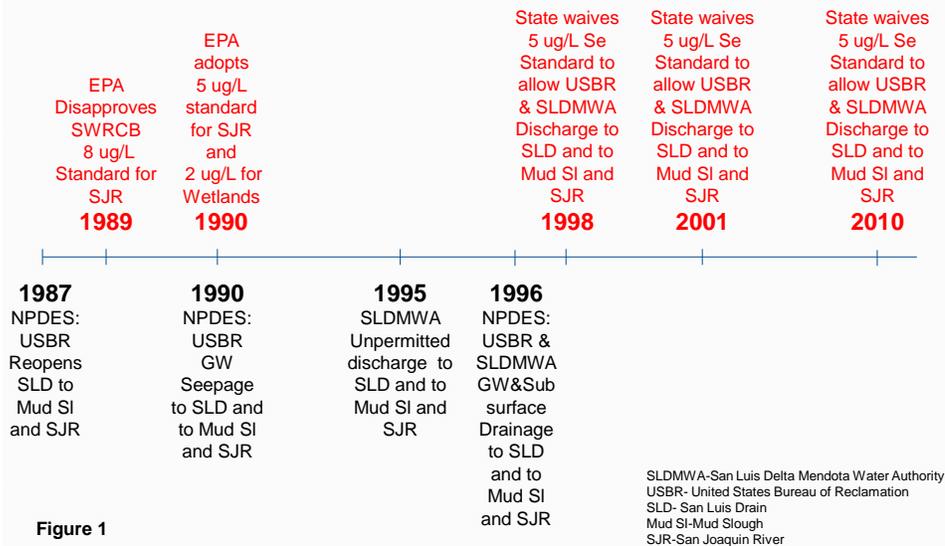


Figure 1

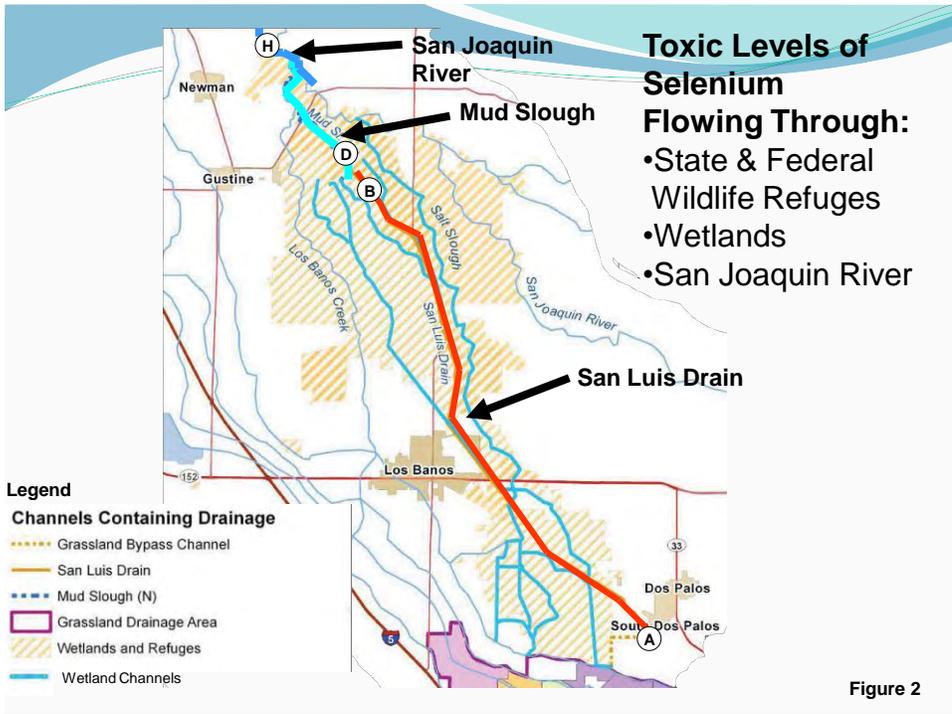


Figure 2

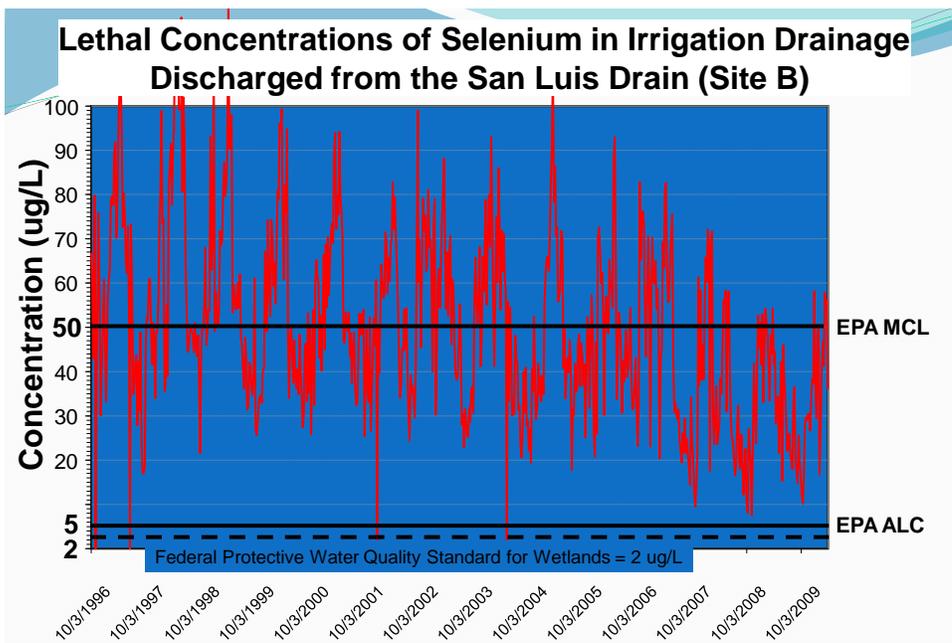
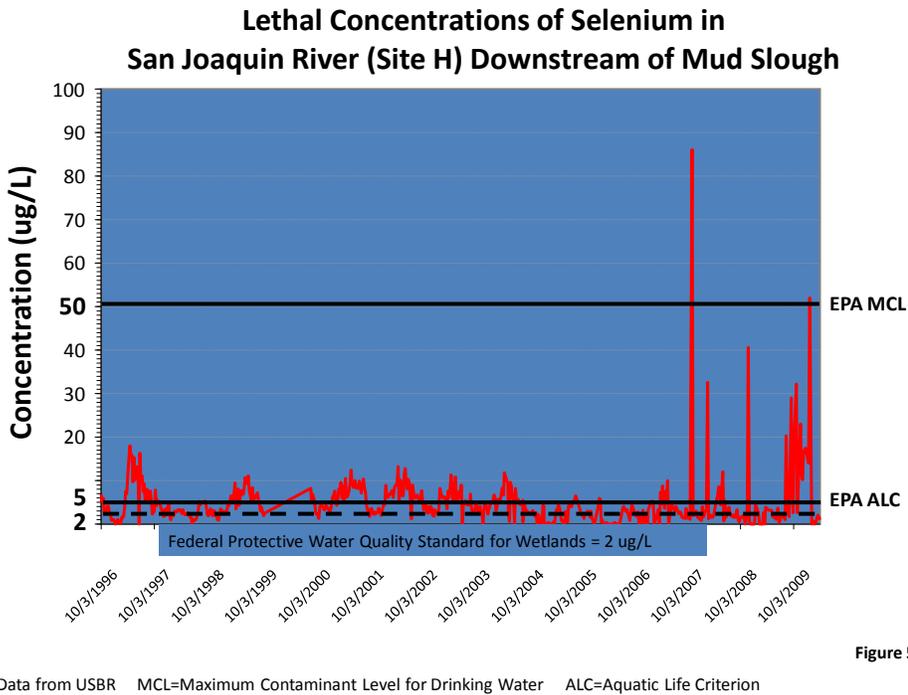
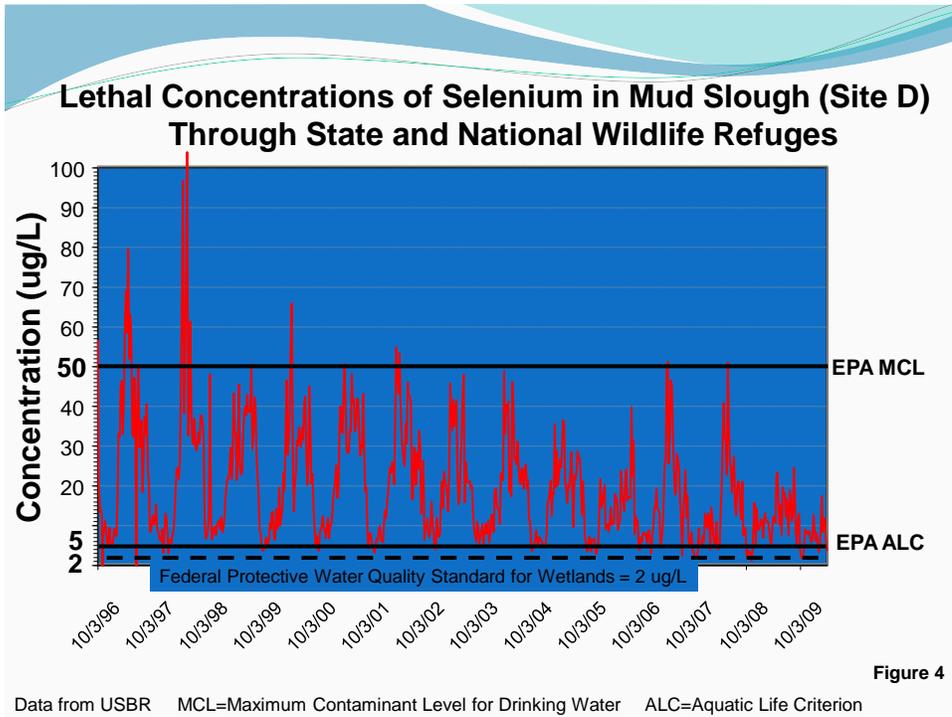
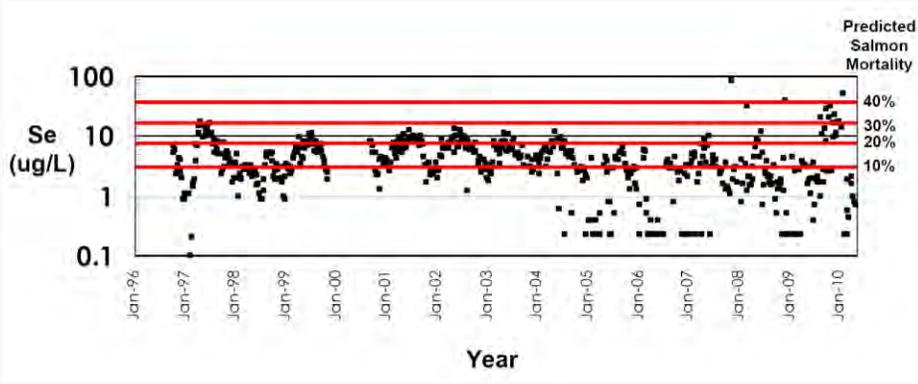


Figure 3

Data from USBR MCL=Maximum Contaminant Level for Drinking Water ALC=Aquatic Life Criterion



## Selenium Levels in the San Joaquin River are not Safe for Salmon



Selenium concentrations measured in the San Joaquin River at Hills Ferry (data from the U.S. Bureau of Reclamation)

Figure 6

## Selenium Impacts in Bay-Delta



USGS continues to find Selenium concentrations in the range of 2 to 22 ppb In Northern San Francisco Bay.

Selenium loads per day from Westside irrigators contribute Approximately 10 to 30 times Daily selenium load compared To the Sacramento and Oil Refineries combined.

Imported irrigation leaches selenium and moves it into aquifers and surface waters. Unregulated and unmonitored, highly toxic Selenium-laden wastewater is being stored in aquifers harming beneficial uses.

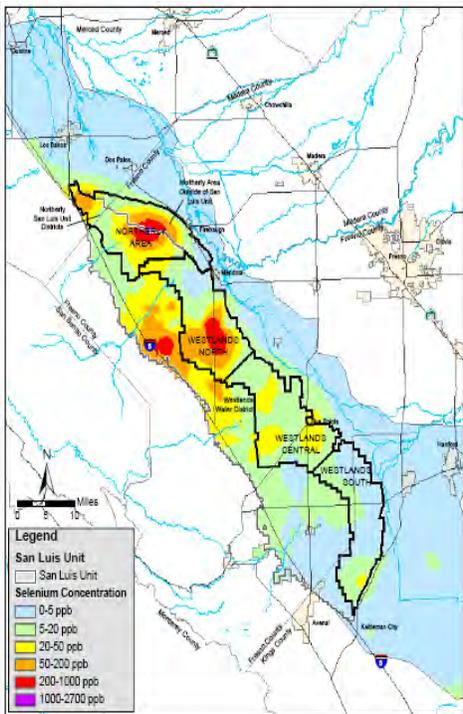


Figure 8

## Ecological Threat

Don't repeat the problems found in the San Joaquin Valley in the Delta

2003 CVRWQCB Measured 1480 ppb Selenium in Shallow Groundwater Near Five Points



2003 University of California Salinity Drainage Program Annual Conference: Drainage Solutions, Joseph Skorupa, U.S. Fish and Wildlife Service Available at: [http://www.camnl.wr.usgs.gov/Selenium/Library\\_articles/joepond.pdf](http://www.camnl.wr.usgs.gov/Selenium/Library_articles/joepond.pdf)

Figure 9



September 27, 2010

*Via Electronic Mail*

ILRP Comments  
Ms. Megan Smith  
630 K Street, Suite 400  
Sacramento, CA 95814

**Re: Comments on the Central Valley Regional Water Quality Control Board's Draft Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (Staff Report), Draft Technical Memorandum Concerning the Economic Analysis of the Irrigated Lands Regulatory Program (Economic Analysis), and Draft Program Environmental Impact Report (DPEIR)**

Dear Ms. Smith:

These comments are submitted on behalf of California Rural Legal Assistance, Inc., California Rural Legal Assistance Foundation, Clean Water Action, Community Water Center, Environmental Justice Coalition for Water, Food & Water Watch, and Pacific Institute. We are a group of nonprofit organizations concerned about the impacts of groundwater contamination on Central Valley communities and the environment.

## **I. Executive Summary**

In producing this set of documents, staff for the Central Valley Regional Water Quality Control Board (the Board) has conducted a severely lopsided analysis that results in a program that does not sufficiently protect water quality objectives or beneficial uses. The economic analysis significantly overestimates agricultural costs while simultaneously failing to make an equal, balanced attempt at quantifying and analyzing the costs and impacts of continued agricultural waste discharges to community drinking water systems, public health and the environment. Likewise, the environmental analysis also fails to differentiate among the environmental and public health impacts and benefits of the various regulatory alternatives. By failing to provide any analysis of the tradeoffs and opportunity costs of adopting a more or less stringent regulatory program, these documents not only promote uninformed decision making by the Board, but result in an analysis that vastly undervalues the economic, public health, and environmental benefits that would be realized with the adoption of an effective regulatory program. As a result, staff has recommended a skewed program to the Board that is not sufficiently protective of water quality objectives and beneficial uses.

In essence, staff has placed undue weight on one of the goals of the long-term Irrigated Lands Regulatory Program (ILRP), while disregarding the other three program goals as well as legal mandates contained in the Porter-Cologne Water Quality Control Act, the relevant Central Valley basin plans, and the State Water Quality Control Board's Anti-Degradation and Non-Point Source policies. When all of the program goals and objectives and legal mandates are accorded their proper weight, it is clear that Alternative 2, on which the Staff-Recommended Program is largely based, falls short in numerous ways and that Alternative 4 is the vastly superior program alternative that should form the basis of a substantially-revised, final staff-recommended program.

In this next phase, staff should revisit both its economic and its environmental analyses as well as the components of the final program it will recommend to the Board. This time around, rather than arbitrarily and capriciously basing all of its decisions on the costs of regulation to agriculture alone, it should balance the costs of imposing each potential regulatory component against (a) that component's predicted effectiveness at protecting and improving water quality and public health and (b) the associated and countervailing cost savings of such protection and improvement to Central Valley residents.

After a more fair and balanced analysis, we believe that the staff-recommended program will include the following key regulatory components, necessary to implement an effective program:

1. Collect basic information on farm practices and water quality to establish a baseline and effectively evaluate management practices. Specifically, an effective program must obtain sufficient information on what practices are in use, how much fertilizer and other chemicals are applied that may be impacting water quality, levels of water quality currently in agricultural areas (by sampling existing wells), the location of recharge areas, wells (active, abandoned, dry & standby), and other features that may act as direct pathways for contamination of groundwater aquifers without adequate protection measures.

2. Result in real farm-level changes to protect groundwater by including mechanisms to ensure adoption of best management practices (BMPs or BPTC), requiring farm-level education and assistance, and ensuring that practices are effective through representative monitoring.
3. Contain effective mechanisms to ensure accountability by setting clear standards for compliance that ensure that dischargers are not contributing to exceedances of water quality objectives and are minimizing degradation, and by ensuring that the Board has effective enforcement mechanisms to compel compliance.
4. Include a component to address both clean-up of legacy agricultural contamination and mitigation of continued degradation and exceedances.

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### **III. Why The Central Valley Needs an Effective Program**

#### **A. Extensive Surface and Groundwater Contamination**

Runoff and leaching of agricultural chemicals, animal waste, and other contaminants present great risks to the Central Valley's surface and groundwater aquifers. The Central Valley's population has grown from 2 million to 3.8 million people since 1980 and is projected to reach 6 million by 2020. Urban groundwater use, while not yet superseding use for agricultural irrigation, has increased along with the population, increasing pressure on groundwater resources and affirming the need to protect groundwater quality over the long term.<sup>1</sup> While there is no over-arching program to monitor the Central Valley's groundwater, available data indicate persistent contamination problems.

In one study of domestic wells in the San Joaquin Valley between 2001 and 2003, researchers found that 44 percent of wells sampled had nitrate levels above the drinking water standards.<sup>2</sup> A 2010 report released by the state's Groundwater Ambient Monitoring and Assessment (GAMA) Domestic Well Project found that in Tulare County, 40 percent of private wells studied did not meet the drinking water standard for nitrates, and 33 percent of the wells tested positive for total coliform bacteria.<sup>3</sup> According to the State Water Resources Control Board, compared to other parts of California, the Central Valley region has the highest number of public drinking wells contaminated with nitrate above the drinking water standard of 10 micrograms per liter (mg/L).<sup>4</sup>

Historical data in the Eastern San Joaquin Valley indicate that nitrate concentrations in groundwater have increased each decade since the 1950s. The data indicate that nitrogen fertilizer is the largest contributor to this increase, although dairy production plays a large role as well. This study also reveals higher concentrations of nitrate and pesticides in shallow groundwater compared to deep. Because water can take between forty and fifty years to travel from the water table to deeper parts of the aquifer, the levels of nitrates and pesticides in deeper groundwater are expected to increase over the next several decades.<sup>5</sup>

Surface water in the Central Valley is severely impaired as well. The 2008/2010 303(d) list adopted by the State Board on August 4, 2010 shows a 64 percent increase of impaired water bodies statewide compared to the number of listings identified in 2006. In Region 5 (Central Valley), 342 water bodies were impaired in the 2006 303(d) list; staff have recommended the

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<sup>1</sup>Faunt, Claudia, Editor. "Groundwater Availability of the Central Valley Aquifer, California." USGS Groundwater Resources Program, Professional Paper 1766. 2009 at 1, 104.

<sup>2</sup>Burow, Karen R., et al. "Regional nitrate and pesticide trends in ground water in the Eastern San Joaquin Valley, California." *Journal of Environmental Quality*. Vol. 37. 2008 at S-262.

<sup>3</sup>Groundwater Ambient Monitoring and Assessment Domestic Well Project, California State Water Resources Control Board. "Groundwater Quality Data Report Tulare County Focus Area." March 2010 at 17.

<sup>4</sup>Cochrane, Christopher. "Groundwater Information Sheet: Nitrate/Nitrite." State Water Regional Control Board, Division of Clean Water Programs Groundwater Special Studies Unit. October 2002 at 2.

