



California Regional Water Quality Control Board
Central Valley Region
Katherine Hart, Chair



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Edmund G. Brown Jr.
Governor

9 September 2011

**Response to Written Comments for
Draft Monitoring and Reporting Workplan and Monitoring Well
Installation and Sampling Plan
Central Valley Dairy Representative Monitoring Program**

Enclosed is a Response to Written Comments regarding the draft *Monitoring and Reporting Workplan and Monitoring Well Installation and Sampling Plan* (Monitoring Workplan), prepared by Luhdorff and Scalmanini Consulting Engineers on the behalf of the Central Valley Dairy Representative Monitoring Program. The Monitoring Workplan was circulated by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) for thirty days beginning on 23 June 2011. Two comment letters were received during the public review period.

A public meeting was held at the Central Valley Water Board's Rancho Cordova office on 21 July 2011 to provide interested parties an opportunity to listen to a presentation of the Monitoring Workplan and provide verbal comments. All comments were considered by Central Valley Water Board staff.

The final Monitoring Workplan will be approved by the Executive Officer under a separate cover.

If you have any questions regarding the Response to Written Comments, please contact me at (559) 445-5116 or by email at dpatteson@waterboards.ca.gov.

Original signed by:

DOUGLAS K. PATTESON
Supervising Engineer

Enclosure(s)

cc: Jennifer Clary, Clean Water Action, San Francisco
Laurel Firestone, Community Water Center, Visalia
Bill Jennings, California Sportfishing Protection Alliance, Berkeley
Rose Francis, Community Water Center, Visalia
Elanor Starmer, Food & Water Watch, San Francisco
Patrick Dunn, Dunn Environmental, Inc., El Dorado Hills
J.P. Cativiela, Dairy CARES, Sacramento
Till Angermann, Luhdorff and Scalmanini Consulting Engineers, Woodland

California Environmental Protection Agency

**Regional Water Quality Control Board
Central Valley Region**

**Response to Written Comments for
Draft Monitoring and Reporting Workplan and Monitoring Well
Installation and Sampling Plan
Central Valley Dairy Representative Monitoring Program**

This document contains the responses to written comments received from interested parties regarding the proposed *Draft Monitoring and Reporting Workplan and Monitoring Well Installation and Sampling Plan* (Workplan) prepared by Luhdorff and Scalmanini, Consulting Engineers, on behalf of the Central Valley Dairy Representative Monitoring Program (CVDRMP). The Workplan was prepared to establish a representative groundwater monitoring program in accordance with the Central Valley Regional Water Quality Control Board's (Central Valley Water Board) Waste Discharge Requirements General Order R5-2007-0035 for Existing Milk Cow Dairies (Dairy General Order) and the associated revised Monitoring and Reporting Program (MRP). Written comments were received from:

1. Nonprofit organizations (NPO), comments on the behalf of:
 - a. Community Water Center,
 - b. Clean Water Action,
 - c. California Sportfishing Protection Alliance, and
 - d. Food & Water Watch
2. Dunn Environmental, Inc. (DE)

The written comments on the Workplan are presented below, followed by Central Valley Water Board staff responses. In determining whether to approve the Workplan, the Executive Officer evaluates whether it meets the requirements for a representative monitoring program workplan set forth in Section III of the current MRP of the Dairy General Order. For these purposes, it is not appropriate for the Executive Officer to consider factors outside those set forth in Section III.

Some of the comments below are about the appropriateness of the Section III requirements, whether the requirements comply with the General Order or the Porter-Cologne Water Quality Control Act, or comments about the representative monitoring program in general. Those comments are not appropriate at this time. The responses below are to address the comments on the Workplan. When the comment is directed at the underlying MRP or its requirements for representative monitoring programs, that fact is noted. Where the Central Valley Water Board staff had previously responded to this type of comment, the previous response has been paraphrased and provided for the convenience of the commenter. In

doing so, the Central Valley Water Board does not waive its right to assert that comments on the underlying MRP are untimely.

**Entity A - Community Water Center, Clean Water Action, California
Sportfishing Protection Alliance, and Food & Water Watch**

COMMENT A.1: The Purpose and Structure of the Dairies Regulatory Program and Its Subsidiary Monitoring Program

The General Order is the regional water board's sole regulatory program to protect the quality of state waters from discharges to surface and groundwater by Central Valley dairies. The overarching purpose of this regulatory program is to protect water quality, as is required by law in Porter-Cologne, the relevant basin plans, and state board policies. In line with these legal requirements, the General Order requires dischargers to demonstrate compliance with state water quality laws and regulations, including (a) the California Water Code and Central Valley basin plans, which prohibit discharges that contribute to exceedances of water quality objectives in receiving waters, and (b) State Water Board Resolution 68-16 (the Anti-Degradation Policy), which is an enforceable water quality standard in the state of California and requires the regional board to limit degradation to that level which will maximize overall benefit to the people of the state and to require regulated dairies to implement Best Practicable Treatment and Control (BPTC).

Monitoring discharges from dairies is necessarily the primary mechanism for ensuring compliance with these legal requirements, as without this information, violators cannot be identified. To this end, the General Order explicitly requires dischargers to monitor groundwater “*to ensure that groundwater protection is being achieved*” (IS-9 (emphasis added)). Unfortunately, the proposed revisions to the Representative Monitoring Program (RMP) through its implementing workplan do not comply with this directive. As drafted, the workplan is nothing but a research program for the regulated industry, supposedly designed to help dairies identify best management practices. In fact, the workplan's stated goal is “*to identify dairy farm practices protective of groundwater quality (including practices currently employed in response to the General Order) using a data collection and analysis effort that targets a subset of Central Valley dairy farms*” (p. 1 (emphases added)). Pursuant to the General Order's language quoted above, the dairy monitoring program must be structured to assess compliance with all applicable water quality laws and regulations, not just to assess the efficacy of specific current practices. Nevertheless, the RMP's stated goal patently omits monitoring for compliance with water quality objectives or optimizing levels of further degradation of state water.