<sup>5</sup>Burow, Karen R., et al. "Regional Nitrate and Pesticide Trends in Ground Water in the Eastern San Joaquin Valley, California." *Journal of Environmental Quality*. Vol. 37. 2008 at S-261. See also Harter, Thomas. (2009). Agricultural Impacts on Groundwater Nitrate. *Southwest Hydrology* 8(4): 23.

addition of another 411 water bodies -- an increase of 120 percent -- and the removal of only 23 water bodies, for a total number of 730 impaired surface water bodies, the second-highest number of all regions in the state.<sup>6</sup> The vast majority of nitrate-impaired surface water bodies in the state are located in the Central Valley, according to the State Board.<sup>7</sup>

## B. Irrigated Agriculture is the Major Contributing Source

There is scientific consensus that irrigated agriculture is a major source of water contamination.<sup>8</sup> The U.S. Geological Survey (USGS) has found that nitrate pollution of both surface and groundwater in the Central Valley is due primarily to the region's intensive irrigated agriculture and its use of chemical fertilizer.<sup>9</sup> Irrigated agriculture in the San Joaquin Valley alone produces approximately 528 million pounds of nitrogen that are potentially leaching into the groundwater each year.<sup>10</sup> Even the California Regional Water Quality Control Board for the Central Valley

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<sup>6</sup>State Water Resources Control Board. "Staff Report: 2010 Integrated Report Clean Water Act Sections 303 (d) and 305 (b)." April 19, 2010, at iv.

<sup>7</sup>State Water Resources Control Board. "2010 Integrated Report — All Assessed waters for Nitrate as Nitrate (NO3)." Available at [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2010.shtml](http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml).

<sup>8</sup>Harter (2009). Dubrovsky, Neil, et al. (1998). Water Quality in the San Joaquin-Tulare Basins, California, 1992-95. U.S. Geological Survey Circular, 1159. Davisson, M. and R. Criss. (1993). Stable isotope imaging of a dynamic groundwater system in the southwestern Sacramento Valley, California (USA). *Journal of Hydrology*. 144: 213-246. Davisson, M., and R. Criss. (1996). Stable isotope and groundwater flow dynamics of agricultural irrigation recharge into groundwater resources of the Central Valley, California. In: International Symposium on Isotopes in Water Resources Management. IAEA-SM-336/14. Vienna: International Atomic Energy Agency, 405-418. Burrow, K., J. Shelton, and N. Dubrovsky. (1998). Occurrence of nitrate and pesticides in groundwater beneath three agricultural land-use settings in the eastern San Joaquin Valley, California, 1993-1995. Sacramento: U.S. Geological Survey.

<sup>9</sup>Gronberg, J., C. Kratzer, K. Burrow, J. Domagalski, and S. Phillips. (2004). Water-Quality Assessment of the San Joaquin-Tulare Basins—Entering a New Decade. Sacramento: U.S. Geological Survey. Burrow et al. 1998. Burrow et al. 2008. Suen, C.J. 2008. Using Isotopic Ratios and Major Minerals Data to Identify the Sources of Ground Water and Ground Water Nitrate in Relation to Pesticide Residues: California Department of Pesticide Regulation, Environmental Monitoring Branch, June 24, 2008. Esser, B.K. et al. 2009. California GAMA Program: Impact of Dairy Operations on Groundwater Quality: Lawrence Livermore National Laboratory under Contract W-7405-ENG-48, August 17, 2009. Green, C.T., L.H. Fisher, and B.A. Bekins. 2008. Nitrogen Fluxes through Unsaturated Zones in Five Agricultural Settings across the United States: *Journal of Environmental Quality*, May-June 2008, Vol. 37, pp. 1073-1085. Harter, T. et al. 2005. Deep vadose zone hydrology demonstrates fate of nitrate in eastern San Joaquin Valley: *California Agriculture*, Vol. 59, No.2, p.124-132. Singleton, M.J. et al. 2007. Saturated Zone Denitrification: Potential for Natural Attenuation of Nitrate Contamination in Shallow Groundwater Under Dairy Operations: *Environmental Science & Technology*, Vol. 41, p. 759-765. McNab, W.W. et al. 2007. Assessing the Impact of Animal Waste Lagoon Seepage on the Geochemistry of an Underlying Shallow Aquifer: *Environmental Science & Technology*, Vol. 41, p.753-758.

<sup>10</sup>See Harter (2009). National Agricultural Statistics Service. (2007). The Census of Agriculture. Washington: United States Department of Agriculture. The Staff Report indicates that the entire Central Valley produces approximately 513 million kilos, or 565,000 tons, of nitrogen per year. Staff Report, p.18 (citing Ruddy, B.C., D.L. Lorenz, D.K. Mueller. 2006. County-Level Estimates of Nutrient Inputs to the Land Surface of the Conterminous United States, 1982-2001. U.S. Geological Survey, Reston, VA. Scientific Investigations Report 2006-5012).

Region (the Board) has acknowledged irrigated agriculture's significant, ongoing contribution to water quality contamination in the Central Valley in its Basin Plans to protect water quality for the region.<sup>11</sup>

While irrigated agriculture is certainly not the only source contributing to surface and ground water contamination in the Central Valley, it is the most significant source and the only major source that is not yet regulated by a Waste Discharge Requirement (WDR). Communities already treat their wastewater and (particularly in small rural communities) are paying very high rates to do so.<sup>12</sup> Dairies also have requirements to protect water quality under their recent general WDR, which includes requirements for every dairy in the region to conduct monitoring and implement nutrient management plans. But there are currently no regulatory requirements whatsoever under any Board program to protect groundwater from fertilizers and pesticides, which irrigated agriculture applies intensively and extensively throughout the valley. We cannot expect to solve our drinking water crisis and prevent the loss of many more community water supplies without creating an effective program to regulate agricultural pollution, and this regulatory program should be consistent with the requirements for other major dischargers.

### C. Disparate Impacts on Communities of Color

Furthermore, we can't afford to take another decade to get changes in place. Already, the Board's failure to enact groundwater protections has disproportionately impacted environmental justice (EJ) communities, and these disparities only increase each year and with each new

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<sup>11</sup>Both basin plans in the Central Valley region document the significant negative impact that discharges to state waters from irrigated agriculture continue to have on water quality in the region. See California Regional Water Quality Control Board, Central Valley Region, *The Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, 4th ed. (September 2009) (*hereinafter* SSJR Basin Plan), p.IV-2.00 (observing that “[i]rrigated agriculture accounts for most water use in the two sub-basins [Sacramento River and San Joaquin River,]” that “[a]gricultural drainage contributes salts, nutrients, pesticides, trace elements, sediments, and other by-products that affect the water quality of the rivers of the Delta[,]” that “[p]esticides and nutrients are . . . major ingredients of surface agricultural drainage” that “have found their way to ground and surface waters *in many areas of the basins[,]*” and that “[n]itrate and DBCP (1,2-Dibromo-3-chloropropane) levels exceeding State drinking water standards *occur extensively in ground water in the basins* and public and domestic supply wells have been closed because of DBCP, EDB, nitrates, and other contaminants in several locations”) (emphases added), *available at* [http://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/](http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/); California Regional Water Quality Control Board, Central Valley Region, *The Water Quality Control Plan for the Tulare Lake Basin*, 2d ed. (January 2004) (*hereinafter* TL Basin Plan), pp.IV-2 to IV-4 (observing that “[i]rrigated agriculture accounts for most water used in the Tulare Lake Basin[,]” that “[a]gricultural drainage . . . carries varying amounts of salts, nutrients, pesticides, trace elements, sediments, and other by-products to surface and ground waters[,]” that “[p]esticides and nutrients in agricultural drainage have found their way to ground waters *in many areas of the basin[,]*” that “[n]itrate and pesticide levels exceeding the State drinking water standards occur in some ground waters in the basin, and have caused closure of domestic supply wells in several locations[,]” and that “[o]ne of the biggest problems facing municipal water providers is the presence of the chemical dibromochloropropane (DBCP) in their wells”) (emphasis added), *available at* [http://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/](http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/).

<sup>12</sup>Sewer treatment plants must secure an individual Waste Discharge Requirement (WDR) or NPDES permit, depending on the methods of disposal. In small rural communities like Yetttem, sewer rates alone are over \$75 per month, while the median household income is far below the poverty level.

community that loses a drinking water supply to agricultural contamination. Researchers at UC Berkeley have documented the reality that we already know on the ground, which is that nitrate contamination disproportionately impacts small, predominantly Latino communities and small communities with less homeowners.<sup>13</sup>

By disparately impacting low income, communities of color, the Board's failure to enact groundwater protections, violates our states commitment to equality and freedom from discrimination as laid out in California Government Code, Section 11135 which states that no person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency. Furthermore, the Board's failure to enact groundwater protections threatens California's Fair Employment and Housing Act, California Government Code 12900, et seq., which guarantee all Californians the right to hold and enjoy housing without discrimination based on race, color or national origin.

Should the Board fail to choose an alternative that adequately addresses groundwater protection and protects communities of color most impacted by contaminated drinking water, the Board may violate California's Equal Protection and Fair Housing Laws, including the Fair Employment and Housing Act and California Government Code 11135. Furthermore, California Government Code Section 65008 renders null and void any action undertaken by a local governmental agency that denies to any individual or group of individual the enjoyment of their residence, landownership or tenancy. The Board's decision, if it fails to protect the drinking water for California's most vulnerable communities, may be null and void.

These EJ communities are more likely to have contaminated drinking water sources that result in being unable to provide safe drinking water to their residents on an on-going basis. As a result, families in these communities have to buy alternative sources of drinking water while still paying high water bills, leading to a huge financial burden for our state's poorest families. Many families continue to drink the water, resulting in health impacts that may ranging from thyroid and kidney problems, to death in infants.

But these communities are really just the canaries in the coal mine. Because they are more vulnerable, they show the impacts of this contamination first and more severely, but in reality communities large and small and rich and poor are impacted and will only continue to be without real, concrete changes to protect our water sources.

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<sup>13</sup>Balazs et al. 2010. Social Disparities in Nitrate Contaminated Drinking Water in California's Central Valley. *Draft under review*.

#### **IV. Staff's Evaluation of the Program Alternatives is Flawed and Should Demonstrate that Alternative 4 is the Clearly Superior Alternative.**

The Staff Report's evaluation of the long-term program alternatives against the program's goals and objectives,<sup>14</sup> if performed correctly, should conclude that Alternative 4 is the clearly superior program alternative. We understand that this analysis is not an exact science, but based on the evidence in the documents and on proper application of the actual meanings of the goals and objectives,<sup>15</sup> staff should conclude that Alternative 4 is best-equipped to meet the goals of the ILRP. Staff attempts to justify its rejection of all four program alternatives and the creation of its own hybrid proposed program, based largely on the deeply-flawed Alternative 2, by selectively changing the meaning of the goals and objectives and failing to make an honest effort to determine the differences among each of the alternatives in terms of their effectiveness at improving water quality, public health and the environment. As a result, the Staff-Recommended Program is missing the fundamental elements of an effective program, most of which *are* included in Alternative 4.

##### **A. The Staff Analysis of the alternatives improperly changes Objectives 4 & 5 to impose a new requirement that is different than the stated objectives and ignores the components of Alternative 4 that are designed to conform precisely with the stated objectives of 4 & 5.**

The Staff Report erroneously concludes that Alternative 4 is only *partially* consistent with Objectives 4 & 5, but to reach this conclusion, it first reinterprets and thus effectively changes the meaning of these two objectives. In the section of the Staff Report entitled "Goals and Objectives of the Long-Term Irrigated Lands Regulatory Program," Objectives 4 and 5 are described as being that the ILRP promote coordination with other Central Valley Water Board programs and other regulatory and non-regulatory agencies.<sup>16</sup> In the section of the Staff Report entitled "Evaluation of Long-Term Program Alternatives," however, staff erroneously reinterprets Objectives 4 & 5 to mean that the ILRP must be managed at a regional level, on the theory that "management at the watershed level would promote coordination" better than "[m]anagement at the farm level . . . ."<sup>17</sup> There is no evidence to support that conclusion. Furthermore, such an interpretation substantively changes objectives that were established and approved by group consensus during the lengthy Stakeholder Advisory Workgroup process in August 2009.<sup>18</sup> In effect, staff appears to be changing Objectives 4 & 5 to mean that administrative costs for the Board must be minimized. While this is a laudable aim, it was *not* one of the Goals and Objectives of the program that were agreed upon during the lengthy stakeholder process. Instead, because administrative costs must ultimately be borne by the

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<sup>14</sup>California Environmental Protection Agency, Regional Water Quality Control Board, Central Valley Region, Adam Laputz, et al., Irrigated Lands Regulatory Program Long-Term Program Development Staff Report (July 2010), attached as Appendix A to Draft Irrigated Lands Regulatory Program, Program Environmental Impact Report (*hereinafter* Staff Report), pp.96-136.

<sup>15</sup>These goals and objectives are described in the Staff Report at pages 92-93.

<sup>16</sup>Staff Report, p.93.

<sup>17</sup>See Staff Report, p.102-103.

<sup>18</sup>See Staff Report, p.92.

dischargers through fees, the administrative costs are already incorporated into the Economic Analysis in terms of impacts on agriculture. In other words, the Board's administrative costs were not included among the explicit Goals and Objectives because stakeholders felt that what mattered most was the overall economic impacts of the program on agriculture, local communities, and the environment. As these Goals and Objectives have already been settled upon, they are not properly subject to revisions at this stage in the development of a long-term ILRP.<sup>19</sup>

The Board cannot, in the course of evaluating the program alternatives, change those objectives to mean something different than their plain meaning, namely, that programs should promote coordination with other existing regulatory and non-regulatory programs.

In any event, contrary to staff's assertions, adding an additional layer to the program in the form of sub-regional lead entities further complicates coordination of this program with the other Central Valley Water Board programs, such as the dairy general order, because it removes information, management, and, ultimately, enforcement from the dominion of Board staff. Furthermore, by utilizing coalitions, the Staff-Recommended Program creates even less transparency and injects yet another layer of bureaucracy to navigate and coordinate - one that is not part of any other existing agency, nor under the control of the Regional Board, nor conforms to watershed boundaries.

In contrast, Alternative 4 includes two key components that directly ensure that this alternative will be consistent with Objectives 4 and 5, by: 1) allowing for growers to create legally responsible and transparent groups to facilitate coordination with the Regional Board and other entities and programs, and 2) creating a regional monitoring program run by a third party.<sup>20</sup> In fact, this Alternative is more consistent with Objectives 4 and 5 than either Alternative 2 or the Staff-Recommended Program, because it would allow "the formation of responsible legal entities that could serve a group of growers who discharge to the same general location and share monitoring locations."<sup>21</sup> Such a structure is entirely consistent with the Grasslands Bypass Project and even the recently-proposed supplemental monitoring program within the Dairy general order, and far more so than either Alternative 2 or the Staff-Recommended Program. In fact, the Staff Report points to exactly this structure in the Grasslands Bypass program as a successful example of how one primary and legally-responsible entity can coordinate with a group of growers to ensure that they meet the program goals.<sup>22</sup> Furthermore, by having a *legally-responsible* entity, rather than an entirely separate third party that is not legally responsible to the Board (as in Alternative 2 and the Staff-Recommended Program), the structure proposed in Alternative 4 will be able to ensure compliance through direct enforcement actions, while still

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<sup>19</sup>In fact, such an interpretation conflicts with the interpretation contained in staff's analysis of the lead entities program element, which states that "[p]rogram goals and objectives and policy requirements do not require that the lead entity be the Central Valley Water Board or a third party." Staff Report, p.138 (emphasis added).

<sup>20</sup>See ICF International, Draft Irrigated Lands Regulatory Program Program Environmental Impact Report, July 2010 (prepared for Central Valley Regional Water Quality Control Board) (*hereinafter* DPEIR), pp.3-16; 3-20; 3-24 to 3-25.

<sup>21</sup>DPEIR, p.3-20.

<sup>22</sup>See Staff Report, pp.80-81 (discussing the Grasslands Bypass project, which is implemented exactly through this kind of legally responsible third-party structure).

coordinating work on the watershed level. This structure will also ensure quality control and transparent reporting, both of which are integral to promoting coordination with other regulatory and non-regulatory programs.

Furthermore, and perhaps most clearly, Alternative 4 furthers coordination with other regulatory and non-regulatory programs by creating a regional monitoring program. This component alone promotes coordination with regulatory and non-regulatory programs more than any other alternative, as it would explicitly integrate existing agencies that could help conduct and create the criteria for regional monitoring that could be funded through this program so as to ensure that the program data can be directly integrated into existing monitoring efforts.<sup>23</sup> This is far more consistent with promoting coordination with regulatory programs, such as the dairy and storm water programs, by ensuring that the quality of data and accessibility of that data is sufficient for use in both existing regulatory and non-regulatory programs.

The staff analysis ignores these specific additional regional coordination components of Alternative 4 and instead erroneously evaluates it as being equal to Alternatives 3 and 5 merely because each grower would be enrolled directly in the program and required to develop individual farm water quality management plans (FWQMPs). In fact, the minimal, non-certified FWQMPs envisioned in Alternative 4 will actually promote coordination with local groundwater management planning programs and other existing programs by encouraging the implementation of exactly the kinds of practices identified in local/regional plans to be implemented at the farm level.<sup>24</sup> Without FWQMPs, growers have no guidance on what practices or measures would be most effective or appropriate for their own individual operations and therefore will be unlikely to implement new practices into their operations, resulting in minimal actual changes on the ground. The local management plans required by Alternative 2 and the Staff-Recommended Program include no mechanisms to require implementation of any of the practices identified in plans, and the third party lead entities (coalitions and/or local water agencies) do not have authority to require individual growers to implement management practices or even participate in monitoring. By requiring FWQMPs,<sup>25</sup> Alternative 4 will complement existing planning programs by helping to promote actual changes at the farm level that are consistent with those plans. In contrast, Alternative 2 and the Staff-Recommended Program would require changes in the existing groundwater management plans to meet the requirements of this program (or duplication of such plans through the creation of entirely new management plans), thereby interfering with ongoing processes rather than providing a mechanism that complements those existing efforts and helping growers utilize the guidance from those plans to determine how their own operations can minimize impacts on groundwater.

Staff's conclusion that Alternative 4 is only partially consistent with Objectives 4 and 5 is not supported by substantial evidence. Staff cannot ignore the regional components that make

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<sup>23</sup>See DPEIR, p.3-25.

<sup>24</sup>Local Groundwater Management Plans are voluntary documents that do not actually require any of the components lists in AB 3030 nor do local agencies that administer the plans have the authority to require implementation of management practices or participation in monitoring programs. See Staff Report, p.88-89.

<sup>25</sup>Many of the requirements in FWQMPs are similar to the recommended components of AB 3030, making them particularly complementary and encouraging the implementation of existing SB303 plan practices on the farm level. Compare Attachment F of the Staff Report with Staff Report, pp.88-89.

Alternative 4 fully consistent with Objectives 4 and 5 just because this alternative includes enforcement mechanisms with individual growers and farm-level planning. While there may be ways to promote these objectives even further in a final program, that is the case for every alternative and all of the evaluation criteria. The fact that it is possible to improve Alternative 4 should not form a basis for finding that it is only partially consistent with the objectives, given that there are direct measures built in to the alternative to do precisely what is required by these objectives. In fact, these measures are even in many cases more effective than those contained in Alternative 2, which staff found to be consistent with Objectives 4 and 5, despite the fact that the regional lead entities envisioned in this alternative do not coincide with watershed boundaries or any other existing boundaries utilized by other relevant agency and non-agency programs.

**B. The Staff Analysis should have found that Alternative 4 is consistent with all criteria and therefore should have based its proposed program around Alternative 4.**

Alternative 4 is the clearly superior alternative and should have formed the basis for the Staff-Recommended Program. Only Alternative 4 is consistent with all of the evaluation criteria. Given that Alternative 2 does not satisfy the legal requirements of the State Board's Nonpoint Source Policy and Anti-degradation Policy, it is not a feasible alternative. Furthermore, although the DPEIR fails to differentiate among the environmental impacts of the various alternatives, it should have found that Alternative 4 would greatly outperform Alternative 2 in terms of accomplishing Goals 1, 2, and 4, and that Alternative 4 sufficiently meets Goal 3.

While the Staff Report, DPEIR and Economic Analysis went into great detail analyzing the alternatives' relative differences in performance with respect to Goal 3, none of these documents contain any real analysis of the alternatives' relative differences in performance with respect to Goals 1, 2 and 4. Instead, staff has concluded that because all alternatives ask growers to "prevent nuisance conditions and/or exceedance of water quality objectives in State waters associated with waste discharge from their irrigated lands,"<sup>26</sup> so long as they have any reference to groundwater, any alternative (including Alternatives 2-5 and the Staff-Recommended Program) will all result in equal implementation of BMPs and improvements and protections of water quality.<sup>27</sup> This seems absurd and without any basis in reality. As a result of essentially ignoring any difference in the alternatives' impact on water quality, staff seem to be basing their entire Staff-Recommended Program purely on pursuing Goal 3 over all others, rather than trying to maximize water quality protection in the most economic way, consistent with all four goals.

Although the DPEIR does not sufficiently analyze the Alternatives to determine what is the clear "environmentally superior alternative[,]"<sup>28</sup> (see CEQA comments below), Alternative 4 is clearly more likely to result in improvements in water quality and reductions in degradation than Alternative 2 or even the Staff-Recommended Program, since it incorporates mechanisms to ensure that farms have guidance for how to protect water quality in their own individual

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<sup>26</sup>Staff Report, p. 99.

<sup>27</sup>Staff Report, p. 100, 162-163.

<sup>28</sup>*Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010).

operations (FWQMPs), and the Board will have the ability to verify whether management plans are effective and ensure that BPTC is implemented.

The assumption that all practices may be implemented to a similar degree under any alternative and therefore environmental impacts are not expected to vary widely is without any supportable evidence and contrary to the experience of even this Regional Board in its own regulatory programs.<sup>29</sup> Certainly coalitions in the current ILRP and entities overseeing AB3030 and SB1938 groundwater management plans have not been able to show that best management practices have been adopted nearly to the same extent as more direct regulatory programs, such as the Grasslands Bypass Project, the Dairy General Order, and California Department of Pesticide Regulation's (DPR) Ground Water Protection Area (GWPA) permits. Therefore, there is not substantial evidence that all the Alternatives will perform equally towards Goals 1, 2, and 4 as indicated in the staff report.

In contrast to Alternatives 4 & 5, Alternative 2 & the Staff-Recommended Program are effectively voluntary programs where third parties voluntarily try to help growers implement monitoring and identify best management plans on a regional level, without any enforcement mechanisms to require growers to actually implement BMPs or even report basic information. The only enforcement that exists is the threat that the Board could regulate individual farms individually, which is no different than the current situation because the Board already has that threat and could regulate farms individually. Therefore, Alternative 2 and the Staff-Recommended Program become nothing more than voluntary programs, which cannot be found to result in the same level of environmental protection as programs with actual enforcement mechanisms, and therefore really should be evaluated as performing only marginally better than Alternative 1. As discussed below in the CEQA section, the staff cannot rely on the implementation of best practices if there is no enforceable mechanism to ensure that they are implemented at the farm level nor any means of monitoring whether they are meeting BPTC standards and sufficiently protecting water quality.<sup>30</sup>

Finally, Alternative 4 performs well towards meeting Goal 3 and protecting the economic viability of agriculture. The costs are estimated at being only a 7% increase from doing no groundwater program at all (Alternative 1), and that is an overestimate since 90% of those costs are attributed to implementing the most expensive management practices, without taking into account more cost effective practices that are more likely to be used as well as the cost savings of implementing those management practices in terms of water, energy and fertilizer and pesticide costs that might be reduced. (See comments below.) Nonetheless, Alternative 4 was found to not impose an appreciable difference in terms of economic impact than not having a groundwater program at all (Alternative 1). In fact, Alternative 4 was equal to Alternative 2 in its impact on total acres changed and total value of production, but was *superior* to Alternative 2 because it actually results in a net *increase* in jobs for the Basin.<sup>31</sup>

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<sup>29</sup>See Staff Report, p.131; DPEIR, pp.5.9-16 to 5.9-18.

<sup>30</sup>See *Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1260-61, 100 Cal. Rptr. 2d 301, 308-09 (2000).

<sup>31</sup>Staff Report, pp.128-129.

While we understand that the Staff should and can suggest ways to improve Alternative 4 to better achieve the Goals and Objectives, it should be used as the base Alternative as it is the only one that is consistent with all the evaluation parameters.<sup>32</sup> Instead the Staff seem to have used Alternative 2 as the Base and made a few small changes that are not sufficient to meet all the Goals and Objectives and most fundamentally, not sufficient to protect water quality (Goals 1, 2, & 4). The application of the analysis in essence weighs cost to agriculture over all other objectives.

Comments on the Staff-Recommended Program are included in detail below. But we encourage staff to provide an evaluation of each of the Alternatives, including the Staff-Recommended Program in order to see how well they perform towards accomplishing all of the Goals and Objectives.

C. The Staff Anti-Degradation Analysis is inadequate and results in inadequate consideration of reasonable protection measures.<sup>33</sup>

We appreciate that the Staff Report does acknowledge that degradation will occur as a result of this program. And we agree that agricultural operations are important to the State of California. However, recognition of the importance of an activity does not alone provide sufficient information to determine how much degradation from that activity is in the best interest of the people of the state. Rather it is vital that the staff attempt to estimate the level of degradation that will occur, and the cost of that degradation on other beneficial uses (including community water supplies and the environment) so that the Board can make an informed decision as to what level of degradation is truly in the best interest to the people of the state. In addition, the staff should consider whether lower water quality can be abated through reasonable means, and consider the implementation of feasible alternative treatment or control methods.<sup>34</sup> Without adequate detail and information on degradation, additional reasonable means or alternative methods cannot be suggested or evaluated.

We are sympathetic to the difficulty of attempting to estimate the level of degradation that is likely to occur as well as the cost of that degradation on other beneficial uses, such as drinking water supplies, at this programmatic level for the entire Central Valley region. Given the level of detail in this stage in the development of the program, it may not be possible to do an effective anti-degradation analysis. Because the Anti-degradation analysis is not complete or sufficient at this programmatic level, further analysis must be done before approving the program implementation measures or approved plans, which would effectively constitute site-specific degradation approvals.<sup>35</sup> We look forward to working with the Staff to help provide adequate analysis for consideration by the Board in the development of those more specific Orders and approvals.

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<sup>32</sup>Staff Report, p.97.

<sup>33</sup>This Section refers to the Anti-Degradation discussion in the Staff Report. See Staff Report, pp.57-68.

<sup>34</sup>See Staff Report, p.63.

<sup>35</sup>See Staff Report, p.63, n.30.

Even at this programmatic this level, however, we discuss approaches that may be used to quantify the potential impacts on drinking water systems in our comments below on the Economic Analysis. We urge the consideration of the addition of a requirement for dischargers that do contribute to degradation or are found to be contributing to exceedances of groundwater objectives to provide funding for alternative water supplies for communities impacted as an alternative treatment or control method.

## **V. The Key Components of an Effective Program**

There are four basic components that we believe must form part of the final program in order for it to be truly effective. Three of these are currently included as part of Alternative 4, which we believe to be the clearly superior alternative. Most of these components are not included in Alternative 2 and many are not adequately included in the Staff-Recommended Alternative.

### **A. Collect Basic Information on Farm Practices and Water Quality**

Without a better understanding of water quality and the activities that impact it, any proposed program cannot effectively target growers and practices or evaluate its own effectiveness. Specifically, an effective program must obtain sufficient information on: 1) what practices are already in use; 2) how much fertilizer and other chemicals are applied that may be impacting groundwater; 3) the water quality in agricultural areas (particularly levels of nitrate in agricultural areas where there are not public water systems because local residents rely on private domestic wells); and 4) recharge areas, wells (active, abandoned, dry & standby), and other features that may act as direct pathways for contamination of groundwater aquifers. Without this basic information, it will be impossible for the program to establish an initial baseline and then evaluate improvements going forward. Therefore, this information should be required from all growers, including sampling for basic constituents in existing wells, as part of the initial and periodic reporting requirements.

Alternative 4 fills this vast information gap by requiring precisely this kind of basic information from all growers. Specifically, Tier 2 and Tier 3 growers would be required to report sampling results of existing on-site wells and tail water and information about cropping practices and nutrient and pesticide application, in addition to participating in a regional monitoring program to evaluate BMPs. In less vulnerable Tier 1 areas, where initial testing shows that nitrate levels are less than the Action Level, *i.e.*, half the nitrate Maximum Contaminant Level (MCL), and there does not appear to be water quality degradation attributable to agricultural activities, sampling frequency requirements are greatly reduced.

Unfortunately, neither Alternative 2 nor the Staff-Recommended Program propose measures to collect this kind of basic data. Alternative 2 makes no attempt to provide basic farm-level information. The Staff-Recommended Program seems to request that regional management plans in Tier 2 areas provide some information on implementation of practices, but this proposed program does not have a mechanism to establish a baseline and determine in which tier growers should be placed in a manner that is sufficient to ensure that Tier 2 includes all growers that are contributing to exceedances of water quality objectives or water quality degradation. At the very

least, the Staff-Recommended Program should require the reporting of information necessary to determine water quality in areas without public wells in order to establish a baseline and to evaluate changes in water quality, as well as sufficient data on implementation of practices to the Board to evaluate the effectiveness of the program.

Collecting this basic information should not constitute a significant extra expense, as growers should be factoring nitrate levels and other basic water quality parameters into their nutrient budgeting and irrigation practices. If they are not already doing this, such a requirement would help them potentially save money by reducing the need to purchase expensive fertilizer. Additionally, this information may help growers determine what water quality is in their own domestic wells, so that they can protect their families and workers.

## **B. Result in Farm-Level Changes to Protect Groundwater**

### **1. Result in Adoption of BMPs at the Farm Level**

While there is some utility in third parties assisting growers to pool resources and information, the recommended practices actually need to be implemented on a farm level, which means that growers need to have clear guidance on how they can best protect water quality in their own operations.

Regional groundwater management plans have been in existence for a number of years in many areas of the valley, but they have not been able to show significant improvements in water quality, nor have they been able to show widespread implementation of BMPs on their own. Instead, many have become expensive paperweights that water agencies have used to check a box to receive certain sources of funding. While some have been effective at developing regional projects and planning for new development, regional management plans alone will not result in the kind of widespread adoption of BMPs and protection of water quality that is necessary to meet water quality objectives. This is because these documents are planning documents, not regulatory programs. In fact, the implementing agencies, whether coalitions or local water agencies, do not have the authority to require growers to implement BMPs or even participate in monitoring, and therefore any program relying on these entities is completely voluntary. While adoption of either Alternative 2 or the Staff-Recommended Program may lead to better collection and reporting of information to the Board than under the status quo, there is no reason to believe that either of these programs would lead to greater implementation of management practices than under a purely voluntary, educational program.<sup>36</sup> At the end of the day, what is most important is that water quality is protected, and to ensure that, growers need to know how they can integrate protections into their own operations.

While we certainly support the development of – and/or coordination with existing – regional water quality management plans, individual farms must have some guidance for what those regional plans mean for their individual operations and circumstances. For example, given a particular farm’s crops, water use and infrastructure, soil, hydrology, and the kinds of wellheads,

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<sup>36</sup>See Staff Report, p.140 (acknowledging that under third-party coalition structures, particularly those without individual farm management plans, it is difficult for the Board to enforce requirements to implement BMPs).

recharge ponds, and other areas vulnerable to “run-in” on or adjacent to the farm’s operations, what should the grower do to minimize water impacts that are economically feasible?

Alternative 2 and the Staff-Recommended Program both contain NO mechanisms to ensure that growers are able to identify exactly what they can and should do to protect water quality in their own operations most effectively. The minimal, non-certified FWQMP requirement set forth in Alternative 4, which is to be kept on the farm unless requested by the Board, would ensure that growers have exactly that – a plan to identify what they can do to protect water quality. Such FWQMPs could still utilize existing or updated regional/local management plans to help identify general practices that are priorities in each region, but by forcing each grower to engage in a thinking exercise about the conditions and needs of his/her particular farm, and encouraging each grower to seek outside technical assistance with this process, FWQMPs would ensure that the guidance is customized to individual farm conditions, rather than consisting merely of general recommendations.

The basic farm-level plans envisioned in Alternative 4 would not impose burdensome costs on individual farms, since growers would not be required to obtain certification or even submit them to the Board. (Growers would merely need to keep their farm-level plans on file to provide to the Board upon request.) Additionally, where farms are only a minimal threat and therefore not contributing to water quality degradation, such as farms in Tier 1 areas under Alternative 4, farm-level plans may be minimal or even unnecessary. In areas where irrigated agricultural discharges are contributing to water quality degradation or exceedances of water quality objectives (Tier 2 and 3 areas under Alternative 4, or parts of Tier 1 areas and all Tier 2 areas under the Staff-Recommended Program), however, these individual plans are necessary to help growers identify what they can and should do to protect water quality. In areas where agriculture is contributing to exceedances of water quality objectives for particular constituents or threatening beneficial uses (Tier 3 areas under Alternative 4 and Tier 2 areas under the Staff-Recommended Program), more in-depth individual management plans tailored to the constituent should be required.

Furthermore, any recommended program should also foresee and facilitate joint management among dischargers when management practices may need to be implemented in coordination with more than one discharger (such as constructed wetlands or combined tail water returns). Alternative 4 allows dischargers to address these regional issues through creation of a legally responsible third party (such as a joint power authority) as is currently being implemented in the Grasslands Bypass Project.

## **2. Provide Farm-Level Education and Assistance**

A significant body of knowledge regarding BMPs is being developed by programs such as the California Department of Food and Agriculture’s Fertilizer Research and Education Program (FREP), DPR’s Ground Water Protection Program, NRCS, and the UC Cooperative Extension. In conjunction with a requirement for farm-level plans, therefore, an effective program must include an educational and/or technical assistance component to help transfer this knowledge to farm operators and aid them in developing their FWQMPs for their own operations. Such an educational component is included in Alternative 4. Other sources of technical educational

information/assistance could include commodity groups and local water management agencies. Using the model of the Dairy General Order, growers approved by certification programs or other approved environmental compliance assistance programs could receive a discount on program fees.

### **3. Provide a Feedback Mechanism (Representative Monitoring) to Ensure Management Practices are Effective**

An effective program must include feedback mechanisms to ensure that the practices being implemented by growers are truly effective at protecting water quality and therefore truly constitute BMPs (also known as Best Practical Treatment and Control, or BPTC, as required under the Anti-degradation Policy). Not only is this legally required by the State Board's Anti-degradation Policy and Non-Point Source Policy, but it is also the only way to ensure that what growers are doing is truly resulting in reductions in agricultural contributions to water quality degradation and exceedances in water quality objectives. To be effective, the final program the Board adopts must: a) establish guidance for regional monitoring to ensure that it is in fact representative; and b) ensure that it is clear which areas are being represented by each monitoring site so that it is also clear which dischargers will need to implement changes in practices that are shown to be insufficient by these regional monitoring programs.

While Alternative 4 does include such measures, Alternative 2 contains no method for accomplishing this, and the Staff-Recommended Program is limited to *regional* monitoring – it does not require reporting of water quality levels on individual farms, even in vulnerable Tier 2 areas. Furthermore, the Staff-Recommended Program only requires this regional monitoring to take place in Tier 2 areas, despite the fact that many of the areas classified as Tier 1 (under the current definitions used in the Staff-Recommended Program) may also be contributing to significant water quality degradation.

## **C. Contain Effective Mechanisms to Ensure Accountability**

### **1. Set Clear Standards for Compliance**

One of the most critical components of an effective program, and one of our biggest concerns with the staff proposal, is that the proposed program does not even define program compliance as not contributing to exceedances in water quality objectives. Porter-Cologne requires that the Board establish effluent limitations in order to meet water quality objectives, not just ask dischargers to make some improvements. Moreover, the relevant Central Valley Basin Plans and the state Anti-Degradation Policy require that, at a minimum, irrigated agricultural waste discharges may not cause or contribute to exceedances of water quality objectives.<sup>37</sup> No matter which alternative the Board adopts, therefore, the Board must set a clear standard for compliance, namely, that dischargers must not be contributing to exceedances of water quality objectives.

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<sup>37</sup>Resolution 68-16. *See also* SWRCB Order Nos. WQ 81-5; WQ 2000-07.

## 2. Ensure the Board has Effective Enforcement Mechanisms

Enforceability makes all the difference between an effective program and a program that is essentially voluntary. In fact, the Staff Report explicitly acknowledges the difficulty that the Board has already experienced with using third-party coalitions, rather than utilizing legally-responsible third-party entities, as outlined in Alternative 4.<sup>38</sup> Alternative 2 does not include sufficient enforcement mechanisms, as it relies on the same ineffective coalition structure currently in place, or an even less accountable structure of existing water planning groups that lack any ability to compel individual dischargers to implement management practices or participate in monitoring programs.

Although we still believe that Alternative 4 is the most effective balance, the Staff-Recommended Program may be sufficient if it is amended to: 1) include a Prohibition of Discharge for non-enrollment; 2) require dischargers to enroll directly with the Board; and 3) require that coalitions demonstrate sufficient transparency as a condition of Board approval to represent groups of individual growers. Transparency must include not only the requirement that coalitions provide the Board with information regarding individual member grower non-compliance and the coalition's communication of program requirements with member growers, but also the requirement that coalitions provide information and transparency regarding data that is gathered, both to the general public and to the Board upon request. Without such accountability mechanisms, we will continue to repeat the mistakes of the current program.

Secondly, regional monitoring must be conducted by a third party that is not paid directly by dischargers. Structuring the monitoring program in this way will avoid conflicts of interest, ensure that this monitoring program can be more easily integrated with other monitoring programs the Board is undertaking or may undertake, and ensure high-quality, consistent data. The costs of the monitoring program should be built into the discharger fees, and the Board should contract with a neutral, scientific third party such as UC Davis or USGS to design and implement a regional monitoring program. Alternative 4 includes this component, which, as mentioned above, furthers Objectives 4 and 5 of promoting coordination with other existing monitoring programs and the establishment of a regional monitoring program that can be easily integrated with other discharger programs administered by the Board. Alternative 2 is missing this requirement all together. And because the Staff-Recommended Program does not utilize neutral expert third parties, it does not provide sufficient safeguards to ensure effective, objective, reliable, high-quality regional monitoring programs.

### D. Clean-Up and/or Mitigate Contamination

One of the components not addressed adequately in any of the Alternatives is the problem of legacy groundwater pollution that has already occurred due in large part to agricultural pollution, including nitrate and pesticide contamination,<sup>39</sup> nor does it try to require mitigation for continued

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<sup>38</sup>See Staff Report, pp.116-117.

<sup>39</sup>The ECR's main groundwater quality findings explicitly find that legacy pesticides will need to be addressed during the development of the long-term irrigated lands regulatory program. See Staff Report, p.20.

degradation or continued contribution to exceedances of water quality objectives. As the staff report indicates, at least \$20.5 to \$47.5 million are needed just to fund immediate solutions for community water systems impacted by nitrate contamination due at least in part to agricultural contributions.<sup>40</sup> As described below, this is a significant underestimate of the true costs, as it does not include any non-community water systems, such as schools, or any domestic wells, nor does it include any future impacts due to continued degradation which is expected to occur as a result of the program, or treatment costs for both nitrate and pesticides. Unfortunately, there is limited funding for these costs and the long-term ILRP should include a proposal for how this problem will be cleaned up and/or mitigated through such projects.

One proposal is for the Executive Officer to develop a Supplemental Environmental Program (SEP) that could be funded through compliance order contributions after enforcement actions and supplemented by money through the Clean Up and Abatement Account that could provide funding for mitigation of contamination and/or clean-up projects such as those that would rehabilitate wells, treat water sources, or otherwise secure a safe source of water for community drinking water systems and domestic wells that have been impacted by nitrate and pesticide contamination. One benefit of such a program is that it could not only be funded through enforcement actions with this program, but also utilize contributions from enforcement actions from other regulatory programs where dischargers have impacted nutrient and pesticide levels, such as dairies, other CAFOs, and sewer treatment plants. Furthermore, it could help ensure that those dischargers continuing to contribute to the exceedance of water quality objectives could help mitigate their impacts on beneficial uses.

We believe that including a SEP clean-up/mitigation program as part of the long-term IRLP would significantly further the goals and objectives of the program:

- it would provide a means of funding programs to restore water quality (in furtherance of Goal 1 and Objective 1);
- it would provide an economic incentive not to exceed water quality objectives and comply with the program, while only burdening those bad actors that require enforcement actions (in furtherance of Goals 2 and 3 and Objectives 2 and 3);
- it would provide a source of funding to help ensure that even with continued degradation, communities and residents can access funds to help secure safe drinking water sources (in furtherance of Goal 4 and Objective 2);
- it can be coordinated easily with other discharge programs (in furtherance of Objective 4); and
- it would supplement and help promote coordination with California Department of Public Health (CDPH) and U.S. Department of Agriculture (USDA) rural drinking water

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<sup>40</sup>Staff Report, pp.50-52.

funding programs by providing a source of funding for those projects or aspects not otherwise covered by their funding sources (in furtherance of Objective 5).

While such a program will not solve all of the problems of legacy pollution and unsafe drinking water in the Central Valley, we believe it will be an important interim step towards developing a truly comprehensive program and can serve as a model or pilot for how a more comprehensive system might work.