RESPONSE A.1: The above comments on the Representative Monitoring Program provisions in the MRP are outside the scope of this comment solicitation. To the extent that the commenter is alleging that Workplan approval will revise the Representative Monitoring Program, the Central Valley Water Board strongly disagrees. The Representative Monitoring Program provisions found at Section III of the MRP remain fully intact.

As explained when the Representative Monitoring Program provisions were added to the MRP, groundwater monitoring works in unison with other requirements of the General Order to confirm compliance. These other requirements include nutrient management and waste management planning. The Central Valley Water Board determined that the General Order, as a whole, imposed requirements consistent with the best practicable treatment or control (BPTC) required by Resolution 68-16. Groundwater monitoring is part of the overall program to verify compliance with the General Order and confirm that practices being implemented are BPTC.

The concept of representative monitoring is the monitoring of a set of dairies that represents the group as a whole. It is true that a major goal of the representative monitoring program is to verify which management practices are protective of groundwater quality and whether the hydrogeologic conditions that underlie dairies has an effect on that verification. The overarching goal of representative monitoring is to verify that dairies within the group are complying with the groundwater limitations of the General Order. If data indicate that represented dairies are not complying with the General Order, steps will be taken to bring them into compliance.

The California Water Code does not mandate groundwater monitoring; however, the Central Valley Water Board values the need for monitoring and has discretion on how monitoring is conducted. Individual monitoring is one approach and representative monitoring is an equally acceptable approach when appropriate.

COMMENT A.2: Compliance, Enforcement, and Liability

Although additional data collection and information are generally always welcome, this is not the purpose of a regulatory program, and the effect is actually to gut the dairy regulatory program, because monitoring is really the only means by which violators can be identified. By revising the RMP to become merely a research effort into best practices, the authors are ensuring that there is no mechanism for the dairy program staff on the regional water board to ensure compliance with water quality objectives and take enforcement action against individual dairies whose discharges contribute to exceedances of water quality objectives.

As the Board well knows, the California Water Code specifies that it is a regulatory agency's duty to determine compliance, not the effectiveness of the means of compliance. A program with the stated goal of identifying specific protective practices, when that program is put forth as a substitute to the individual monitoring program created by the Board to determine permit compliance, is insufficient. This is particularly the case when, in the course of determining the effectiveness of specific practices, a program allows groundwater degradation to continue unabated, with no requirements for more than 1600 existing milk cow dairies covered by the General Order to alter their existing practices to meet enforceable compliance standards.

If the Board adopts the proposed revisions, the RMP as applied will take the entire dairies General Order out of compliance with both Porter-Cologne and the State Anti-Degradation Policy. The monitoring program is the mechanism for gathering data for the entire program, but these revisions effectively make it impossible for regulators to identify individual dairies that are not in compliance with water quality standards or are degrading state waters to the detriment of the people of the state. There is no way that dairies can be required to implement protective practices if they are not being monitored, but instead are "paired" with representative dairies that are being monitored. We raised this concern repeatedly in past comments. While the regional board's dairy staff has asserted that there would not be a problem, the coalition proposal itself acknowledges that enforcement on unmonitored dairies would never stand up in court:

"In theory this may be true, however each individual dairy may state that the underlying geology has not been defined for definition of highly permeable soils or shallow groundwater. Without a geological investigation of a specific site it cannot be determined that the soils are highly permeable and the groundwater elevation is shallow. Any enforcement action based on an investigation at another location would not likely be adopted by the Regional Board, upheld on petition to the State Board or upheld by a court. Any enforcement action would need to be based on the individual site specific conditions. Collecting the data for all the dairies with the requisite permeable soils and shallow groundwater would take a significant amount of time" (p. 3 (emphases added)).

It is clear, then, that we are really talking about spending six years to monitor 18 dairies with the expectation that only those 18 dairies would be required to make any changes in order to protect groundwater. The rest of the nearly 1,000 dairies enrolled in the RMP would continue business as usual, unmonitored, and could not be required to implement BPTC. This is simply unacceptable.

RESPONSE A.2: The above comments on the General Order's compliance with Porter-Cologne and Resolution 68-16 or the sufficiency of the MRP are outside the scope of this comment solicitation. To the extent that the commenter is

alleging that approval of the Workplan will revise the Representative Monitoring Program, the Central Valley Water Board strongly disagrees. The Representative Monitoring Program provisions found at Section III of the MRP remain fully intact.

The Representative Monitoring Program Workplan reflects more than “just” a research project. The proposed Representative Monitoring Program is a program to assess compliance by identifying combinations of site conditions and management practices that are protective of groundwater quality and then having appropriate management practices implemented at participating dairies to protect groundwater quality. Part of the reason this program is being implemented is that the Central Valley Water Board, during the hearing where the General Order was adopted, asked staff to identify if there were alternative methods to assessing compliance at every dairy other than individual monitoring at every dairy. Staff believes the Representative Monitoring Program can be used to assess compliance at participating dairies. The General Order is consistent with the State’s Antidegradation Policy as detailed in Findings 28 through 31 of the General Order.

Representative monitoring is one method for dairy owners and operators to perform groundwater monitoring. As of late August when these responses to comments were assembled, an estimated 350 dairies have chosen not to join the program. Dairies that do not join a representative monitoring program will be required to implement individual monitoring in accordance with Attachment A of the MRP. The Executive Officer is continuing to issue orders for individual monitoring.

Being part of the Representative Monitoring Program does not preclude the Central Valley Water Board from pursuing enforcement actions against any individual dairymen that are part of the program and do not implement practices shown to be protective of groundwater quality. All members of a representative monitoring program are required to submit a statement to the Central Valley Water Board in accordance with Section III.13 of Attachment A of the MRP conforming that they have voluntarily joined the Representative Monitoring Program, they intend to fully comply with the MRP and the intent of the Representative Monitoring Program, and they are aware that failure to comply may result in removal from the Representative Monitoring Program and that they may be subject to enforcement by the Central Valley Water Board. Compliance with the MRP is required by the General Order and is enforceable under Section 13267 of the California Water Code.

If management practices on a specific dairy are not confirmed by the Representative Monitoring Program to be protective of groundwater quality given the site-specific conditions, the Discharger is required by the MRP to identify how their practices will be modified to protect groundwater quality in the annual report

submitted following submittal of the Summary Representative Monitoring Report. In this manner, the Central Valley Water Board will require implementation of management practices protective of groundwater quality on those dairies not specifically monitored. This procedure will enable the Central Valley Water Board to verify compliance with the General Order. Violators can and will be identified as those that have not implemented adequate management practices or that are in violation of the groundwater limitations of the General Order.

This work plan is for the Phase 1 of the program. A second phase is being required with submittal of a work plan to bring the total number of dairies being monitored to between 50 and 100 dairies. It is anticipated that implementation of phase 2 will be required by the end of calendar year 2012. Failure of the Representative Monitoring Program to verify that combinations of practices and site conditions are protective of groundwater quality will require modification of practices by Dischargers to comply with the General Order. As stated in the MRP, the range of practices and site conditions monitored by the CVDRMP must include all practices employed and conditions encountered at dairies that are part of the RMP or the combination of practices and conditions will not be considered protective. While only a subset of the dairies are actively monitored, all participating dairies are represented by these data and will be required to implement practices if such actions are found necessary based on results of the monitoring. A condition of approval is anticipated to require submittal of an acceptable Phase 2 Workplan by 1 May 2012, with implementation by the end of calendar year 2012. The work being completed in phases will not delay the due date of the Summary Representative Monitoring Report that is due six years following submittal of the first Annual Representative Monitoring Report.

COMMENT A.3: Noncompliance with State Antidegradation Policy

If the Board adopts the proposed revisions to the monitoring program, there will be no way under the General Order to determine whether dairies are causing degradation or pollution of state waters. Data collection that would facilitate such a determination has been excluded from the entire purpose of the monitoring program. Thus, these revisions will have the effect of taking the entire General Order out of compliance with the anti-degradation policy.

The state anti-degradation policy is a legally required and enforceable policy of the State Water Board. To date, the Regional Board's anti-degradation analysis has been entirely lacking with respect to the adoption of the General Order. In order to conduct a proper anti-degradation analysis going forward, the Regional Board must know the extent of existing groundwater degradation, as it is impossible to make an anti-degradation finding until the Board understands how significantly groundwater in the Central Valley has already been degraded. This will require much more comprehensive monitoring of a variety of site conditions, aquifers, and geographic regions to determine the degree and extent of

degradation. The proposed RMP monitors only 18 dairy facilities out of the nearly 1,000 that have joined the coalition, and the vast majority of monitored dairies represent only one region and site condition, which is those with shallow depth to groundwater and extremely permeable soils. The proposed revised RMP misses the opportunity to gauge the extent of groundwater pollution by dairies in different site conditions, regions and aquifers, making it impossible for the Board to conduct a proper anti-degradation analysis for the dairy program.

Moreover, operations participating in the coalition that are not located in such geographically sensitive areas – which we assume number in the hundreds – will not be asked to implement Best Practicable Treatment and Control technologies for years, since they will not be monitored or paired with dairies that are being monitored until at least six years out.

These shortcomings in the proposed revisions to the RMP reinforce our ongoing concern that the General Order is not in compliance with the state anti-degradation policy: in fact, the revised RMP would bring General Order even farther out of compliance. (The Board previously has argued that all dairies in the Central Valley would eventually have monitoring wells to detect degradation occurring, but now this has been excluded from the program and it's clear that there is no intention of ever installing monitoring wells on all dairies to determine where degradation or pollution are occurring.)

RESPONSE A.3: The above comments on the General Order's compliance Porter-Cologne and Resolution 68-16 or the sufficiency of the MRP are outside the scope of this comment solicitation. The MRP was revised to allow representative monitoring in February of this year. The submitted Workplan has been determined to be consistent with the requirements of a workplan required by the revised MRP. To the extent that the commenter is alleging that Workplan approval will revise the Representative Monitoring Program, the Central Valley Water Board strongly disagrees. The Representative Monitoring Program provisions found at Section III of the MRP remain fully intact. Resolution 68-16 was addressed and complied with through adoption of the General Order. If approved, this proposed Representative Monitoring Program would be implemented as part of the General Order.

COMMENT A.4: Unnecessary Delay

Furthermore, at this stage, if the regional board adopts these proposed revisions to the RMP, it will effectively be wasting the time and resources of everyone involved.