Additionally, the Executive Officer or Board should look for ways to assert their authority to ensure that continued contributions to water quality exceedances impacting domestic drinking water supplies are mitigated. Pursuant to Water Code Section 13267, the Executive Officer may require dischargers to conduct sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater and submit technical reports evaluating the sampling results. In addition, pursuant to Water Code Section 13304, the Board may require dischargers to provide alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners. These provisions should be utilized where appropriate.

## **VI. Comments on the Staff-Recommended Program**

If, despite the fact that Alternative 4 is the clearly superior alternative, staff nevertheless chooses to move forward with its proposed program, we suggest that the following issues must be improved or clarified in order to ensure a truly effective program that meets all legal requirements and implements the program goals and objectives.

It should be noted, however, that the overall economic impact of the Staff-Recommended Program is worse than Alternative 4 in that it will result in overall job loss, rather than jobs gained, and that the savings from eliminating key components of Alternative 4 (including not requiring sampling of existing water quality and not requiring individual farm management plans) do not seem to result in any significant difference in the economic impact towards accomplishing Goal 3, but will result in significant loss in effectiveness towards Goals 1, 2 & 4 of improving or protecting water quality and preventing impacts on community water supplies. Furthermore, the alternatives failed to show the varied water quality benefits by alternative, even though the economic analysis did have a clear cost differential by alternative. Just as economic impact is important to an assessment of an alternative relative to the recommended program, so to is the water quality benefits of each alternative relative to the staff-recommended program. The “Estimated Annualized Costs” show a cost differential on alternatives based in part on management practices, which will have a directly beneficial relationship with water quality. If the implementation of practices varies in cost (in particular in Alternative 5), then the water quality benefits must vary as well. Additional cost variables, like greater monitoring and administration can also have a positive effect on water quality. In order to provide the board with the tools to assess if the staff-recommended alternative is the preferred alternative, it is necessary to truly know the water quality benefits of each alternatives. If the presumption is that

the same goal will be attained by Alternatives 2, 3, and 4 but just in different time frames, then those varied timelines should be delineated as well.

## A. The Lead Entity<sup>41</sup>

### 1. Ensuring Enforceability

Enforceability makes all the difference between an effective program and a program that is essentially voluntary, and is one of the elements required by the State Board's Non-point Source Policy.<sup>42</sup> Staff acknowledge the difficulty that the Board has already experienced with using third-party coalitions, rather than utilizing legally responsible third party entities (as proposed in Alternative 4).<sup>43</sup> Because coalition groups are not discharging waste, the Central Valley Water Board has limited authority to enforce program requirements directly. Program enforcement options are limited to direct actions upon irrigated agricultural operators, or revoking Water Board coalition approval. Most coalition groups do not have regulatory authority over members to require implementation of water quality management practices. As a result, the same difficulties experienced over the last five years with coalition implementation will continue into the long-term program under the Staff-Recommended Program.

While we are not clear why staff feel that it is preferable to continue to administer this program though third parties not directly accountable to the Board, we agree that it is critical that the long-term program enroll dischargers directly with the Board and incorporate transparency requirements before approval of any coalition representation of individual growers, including not only requiring coalitions to provide the Board with information regarding non-compliance, and requiring transparency and communication of requirements with growers, but also providing information and transparency regarding data gathered to the public or the Board upon request. Without accountability mechanisms we will continue to repeat the mistakes of the current program.

#### *a. Public Accountability*

The delegation of program elements to third party entities reduces the transparency of the program. To counter that problem, we suggest the following:

- Monitoring data submitted by coalitions should be made available in a publicly accessible form (for instance on Geotracker or other state databases) within 30 days of submission to the Board.
- The Board should establish a process for public review of and comment on management plans prior to approval.
- Annual reports submitted by the coalitions must contain detailed information about implementation of their management plans and be made publicly available at the time of

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<sup>41</sup>Staff Report § X(B)(5), pp.147-49.

<sup>42</sup>Staff Report, p.55.

<sup>43</sup>See Staff Report, pp.116-117.

their submission to the Board. Furthermore, supporting data should be made available to the public or the Board upon request.

- Where the Board is asked to approve an existing plan – such as an existing groundwater management plan or an Integrated Regional Water Management Plan – the same requirements for public review and approval should apply.

These all seem consistent with the cost estimates of the Staff-Recommended Program, but should be made explicit in the description of the final long-term program adopted by the Board.

*b. Failure to Enroll in ILRP*

Full enrollment is a critical piece of an effective program and has a significant impact on water quality. Our understanding is that enrollment in the current coalitions varies widely. As the number of growers subject to this program increases with the inclusion of groundwater, so will the problem of full enrollment. Therefore, it is critical that the Board issue a Prohibition of Waste Discharge for all dischargers not enrolled in the program after a reasonable time period. After that time period, growers not enrolled should be issued an enforcement action and required to file a Report of Waste Discharge preparatory to issuance of an individual permit.

*c. Inspections*

In order to ensure that individual farms comply with the coalitions' regional water quality management plans, and in particular, implement required management practices, the Board or its contractor must conduct surprise inspections of 5% of growers, including annual inspections of growers within each coalition. This inspection requirement is already included in the DPEIR in Alternatives 3, 4, and 5 and should be consistent with the cost estimate for the Staff-Recommended Program. Inspections should be prioritized in ultra-high priority (Tier 2) areas that have been deemed extremely vulnerable. If, in addition to the Board inspections, the coalitions conduct their own inspections to verify the data that they are reporting, the Board must require that these inspections be without forewarning, and individual coalition employees should be subject to a significant civil penalty and removal from their position if it is discovered that they have forewarned farm operators of pending inspections.

*d. Consequences for Non-Compliance*

Existing law clearly establishes that noncompliant operations are to be held civilly liable for their violations. Under the California Water Code Section 13268, operations that have failed to furnish technical or monitoring program reports required by the Regional Board as part of a waste discharge requirement are guilty of a misdemeanor and may be held civilly liable by the Regional Board for a fine of up to \$1,000 per day, for each day that the violation continues. California Water Code Section 13350 provides that any person who discharges waste in violation of WDR requirements shall be held civilly liable and may be subject to a fine imposed by the Regional Board of up to \$5,000 per day, for each day that the violation continues. Imposition of civil liability on dischargers individually (including all dischargers covered by a coalition failing

to meet program requirements) should be explicitly included as a consequence in consideration of Key Element 5 of the State Board's Non-Point Source Policy.<sup>44</sup>

## 2. Clarifying Coalition Responsibilities

The coalition's main role is to facilitate communication between the Board and individual dischargers. In addition, the coalition should help disseminate best practices in order to assist dischargers with mitigating water pollution. In most cases, these best practices have already been developed by third-party groups (e.g. NRCS, UC Cooperative Extension, university researchers, commodity groups, etc.); the role of the coalitions is simply to facilitate the transfer of this information to dischargers and help identify which practices might be most appropriate for growers in the region. Unfortunately, there is almost no reference to this role for the coalitions in the Staff-Recommended Program.<sup>45</sup> The Staff-Recommended Program does not require a plan for how BMPs will be disseminated, or even a list of approved sources of BMP research and assistance from which the coalitions can draw.

To further this goal, the Staff-Recommended Program should incorporate a requirement for education and incentives to utilize technical assistance providers. This kind of a requirement is included in Alternative 4 but does not seem to be included in the Staff-Recommended Program. Including this requirement will further the goals of Objectives 4 and 5 to promote coordination with other Central Valley Water Board programs and other regulatory and non-regulatory agencies.<sup>46</sup>

Furthermore, using the model of the Dairy General Order, growers approved by certification programs or other approved environmental compliance assistance programs could receive a discount on program fees as it would reduce the administrative burden for coalitions or the Board to work with and oversee individual growers. Such a program would further the goals and objectives of providing incentives to reduce and minimize discharges and make implementation of BMPs more effective.

Although we do not believe the coalitions should play a role in the regional monitoring program laid out in the Staff-Recommended Program (see below), as part of its role in facilitating identification and implementation of BMPs, coalitions should be encouraged to facilitate monitoring at the individual farm level to assist growers in designing and implementing BMPs (e.g. sampling for nutrient levels as part of nutrient management plans). Dischargers may wish to undertake monitoring beyond what is required under the ILRP in order to gauge progress and impacts from changes to BMPs. Coalitions are in a position to assist with this internal technical monitoring, but this is separate and apart from the design and implementation of a regional monitoring program to gauge the effectiveness of the program implementation (again, see below.)

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<sup>44</sup>See Staff Report, p.167.

<sup>45</sup>The Staff Report only makes passing reference to this role on p.147 under "Lead Entity": "Work with the Central Valley Water Board to inform growers of program requirements, provide coordination to ensure that water quality concerns are addressed, and provide informational materials on potential environmental impacts of water quality management practices."

<sup>46</sup>Staff Report, p.93.

### 3. Removing the Monitoring and Reporting Program from Coalition Jurisdiction

We understand the utility of working within the existing coalition structure given the limited resources available to the Board and staff. That said, we are very concerned about turning over the administration and reporting of the monitoring program to coalition entities paid directly by the operations whose water they are monitoring. In the staff's proposal, very little direct communication takes place between the Board and the individual dischargers; most information, including suggestions on best practices and the results of monitoring tests, is communicated between the coalitions and the dischargers and then reported by the coalitions to the Board. This puts the coalitions in a position of effectively enforcing the program requirements because they are the first point of contact with the dischargers, even though they have no actual regulatory authority over members to require implementation.<sup>47</sup> This is problematic to say the least. It is particularly problematic given that the coalitions are paid directly by the dischargers for this service, a major conflict of interest, and are directly accountable to their discharger-members.<sup>48</sup> At the very least, the monitoring program -- essentially a way to gauge how well the ILRP is working -- should be administered by an entity accountable to the public.

We agree that all stakeholders need better data, collected in a cost-efficient manner, to evaluate what is working and what is not and to ensure that the operations can respond in a timely way to that data in order to mitigate contamination. But this can and must be accomplished in a way that does not create a direct financial connection between the operations and the coalition or other third-party administrators of the monitoring program. What is the coalition's interest in reporting data showing continued contamination, especially if the Board does not directly review the results of individual monitoring?

If the Board itself cannot administer this program, at the very least the direct financial connection between the dischargers and the monitoring program administrator must be broken. Rather than having the program administered by a third party paid by the dischargers, participating dischargers should pay a higher fee to the Board as part of their permit fee and the additional money should be used to pay a neutral third party hired by the Board to administer the program. This will ensure that the program administrator is accountable to the public, not to entities with a financial stake in the outcomes of the monitoring and reporting.

Having a neutral third party do the regional monitoring will facilitate the Board's goal of eventually establishing a regional monitoring program that will cover all of its programs, because this program can be more easily integrated with other programs. All programs could be feeding into the same regional monitoring program administered by the same publicly-accountable party. This vision for the monitoring program meets the goals of Objectives 4 and 5 to coordinate with state and regional agencies.

Finally, this administrative structure will protect against problems with quality control on the monitoring data. Alternative 4 accomplishes this by promoting the use of third parties, such as UC Davis or USGS to design and conduct the regional monitoring program with costs being

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<sup>47</sup>Staff Report, p.9.

<sup>48</sup>Staff Report, p.147.

incorporated into the discharger fees and having the Board contract for those services directly. (See discussion above regarding Alternative 4).

## B. Regulatory Requirements<sup>49</sup>

### 1. Improving Tier Classification and Collection of Basic Baseline Data

In order to develop a robust tiering system and track progress over time, basic data must be compiled both initially as a baseline and through implementation of the program. The Staff-Recommended Program proposes to use existing water quality data from Basin Plans, GAMA, the Department of Pesticide Regulations and other sources to develop the tiering system. This data, while an important piece of the puzzle, provides incomplete information on discharge potential and the impact of agricultural practices on water resources, and therefore must be supplemented.

#### *a. Collect and Incorporate Data on Water Quality in Shallow Domestic Wells in Areas Without Sufficient Public Data.*

Many rural agricultural areas may not have publicly available data on nutrients and pesticides because there may not be public drinking water systems in the immediate area. However, there are likely domestic wells in those agricultural areas and therefore all farms should be required to do an initial and periodic sampling of water quality in existing wells, including domestic wells on or nearby the property.

#### *b. Collect and Incorporate Information on Practices and Pesticide and Fertilizer Use to Identify Areas of Higher Risk.*

As noted in the Staff Report, water quality detections in public drinking water supply wells, which supplies most of the available groundwater data, likely underestimates the actual area of impact because they sample deeper waters below shallow, nitrate-affected waters or sample wells with long screen intervals.<sup>50</sup> The indicator of fertilizer and pesticide use (along with vulnerability maps as proposed in Alternative 4), rather than water quality data (along with vulnerability maps as in the Staff-Recommended Program), is a better indicator of actual areas of impact from agriculture.<sup>51</sup> Furthermore, the use of this data would further Objectives 2 & 3 of the program by providing incentives for agricultural operations to institute management practices and minimize waste by tying tier designation to actual use, rather than general deep-water well data that may be less immediately tied to growers' practices.

#### *c. Vulnerable Areas Should Include Recharge Areas, Dry and Improperly Abandoned or Sealed Wells, and Other Pathways for "Run-In" Contamination.*

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<sup>49</sup>Staff Report § X(B)(6), pp.149-156.

<sup>50</sup>Staff Report, p.47.

<sup>51</sup>See Staff Report, p.47; *see also*

Burow, K.R., and Green, C.T., 2008, Spatial and temporal trends in nitrate concentration in the Eastern San Joaquin Valley Regional Aquifer and implications for nitrogen fertilizer management: California Plant and Soil Conference: Conservation of Agricultural Resources, February 5 & 6, 2008, Visalia, California, p. 47-52.

Nutrient and pesticide contaminants from agricultural dischargers can enter groundwater through (1) run-in, and (2) leaching.<sup>52</sup> While the groundwater vulnerability maps help identify those areas most likely to be impacted by leaching, run-in is not incorporated. Run-in is likely to impact areas with fractured bedrock, sinkholes, or poorly constructed wells.<sup>53</sup> However, nowhere does the staff alternative propose to collect information to identify those areas. Characterization of those areas susceptible to “run-in” should also be included as a requirement of reporting requirements and those areas should be classified as Tier 2 when appropriate.

## **2. Ensuring Tiers Reflect High and Low Priority Areas**

The Tiers should first and foremost ensure that requirements are focused on high priority areas where agriculture is contributing to exceedances of water quality objectives, but also should ensure compliance with the Basin Plans by also prioritizing those areas where agriculture is contributing to significant degradation. As currently articulated, Tier 1 includes those in the latter category, where water quality is not yet exceeded and it is not in a vulnerable hydrologic area, but still may be in an area that is just below the water quality objective where agricultural contributions to degradation still may be significant. In order to address this issue, Tier 2 should include those areas exceeding the Action Level (50% of the MCL) for those contaminants attributable to agriculture operations, rather than just those areas exceeding MCL.

Alternatively the staff could approach this issue by limiting Tier 1 to growers who can definitively show that they are not contributing to the degradation of California’s waters as defined by the California Water Code, and leave those that are contributing to degradation in Tier 2. Tier 1 growers should be allowed to show that they are not contributing to degradation by demonstrating effective implementation of the following practices: elimination of all tail water; use of integrated pest management techniques and no use of pesticides identified as having a high potential to degrade/pollute surface or groundwater; implementation of a nutrient management plan certified by an appropriate professional certification to be protective of water quality; and implementation of storm water control measures to minimize erosion and sediment deposition using best practicable treatment or control.

## **3. Requirements for Tier 1 Areas**

As discussed above, Tier 1 growers should be limited to those who can definitively show that they are not contributing to the degradation of California’s waters as defined by the California Water Code. However a widespread lack of data makes trend analysis (and therefore anti-degradation analysis) problematic in some cases. We recommend that those operations that cannot show that they are not contributing to degradation of surface or groundwater should be classified as Tier 2 operations until such data is forthcoming. If staff chooses not to do this, then it must assume that a number of Tier 1 operations are contributing to degradation and therefore subject to greater requirements to protect water quality. At a minimum, therefore, Tier 1 operators under the current definition or those operators that are contributing to degradation

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<sup>52</sup>Staff Report, p.45.

<sup>53</sup>Staff Report, p.45.

should be required to prepare and implement a farm water quality management plan to control sources as described in Alternative 4.<sup>54</sup> Staff could avoid having all Tier 1 growers subject to FWQMP requirements by collecting basic data from growers sufficient to indicate whether or not they are contributing to groundwater degradation (not just exceedances), as discussed in the section above.

By the same token, all growers in the program, including Tier 1 growers, should be required to report their on-farm fertilizer application and report periodic water quality sampling results. These results should be included in the first and 5-year reports. There is precedent for this requirement, including DPR's requirement for full pesticide use reporting, and the Dairy program requirements for manure application.

#### **4. Requirements for Tier 2 Areas**

Tier 2 is currently defined as very vulnerable areas or areas that are already exceeding water quality objectives. In these cases, much more intervention is needed to ensure that changes are made that will result in ensuring that agricultural discharges are not contributing to exceedances of water quality objectives. In order to meet the requirements for compliance with Porter-Cologne and the State Board's Anti-Degradation Policy, the Board must have a means of ensuring BMPs/BPTCs are implemented at the farm level. In Tier 2 areas, which the Staff-Recommended Program currently limits to those areas where agriculture is (or is likely to be) contributing to exceedances of water quality objectives, the Board must at the very least require individual water quality management plans in order to provide a mechanism for enforcement with individual dischargers, or hold all dischargers covered by a Regional Water Management Plan liable for failure to achieve compliance. The latter option would not be possible under the coalition structure proposed in the Staff-Recommended Program without FWQMPs (although it would be possible under Alternative 4's proposed structure).<sup>55</sup> Therefore, if staff wants to use a coalition structure, it must at a minimum require individual farm water quality management plans for Tier 2 dischargers, in addition to any Regional Water Management Plan Requirements.

##### *a. Individual Farm Water Quality Management Plans for all Tier 2 Dischargers*

The current Staff-Recommended Program states that individual water quality management plans would be put into place where regional plans have been ineffective, but it is unclear how farms would be chosen for individual plans or why all farms in Tier 2 should not be required to do individual farm water quality management plans given that Tier 2 already currently limited to those areas with exceedances of water quality objectives where agriculture is a source, or at high risk of having agricultural sources cause exceedances. Staff appears to be weighing the economic considerations more heavily than the environmental ones or even legal obligations to achieve water quality objectives or the ability of the Board to reasonably enforce the program.

FWQMPs for Tier 2 should contain, at a minimum, identification of practices that are currently being or will be implemented to address irrigation management, pesticide management, nutrient

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<sup>54</sup>See DPEIR, p.3-21.

<sup>55</sup>See Staff Report, p.140 (discussing individual and regional water management plans and implications for enforcement with dischargers).

management and erosion control to protect water quality. Plans should account for specific nitrate concentrations in irrigation water and soil in determining agronomic nitrogen application rates to ensure that current discharges to groundwater do not further degrade groundwater. Farm Plan nutrient management plan element must be certified by professional to be protective of water quality. Additionally, plans should contain a schedule for implementation of practices. Lists of water quality protection practices are available for several sources, including the University of California farm plan template available from the University of California and on-line at <http://anrcatalogue.ucdavis.edu/merchant.ihtml?pid=5604&step=4>.

Management practices must be designed and implemented to achieve improvements in water quality and compliance with the conditions in the Waivers and the State and Regional Board Plans and Policies. The plan must identify future actions necessary to improve and protect water quality.

*b. Regional Groundwater Quality Management Plans (GQMPs)*

Regional Groundwater Quality Management Plans (GQMPs) required in the Staff-Recommended Program should include the following clarifications for the current elements basic elements, as well as a number of additional requirements as follows:

*Required Element #1: Identify areas covered by the plan*

Particularly if regional monitoring is conducted by coalitions themselves, GQMPs should not only clearly identify all areas associated with constituents of concern addressed by the management plans but also explicitly link those areas to a specific representative area included in the regional monitoring program. (See comments in the Monitoring section regarding the importance of ensuring that regional monitoring programs actually are designed to be representative of the groundwater management areas for the constituents of concern.)

*Required Element #2: Summarizing and Assessing Data*

In summarizing and assessing water quality data generated by other entities that are available to the coalition at the outset, the coalition should be required to specify in the GQMP the detected *levels* of those constituents which the coalition has identified as “constituents of concern” in the region pursuant to Element #1. Thus, for example, if the coalition identifies nitrate as a constituent of concern in the GQMP, and the coalition has data at its disposal showing that wells in the region have detected nitrate at levels approaching the Maximum Contaminant Level (MCL), the coalition should indicate as much in the GQMP.