The proposed RMP requires annual reports during Phase 1 that include data, hydrogeologic analysis, and information on the management of the specific dairy. It will also, according to the proposal, "assess current groundwater conditions

and how they relate to historical operations” and “how dynamically changing dairy management practices... affect groundwater quality trends.” The Phase 2 annual reports, which will start at least a year but potentially longer after Phase 1 has been implemented, will “supplement the data record” and allow for conclusions that can be used to formulate management practices that better protect groundwater. A summary report on Phase 1 will be prepared within 6 years, which includes the results of data collection, findings related to historical and current dairy management practices, impacts of practices on groundwater quality, etc. The Multistakeholder Advisory Committee (MAC) will delineate management practices in response to the findings of the annual reports and then assess their feasibility. The proposal states, “subsequent implementation of management practices by the RMP will ultimately show whether they are protective of groundwater quality.”

This timeframe is unacceptably long. It allows for detected groundwater degradation to continue for at least six years before a complete analysis is done, with additional time spent while the MAC determines whether any management changes are “technically and economically feasible.”

It has been asserted that the information this work plan will generate is critical and a necessary precondition to board staff approaching individual dairies to issue enforcement actions, in that the data scheduled to be collected will provide staff with the proof they claim to need regarding the types of practices that are not protective of water quality in particular hydrogeologic conditions. However, the fact is that the regional board already has more than enough proof of the efficacy of particular practices to move forward with enforcement actions, once it identifies violators.

There have been numerous projects and studies conducted by the industry and academic researchers, both in California and elsewhere, to determine best practices on dairies to protect ground and surface water from degradation and pollution. Most notably, there is already significant research demonstrating that the existing widespread practice in the Central Valley of using unlined ponds to hold liquid cattle waste is not protective of water quality. In 2004, the Board-commissioned Brown, Vence & Associates study concluded that Title 27 lagoon requirements were insufficiently protective, and these results were even acknowledged in the General Order.

Particularly egregious is the fact that these conclusions were reached in board-commissioned studies analyzing the exact same dairies using the exact same practices on the exact same “management units” (*i.e.*, waste ponds and corals and fields) that the exact same dairy program staff personnel are now preparing to recommend be studied once again, for another six years, presumably to discover the same results and reach the exact same conclusions that the regional board has already determined. In other words, these revisions will just

delay any implementation of a real regulatory program for at least six more years. These revisions to the monitoring program therefore appear to be nothing more than a stalling tactic by the authors to protect the economic interests of the industry that is supposed to be regulated.

RESPONSE A.4: As described in written responses to comments on the MRP revisions, representative monitoring is not a waste of the time and resources of everyone involved. This particular program is designed to identify specific measures needed to ensure protection of groundwater quality, identify where improvements are needed, and thereby identify where management practices have been inadequate. The idea that the Summary Representative Monitoring Report is for Phase 1 only is incorrect. The Summary Representative Monitoring Report is for the entire program (including Phases 1 and 2) and must be completed within the time frame of the MRP from initiation of the program. Central Valley Water Board staff will shorten the timeframes of the MRP if review of data indicates that actions are needed sooner. As stated in the response to Comment A.2, a condition of approval is anticipated to require submittal of an acceptable Phase 2 Workplan by 1 May 2012, with implementation by the end of calendar year 2012. Work of the advisory committees cannot delay meeting the timeframes for submittal of the Summary Representative Monitoring Report or submittal of information in Annual Reports by individual dischargers required by the MRP.

Central Valley Water Board files contain information regarding particular management practices. However, sufficient monitoring data are not generally available in the Central Valley Water Board files to allow a determination of the efficacy of the combination of management practices and site conditions to protect groundwater quality. The majority of the dairies being monitored have not been previously monitored. In addition, most of the previous work has been conducted as part of research projects where specific information about the facilities was not presented by the researchers. The volume of monitoring data are limited and do not allow a blanket determination that specific practices should be prohibited under specific conditions. Brown, Vence & Associates concluded in their study that based on review of available data, insufficient information was available to conclude that existing regulations for dairies in Title 27 of the California Code of Regulations (Title 27) are effective in protecting groundwater quality. They did not conclude that specific practices should be prohibited. One of the primary goals of representative monitoring is to collect sufficient data to answer those questions.

COMMENT A.4' (labeled A.4 in the comment letter): Conflict of Interest

We reiterate our belief, stated in numerous previous comments submitted to the Dairy Program staff, that a coalition group paid by the dischargers should not be in charge of designing a monitoring program, the goal of which, according to the

general permit, is to determine regulatory compliance. Because the coalition group is paid by and directly accountable to the dischargers, coalition groups have a conflict of interest when it comes to designing a program that can sufficiently identify and report violations. The Board's mandate is to protect beneficial uses, and there is no reason to assume that coalition groups would carry out this mandate.

The revisions to the RMP put forth by the dairy industry would transform the RMP into a liability shield, whereby no individual dairy (except the handful that will actually be monitored directly pursuant to the proposed workplan) can be held accountable for violations of the water code and basin plans. The revisions would also delay the implementation of a real regulatory program with the means to enforce compliance with water quality laws for another decade. We have no doubt that this structure proposed by the dairy industry is intentional, and this substantially reinforces our concern about the structure of a monitoring program that is designed and administered by a coalition group that is paid by the dischargers. The proposed design demonstrates not just that a conflict of interest exists, but that the coalition group is acting on its conflict of interest.

Notably, the work plan envisions creating technical advisory committees that consist of scientific and engineering experts, academics, regulators, and "dairy farm representatives", *i.e.*, policy advocates for the impacted industry. Notably missing from this list are residents from disadvantaged communities that are impacted by groundwater contamination attributable to dairy farm discharges, or their policy advocates, or even representatives of environmental interests, all of whom are just as impacted by the outcome of the dairy regulatory program and its subsidiary monitoring program as the dairy farmers. Again, such a structure that excludes significant impacted stakeholders, and yet would include policy advocates for dairy farmers, is fundamentally flawed and further reinforces the existence of a conflict of interest on the part of the drafters of the proposed revisions.

RESPONSE A.4':

Central Valley Water Board staff does not agree. Discharger-directed or self-prepared monitoring reports that contain interpretation of geologic or engineering data or conclusions to be signed by an appropriately registered professional is the standard for parties regulated by the Central Valley Water Board to comply with WDRs. Groundwater monitoring conducted to comply with the General Order is self directed and the RMP is consistent with this requirement. Representative Monitoring Program reports that present geologic or engineering interpretations or make conclusions based on those data will have to be signed by an appropriately registered professional engineer or geologist.

Each person signing a report required by the General Order is also required to make the following certification

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment,”

As stated in responses to comments above, enforcement can and will be pursued against Dischargers that do not comply with the General Order including the MRP. The Workplan does not provide a liability shield.

While not required by the MRP, Central Valley Water Board staff support the formation of the committees being put together by the CVDRMP so the best answers to the questions being asked can be developed and adequate improvements implemented to ensure protection of groundwater quality. In addition, Central Valley Water Board staff will conduct Stakeholder Meetings, open to the public with all Stakeholders invited. The Stakeholder Meetings will be conducted at six-month intervals at least through submittal of the Summary Representative Monitoring Report. Stakeholder Meetings will continue beyond submittal of the summary report, although the frequency could change, as long as interest continues.

Members of the technical committees have not yet been determined. If qualified technical experts wish to participate in these committees, please forward their resumes to Central Valley Water Board staff for consideration and potential recommendation to the CVDRMP for inclusion on the committees.

COMMENT A.5: Reduced Water Quality Protection through Selection of Monitored Facilities

The Basin Plans charge the Board with ensuring the protection of beneficial uses, which include domestic and municipal supply. Consistent with this duty, in the General Order’s individual monitoring program, the Executive Officer laid out criteria for prioritizing dairies for groundwater monitoring. These included proximity to domestic and municipal supply wells and groundwater recharge areas. In numerous previous comments submitted to the Executive Officer and staff, we asserted that in order to protect these beneficial uses sufficiently, any representative monitoring program would need to prioritize the monitoring of dairies located near domestic or municipal supply wells, although all groundwater with designated beneficial uses must be protected against impermissible degradation and pollution. No such criteria have been incorporated into the

proposed RMP. This means that the proposed RMP offers reduced protection compared to the individual monitoring program in the General Order.

RESPONSE A.5:

The primary decision on which dairies to monitor in Phase 1 has been based on the layout of the dairy and an assessment of whether there would be interferences from other sources in evaluating the data. This has been done so that collected data can be extrapolated to dairies that do not have groundwater monitoring wells. A critical issue in Phase 2 will be to cover the range of practices and site conditions. Dairies on the east side of the Central Valley, particularly in the Tulare Lake Basin will be selected for monitoring as this is a high priority area because of nitrate issues in the area. An effort will be made during Phase 2 to include dairies where groundwater from domestic water supply wells contain nitrates at concentrations greater than the maximum contaminant level for nitrates listed in Title 22 of the California Code of Regulations. This monitoring regime adequately addresses the requirement in Section III of the MRP that the Workplan explain how data collected at facilities that are monitored will be used to assess impacts to groundwater at facilities that are not part of the Representative Monitoring Program's network of monitoring wells.

COMMENT A.6: Reduced Water Quality Protection through Limited Monitoring of Constituents of Concern

The General Order states the following:

“This General Order requires dischargers to monitor groundwater to ensure that groundwater protection is being achieved.... [The Order] will reduce impacts to surface water and groundwater at existing milk cow dairies by *requiring Dischargers to demonstrate compliance with State Water Board Resolution 68-16,... Title 27 CCR for confined animal facilities, and the Basin Plans*”

(p. IS-10, emphasis added).

The proposed RMP would monitor for total dissolved solids (TDS), nitrate and ammonia on a quarterly basis and for general minerals, nitrate, nitrate, ammonia and TKN on an annual basis. We are very glad to see quarterly monitoring for three constituents of concern. As we have stated numerous times in previous comments, however, the Central Valley Basin Plans also contain numeric criteria for coliform bacteria, which the current draft RMP does not propose to monitor. The draft RMP also leaves out electro conductivity (EC), one of the primary contaminants in the General Order's individual groundwater monitoring program and a key threat to the Central Valley's groundwater.

The General Order reviews contaminant limitations for receiving waters for dairies and lists “the most stringent limitations to implement narrative and numeric water quality objectives” as those for total coliform, ammonia-nitrogen, boron, chloride, nitrate-nitrogen, EC and TDS (IS-17.) The Order then notes that “[l]ess stringent limitations may apply to different areas but can only be determined through a site-specific assessment.” The proposed RMP leaves out several of these contaminants without conducting a site-specific assessment and is therefore out of compliance with applicable water quality laws and regulations. The fact that the individual monitoring program is also out of compliance does not abdicate the coalition from the responsibility of meeting these requirements in its RMP.

Applicable law obliges the Board to institute a monitoring program that is not only able to identify whether groundwater has been impacted generally by degradation or pollution, but, if it has been, is also able to identify *which* constituents threaten beneficial uses for that particular location and do so for the constituents identified in the Basin Plans and other relevant laws and regulations.