*Required Element #3: Identifying Contamination Sources*

In identifying the potential sources of water quality problems, including sites and management practices, abandoned wells in the region should be mapped out, as these constitute a significant potential vector of contamination absent wellhead protection measures. Furthermore, in order to promote coordination with Local Groundwater Quality Management Plans (consistent with Objective 5) GQMPs should be required to identify wellhead protection areas and recharge areas

as well as areas in need of wellhead abandonment that may be pathways for contamination via “run-in” and leaching.<sup>56</sup>

Required Element #4: Identifying Good Management Practices

GQMPs, at a minimum, should include the following management practices to address constituents of concern:

1. Practices to reduce pesticide and fertilizer use (i.e., Integrated Pest Management and nutrient management)
2. Measures to prevent groundwater wells from serving as a conduit for groundwater contamination, including
  - a. Backflow prevention measures to prevent groundwater contamination for dischargers that fertigate, chemigate or otherwise apply chemicals through an irrigation system connected to a groundwater well;
  - b. Destruction of all abandoned wells, test holes or exploration holes, as defined by DWR bulletin 74-81 as revised in 1988. in such a manner that they will not provide a conduit for mixing or otherwise transferring groundwater between permeable zones or aquifers;
3. Construction and maintenance of ponds, reservoirs or other water containment structures to avoid leaching of waste to groundwater
4. Irrigation practices that reduce leaching of contaminants below the root zone.

Required Element #5: Evaluation of Management Plan Effectiveness

The monitoring program adopted as part of the Groundwater Management Plan should be designed to ascertain the success of the adopted BMPs. As discussed below, the Board needs to provide as a basic guideline the requirement that regional monitoring be representative and that those farms being represented by the selected monitoring sites be bound by the same requirements to implement BMPs as the actual monitored site, where monitoring reveals water quality degradation or exceedances in water quality objectives.

Required Element #6: Description of Outreach to Growers

The coalition should help disseminate best practices in order to assist dischargers with mitigating water pollution. In most cases, these best practices have already been developed by third-party groups, including university researchers; the role of the coalitions is simply to facilitate the transfer of this information to dischargers. To further this goal, the GQMPs should require not just a description of outreach on the water quality issues in the area, but also a plan for how BMPs will be disseminated and a list of approved sources of BMP research and contacts of assistance providers.

Required Element #7: Tracking Management Practices

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<sup>56</sup>See Staff Report, pp.88-89 (containing a description of AB 3030 recommended components of local groundwater management plans).

The use and efficacy of agreed-upon BMPS is a critical required element of the annual report to the Board. The report should specifically cite which growers are employing agreed upon or recommended BMPs and which are not. This should include identification of Tier 2 growers without FWQMPs.

Required Elements #8: Monitoring Plans to Track Changes in Water Quality

As stated above, we believe that a regional monitoring program is more effectively designed and implemented by a third party that is not paid directly by the dischargers. In general, however, we agree with the current description in this element of the contents of such a plan, although feel it is vital that the program be required to be representative of all growers in management plan areas and that each representative cite be explicitly linked with the areas of which it is representative. (See our comments on the monitoring section below as well as our comments regarding implementation of regional monitoring by coalitions.)

Required Element #9: Schedules and Milestone

See our comments below regarding compliance schedules.

Missing Educational Requirement / Assistance to farmers on BMPs

As discussed above, the Staff-Recommended Program should incorporate a requirement for growers to complete a set minimum hours of education on water protection practices, which could include utilizing technical assistance providers, such as UC Cooperative Extension, NRCS, etc. GQMPs should include a list of educational opportunities, contact information of technical assistance providers, and a list of dischargers that have not complied with this requirement.

Missing Mitigation Reporting

In addition to the current requirements for GQMPs, an element should be added to require reporting of mitigation actions undertaken to address impacts to sources of domestic water supplies by agricultural discharges. Such actions may include the sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater, as well as contributions to the provision of alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners.

## **5. Requirements for Growers Who Do Not Join Coalitions**

Growers should have the option not to join a coalition, particularly if they already implement a full suite of BMPs recommended for their particular crop selection and soil type. In this case, individual WDRs for these growers should require the development of individual farm water quality management plans that are certified by a qualified third party. For organic farmers, this requirement could potentially be fulfilled through their current certification process, so long as they can show implementation of nutrient management practices (i.e. nutrient budgeting), measures to prevent groundwater wells from serving as a conduit for groundwater contamination, including backflow prevention measures to prevent groundwater contamination for dischargers that fertigate, chemigate or otherwise apply chemicals through an irrigation

system connected to a groundwater well, destruction of all abandoned wells, test holes or exploration holes, as defined by DWR bulletin 74-81 as revised in 1988. in such a manner that they will not provide a conduit for mixing or otherwise transferring groundwater between permeable zones or aquifers; construction and maintenance of ponds, reservoirs or other water containment structures to avoid leaching of waste to groundwater, and use of irrigation practices that reduce leaching of contaminants below the root zone. However, such operations should also be required to sample existing wells on the property for any constituents of concern and provide periodic reports to the Board to ensure that water quality objectives are being met.

## C. Monitoring Provisions<sup>57</sup>

### 1. All Monitoring

#### *a. The Monitoring Sites Selected by Coalitions Must Be Representative and Binding on All Represented Growers*

We recognize and acknowledge that certain monitoring practices, such as the installation of monitoring wells, can be quite expensive and burdensome. Since this reality invariably limits the amount of monitoring that can be conducted pursuant to this program, it is that much more important that the monitoring that *is* conducted be meaningful and further the goals and objectives of the ILRP. Although the Board may very well need to develop more specifically-tailored monitoring requirements in the individual orders, it should at minimum establish in this program-wide document the general requirement that third party coalitions select locations for both “regional monitoring” and “[t]argeted site-specific studies” that are in fact representative. The Board itself need not identify the parameters by which the individual coalitions determine representativeness, but it should establish this requirement as a guiding consideration for the coalitions in selecting monitoring sites. The Board can impose this requirement on coalitions as a general rule without micromanaging the coalitions’ siting decisions. If the Board does not include language in the ILRP establishing this basic requirement, such an omission might hinder its ability to impose such a requirement in individual enforcement actions once the program is underway.

Such a requirement is quite simply common sense and costs the Board nothing. Without it, coalitions, at least as they are currently structured, wherein they are directly funded by growers, have a structural incentive to select monitoring sites with the least likelihood of detecting water quality problems (*e.g.*, sites up gradient of discharges), so as to avoid the imposition of draconian management practice requirements on the growers that fund their existence. Unrepresentative monitoring is truly a waste of everyone’s time and money and does not further the goals and objectives of the ILRP, including Objective 2, which is to “encourage implementation of management practices that improve water quality in keeping with the first objective [*i.e.*, ensuring that water quality objectives are met] without jeopardizing the economic viability [of agriculture] . . . .”<sup>58</sup>

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<sup>57</sup>Staff Report § X(B)(7), pp.156-58.

<sup>58</sup>Staff Report, p.93.

Additionally, the ILRP should establish that if water quality problems are detected at the representative monitored site, all operations represented by that site must implement the changes in management practices deemed necessary at the monitored site.<sup>59</sup> Failure to include this requirement would undermine the entire purpose of having a third party lead entity in the first place (namely, to maximize administrative resources while still achieving maximum valley-wide compliance with ILRP requirements.)

To facilitate Board oversight of this requirement, water quality management plans should be required to include a provision specifying the parameters by which the coalition selects representative sites for monitoring and identifying which areas and farms are being represented by each monitoring site.

*b. Sufficient Data*

The sites a coalition selects for “regional” monitoring must not only be representative of those areas not being directly monitored, but also temporally and spatially sufficient in order to characterize water quality in the region adequately. Again, the Board can impose this requirement on coalitions as a general rule without micromanaging the coalitions’ siting decisions.

**2. Low-Priority Groundwater Monitoring (Tier 1 Areas)**

The Staff-Recommended Program needs to be clear that in Tier 1 areas, growers will participate in regional monitoring every five years, and that this regional monitoring will include individual grower reporting of management practices, including rates of fertilizer and pesticide application. As part of this regional monitoring every five years, all growers also must be required to sample all existing wells on their farms for nitrate, at minimum. This requirement is neither particularly onerous nor expensive (*e.g.*, it generally costs about \$40 to sample for nitrate.) Without this basic information generated every five years, the ILRP will never generate meaningful information from Tier 1 areas and will perpetuate the cycle of information gaps.

**3. High-Priority Groundwater Monitoring (Tier 2 Areas)**

In order to ensure that groundwater monitoring is effective in Tier 2 areas, a meaningful baseline must be established. In order to establish this baseline, all growers in Tier 2 areas must be required to sample all existing wells on their farms for nitrate, at minimum. This requirement is neither particularly onerous nor expensive (*e.g.*, it generally costs about \$40 to sample for nitrate.) In addition, growers must provide a description of the groundwater hydrology for the aquifers from which they pump water and to which they discharge wastes.

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<sup>59</sup>The issue of identifying represented farms is alluded to in Appendix D of the Staff Report, in the first element in the list of required elements for GQMPs, but the current language does not go far enough. First, it appears limited to monitored sites where there are “exceedances.” Staff Report, p.D-3. Second, it suggests that not all sites will in fact be representative. *See id.* Third, it does not require that a coalition identify the parameters by which it determines representativeness or impose resulting management practice changes on all represented farms. *See id.*

## D. Time Schedule for Compliance<sup>60</sup>

### 1. Defining What Constitutes “Compliance”

Porter-Cologne requires the Board to comply with applicable basin plans when adopting the long-term ILRP.<sup>61</sup> The relevant basin plans for the Central Valley are (1) the Water Quality Control Plan for the Sacramento and San Joaquin River Basins and (2) the Water Quality Control Plan for the Tulare Lake Basin.<sup>62</sup> These basin plans establish water quality objectives (WQOs) for various constituents, including nitrates and pesticides, which are legally-enforceable water quality standards.<sup>63</sup>

For all water resources in the Central Valley that include drinking water as a designated beneficial use, the basin plans establish numerical WQOs for nitrates and pesticides that are linked to the maximum contaminant levels (MCLs) specified in Title 22, Chapter 15 of the California Code of Regulations.<sup>64</sup> In other words, the WQO for each of these constituents in both basin plans is that the water resource shall not contain concentrations of the constituent in excess of that constituent’s state MCL.

As currently proposed by Board staff, the long-term ILRP will serve as an overarching framework that will guide the Board in its subsequent adoption of eight to twelve general orders, either in the form of waste discharge requirements (WDRs) or conditional waivers.<sup>65</sup> These WDRs and conditional waivers will not just serve as implementation mechanisms for the long-term ILRP, however; they are also the primary vehicles for implementing the basin plans with respect to irrigated agriculture.<sup>66</sup> In other words, the subsequent general orders are the mechanisms for bringing irrigated agriculture into compliance with the water quality objectives established in the basin plans. In fact, Porter-Cologne explicitly directs the Board, when issuing

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<sup>60</sup>Staff Report § X(B)(8), pp.158-160.

<sup>61</sup>See California Water Code (CWC) § 13247 (“State offices, departments, and *boards*, in carrying out activities which may affect water quality, shall comply with water quality control plans approved or adopted by the state board unless otherwise directed or authorized by statute[.] . . .”) (emphasis added).

<sup>62</sup>See California Environmental Protection Agency, Central Valley Regional Water Quality Control Board, Basin Planning, at [http://www.swrcb.ca.gov/rwqcb5/water\\_issues/basin\\_plans/](http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/) (last visited September 15, 2010).

<sup>63</sup>See CWC § 13247.

<sup>64</sup>California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Sacramento and San Joaquin River Basins, 4th ed. (September 2009) (*hereinafter* SSJR Basin Plan), p.III-3.00 (WQO for “Chemical Constituents” in surface water) *available at* [http://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/](http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/); *id.* at p.III-6.00 (WQO for Pesticides in surface water); *id.* at p.III-10.00 (WQO for “Chemical Constituents in groundwater); California Regional Water Quality Control Board, Central Valley Region, The Water Quality Control Plan for the Tulare Lake Basin, 2d ed. (January 2004) (*hereinafter* TL Basin Plan), pp.III-3 to III-4 (WQOs for “Chemical Constituents” and Pesticides in surface water), *available at* [http://www.waterboards.ca.gov/centralvalley/water\\_issues/basin\\_plans/](http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/); *id.* at p.III-7 (WQO for “Chemical Constituents” in groundwater).

<sup>65</sup>Staff Report, pp.144-146.

<sup>66</sup>See CWC § 13263(a) (WDRs “shall implement any relevant water quality control plans”); CWC § 13242(a) (the basin plan’s implementation program must include “actions” that are necessary to achieve water quality objectives); SSJR Basin Plan, p.III-2.00 (“[Water quality] objectives are to be achieved primarily through the adoption of waste discharge requirements . . . .”); TL Basin Plan, p.III-2 (same).

its subsequent WDRs, to include requirements in those WDRs “implement[ing]” the relevant basin plans and to “take into consideration” both “the beneficial uses to be protected[.]” and “the water quality objectives reasonably required for that purpose[.]”<sup>67</sup> Likewise, if the Board opts to issue a conditional waiver in lieu of a WDR, both the waiver and its conditions must be “consistent with any applicable [basin] plan . . . .”<sup>68</sup> If the long-term ILRP and its subsequent general orders do not require irrigated agriculture to comply fully with the water quality objectives established in the basin plan, essentially nothing will. Such a program would directly undermine the basin plans, in violation of Sections 13247, 13263, and 13269 of the California Water Code.

Furthermore, the State Water Resources Control Board (the State Board) has adopted a Policy for Implementation and Enforcement of the Nonpoint Sources of Pollution Control Program (NPS Policy) that requires the ILRP to “promote attainment of water quality objectives.”<sup>69</sup> Irrigated agricultural waste discharges to state waters constitute a form of nonpoint source pollution, so the NPS Policy requires that the implementation orders (the general WDRs and/or conditional waivers) address irrigated agricultural discharges “in a manner that *achieves* and maintains *water quality objectives* . . . .”<sup>70</sup> Thus, a long-term ILRP that does not define program compliance as compliance with water quality objectives also violates Key Element 1 of the State Board’s NPS Policy.

As currently drafted, staff’s proposed long-term ILRP does not require full compliance with water quality objectives. Instead, staff proposes to define compliance with the program as “demonstrated *improvement in water quality* or *reduction in discharge*” or “documented *implementation of management practices*,” among other things.<sup>71</sup> Each of these standards falls far short of meeting WQOs, which are the basin plans’ mandatory, enforceable, numeric water quality standards. We strongly recommend that staff revise this aspect of its proposed program to define an individual grower’s compliance with the long-term ILRP as compliance with the basin plan, or, stated differently, to define compliance as not contributing to exceedances in WQOs.

Not only is there explicit legal authority for making this change, but it also makes sense from a policy standpoint. The Board has already incorporated considerations of technical and economic feasibility for dischargers into the establishment of WQOs in the region’s two basin plans.<sup>72</sup>

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<sup>67</sup>CWC § 13263(a); *see also* SSJR Basin Plan, pp.IV-7.00 to IV-8.00 (discussing the types of remedial measures the Board can utilize to implement the water quality objectives, foremost among these being WDRs, and noting that “[w]hatever actions the Regional Water Board implements must be consistent with the Basin Plan’s beneficial uses and water quality objectives”); TL Basin Plan, pp.IV-19 to IV-20 (same).

<sup>68</sup>*See* CWC § 13269(a)(1).

<sup>69</sup>*See* Staff Report, p.54. *See also* California Environmental Protection Agency, State Water Resources Control Board and California Coastal Commission, Nonpoint Source Program Strategy and Implementation Plan, 1998-2013 (January 2000), *available at* [http://www.swrcb.ca.gov/water\\_issues/programs/nps/protecting.shtml](http://www.swrcb.ca.gov/water_issues/programs/nps/protecting.shtml).

<sup>70</sup>*See* Staff Report, p.55 (emphases added).

<sup>71</sup>Staff Report, p.160 (emphases added).

<sup>72</sup>*See* CWC § 13241(c), (d) (directing regional boards, in establishing water quality objectives, to consider both (a) the level of water quality “that could *reasonably* be achieved through the coordinated control of all factors which affect water quality in the area” and (b) “[e]conomic considerations”) (emphasis added).

Moreover, the WQOs for areas designated for drinking water are linked to state MCLs, which also already balance public health against considerations of economic and technical feasibility.<sup>73</sup> In other words, both the Central Valley Regional Board and the California Department of Public Health have already deemed the WQOs to be reasonable standards that are both technically and economically feasible for dischargers to achieve.

Furthermore, staff's proposed program creates a significant loophole by permitting "modification of] these [compliance] schedules based on evidence that meeting [water quality objectives by] the compliance date is *technically or economically infeasible* . . . ."<sup>74</sup> Since WQOs already incorporate technical and feasible considerations, extra time should only be given through enforcement orders so that some fee or mitigation can be required to offset impacts on beneficial uses, such as domestic water supplies. (See discussion above of mitigation programs that could be incorporated into this program to help address impacts to local drinking water sources.)

## 2. Establishing a *Reasonable* Time Schedule for Compliance

Although it is within the Board's authority to establish a time schedule for an irrigated agriculture operation to comply with WQOs "when it appears that the discharger cannot immediately meet the requirements[,] both state regulation and the State Board's NPS Policy dictate that this time schedule may "not permit any unnecessary time lag" and must include a date for "*full compliance* with requirements."<sup>75</sup> The current compliance schedule does not contain a date for full compliance with WQOs; in fact, as discussed above, it does not currently require full compliance with WQOs *at all*. Thus, not only does staff need to revise its proposed program to require compliance with WQOs, but if it does not intend to require *immediate* compliance with those standards, it must establish a reasonable time schedule within which full compliance must be achieved.<sup>76</sup>

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<sup>73</sup>See California Health & Safety Code § 116365(b)(3); *see also* California Department of Public Health, CDPH's Process for Adoption of a Maximum Contaminant Level, at <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/MCLprocess.aspx> (last visited September 22, 2010) (acknowledging that the agency sets an MCL "at a level as close as is *technically and economically feasible* to its public health goal") (emphasis added).

<sup>74</sup>Staff Report, p.159 (emphasis added).

<sup>75</sup>23 California Code of Regulations (CCR) § 2231(b), (c) (emphasis added). *See also* Staff Report, p.55 (construing Key Element 3 of the NPS Policy as requiring the Board to "include a *specific time schedule* and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements [water quality objectives]" when the Board "determines it is necessary to allow time to achieve water quality objectives").

<sup>76</sup>At the lower bound, the EPA has interpreted three years as a reasonable compliance period. *See Miccosukee Tribe of Indians of Florida v. United States of America, et al.*, 1998 U.S. Dist. LEXIS 15838, \*26 (S.D. Fla. 1998) (quoting a deposition by the EPA official charged with deciding whether Florida's new time schedule for compliance de facto changed water quality standards in that case). At the upper bound, the Board has interpreted ten years as a reasonable compliance period. *See* SSJR Basin Plan, pp.III-2.00, IV-16.00; TL Basin Plan, pp.IV-22 to IV-23. Both of these terms are counted from the date a water quality standard is adopted, however, not from the commencement date of a program implementing those standards, such as the ILRP. Thus, for long-standing WQOs, such as that for nitrate, even with a ten-year compliance period, compliance should be immediate.

If the program sets the benchmark for program compliance at less than full compliance with water quality objectives, this constitutes an impermissible *de facto* change in water quality standards. The same goes for an unnecessarily lengthy (or, as here, indefinite) time schedule for compliance. The impact of delaying the deadline for full compliance is that the program suspends enforcement of the basin plan and authorizes growers to continue contributing to exceedances in water quality objectives in the interim, with impunity. If that interim period extends beyond what is reasonable and necessary, this effectively authorizes ongoing violation of WQOs; the clear force of such a program is to alter the water quality standards in this region.<sup>77</sup> The ILRP is not the appropriate vehicle for making such a change.

For the foregoing reasons, staff should amend its proposed program (1) to define compliance as not contributing to exceedances in WQOs and (2) to require all growers be in full compliance with all WQOs, as measured at first encountered groundwater, as soon as is practicable but in no case more than five years from the date of adoption of the ILRP implementation orders. The program should specify a penalty for growers that fail to comply with this deadline.

Finally, as stated above, pursuant to Water Code Section 13304, the Central Valley Water Board may require Dischargers to provide alternative water supplies or replacement water service. Including wellhead treatment, to affected public water suppliers or private domestic well owners. The provision of alternative water supply or replacement water service could take place within the basin; or could be program-wide in the form of a mitigation payment into a cleanup and abatement fund targeting small, low-income communities that are most at risk from the negative impacts of drinking water contamination that are largely attributable to continuing agricultural discharges into Central Valley waters.