RESPONSE A.6:

This comment is directed at adequacy of the underlying MRP, not whether the proposed Workplan complies with Section III of the MRP. Central Valley Water Board staff previously responded to this comment when it revised the MRP. The Central Valley Water Board is aware of potential impacts to groundwater from other constituents. The monitoring program in the MRP was designed to identify whether groundwater at dairies is being impacted by site activities and the representative monitoring program is consistent with the MRP. To that end, the representative monitoring program (as well as individual monitoring) concentrates on primary indicator parameters to identify whether groundwater quality has been impacted. The list was not intended to be an all inclusive list of every constituent that could potentially affect groundwater. The representative monitoring program requirements in the MRP require the list of constituents to be adequate to assess whether facilities being monitored are impacting groundwater quality. If additional constituents are needed, the Executive Officer has the authority to require analysis for additional constituents.

This proposed Representative Monitoring Program was designed with the constituents included. As data are evaluated the Representative Monitoring Program may address additional constituents in the future.

COMMENT A.7: Suggested Improvements

Instead of implementing unnecessary additional delays, the Board can and should acknowledge now that the discharge of pollutants to highly permeable soils over shallow groundwater will result in unacceptable degradation or

pollution. If contamination is detected in a downgradient well that was not detected in a well upgradient of the facility, then the facility should be found to be degrading groundwater and required to implement best practicable treatment and controls (BPTCs), including but not limited to lagoon liners and reduced application of dairy wastewater to fields. If the facility is contributing to exceedances of the water quality objectives and the stated groundwater limitations of the General Order, enforcement should be taken immediately, not after six years. Finally, if downgradient wells show contamination compared to upgradient wells, that constitutes a violation of the basin plans and the water code and should be reported immediately to the Board, not held over until it can be included in the Annual Report.

First and foremost, the Board should conduct more targeted monitoring by trying to identify where there are already exceedances of water quality objectives that impact community drinking water supplies and thus public health. (This can be done easily through testing domestic drinking water supply wells in the vicinity of dairies.) For those areas where this testing (or other testing done by the water supplier) demonstrates that constituent(s) of concern potentially associated with local dairies (such as nitrates) exceed the Maximum Contaminant Level, the Board should then require that monitoring wells be installed at dairies in these regions, or otherwise conduct more intensive studies through the RMP, to ensure that local dairies are not contributing to exceedances of water quality objectives and that impermissible levels of degradation are not occurring in these vulnerable areas that negatively impact human health. This is a very basic and fundamental element of a regulatory program to protect water quality from dairy discharges, and it is missing from the current proposed revisions to the monitoring program and its implementing work plan.

Additionally, the Board could accelerate its ability to make adjustments and fine tune the effectiveness of its monitoring program and its compliance enforcement abilities by requiring through the RMP that all participating dairies identify and report which management practices they are using and what kind of hydrological environment they are situated in, now, not six years from now. The Board should incorporate that information together with monitoring results to make decisions in real time to issue permeability standards for various categories of dairies utilizing particular combinations of practices in particular hydrological environments. We reiterate, the Board does not need to wait an additional six years before beginning such a process. Furthermore, where this information demonstrates that impermissible degradation or pollution is occurring, *i.e.*, that particular participating dairies are engaging in practices that are known not to protect water quality in a vulnerable environments, the Board should issue enforcement actions against those dairies in real time, not six years from now. In fact, it is illegal under Porter-Cologne and the Basin Plans for the Board *not* to do this.

RESPONSE A.7:

This comment is directed at adequacy of the underlying MRP, not whether the proposed Workplan complies with Section III of the MRP. As such, these comments are neither timely nor within the scope of this comment solicitation.

In regards to the comment that the Representative Monitoring Program will not allow for enforcement of the General Order's groundwater limitations, please see the responses to comments above. One of the primary goals of the representative monitoring program is to determine whether these limitations are being met. If dairies are not implementing practices found to comply with the groundwater limitations of the General Order, they will be required to upgrade their practices or else be subject to enforcement and/or individual permitting. The upgraded practices could include engineered liners for lagoons or reduced application of dairy waste to land application areas. Data will be required to be tabulated and submitted as they become available; however, assessment of the data by the CVDRMP will be conducted as part of the Representative Monitoring Program Annual Reports. Actions will be taken as data become available and if data indicate actions are needed sooner than the time schedules in the MRP, the Executive Officer has the authority to require actions be taken sooner.

The 50 to 100 dairies that will be monitored in Phase 2 of the representative monitoring program will include dairies in a wide range of conditions. Unfortunately, there are a number of different sources that are probably contributing to nitrates in areas where the MCL for nitrates is exceeded in deeper wells. A concentrated effort such as proposed by the CVDRMP is needed to identify the contributions by dairies. As data become available, additional monitoring may be needed and the Executive Officer has the authority to require participants to undertake individual monitoring.

The request is made that participating dairies should be required to report their site-specific conditions at the beginning of the program and not after the Summary Representative Monitoring Report has been submitted. The requirement for individual dischargers to report site specific information is part of the MRP and not required to be included as part of the workplan.

COMMENT A.8: Additional Technical Concerns

The concerns above constitute the bulk of our feedback on the proposed RMP. In addition, there are several smaller technical concerns that we want to raise with the content of the RMP. Below are various quotes from the document, followed by our responses and questions.

On Page 3:

“Groundwater monitoring efforts will target the uppermost zone of first encountered groundwater beneath three distinct management units, i.e., the liquid manure storage ponds, corrals, and manure applied forage fields.”

Saline water is more dense than clean water. Therefore, saline water tends to sink. If monitoring wells are only screened to monitor the upper portion of an aquifer, the most saline water may be missed and the sample would not be representative of the condition of the aquifer. Of course, the proposed RMP does not monitor for EC, which we think is a significant oversight.