## **VII. Comments on the Economic Analysis**

### **A. The Economic Analysis is One-Sided and Distorts the Whole Program**

Perhaps what is most clear from this document is that staff has looked very closely at the economic impacts to agriculture and barely considered impacts to the rest of valley residents and the environment – and apparently included none of those costs and benefits in its modeling efforts. As a result:

- There is insufficient information to determine the costs and benefits of each alternative;
- The determination of an environmentally superior alternative lacks any analysis of environmental costs and benefit;
- The relative impacts and benefits to agriculture, communities and the environment have been skewed and do not provide appropriate qualitative guidance on an appropriate preferred program;

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<sup>77</sup>See generally *Miccosukee Tribe of Indians of Florida*, 1998 U.S. Dist. LEXIS at \*43-\*53. While obviously not binding precedent for the Board, this case could be deemed persuasive by a California court, as it provides a cogent and well-reasoned explanation for why an unnecessarily prolonged time schedule for compliance effectively constitutes a *de facto* change in water quality standards.

- There is insufficient evidence to make an anti-degradation determination in compliance with the Anti-degradation policy.
- The board lacks the information to make an informed decision.

An oversimplified and underestimated analysis of community costs and impacts was pasted on to the end of the economic analysis, but not included in the model that was actually used to develop the analysis – which means that environmental and community impacts were not meaningfully integrated into the process of developing a preferred alternative.

The IMPLAN model used in the analysis allows for the input of other costs and benefits. Direct costs and costs avoided for communities can and should be included in the model developed for this analysis and be treated in the IMPLAN model as a boost to disposable incomes just as the reduction agriculture profits was put into the model. Money that is not spent on bottled water or increased water treatment is money that could be spent on other things in the community. Below are several suggestions on how community costs of continued contamination can be quantified and integrated into the overall economic analysis. We also include some discussion of problems in the existing economic analysis.

Not only were community economic impacts left out of the economic impact (IMPLAN) model, but the assumptions used in the agricultural impact analysis were grossly overestimated, by including unrealistic assumptions, like in the implementation of practices and monitoring requirements, as well as cropping changes that were blind to other market forces.

## B. Improving the Estimate of Community Costs

### 1. **Including All Impacted Communities**

The current economic analysis identifies a very narrow universe of impacted communities, consisting only of those small water systems that have identified an exceedance of nitrates but have not yet provided a long-term solution. This approach severely underestimates the total community impact of nitrate contamination, and therefore inaccurately compares the costs and benefits of the different alternatives. In particular, it skews the data in favor of Alternative 2, which does not set water quality objectives, and away from Alternative 4, which does.

#### *a. The Cost Analysis for Communities Identified in the Report is Inaccurate and Incomplete.*

The report uses the Department of Public Health Source Water Assessment data (collected from 2000-2003) to determine that only 45 wells currently listed as contaminated by nitrate were impacted by agriculture. Unfortunately, the data used to create these Source Water Assessments was extremely limited; recharge areas were not identified, nor were other aquifer characteristics. Essentially, these small systems were asked to draw a circle around their well and then list the Potentially Contaminating Activities that were situated within that circle - this bears little resemblance to the way an aquifer functions.. This lack of basic information about the aquifers makes the information unusable for this analysis. To gain a better understanding of the impact of agricultural activities on these wells, we recommend instead that the systems be identified by

their basin, and that the agricultural contribution to contamination be based on the presence or absence of agricultural activity within that basin. This creates an appropriately conservative estimate that also reflects the implementation mechanism proposed in the staff alternative.

A second difficulty is that the well costs identified fail to list the cost of drilling deep wells. When a contaminated source must be replaced by a new well, that well tends to be deeper, in order to access a cleaner part of the aquifer. Additionally, wells in the southern San Joaquin County tend to be deeper than in northern counties, a factor that should be included in the cost estimates.

The report also fails to provide information on the impact of pesticides on community water systems. While the Department of Pesticide Reform (DPR) has a groundwater protection policy, that policy does not meet the conditions of the anti-degradation policy that guides the Board's regulatory program; deferring to DPR's existing programs is not sufficient to achieve water quality objectives. In terms of cost, the detection of pesticides does not necessarily trigger well closure and replacement; in some cases, treatment is available, at a cost to the community. At a minimum, for the purposes of this analysis, staff should evaluate the data used to create Tables 5.9-1, -2, and -3 of the PEIR to identify trends in contamination and identify the cost of remediating drinking water in those wells that have exceeded a drinking water standard..

***b. Analysis Fails to Include the Community Impact of Domestic Well Contamination.***

According to the Groundwater Ambient Monitoring & Assessment Program, there are an estimated 600,000 private domestic wells in California and 10 percent of those tested have nitrate levels above the legal limit.<sup>78</sup> According to the USGS, there is a population of 813,390 in Central Valley counties who rely on domestic wells (See Table 2).<sup>79</sup> The percentage of wells contaminated per county in the Central Valley ranged widely, from less than 1% in Tehama to 40% of those tested in Tulare County. The extent to which contamination originates from agricultural run-off is not known, in part due to a lack of systematic monitoring of run-off and ground water quality. Most researchers agree that agriculture is the leading source of nitrate contamination of ground water in the Central Valley.<sup>80</sup>

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<sup>78</sup>State Water Resources Board, Groundwater Ambient Monitoring & Assessment Program (2010). *Summary of Detections Above a Drinking Water Standard, GAMA Domestic Well Project*. Accessed on September 20, 2010 from [http://www.swrcb.ca.gov/gama/domestic\\_well.shtml](http://www.swrcb.ca.gov/gama/domestic_well.shtml).

<sup>79</sup>USGS (2000) Estimated Use of Water in the United States County-Level Data for 2000. Online at <http://water.usgs.gov/watuse/data/2000/index.html>

<sup>80</sup>United States Geological Survey (1995) *Water Quality in the San Joaquin-Tulare Basins, California, 1992-95*. Accessed on September 20, 2010 from <http://pubs.usgs.gov/circ/circ1159/sec6.html>.

Table 2. Population Served by Domestic Wells in Central Valley Counties

| County       | Total Population | Population served by domestic wells | As percentage of total population |
|--------------|------------------|-------------------------------------|-----------------------------------|
| Butte        | 203,170          | 38,400                              | 19%                               |
| Colusa       | 18,800           | 7,060                               | 38%                               |
| Fresno       | 799,410          | 41,730                              | 5%                                |
| Glenn        | 26,450           | 12,260                              | 46%                               |
| Kern         | 661,650          | 76,050                              | 11%                               |
| Kings        | 129,460          | 20,990                              | 16%                               |
| Madera       | 123,110          | 49,070                              | 40%                               |
| Merced       | 210,550          | 53,140                              | 25%                               |
| Placer       | 248,400          | 25,920                              | 10%                               |
| Sacramento   | 1,223,500        | 64,030                              | 5%                                |
| San Joaquin  | 563,600          | 102,340                             | 18%                               |
| Shasta       | 163,260          | 25,560                              | 16%                               |
| Stanislaus   | 447,000          | 85,170                              | 19%                               |
| Sutter       | 78,930           | 21,310                              | 27%                               |
| Tehama       | 56,040           | 32,590                              | 58%                               |
| Tulare       | 368,020          | 103,420                             | 28%                               |
| Yolo         | 168,660          | 33,460                              | 20%                               |
| Yuba         | 60,220           | 20,890                              | 35%                               |
|              |                  |                                     |                                   |
| <b>TOTAL</b> | <b>5,550,230</b> | <b>813,390</b>                      | <b>15%</b>                        |

The cost of ensuring safe drinking water to the users of these wells must cover strategies for reducing nitrate levels or accessing an alternative water source. This may include installing treatment technology or a filter, drilling a new well, or buying bottled or vended water. According to Culligan, one of the leading purveyors of filter systems in the Valley, a typical nitrate filter costs \$336 per fixture per year including

maintenance.<sup>81</sup> Our cost estimate assumes that only 10 percent of the Central Valley population relying on domestic wells have high nitrates. Assuming only 60% of the contamination affecting these 16,713 households have agricultural run-off as a contaminating activity, the costs for each of them to install a Culligan filter total at \$5,615,734. In the above-mentioned EPA report on CAFOs, a domestic well owner's Willingness to Pay for nitrate levels being brought down to the MCL is valued at \$718.67 per year (inflation adjusted from \$583 in 2001 dollars). Using this as the annual cost per household, the annual costs to domestic well owners amount to \$12,011,486.

*c. Analysis Does Not Include Other Impacted Communities.*

There are several other impacted groups that missing from this analysis:

- Schools and other non-community water systems. These systems, most run as part of private businesses, are impacted by a lack of clean drinking water. At a minimum, the cost of providing point of use treatment should be included as a cost for the smaller businesses. Schools face the same costs as small communities (new wells or centralized treatment costs).
- Communities who have removed wells from production or switched to wells with other contaminants. Systems with multiple wells typically blend contaminated water to meet safe drinking water requirements or removed contaminated wells from production, thereby reducing their overall capacity. In some cases this can lead to reliance on water with other contaminants; for instance, Monterey Park Tract in Stanislaus County is currently listed by the state as being in compliance with the drinking water standard for nitrate. However, compliance was achieved by turning off the well with nitrate contamination, and relying wholly on a single well that exceeds the drinking water standard for arsenic. This community still has unsafe drinking water. Unfortunately, the state does not maintain a database of wells closed due to contamination, but a review of wells that have exceeded the nitrate standard over the past 10 years to discover which are still in production would provide some guidance.
- Communities treating drinking water for agricultural contaminants. Where treatment is affordable - this could be because a treatment is inexpensive, like granular activated carbon for VOCs or some pesticides, or because a community is large enough to reduce the per capita cost - it is generally already in place. This report does not identify the costs paid by these communities for safe drinking water; the information is not maintained centrally, but could be obtained through a survey of Central Valley water systems located in vulnerable hydrologic regions.

*d. Analysis Fails to Identify a Trend of Increasing Contamination.*

The community impact analysis shows a snapshot of current contamination, but fails to identify the problem of increasing nitrate levels in Central Valley Drinking Water Wells. Our organizations worked with Pacific Institute to identify trends of nitrate contamination. Analysts at Pacific Institute carried out a regression analysis to estimate the number of wells currently under the MCL that can be expected to rise above this threshold in the next ten years. Using a

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<sup>81</sup>Culligan (2010) Personal Communication 9/17/10.

database including all nitrate measurements from 1980 to present in the GAMA database for Kern County, wells were selected that had ten or more samples recorded (678 wells), and fit a trend line of nitrate concentration versus time, using ordinary least squares regression. Pacific Institute used the uncertainty associated with this relationship to calculate the percent likelihood of exceeding the 45 mg/L threshold in 2010, 2015, and 2020.

Based on this analysis, Pacific Institute found 33 wells where the likelihood of exceeding the MCL is 75%. In 2015, this increases to 50 and in 2020 rises to 65 (See Table below). This is almost a doubling of the number of wells with nitrate levels above the MCL by 2020, an increase from 5% to 10% of monitored wells. Based on current trends, we estimate that the number of wells exceeding the MCL in Kern County will double in the next ten years. See comments submitted by Pacific Institute for greater detail on this analysis

### Trend analysis of nitrate levels in Kern County wells

| Groundwater Basin                          | Total number of Wells | Number of wells with greater than 75% likelihood of exceeding MCL in 2010 | Number of wells with greater than 75% likelihood of exceeding MCL in 2015 | Number of wells with greater than 75% likelihood of exceeding MCL in 2020 |
|--|-----------------------|---|---|---|
| Antelope Valley (6-44)                     | 29                    | 0   | 0   | 0   |
| Brite Valley (5-80)                        | 4                     | 0   | 0   | 0   |
| Castac Lake Valley (5-29)                  | 6                     | 0   | 0   | 0   |
| Cuddy Canyon Valley (5-82)                 | 5                     | 0   | 0   | 0   |
| Cuddy Ranch Area (5-83)                    | 4                     | 0   | 0   | 0   |
| Cuddy Valley (5-84)                        | 6                     | 0   | 0   | 0   |
| Cummings Valley (5-27)                     | 14                    | 2   | 2   | 3   |
| Fremont Valley (6-46)                      | 11                    | 0   | 0   | 0   |
| Indian Wells Valley (6-54)                 | 36                    | 0   | 0   | 0   |
| Kern River Valley (5-25)                   | 55                    | 4   | 7   | 8   |
| Mil Potrero Area (5-85)                    | 2                     | 0   | 0   | 0   |
| No Basin Found                             | 67                    | 1   | 2   | 2   |
| San Joaquin Valley - Kern County (5-22.14) | 417                   | 24  | 37  | 50  |
| Tehachapi Valley East (6-45)               | 3                     | 0   | 0   | 0   |
| Tehachapi Valley West (5-28)               | 18                    | 2   | 2   | 2   |
| Walker Basin Creek Valley (5-26)           | 1                     | 0   | 0   | 0   |
| <b>TOTAL</b>                               | <b>678</b>            | <b>33</b>   | <b>50</b>   | <b>65</b>   |

Kern County was chosen because it is the county with the highest number of nitrate detections in the Central Valley, and so had more data available to develop a trend analysis. A land use analysis by basin can provide a correlation between agriculture and nitrate contamination.

This analysis is not just important to inform this DPEIR; it is critical to predicting the success of the program. Mitigation of groundwater contamination is a long-term effort, and this type of analysis will be needed for each constituent of concern in each basin. in order to measure interim progress. We urge staff to develop this analysis for all of Region 5's groundwater resources.

## 2. Estimating the Cost to Community Members and Regions

The economic analysis fails assess the cost to communities that lack access to safe drinking water from their tap. This is a significant cost that reduces available income for other purposes, so it does shape the local economy. Additionally, impacts to the local economy are not calculated in this analysis. Our organizations have worked with Pacific Institute to develop some cost estimates for impacted households.

### *a. ILRP Costs to Drinking Water Consumers*<sup>82</sup>

It has been well documented that households impacted by groundwater contamination incur significant costs to avoid contaminated tap water. A series of studies using the “avoidance cost” method—that is, “assessing the costs of actions taken to avoid or reduce damages from exposure to groundwater contaminants”—have demonstrated that household responses to contamination of domestic water supplies is far from inexpensive and that these expenditures must be taken into consideration in valuing the costs and benefits of groundwater protection.<sup>83</sup>[1],[2],[3] To avoid nitrate-contaminated tap water, households must install costly reverse osmosis filters, order domestic water service to their home, or buy gallons of vended and bottled water for consumptive household uses such as cooking and drinking.

In the summer of 2010, Pacific Institute conducted a survey of 21 out of the 28 households connected to the community water system, Beverly Grand Mutual Water Company, which was in violation of the 45 mg/L MCL for nitrate concentration. Respondents were asked a series of questions about household socioeconomic and demographic information, perception of contamination, household water use, and expenditures on tap water, filters, and alternative sources of water (such as vended and bottled water).

Preliminary analysis of the survey shows that households that are aware of contamination in their water and that drink and cook with exclusively non-tap sources of water pay on average 77% more than they would have had they solely used tap water for these consumptive household uses. On average, non-tap water expenditures for these households constituted 2% of household

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<sup>82</sup>See written comments by Pacific Institute for more details on the costs to consumers.

<sup>83</sup>Abdalla, Charles W. *Measuring Economic Losses from Ground Water Contamination: An Investigation of Household Avoidance Costs*. Water Resources Bulletin Vol. 26 No. 3, 451-463. Collins, Alan R. and Scott Steinback (1993). *Rural Household Response to Water Contamination in West Virginia*. Water Resources Bulletin Vol. 29 No. 2, 199-209. Laughland, Andrew S., Musser, Lynn M., Musser, Wesley N., and James S. Shortle (1993). *The Opportunity Cost of Time and Averting Expenditures for Safe Drinking Water*. Water Resources Bulletin Vol. 29 No. 2, 291-299.

income, although some households spent up to 4.2% of their income on bottled and vended water for use in the home. On average, households that exclusively use non-tap sources of water for cooking and drinking spend \$5.46 per person per month on vended and bottled water for use in the home (although some households spent up to \$14.08 per person per month). This suggests that, collectively, the 1.3 million people connected to water systems with contaminated groundwater supplies may spend approximately \$7.1 million to avoid nitrate-contaminated water.

#### *b. Regional Economic Impacts*

Clearly, there are very real economic impacts to communities' ability to attract economic development when drinking water sources are contaminated that are above and beyond the direct costs to the residents and water systems trying to mitigate the problem. For instance, many communities are unable to provide will-serve letters to allow for new connections into the system because they have had to close wells due to nitrate or pesticides. For example, the community of Orosi has had to limit its capacity to provide water to new developments because it lacked sufficient supply after nitrate levels in a new well rose above the MCL between the time of a test well and the drilling and testing of the final well. Residents in the community of Strathmore had trouble getting loans for real estate sales after nitrate levels rose above the MCL.

These same impacts are felt at the county level, as scarce resources are directed to communities to help pay for new wells. These impacts come from several sources; counties often administer state and federal grants and loans for small communities; some provide matching funds; and Community Development Block Grants are used to solve problems in some systems. In each case, scarce county funding is diverted from other purposes.

When financing and water supplies are not available, development will not occur and valley communities are further economically harmed. The economic analysis fails to allocate any regional impacts or benefits to the provision of clean water, yet communities without safe water are clearly impacted by their inability to add homes or businesses. Several data points could be used to develop such regional costs. Property tax receipts for communities impacted by nitrates could be compared with unincorporated areas within the county as a whole; county expenditures for community expenses (such as administering grants, providing matching dollars for grants, or expenditure of Community Development Block Grants for new wells) could be analyzed to measure funds diverted from other needed services.

### C. Flaws in the Current Economic Analysis for Agricultural Costs

The reality of economic impact reports is that they are based on assumptions. Based on the assumptions and the extension of time that the model examines, you can have varied results; in fact, you can have completely inversed results. The IMPLAN model has been used in the Central Valley many times to assess the impact of many land-use and water quality programs, like the Westlands Land Retirement Program that was found to have a net economic benefit to agriculture. Ironically, the Retirement Program was put in place because of the lack of drainage and therefore increasing salinity problem and harmful to the long-term viability for a sustainable agricultural productivity for the west side. Irrigated Lands Program is no different, in order to

secure a sustainable agricultural for the Central Valley we must protect our groundwater quality supply. CV Salts is a clear recognition that nutrient loading is not just a problem of nitrate contamination of drinking water supplies, but of overall excessive loading that if left unmanaged will result in an inevitable impact to agriculture productivity.

The economic analysis failed to evaluate the economic harm to agriculture of doing nothing or the economic harm of doing little to address the nutrient loading. The economic impact analysis should be analyzing the threshold on where the investment for agriculture today will pay off for tomorrow, for themselves and for their communities. Unfortunately, the assumptions used in the IMPLAN model fail to incorporate the variables and the time frame for truly beneficial analysis for developing this critical program. Including, failing to include integrated pest management as management practice, assuming the implementation of practices and monitoring requirements, assuming no outside market forces in cropping changes; the analysis fails to evaluate the relative costs and contribution to water quality of each of the management practices listed; and the analysis did not attribute any cost benefits to the implementation of the specified management practices, including practices that would reduce the use and therefore the cost of fertilizer, or conserve water.

#### **D. The Legal Requirement to Do This**

The Staff Report through its anti-degradation analysis is asking the board to make a finding that it is okay to allow for continued degradation of water quality in order to meet economic interests in reduced costs to agriculture. However, nowhere in the economic analysis does the staff provide an estimate of what level of degradation will be allowed or what the cost of that degradation will be. Without that basic information, it is impossible for the Board to make an informed decision or finding based on substantial evidence that allowing degradation is in the best interest of the people of the state, as required by the Anti-degradation Policy.

Furthermore, as described above, once the Economic Analysis attempts to conduct a comprehensive economic analysis above and beyond what is required by Porter Cologne,<sup>84</sup> which merely requires the Board to calculate the direct costs to dischargers, it must do so in a way that attempts to be truly comprehensive of both sides and not arbitrarily ignore the costs on one side of the equation and therefore distort the decision-making process. To do that would leave the Board without a substantial or rational basis for making a determination on what would be the preferred program.

### **VIII. Comments on the DPEIR**

#### **A. The DPEIR is Insufficient for a Tiered, Programmatic EIR**

The Draft Irrigated Lands Regulatory Program Program Environmental Impact Report (the DPEIR) falls afoul of the California Environmental Quality Act (CEQA)<sup>85</sup> in numerous ways.

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<sup>84</sup>CWC § 13141.

<sup>85</sup>California Public Resources Code § 21000 et seq.