“Traditional regulated units are designed to not recharge groundwater, whereas irrigated agriculture depends on sufficient leaching of salt residue beyond the crop root zone to avoid increasing soil salinity and associated soil degradation and crop losses (and some recharge is also expected from corrals and liquid manure storage ponds).”

This is a critical comment since the area being discussed is an area with highly permeable soils and shallow groundwater. Applying pollutants to highly permeable soils with shallow groundwater while intentionally leaching salts from the root zone will undoubtedly result in additional pollution migrating to groundwater.

“Typically, constituents of concern related to traditional regulated units are not commonly found in natural groundwater systems (e.g., petroleum products), and a detection in a downgradient well provides evidence that the regulated unit leaks (given that this constituent is not detected in the upgradient well). This is in contrast to irrigated agriculture, where constituents of concern (i.e., mainly nitrate and other salts) are ubiquitous in groundwater systems.”

This should not have any bearing or consequence on the program. Regardless of the background level of contaminants in the groundwater, if downgradient wells show an increase in the level of contamination compared to wells upgradient of the facility, then the discharger has affected the quality of the water. The potential for upgradient presence of constituents of concern (at lower concentrations than downgradient) should not distract from the basic question at hand, which is whether the facility degrades or pollutes state waters, or not. In taking enforcement action against a wastewater treatment plant, the Regional Board requires the Discharger to prepare a corrective action plan, typically under an enforcement action, but ultimately the responsibility of compliance – including determining the source of pollution – lies with the Discharger. The monitoring program should simply determine overall compliance: does a dairy degrade or pollute groundwater?

“Groundwater sampling should occur in the upper few feet of the groundwater column to avoid mixing of (younger) groundwater originating under the targeted management unit with (older) groundwater from source areas upgradient of the targeted management unit.”

This would only occur in an aquifer that has great depth (where depth means the thickness of the aquifer). Most of the shallow (first encountered) groundwater aquifers are not hundreds of feet thick. In an aquifer approximately 10 feet thick, for example, it would be difficult to separate the “older” water from the “newer” water. A critical point here is that different pollutants have different densities. Some will tend to float and some will tend to sink based on their relative density. We would be more concerned about accurate pollutant concentration sampling than the age of the water. This accounts for the difference between monitoring to determine compliance and to determine the impacts of recent actions by the discharger.

“As a corollary to the above, the concept of comparing downgradient to upgradient groundwater quality as a means to determine potential groundwater degradation loses its utility in recharge-dominated systems.”

Comparing upgradient and downgradient waters to determine the impacts of a wastewater discharge must account for all the waters and constituent loading rates. Such accounting does not lose its utility in recharge-dominated systems, but is in fact the only means of determining whether the Discharger complies with the terms of its permit.

Finally, we note that the repeated mention of the contribution of historical operations and practices raises serious concerns for us. It paints a scenario in which even if groundwater quality is found to be degraded by the facility, the discharger could argue that it is a result of past practices, not current ones, and that therefore, no management changes should be required. This could theoretically go on forever. The emphasis on historical analysis is also completely unnecessary based on the coalition’s own claims about the dairies to be monitored. The proposal claims to have chosen dairies for Phase 1 monitoring that are present in “those areas in the Central Valley where high groundwater nitrogen and salt concentrations are thought to be substantially attributable to dairy operations and where *changes in water quality are most likely to be detected quickly due to adoption of management practices* required by the General Order” (emphasis added).

RESPONSE A.8:

The postulation that saline water is denser than fresh water and will sink over time is correct. This can be seen in the Central Valley by saline water underlying usable groundwater or what is known as “the base of fresh water.” However, the

density differences are small and considerable time is needed for this “differentiation” to occur. The reason to sample the uppermost groundwater is so any impacts can be clearly tied back to the facility from which the sample was collected and to also allow evaluation of whether changes from management practices that were not protective of groundwater quality to improved management practices are effective. Effects of recharge and discharge within the aquifer greatly outweigh any movement caused by density differences of different quality groundwaters.

Leaching of salts from cropland is an issue with both the dairy program and the irrigated lands regulatory program. It is a common practice of agriculture to leach salts from the root zone to prevent salts from reaching toxic levels in the root zone of the soil profile. This is an issue both programs in coordination with CV SALTS are addressing.

If it is determined that a dairy is not in compliance with the groundwater limitations of the General Order, Central Valley Water Board staff will require corrective steps to be taken, or exclusion of the facility from coverage under the General Order. Enforcement action, on a case-by-case basis, will be taken if needed to achieve compliance.

The discussion of older versus younger water in the Workplan is related to identifying sources from the specific activity targeted by the monitoring and identifying the impacts recent practices are having on groundwater. Older versus newer groundwater is not an issue when enforcement action is being considered. The issue of densities was discussed in the first paragraph of this response. The comment about upgradient versus downgradient comparisons being the only means of determining compliance is incorrect. If the water being sampled is recharged locally (as in an irrigated field i.e., recharge dominated system) comparison of the quality of the water sampled to the groundwater limitations is appropriate as there is limited to no mixing in that zone by upgradient waters. By sampling recently recharged groundwater, the issue of influence from past practices is minimized.

Entity B - Dunn Environmental, Inc.

These comments are summarized and have not been presented in their entirety

COMMENT B.1: Groundwater Elevation

The Workplan does not adequately address variability in groundwater elevations due to regional and local pumping. Time-series hydrographs for nearby California Department of Water Resource (DWR) wells should accompany the

analysis for each site to help determine well depths, screen lengths, and impacts to first encountered water mixing zones.