To begin with, staff has titled this document a “*Program Environmental Impact Report*.” If staff intends for this to serve as a programmatic environmental impact report (EIR), as contemplated in Section 15168, Title 14 of the California Code of Regulations, and if staff intends to roll out streamlined project EIRs for the general orders implementing the ILRP within a year of the program’s adoption, then this DPEIR needs substantial additional documentation and analysis. The current draft cannot be characterized as an “exhaustive consideration of effects and alternatives” that has “deal[t] with the effects of [the ILRP] as specifically and comprehensively as possible.”<sup>86</sup> As is, a significant amount of further environmental analysis will be required for each of the subsequent WDRs and conditional waivers that the Board intends to issue as implementation mechanisms for the ILRP, making staff’s projected one-year timeline for the Board to adopt each of these mechanisms extremely unrealistic.

Staff has chosen to take a mile-high view of the program in this document, but in so doing, it has obscured the details to such an extent that the very purposes of CEQA have been undermined: this current DPEIR does not arm the Board with the information it needs to make an informed decision, nor does it provide the public with sufficient information to participate in the decision making process.<sup>87</sup>

## B. The DPEIR Must Sufficiently Analyze the Proposed Project

Numerous revisions are necessary to transform this DPEIR into a useful document and a true programmatic EIR. Foremost among these is the requirement that staff analyze the environmental impacts of the *proposed project*, which is the staff-recommended alternative.<sup>88</sup> Currently, the extent of staff’s impacts “analysis” of the recommended program is buried at the end of the Staff Report, a mere appendix to the DPEIR, and consists of less than two full pages. Not surprisingly, then, given its brevity, this section of the Staff Report consists of little more than cursory conclusions and fails to “reflect the analytic route the agency traveled from evidence to [recommended] action.”<sup>89</sup> In this significant respect, the DPEIR does not satisfy CEQA’s requirements, including that the DPEIR itself analyze the proposed project and that it do so with “a sufficient degree of analysis to provide decision makers [here, the Board and members of the public] with information which enables them to make a decision which intelligently takes account of environmental consequences.”<sup>90</sup>

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<sup>86</sup>14 CCR § 15168(b)(1), (c)(5).

<sup>87</sup>*In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008) (“The purpose of an EIR is to give the public and government agencies the information needed to make informed decisions . . . .”) (quoting *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal. 3d 553, 564 (1990)); *Marin Mun. Water Dist. v. Kg Land Cal. Corp.*, 235 Cal. App. 3d 1652, 1660 (1991) (“[T]he essential purpose of the EIR is to inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made.”) (emphasis added).

<sup>88</sup>14 CCR § 15126(a).

<sup>89</sup>*Kings County Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 733, 270 Cal. Rptr. 650, 670 (1990). *See also Preservation Action Council v. City of San Jose*, 141 Cal. App. 4th 1336, 1353 (2006) (observing that the agency must “set forth facts and meaningful analysis . . . rather than just the agency’s bare conclusions or opinions”) (internal quotations omitted; emphasis added).

<sup>90</sup>14 CCR § 15126(a), 15151.

### C. The DPEIR Must Analyze a Reasonable Range of Alternatives

An EIR is an “informational document” – its essential purpose is to provide the Board with detailed information about the environmental consequences of the proposed program before any final decisions are made.<sup>91</sup> To satisfy this informational purpose, the DPEIR must consider a “reasonable range of alternatives” to the proposed program, the purpose of which is to “to allow the decision maker to determine whether there is an environmentally superior alternative that will meet most of the project’s objectives[.] . . .”<sup>92</sup> To constitute a reasonable range, the alternatives put forth in the DPEIR must satisfy two basic requirements: (1) they must “feasibly attain most of the basic objectives of the project . . . [.]” and (2) they must “offer *substantial environmental advantages* over the project proposal[.]”<sup>93</sup> Ultimately, the DPEIR must “provide a meaningful basis for comparison” between the environmental impacts of the proposed project and the environmental impacts of the alternatives, in order for the Board to evaluate the proposed program properly and make the environmentally-informed decision that CEQA requires.<sup>94</sup>

With respect to water resources, in particular, the DPEIR as currently drafted does not fulfill this duty. Staff has cursorily concluded that none of the program alternatives will have any significant impact on water quality,<sup>95</sup> without “set[ting] forth facts and meaningful analysis of these alternatives . . . .”<sup>96</sup> Staff has chosen in the DPEIR to define a significant impact to water resources as “contribut[ion] to degradation of state waters as a result of agricultural discharge[.]”<sup>97</sup> Because each of the regulatory program alternatives put forth in the DPEIR is designed, at least in theory, to reduce irrigated agriculture’s contribution to groundwater contamination in the Central Valley (except the no-project alternative, which would not extend the ILRP to groundwater), staff has reasoned that none of these alternatives will have a significant negative environmental impact on water resources. Staff may be correct, at least in theory, that each of the program alternatives promises some environmental benefit with respect to water quality, but this is no excuse for failing to perform the requisite comparative analysis among the different program alternatives.<sup>98</sup> Because staff has failed to conduct any rigorous analysis as to the relative environmental merits of the various program alternatives, this document does not provide any guidance or assistance to the Board in comparatively evaluating

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<sup>91</sup>*Goleta Union School Dist. v. Regents of University of California*, 37 Cal. App. 4th 1025, 1030 (1995); *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008); *Marin Mun. Water Dist. v. Kg Land Cal. Corp.*, 235 Cal. App. 3d 1652, 1660 (1991).

<sup>92</sup>*Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010); *City of Long Beach v. Los Angeles Unified School Dist.*, 176 Cal. App. 4th 889, 920 (2009); 14 CCR § 15126.6.

<sup>93</sup>*In re Bay-Delta*, 43 Cal. 4th at 1162; *City of Long Beach v. Los Angeles Unified School Dist.*, 176 Cal. App. 4th 889, 920 (2009) (quoting *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal.3d 553, 566 (1990)); *Watsonville Pilots Assn. v. City of Watsonville*, 183 Cal. App. 4th 1059, 1089 (2010) (emphasis added).

<sup>94</sup>*See Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1264-65 (2000).

<sup>95</sup>*See* DPEIR, pp.5.9-16 to 5.9-18.

<sup>96</sup>*Preservation Action Council v. City of San Jose*, 141 Cal. App. 4th 1336, 1353 (2006) (internal quotations omitted).

<sup>97</sup>DPEIR, p.5.9-14.

<sup>98</sup>If the alternatives will truly result in no differences, then they are not sufficiently different to constitute a reasonable range of alternatives for the purposes of CEQA. *See, e.g., Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1264 (2000).

the various program alternatives and identifying which among them are “environmentally superior,” as CEQA requires.<sup>99</sup>

Furthermore, the long-term ILRP constitutes a regulatory program that establishes a performance standard (namely, the achievement of water quality objectives), within the meaning of Section 15187, Title 14 of the California Code of Regulations. Thus, the EIR for this program “must perform an environmental analysis of the reasonably foreseeable methods by which compliance with that rule or regulation will be achieved[.]”<sup>100</sup> including “[a]n analysis of the reasonably foreseeable *environmental impacts of the methods of compliance*” and “[a]n analysis of the reasonably foreseeable *alternative means of compliance* with the rule or regulation[.] . . .”<sup>101</sup> “[C]ompliance with the rule or regulation” here refers to compliance with the performance standard of achieving water quality objectives.<sup>102</sup> Clearly, a regulation establishing a performance standard will almost always be designed to improve on environmental conditions.<sup>103</sup> According to staff’s reasoning, therefore, it would never need to conduct a comparative environmental analysis of the different potential program structures that could be deployed to achieve the performance standard, thereby evading acknowledgement of the tradeoffs in choosing more or less stringent program structures. This would clearly contravene Section 15187, which envisions comparative environmental analysis of the various alternative “methods of compliance[.]”<sup>104</sup>

To measure and facilitate comparison of each alternative’s environmental impact, the DPEIR must attempt to project what the future will look like under each program alternative and compare that future scenario to the baseline of existing water quality conditions today.<sup>105</sup> In order for the DPEIR to fulfill its statutory purpose of serving as a meaningful, informative environmental document that will help guide the Board in making an environmentally-informed

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<sup>99</sup>*Watsonville Pilots Assn.*, 183 Cal. App. 4th at 1089.

<sup>100</sup>14 CCR § 15187(a). More completely, this subsection provides:

At the time of the adoption of a rule or regulation . . . establishing a performance standard, . . . all regional water quality control boards, . . . must perform an environmental analysis of the reasonably foreseeable methods by which compliance with that rule or regulation will be achieved.

*Id.*

<sup>101</sup>14 CCR § 15187(b), (c)(1), (c)(3) (emphases added).

<sup>102</sup>*See* 14 CCR § 15189 (“This section applies to projects consisting solely of compliance with a performance standard . . . which was the subject of an environmental analysis as described in Section 15187.”).

<sup>103</sup>As discussed elsewhere in these comments, the staff-recommended program does not even require compliance with water quality objectives, *see* Staff Report, pp.158-160, so it’s not clear that the proposed project would even meet the goals of the program or meet the performance standard of meeting water quality objectives. *See* 14 §§ CCR 15187, 15189.

<sup>104</sup>*See* 14 CCR § 15187.

<sup>105</sup>To be clear, this baseline is not the current *rate* of agricultural discharge to state waters, but the actual conditions of water quality at the time of the CEQA analysis, *i.e.*, “real conditions on the ground” or “existing physical conditions in the affected area” today. *See Communities for a Better Environment v. South Coast Air Quality Management District et al.*, 48 Cal. 4th 310, 320-21, 226 P.3d 985, 992-93, 106 Cal. Rptr. 3d 502, 511-12 (2010).

choice, staff must provide some comparative analysis by evaluating the varying degrees to which each of the alternatives improve upon this baseline.

For example, common sense would suggest that less stringent regulatory programs like the proposed project (the Staff-Recommended Program) and Alternative 2, which have virtually no enforcement mechanisms and limited monitoring requirements, would not result in reductions in agricultural discharges and achievement of water quality objectives throughout the Central Valley as quickly as programs with real enforcement mechanisms and comprehensive monitoring and data collection like Alternatives 4 and 5. Staff's baseless conclusion to the contrary is founded on the unspoken assumption that each of the proposed regulatory programs would result, apparently instantaneously, in the universal adoption of best management practices (BMPs) by growers throughout the valley. However, if staff is going to assert that any given program alternative will have no significant impact on water resources on the theory that growers will be implementing required management practices pursuant to that program, then the program must actually make "provision" for ensuring that those practices will "actually be implemented" and fully enforceable through permit conditions, including a workable "monitoring program to ensure that [those management practices] are implemented."<sup>106</sup> If implementation of management practices cannot be meaningfully monitored and enforced on all growers, then it is purely speculative to suggest that these practices will actually be implemented and to use them as a basis for a finding that impacts on water quality will not be significant.

Thus, one obvious method by which staff could distinguish among the relative environmental merits of the various alternatives is by projecting how quickly each program will lead to valley-wide adoption of BMPs and the resulting situation in which irrigated agriculture no longer contributes to exceedances in water quality objectives (thereby achieving full compliance with the ILRP). Where data are available on the implementation rates of specific BMPs under current voluntary programs, staff should incorporate those data into the analysis.

For example, citing Orang et al. (2005),<sup>107</sup> the Staff Report indicates that under the current regulatory setting, in which growers' adoption of BMPs has been purely voluntary, there has been a 30% transition from gravity-driven "flood and furrow" irrigation systems to more environmentally-beneficial drip irrigation systems over the course of 30 years.<sup>108</sup> Staff could presume, therefore, that a purely voluntary program like those envisioned in the proposed project (the Staff-Recommended Program) and Alternative 2 will result in a drip irrigation implementation rate of 1% of total Central Valley irrigated acreage per year, meaning that all growers in the Central Valley would be utilizing drip irrigation systems by the year 2070. Thus, under these program alternatives, a steadily declining proportion of total irrigated acreage would continue to contribute to exceedances in water quality objectives for 59 years (from 2011 to 2069). Once staff completes a more robust analysis of the costs that ongoing contaminated

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<sup>106</sup>See *Federation of Hillside & Canyon Associations v. City of Los Angeles*, 83 Cal. App. 4th 1252, 1260-61, 100 Cal. Rptr. 2d 301, 308-09 (2000).

<sup>107</sup>Orang, M., R. Snyder, and S. Matyac. 2005. Survey of Irrigation Methods in California. California Department of Water Resources and University of California, Davis. California Water Plan Update 2005. Volume 4, pg 299-318.

<sup>108</sup>See Staff Report, p.16. Here, drip irrigation is presumed to be a BMP, although a feedback mechanism in the form of adequate monitoring would be required to ensure that transition to such a system actually leads to compliance in terms of no longer contributing to exceedances in water quality objectives.

drinking water imposes on municipalities (specifically, treatment costs) and on smaller communities (including economic costs associated with driving to the market and purchasing bottled water to supplement a monthly flat rate for tap water and medical and lost income costs from health incidents related to exposure to contaminated water), the environmental and public health costs associated with each year of delay in valley-wide implementation of BMPs will become much more clear. This figure can be multiplied times the number of acres per year that are estimated as continuing to utilize non-BMP irrigation methods, such as flood and furrow.

Where data indicate that a particular BMP is *declining* in usage under voluntary programs, however, this also must be incorporated into the analysis. Thus, for example, citing Glass (2003),<sup>109</sup> the Staff Report indicates that synthetic nitrogen fertilizer usage has steadily increased in California, specifically threefold over the course of approximately 40 years (from 1961 to 2008).<sup>110</sup> Under voluntary programs like the proposed project and Alternative 2, staff must presume that nitrogen fertilizer use will continue to increase at this rate indefinitely, with associated annual economic, environmental, and public health costs on drinking water systems and Central Valley residents. Again, staff simply MUST perform a robust and balanced analysis of the impacts of the various program alternatives, including attempting to estimate community costs with as much dedication as it currently documents costs to the irrigated agriculture industry. Without this information, staff will continue to underestimate vastly the comparative environmental impacts and public health trade-offs of the various alternative regulatory structures being considered in the EIR.

In contrast, for program alternatives that include: (a) meaningful enforcement mechanisms; (b) comprehensive monitoring that serves as a feedback mechanism to ensure that management practices being implemented really are reducing discharges to state waters (and thus really do constitute BMPs); and (c) a reasonable time schedule for compliance, namely, reaching a point where irrigated agriculture no longer contributes to exceedances in water quality objectives, staff could presume that full compliance would be achieved by that deadline. Under this scenario, it is not speculative for staff to assume that required management practices will actually be implemented.<sup>111</sup> Irrigated agriculture's annual contribution to exceedances in water quality objectives could be measured at a declining rate over that period, and this figure could be multiplied by the foregoing estimated annual cost of contaminated water to drinking water systems and Central Valley communities.

Where staff does not yet have sufficient information regarding estimated implementation rates for the various potential management practices, including but not limited to those contained in Table 5.1.1 of the DPEIR, which, incidentally, omits any mention of Integrated Pest Management for the reduction of pesticide usage, CEQA requires it to conduct this further analysis. It is against everyone's interests, and furthermore illegal, for staff to rush forward with proposing an ILRP that not only violates CEQA but ultimately amounts to a paper tiger. The information that staff currently lacks is not unimportant and insignificant to the larger goals and objectives of the program, including protecting water quality and community drinking water

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<sup>109</sup>The Staff Report, presumably by mistake, does not include a full citation to this source in its References section.

<sup>110</sup>Staff Report, p.16.

<sup>111</sup>See *Federation of Hillside & Canyon Assocs.*, 83 Cal. App. 4th at 1260-61.

sources.<sup>112</sup> By engaging in such a process, staff would be able to evaluate the various program alternatives in the DPEIR comparatively and quantitatively, which would allow the Board to identify the “environmentally superior alternative” and make a *truly* environmentally-informed decision about which program alternative to adopt, as CEQA requires.<sup>113</sup>

#### D. The Alternatives Must Be Feasible

The alternatives in the DPEIR must be feasible, meaning they must comply with existing law.<sup>114</sup> Only Alternatives 4 & 5 comply with the State Board’s anti-degradation policy, however.<sup>115</sup> Therefore, Alternatives 2 & 3 are not feasible alternatives.

#### E. Mitigation in the Interim While Waiting to Meet Water Quality Objectives

Given that there is likely to be some period of delay between approval of the program and significant reductions in agricultural contributions to water quality degradation and even continued exceedances of water quality objectives, this program should include mitigation measures to offset these impacts on public health and the environment. Pursuant to Water Code Section 13267, the Executive Officer may require dischargers to conduct sampling of private domestic wells in or near agricultural areas with high nitrate in groundwater and submit technical reports evaluating the sampling results. In addition, pursuant to Water Code Section 13304, the Board may require dischargers to provide alternative water supplies or replacement water service, including wellhead treatment, to affected public water suppliers or private domestic well owners. This program should include utilizing this power, as well as the creation of a SEP to facilitate use of enforcement actions to support improvements in local impacted drinking water supplies, as described in the sections above.

#### F. The DPEIR fails to address both Programmatic and Cumulative Impacts to Public Health.

This document already acknowledges that the No Project Alternative fails to protect water quality; in addition, we assert in other areas of this document that Alternative 2 and the Staff Alternative also fail to do so. The failure of these alternatives to reverse the degradation of groundwater quality leads directly to a public health impact that is not analyzed in this document. Moreover, these health impacts are cumulative, as other environmental stressors already impact community health in Region 5. This document must identify the impact of nitrates on public

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<sup>112</sup>See Staff Report, pp.92-93.

<sup>113</sup>See *Watsonville Pilots Assn.*, 183 Cal. App. 4th at 1089; *Federation of Hillside & Canyon Assocs.*, 83 Cal. App. 4th at 1264.

<sup>114</sup>*In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1162 (2008) (“CEQA defines ‘feasible’ as ‘capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.’”) (quoting California Public Resources Code § 21061.1).

<sup>115</sup>See Staff Report, p.114 (Table 15).

health as a *significant impact* for Alternatives 1 and 2 that is not capable of mitigation, as well as the staff alternative.

## 1. Health Effects

The final document should acknowledge the following short and long-term risks of exposure to nitrates in the water supply.

In the short-term, nitrates can cause: Methemoglobinemia, or “Blue Baby Syndrome”<sup>116</sup>; Indigestion, inflammation of the stomach and gastrointestinal tract (gastroenteritis), with abdominal pain, diarrhea, and blood in the urine and feces<sup>117</sup>

In the long-term, scientific and medical studies have linked nitrates to:<sup>118</sup> Multiple digestive tract impairments, including dyspepsia<sup>119</sup>; Depression, headache and weakness<sup>120</sup>; Miscarriage,<sup>121</sup> stillbirths or premature birth<sup>122</sup>; Sudden Infant Death Syndrome (SIDS)<sup>123</sup>; Mutagenicity (DNA damage) and tetragenicity<sup>124</sup>; Impaired growth of fetuses *in utero*, leading to neural tube disabilities and other birth-related disabilities<sup>125</sup>; Cancers of the digestive system,<sup>126</sup> stomach,<sup>127</sup> esophagus,<sup>128</sup> lungs,<sup>129</sup> colon,<sup>130</sup> bladder and ovaries,<sup>131</sup> testicles,<sup>132</sup> uro-genital tract,<sup>133</sup> and non-

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<sup>116</sup>U.S. Environmental Protection Agency. (2010). Basic Information about nitrate in drinking water. Retrieved June 4, 2010, from <http://www.epa.gov/safewater/contaminants/basicinformation/nitrate.html>. Knobeloch, L., B. Salna, A. Hogan, J. Postle, and H. Anderson. (2000). Blue Babies and Nitrate-Contaminated Well Water. *Environmental Health Perspectives* 108.

<sup>117</sup>Fassett, D. (1973). Nitrates and Nitrites. *Toxicants Occurring Naturally in Foods*. Washington: National Academy Press.

<sup>118</sup>Camargo and Alonso (2006).

<sup>119</sup>Fassett (1973).

<sup>120</sup>Ibid.

<sup>121</sup>Manassaram, D., L. Backer, and D. Moll. (2006). A review of nitrates in drinking water: maternal exposure and adverse reproductive and developmental outcomes. *Environmental Health Perspectives* 114:320-327. Fan, A., and V. Steinberg. (1996). Health implications of nitrate and nitrite in drinking water: an update on methemoglobinemia occurrence and reproductive and developmental toxicity. *Regulatory Toxicology and Pharmacology* 23:35-43.

<sup>122</sup>Manassaram et al (2006).

<sup>123</sup>U.S. EPA (2010).

<sup>124</sup>Camargo and Alonso (2006).