RESPONSE B.1:

The hydrographs for nearby wells are being evaluated. DWR depth-to-groundwater contours most closely represent “unconfined” groundwater conditions in the Central Valley. These maps were used by the consultant in its Report of Results as one of seven criteria to select the area for initiation of the RMP. DWR’s groundwater elevation contour maps indicate “Unconfined Aquifer.” They cannot be relied upon to represent first encountered groundwater as these maps are comprised of a variety of wells (e.g., domestic, observation, municipal, and agricultural) and often have long screens (or unknown screen length and position).

Knowledge of local groundwater conditions is important for well design. Analysis of individual time-series hydrographs (as available) is in progress by the consultant. The analysis includes, for example, data from Turlock Irrigation District, Central California Irrigation District, and DWR. In addition, extensive anecdotal information was collected during site visits from both farmers and trade organization representatives.

COMMENT B.2: Groundwater Monitoring Wells Design

Site-specific hydrogeologic conditions should govern the position of the screened intervals. Existing well logs and a phased approach test boring programs should be used to develop hydrogeologic cross sections in the field to verify that a single monitorable and continuous aquifer is being targeted.

RESPONSE B.2:

The well specifications in the Phase 1 Representative Monitoring Program Workplan are generic to allow for site-specific modifications. Site-specific hydrogeologic conditions will be developed by the consultant in a phased manner during drilling and, in conjunction with individual time-series hydrographs (see above), will be used for actual monitoring well design. Compilation of lithologic and hydrologic information will commence with the first monitoring well and continue throughout the well installation project to aid in monitoring well design. Well log information from existing dairy farm wells (as available) will facilitate monitoring well design. However, the distances between proposed monitoring wells, their expected shallow completion, and the expected absence of marker beds do not lend themselves to creating hydrogeologic cross-sections. It is neither assumed, nor is it necessary to assume that a “single monitorable and continuous aquifer is being targeted” on each dairy farm. It is likely that

groundwater elevations from monitoring wells will in many cases be used for specific Management Units, not dairy wide.

The CVDRMP is charged with monitoring first encountered groundwater. In some cases, first encountered groundwater may be perched; and CVDRMP will be charged to monitor *that* first encountered (perched) groundwater. Importantly, for Management Unit-specific groundwater data interpretation, regional groundwater quality trends or the question of whether groundwater is perched are secondary.

COMMENT B.3: Soil Sampling

The Workplan states that soil samples will be collected every five feet during drilling. Continuous soil samples should be collected in environments where sands and clays are heavily interbedded. To help assess confined or unconfined groundwater conditions and to help determine the placement of the monitoring well, sufficient time should be provided for water levels to stabilize within the borehole.

RESPONSE B.3:

The Workplan states that soil samples will be collected at least every five feet and at the bottom of each borehole. The consultant for the CVDRMP has indicated that samples will also be collected at material changes and more frequent sampling performed if needed to understand the subsurface hydrogeology.

It is agreed that accurate information on first encountered groundwater during drilling and stabilized groundwater levels in test borings provide important information for good well design.

COMMENT B.4: Data Needs and Statistical Analysis

Can sufficient background data be collected to perform statistical analyses within the timeframe discussed in the Workplan?

RESPONSE B.4: Yes.

COMMENT B.5: Determining Compliance

The criteria that will be used to determine impacts to groundwater are unclear. Will an Antidegradation analysis be part of the assessment?

RESPONSE B.5:

The criteria to determine impacts will be the water quality objectives. Compliance with the Antidegradation Policy is addressed by the Dairy General Order. The Dairy General Order prohibits all facilities from causing further degradation to groundwater. Any dairy that is causing further degradation of groundwater is violating the Dairy General Order. If further degradation cannot be eliminated by modification of management practices, such facilities cannot be permitted under the General Order; instead, they must apply for a separate, individual permit. Any individual waste discharge requirements for dairies causing further degradation of groundwater would be subject to all the laws, regulations, and policies of the Water Boards, including the Antidegradation Policy.

COMMENT B.6: Non-dairy Impacts

The non-dairy land use information component of the draft Report of Results (Attachment A) needs further detail. Non-dairy impacts may not be fully explored and should be discussed when reporting on the individual sites.

RESPONSE B.6:

One of the goals of the RMP is to identify impacts caused by dairies. Non-dairy impacts will have to be considered to identify the impacts caused by dairies.

COMMENT B.7: Clarification on Attachment A

Attachment A indicates that multiple exceedances of nitrate as nitrogen were identified in the 1960's. Did these exceedances occur at multiple wells and/or multiple exceedances from the same wells?

RESPONSE B.7:

Figure 12 in the Report of Results, included as Attachment 1 of the Workplan, does not differentiate between well sites with single or multiple maximum contaminant level exceedances. Any well with at least one concentration value that falls within the specified range is shown in that category. Each symbol on Figure 12 represents one well.

COMMENT B.8: Clarification on Attachment A

In Attachment A, it is unclear what factors were used to determine groundwater recharge. The U.S. Geological Survey's (USGS) Central Valley Hydrologic Model (CVHM) does not appear to be available for review.

RESPONSE B.8:

Groundwater recharge rates were obtained from the CVHM output files (see Report of Results Section 5.3, Attachment 1 of the Workplan). The CVHM is available for public review and can be downloaded at <http://pubs.usgs.gov/pp/1766/>.

COMMENT B.9: Stabilization Parameters

Dissolved oxygen is a valid stabilization parameter for micro purge techniques, but not for the macro purge technique proposed in the Workplan.

RESPONSE B.9:

According to the consultant for the CVDRMP, temperature, pH, and electrical conductivity will be the primary stabilization parameters. The consultant states that a 10 percent range for stabilization for dissolved oxygen and oxidation reduction potential will be more attainable during purging activities.