<sup>125</sup>Manassaram et al (2006). See also: Dorsch, M., R. Scragg, A. McMichael, P. Baghurst, and K. Dyer. (1984). Congenital Malformations and Maternal Drinking Water Supply in Rural South Australia: a Case-Control Study. *American Journal of Epidemiology* 119:473-86; Knox, E. (1972). Anencephalus and dietary intake. *British Journal of Preventive and Social Medicine*. 26: 219–23; Super, M., H. Heese, D. MacKenzie, W. Dempster, J. Du Plessis, and J. Ferreira. (1981). An epidemiological study of well-water nitrates in a group of South West African/Namibian infants. *Water Resources* 15:1265-1270. Croen, L., K. Todoroff, and G. Shaw. (2001). Maternal exposure to nitrate from drinking water and diet and risk for neural tube defects. *American Journal of Epidemiology*. 153:325–331.

<sup>126</sup>Powlson, D., T. Addiscott, N. Benjamin, K. Cassman, T. de Kok, H. van Grinsven, J. L'Hirondel, A. Avery, and C. van Kessel. (2003). When does nitrate become a risk for humans? *Journal of Environmental Quality* 37:291-5.

<sup>127</sup>World Health Organization International Agency for Research on Cancer Monograph Working Group. (2006). Carcinogenicity of nitrate, nitrite, and cyanobacterial peptide toxins. *Lancet Oncology*, 7:628-629.

<sup>128</sup>Zhang, X., Z. Bing, Z. Xing, Z. Chen, J. Zhang, S. Liang, F. Men, S. Zheng, X. Li, and X. Bai. (2003). Research and control of well water pollution in high esophageal cancer areas. *World Journal of Gastroenterology* 9:1187-90.

Hodgkins lymphoma<sup>134</sup>; Nervous system disabilities<sup>135</sup>; Dieresis (increased urination), increased starchy deposits and hemorrhaging of the spleen<sup>136</sup>; Active ulcerative colitis and Crohn's disease<sup>137</sup>; Pancreatitis,<sup>138</sup> which is highly associated with pancreatic cancer<sup>139</sup>; Thyroid disruption, including hypertrophy<sup>140</sup>.

Vulnerable populations are especially sensitive to nitrate contamination, including children and pregnant women.<sup>141</sup> Nitrates can also have indirect health impacts. In particular, diabetes may be indirectly linked,<sup>142</sup> because impaired pancreas functioning can lead to diabetes mellitus, and

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<sup>129</sup>Greenblatt, M., S. Mirvish, and B. So. (1971). Nitrosamine Studies: Induction of Lung Adenomas by Concurrent Administration of Sodium Nitrite and Secondary Amines in Swiss Mice. *Journal of National Cancer Institute* 46:1029-1034.

<sup>130</sup>Ward, M. (2006). Workgroup report: Drinking-water nitrate and health--recent findings and research needs. *Environmental Health Perspectives* 114:A458-9; A459-61. See also: Gulis, G., M. Czompolyova, and J. Cerhan. (2002). An ecologic study of nitrate in municipal drinking water and cancer incidence in Trnava District, Slovakia. *Environmental Resources* 88:182-187.

<sup>131</sup>Weyer, P., J. Cerhan, B. Kross, G. Hallberg, J. Kantamneni, G. Breuer, M. Jones, W. Zheng, and C. Lynch. (2001). Municipal drinking water nitrate level and cancer risk in older women: the Iowa Women's Health Study. *Epidemiology* 12:327-38.

<sup>132</sup>Moller, H. (1997). Work in agriculture, childhood residence, nitrate exposure, and testicular cancer risk: a case-control study in Denmark. *Cancer Epidemiology, Biomarkers and Prevention* 6:141-144.

<sup>133</sup>Lubin, F., H. Farbstein, A. Chetrit, M. Farbstein, L. Freedman, E. Alfandary, and B. Modan. (2000). The role of nutritional habits during gestation and child life in pediatric brain tumor etiology. *International Journal of Cancer* 86:139-143.

<sup>134</sup>Gulis et al (2002).

<sup>135</sup>Manassaram, D., L. Backer, and D. Moll. (2006). Ingested nitrate and nitrite, and cyanobacterial peptide toxins. *Monographs On The Evaluation Of Carcinogenic Risks To Humans*. International Agency for Research on Cancer 94.

<sup>136</sup>U.S. E.P.A. (2010).

<sup>137</sup>Kimura, H., S. Miura, T. Shigematsu, N. Ohkubo, Y. Tsuzuki, I. Kurose, H. Higuchi, Y. Akiba, R. Hokari, M. Hirokawa, H. Serizawa, and H. Ishii. (1997). Increased nitric oxide production and inducible nitric oxide synthase activity in colonic mucosa of patients with active ulcerative colitis and Crohn's disease. *Digestive Diseases and Science* 42:1047-54. See also: National Institute of Public Health and Environmental Protection. (2010). Nitrate. International Program on Chemical Safety. Retrieved April 5, 2010, from <http://www.inchem.org/documents/jecfa/jecmono/v35je14.htm>.

<sup>138</sup>Carmargol et al (2008).

<sup>139</sup>Coss, A., K. Cantor, J. Reif, C. Lynch, and M. Ward. (2004). Pancreatic Cancer and Drinking Water and Dietary Sources of Nitrate and Nitrite. *American Journal of Epidemiology* 159:693.

<sup>140</sup>Van Maanen, J., A. van Dijk, K. Mulder, M. de Baets, P. Menheere, and D. van der Heide. (1994). Consumption of Drinking Water with High Nitrate Levels Causes Hypertrophy of the Thyroid. *Toxicology Letters* 72:365-374.

<sup>141</sup>McCasland, M., N. Trautmann, and S. Porter. (2008). Nitrate: Health Effects In Drinking Water. Natural Resources Cornell Cooperative Extension. Retrieved June 5, 2010, from <http://psep.cce.cornell.edu/facts-slides-self/facts/nit-heef-grw85.aspx>.

<sup>142</sup>Kostraba, J., E. Gay, M. Rewers, and R. Hamman. (1992). Nitrate Levels in Community Drinking Waters and Risk of IDDM, an Ecologic Analysis. *Diabetes Care* 15:1505-1508. See also: Parslow R., P. McKinney, G. Law, A. Staines, R. Williams, and H. Bodansky. (1997). Incidence of Childhood Diabetes Mellitus in Yorkshire, Northern England, is Associated with Nitrate in Drinking Water: an Ecologic Analysis. *Diabetologia* 40:550-556.

nitrates are associated with chronic pancreatitis. In fact, nitrate concentrations in blood have been recommended as a marker for diabetes.<sup>143</sup>

## **2. Measured Health Impacts in Tulare County**

The Community Water Center has assembled detailed information on the rates of diseases in Tulare County (where 20% of public supply wells and 40% of domestic wells exceed the drinking water standard for nitrates) associated with nitrates, as outlined in scientific and medical literature. This data reinforces our contention that the health impacts of not reducing nitrate contamination in groundwater are significant.

The following tables present information on health outcomes that occur at elevated levels within Tulare County and are associated with high nitrate levels. Information for health outcomes that occur at average statewide rates are not included. All statistics are expressed as “death rates,” which refer to the rate of death for each associated disease per 100,000 people. The death rate for each disease varies depending on the health outcome, but in each outcome listed, Tulare County’s death rate occurred at levels significantly higher than the state rate.

## **3. Reproductive and Infant Health Concerns**

Tulare County’s infant mortality rate is higher than the state average – 6.4 versus 5.3 (per 100,000 infant births).<sup>144</sup> These rates have remained consistently high since 1990.<sup>145</sup> Another cause for concern is that studies have shown that drinking water contaminated with both bacteria and nitrates can make methemoglobinemia (blue baby syndrome) more likely.<sup>146</sup> In private well testing in Tulare County, 15 percent of wells tested exceeded MCLs in both categories.<sup>147</sup>

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<sup>143</sup>Nunes, S., I. Figueiredo, P. Soares, N. Costa, M. Lopes, and M. Caramona. (2008). Semicarbazide-sensitive amine oxidase activity and total nitrite and nitrate concentrations in serum: novel biochemical markers for type 2 diabetes? *Acta Diabetologica* 46:135-140.

<sup>144</sup>California Department of Public Health. (2010). County Health Status Profiles. Retrieved June 8, 2010, from <http://www.cdph.ca.gov/programs/ohir/Pages/CHSP.aspx>.

<sup>145</sup>California Department of Health Services. (2005). Leading Causes of Infant Death, California Counties, 2005 (By Place of Residence). Sacramento: Center for Health Statistics.

<sup>146</sup>Fan and Steinberg (1996).

<sup>147</sup>State Water Resources Control Board (2006).

| <b>Health outcome associated with high nitrate levels</b>   | <b>Death rate in Tulare County</b>  |
|---|---|
| Sudden Infant Death Syndrome  | 146 to 252 percent of state rate (2003)   |
| Methemoglobinemia, or “Blue Baby Syndrome”  | 140 percent of state rate, ranking Tulare County 42nd of all California counties (2006) |
| Congenital malformations, deformations and chromosomal abnormalities, including neural tube disabilities <sup>148</sup> | 109 percent of state rate (2003); leading cause of infant death in 2005                 |
| Certain Conditions Originating in the Prenatal Period   | 250 percent of state rate (2003)  |
| Spontaneous abortion, miscarriage   | 211 percent of state rate (2001-2003)   |

*Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.*

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<sup>148</sup>California Department of Health Services (2005).

#### 4. Incidences of Cancers Associated with Nitrate Contamination

| Health outcome associated with high nitrate levels | Death rate in Tulare County   |
|--|---|
| Digestive System Cancers                           | 125 percent of state rate   |
| Pancreatic cancer                                  | 121 percent of state rate   |
| Esophogus Cancer                                   | Between 125 and 134 percent of state rate (2001 - 2005); as high as 153 percent for females |
| Stomach Cancer                                     | #8 in state for deaths caused by stomach cancer (1988-2005)                                 |
| Bladder Cancer                                     | 111 percent of state rate (2003)  |
| Ovarian Cancer                                     | 116 percent of state rate (2001-2005)   |
| Testicular Cancer                                  | 107 percent of state rate (2002 – 2006)   |
| Colon Cancer                                       | 113 percent of state rate (2005)  |
| Non-Hodgkin lymphoma                               | 119 percent of state rate for females (2001-2005)   |
| Lung Cancer  | 108 percent of state rate (2001-2005); as high as 115 percent in 2005                       |

Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.

#### 4. Gastrointestinal Illnesses

Many gastrointestinal illnesses are related to nitrates.<sup>149</sup> One of the acute impacts of consuming nitrate-contaminated water is a variety of gastrointestinal illnesses. Almost 17 percent of farm workers in Tulare experienced at least monthly bouts of diarrhea, vomiting, and/or stomach pains.<sup>150</sup> While these may or may not be linked to nitrates, gastrointestinal inflammation exacerbates the more serious health impacts of nitrate contamination, such as pancreatitis and cancers of the gastrointestinal tract.

<sup>149</sup>Laboratory for Toxicology, National Institute of Public Health and Environmental Protection. (n.d.). Nitrate. National Institute of Public Health and Environmental Protection: International Programme on Chemical Safety. Retrieved January 21, 2009, from <http://www.inchem.org/documents/jecfa/jecmono/v35je14.htm>.

<sup>150</sup>Frisvold, G., R. Mines., and J. Perloff. (1988). The Effects of Job Site Sanitation and Living Conditions on the Health and Welfare of Agricultural Workers. *American Journal of Agricultural Economics* 70(4):875-85.

| <b>Health outcome associated with high nitrate levels</b> | <b>Death rate in Tulare County</b> |
|---|------------------------------------|
| Diseases of the Digestive System                          | 149 percent of state rate (2003)   |
| Peptic Ulcer  | 140 percent of state rate (2003)   |
| Chronic Liver Diseases and Cirrhosis                      | 133 percent of state rate (2003)   |
| Other Liver diseases                                      | 224 percent of state rate (2003)   |
| Pancreatitis  | 180 percent of state rate (2003)   |

*Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.*

### **5. Additional Health Outcomes Associated with Nitrate Contamination**

Several other health outcomes associated with nitrates occur at notably high rates in Tulare County. For example, consumption of water high in nitrates has been shown to increase hypertrophy, a condition marked by enlargement of the thyroid, which is responsible for many of the body's endocrine and hormonal functions.<sup>151</sup> Tulare County's rate of death for these diseases is exceptionally high. Another endocrine-related disease is diabetes mellitus, which is associated with the endocrine portion of the pancreas.<sup>152</sup> Nitrates are associated with chronic pancreatitis, and total nitrate concentrations in blood serum have been suggested as a prognostic marker for diabetes.<sup>153</sup>

| <b>Health outcome associated with high nitrate levels</b>                   | <b>Death rate in Tulare County</b>            |
|---|---|
| Endocrine, Nutritional and Metabolic Diseases (including thyroid disorders) | 172 percent of the state rate (2003)          |
| Respiratory problems; shortness of breath; acute respiratory infections     | 119 percent of state rate (2007)              |
| Diabetes  | 148 - 158 percent of state rate (2003 - 2006) |

*Source: California Department of Public Health, Center for Health Statistics, Office of Health and Information Research.*

### **6. Health Impacts are Cumulative**

<sup>151</sup>Van Maanen et al (1994).

<sup>152</sup>Kostraba et al 1992. See also: Parslow et al (1997).

<sup>153</sup>Nunes et al (2008).

Health problems associated with nitrate contamination in drinking water may be exacerbated and/or compounded by many other environmental and health stressors.<sup>154</sup> As the National Academy of Sciences notes, multiple stressors, ranging from chemicals released from noxious land uses to socioeconomic factors, can exacerbate the impacts of one particular source. They recommend “that exposure assessment methods [for environmental hazards] be expanded to consider exposures to multiple chemicals with multiple routes of exposure...These models need to be able to assess the cumulative effects of chemicals that may have either synergistic or antagonistic actions.”<sup>155</sup>

If cumulative risks make certain communities more vulnerable to stressors,<sup>156</sup> such as drinking water contamination, the residents in the San Joaquin Valley are extremely vulnerable. In addition to nitrate contamination, residents face a host of other drinking water pollutants, including pesticides, arsenic, disinfectant by-products, and gasoline additives.<sup>157</sup>

Residents of the San Joaquin Valley are also assaulted by some of the most polluted air in the U.S. According to the American Lung Association, five of the nation’s top 25 cities most polluted by particle matter are in the San Joaquin Valley.<sup>158</sup> In addition, five San Joaquin Valley counties make the top 25 list of the most polluted counties for both ozone and particulate matter.<sup>159</sup>

Given the multiple and severe health risks encountered by communities in Tulare County, the cumulative impact of any one stressor is significant. In addition, without a strong regulatory program, such as that identified in Alternative 4, the number of wells with nitrates in excess of the drinking water standard can be expected to increase, exacerbating the already significant health impact of Alternatives 1 and 2.

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<sup>154</sup>Koppe, J., A. Bartonova, G. Bolte, M. Bistrup, C. Busby, M. Butter, P. Dorfman, A. Fucic, D. Gee, P. van den Hazel, V. Howard, M. Kohlhuber, M. Leijts, C. Lundqvist, H. Moshammer, R. Naginiene, P. Nicolopoulou-Stamati, R. Ronchetti, G. Salines, G. Schoeters, G. ten Tusscher, M. Wallis, and M. Zuurbier. (2006). Exposure to multiple environmental agents and their effect. *Acta Paediatrica Supplement* 95(453):106-13.

<sup>155</sup>Committee on Pesticides in the Diets of Infants and Children, National Research Council. (1993). *Pesticides in the Diets of Infants and Children*. Washington: National Academy Press.

<sup>156</sup>National Environmental Justice Advisory Committee Cumulative Risks and Impacts Group (2004).

<sup>157</sup>Gronberg et al (2004). See also: Ramos (2003); Ferriss, S. (August 18, 2009). Central Valley continues marathon fight for clean drinking water. *Sacramento Bee*; Troiano, J., T. Barry, C. Nordmark, and B. Johnson. (1997). Profiling areas of ground water contamination by pesticides in California: phase II - evaluation and modification of a statistical model. *Environmental Monitoring and Assessment* 45(3):301-318; Environmental Working Group. Drinking Water Quality Report, City of Tulare. Retrieved February 23, 2010, from <http://www.ewg.org/tap-water/whatsinyourwater/CA/City-of-Tulare/5410015/>. The State Water Resources Control Board’s Geotracker database compiles cases of leaking underground storage tanks, leaking landfills, and other sources of potential aquifer contamination. The database on January 7, 2009 listed over 60,000 cases, of which over 24,000 are open. Most of the contaminants listed are gasoline, diesel, heating oil, hydraulic fluid, benzene and solvents.

<sup>158</sup>American Lung Association. (2010). *State of the Air 2010*. Washington: American Lung Association.

<sup>159</sup>Ibid.

## Conclusion

Thank you for your consideration of these comments. If you have any questions or concerns, please do not hesitate to contact us. We look forward to continuing to work with staff and the Board to develop an effective long-term irrigated lands regulatory program.

Sincerely,



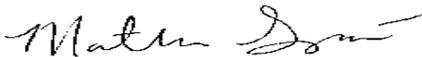
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Co-Executive Director and Attorney at Law  
Community Water Center



Rose Francis  
Attorney at Law  
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Jennifer Clary  
Water Policy Analyst  
Clean Water Action



Martha Guzman  
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/s/ Phoebe Seaton  
Attorney at Law  
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March 21, 2011

Katherine Hart  
 Chair, Central Valley Regional Water Quality Control Board  
 11020 Sun Center Drive, #200  
 Rancho Cordova, CA 95670

**Re: Recommended Irrigated Lands Regulatory Framework: Groundwater**

Dear Chairperson Hart and Board Members,

We are representatives of environmental and environmental justice communities located in the Central Valley and throughout California, writing to remind you of the urgent need to address widespread groundwater contamination attributable to irrigated agriculture, and your

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responsibility under the Porter-Cologne Act to do so. We appreciate the hard work that staff has put into preparing the Framework that you are being asked to approve as well as their efforts to keep us engaged and informed during the process of developing these recommendations.

We are deeply concerned that the Framework is being adopted as a resolution rather than a regulation; however, your support of measures contained in the framework and the inclusion of additional measures will provide strong guidance to staff as they develop implementing orders. To that end, we would like to offer specific suggestions to strengthen that guidance in order to effectively protect the Valley's groundwater resources.

As previously stated in comments on the draft program, an effective regulatory program must contain the following elements: 1) effective on-farm programs that actually reduce polluted runoff; 2) basic data collection on farm practices and water quality in order to establish a baseline, evaluate management practices and measure progress towards water quality objectives; 3) clear standards for compliance to ensure that water quality goals and timelines are met; 4) strong enforcement powers to ensure compliance; and 5) provisions for cleanup and abatement of legacy agricultural contamination.

In order to fully protect and restore groundwater supplies, this program requires the following changes:

- ***A time schedule and quantitative measurements of compliance for groundwater that are protective of public health and water quality.*** The current groundwater compliance goal of “a demonstrated improvement in water quality or a reduction in discharge” is inappropriate because it does not require dischargers to meet specific water quality objectives at any point in time. If there is no requirement to meet specific water quality objectives by a specific time, they will not be met, and drinking water in the Central Valley will continue to deteriorate.
- ***Greater emphasis on enforcement.*** The framework does not address enforcement except to remove one tool, the prohibition of discharge, with the argument that use of this would reduce the Board's enforcement discretion and expend staff resources. We strongly disagree with this characterization. The proposed framework already significantly limits staff's ability to enforce the program through its reliance on third party coalitions to implement most facets of the program. Removing the threat of a prohibition of discharges renders this program even more toothless.
- ***The establishment of a cleanup and abatement account for enforcement fines to fund mitigation of drinking water contamination.*** The suite of potential enforcement actions listed in the discussion of Key Element 5 should include the exaction of fines to fund

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mitigation efforts. Since improvements in drinking water quality will be slow, the Board should use this mechanism to help communities achieve safe drinking water.

- **Data collection should include information on fertilizer application for all Tier 2 and Tier 3 dischargers.** The most significant contaminant of groundwater is nitrate, which leaches through excess fertilization of irrigated fields. A very basic tool for identifying potential problem areas is a requirement that dischargers report the quantity and frequency of their fertilizer application, and that that information be made publicly available. This can help the board prioritize operations for inspection, and also provide very basic information about the success of the program in reducing inputs to groundwater.

We have many other concerns, in particular the very limited protections for surface water in the framework, which is addressed in another letter. We urge the Board to incorporate our recommendations into the framework prior to adoption.

Sincerely,

s/m \_\_\_\_\_  
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 California Regional Director  
 American Rivers

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 Monterey Coastkeeper

Tracey Brieger  
 Co-Director  
 Californians for Pesticide Reform

Elanor Starmer  
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s/m \_\_\_\_\_  
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Baykeeper and Executive Director  
San Francisco Baykeeper

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Evon Parvaneh Chambers  
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