

February 18, 2014

140055:EC

Ms. Margaret Wong  
Central Valley Regional Water Quality Control Board  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670-6114

Sent via e-mail to MAWong@waterboards.ca.gov

Subject: Sacramento River Source Water Protection Program Comments on ILRP Tentative WDRs General Order for Sacramento Valley Rice Growers

Dear Ms. Margaret Wong:

On behalf of the Sacramento River Source Water Protection Program (SRSWPP), thank you for the opportunity to provide comments on the Irrigated Lands Regulatory Program (ILRP) Tentative Waste Discharge Requirements General Order for Sacramento Valley Rice Growers (Rice Order). The SRSWPP is sponsored by the City of Sacramento and the Sacramento County Department of Water Resources; this program is coordinated with other agencies that draw their drinking water from the Sacramento River (or have plans to do so), including the City of West Sacramento, East Bay Municipal Utility District, and the Woodland-Davis Clean Water Agency. We serve drinking water to more than 600,000 people in Northern California.

Watershed management programs are essential for preserving the high quality of the Sacramento River watershed. The Central Valley Regional Board and other regulatory agencies, regulated communities, and educational organizations have made significant strides. We appreciate the substantial efforts of the ILRP and the California Rice Commission (CRC) to protect water quality. The SRSWPP supports the overall framework of the tentative Rice Order. We support adoption of the Tentative Rice Order with minor - but important - modifications to the Monitoring and Reporting Program, which are specified below.

The SRSWPP seeks to maintain the high quality of the Sacramento River drinking water supply for the current and future generations. It is our responsibility as water utilities to ensure that our water is both healthful and free of any unpleasant taste, odor, or other aesthetic effects. We have been actively providing stakeholder input during the development of the Long-Term Irrigated Lands Regulatory Program (ILRP) orders, because they have the potential to impact source water quality for current and future water quality constituents of interest.

Source water protection is part of a "multi-barrier" approach to providing safe drinking water. Drinking water treatment alone cannot always be successful in removing contaminants. Even in cases where treatment is an option, treatment can be substantially more costly than source water protection. We rely on management programs, including the Long-Term ILRP, as part of the source water protection in the Sacramento Valley.

Over the last two decades, on many occasions the City of Sacramento and City of West Sacramento have detected pesticides at our water treatment plant intakes on the Sacramento River that are used only on rice. The presence of rice pesticides at our intakes demonstrates that there are pathways for water pollutants in rice discharges to reach downstream water supplies. In addition, our ongoing drinking water source assessments continue to identify agriculture as a significant potential contaminating activity in our watershed. We appreciate the efforts of the rice industry and regulatory agencies through the Rice Pesticide Program, which have resulted in significant reductions in frequency and detected levels of thiobencarb in the Sacramento River. We support the continued management of thiobencarb through the existing Rice Pesticides Program, as noted in the tentative Rice Order.

Agriculture, including rice cultivation, has the potential to contribute numerous constituents of interest to our source water. Our key interests for the Sacramento River drinking water supply, in addition to pesticides, include turbidity, organic carbon, and pathogens. Historical data collected as part of the ILRP indicates that these constituents are contributed by agriculture, so we support their inclusion in this long-term Order by monitoring and implementing control measures, as appropriate.

Our comments on the Tentative Rice Order include the following three remaining issues on the Attachment B Monitoring and Reporting Program (MRP), with corresponding suggested modifications. We recognize that there may be other solutions to address the issues, and we welcome those ideas and further discussion.

1. Limited Representative Monitoring during Non-Irrigation Season

Limited monitoring for field measurements and general physical parameters is requested during the non-irrigation season at the four primary monitoring sites. We request that the assessment and modified assessment monitoring be modified to add the winter drainage of a significant acreage of rice, which typically occurs in mid-February or March. This information will fill an important data gap for organic carbon and related constituents.

Total organic carbon (TOC) in the water column is a surrogate measure of disinfection by-products (DBP) precursor material in water. TOC levels in either source or treated water are used to determine treatment requirements in the Stage 1 Disinfectant/Disinfection By-Product Rule (D/DBP Rule). Disinfectants used in drinking water treatment can react with the naturally-occurring portion of organic carbon in the water to form byproducts, such as trihalomethanes and haloacetic acids, which are both defined by EPA as carcinogens, and may pose health risks. Organic carbon is recognized in the chemical constituents narrative of the Basin Plan, as per the Delta Drinking Water Policy, and therefore must be evaluated as part of the Long-Term ILRP. Protection of the municipal and domestic beneficial use should include looking at the cumulative effects of watershed activities and ensuring that reasonable efforts are made to prevent degradation in the long-term.

Please see **Attachment 1** for suggested modifications to the MRP and additional supporting information for this request.

2. Annual Monitoring Report (AMR) to include discussion of trends of degradation that may be occurring.

It is important that the AMR requirements include review for trends of degradation and discussion, to help ensure protection of beneficial uses and to protect the high quality of the Sacramento River water supply. We request that the AMR include a similar review as in Report Component No. 18 – Evaluation of Monitoring Data, in the Sacramento River Watershed Tentative Order.<sup>1</sup> We believe that a frequency of two years out of the five year monitoring cycle should be sufficient evaluation to identify trends, unless there have been any water quality objective or trigger limit exceedences in any given year.

We refer to page 3 of our September 13, 2013 comments on the Administrative Draft Order for discussion of the importance of the monitoring program design to detect degradation and provide response mechanisms. We believe that review of trends of degradation in the AMR support this important need.

3. Clarification of discussion of Table 7 to provide for future adaptability

We understand that Table 7, Basin Plan Numeric Water Quality Objectives for the Sacramento River Watershed, provides the current numeric water quality objectives which Board staff have evaluated and determined may be applicable to this order. We request clarification of the discussion of Table 7 to ensure adaptability to address the potential for future additional constituents of interest.

The text on page 35 currently states that “Table 7 of this MRP lists Basin Plan numeric water quality objectives and NTR/CTR criteria for constituents of concern that may be discharged by Growers. We request that a sentence be added immediately after this sentence, stating that there may be other constituents with numeric water quality objectives that could be present in the discharge and those objectives apply as well.

We appreciate the efforts of Regional Board staff and the CRC to meet with us and discuss our comments and interest. We also would like to take this opportunity to provide our recognition and support of some of the key changes that are included in the Tentative Rice Order.

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<sup>1</sup> See the Sacramento River Watershed Tentative Order Attachment B – MRP, page 31:

**Report Component No. 18 — Evaluation of Monitoring Data**

The third-party must evaluate its monitoring data in the Monitoring Report in order to identify potential trends and patterns in surface and groundwater quality that may be associated with waste discharge from irrigated lands. The third-party must specifically determine whether there are any trends in degradation that may threaten applicable beneficial uses. As part of this evaluation, the third-party must analyze all readily available monitoring data that meet program quality assurance requirements to determine deficiencies in monitoring for discharges from irrigated agricultural lands and whether additional sampling locations or sampling events are needed or if additional constituents should be monitored. If deficiencies are identified, the third-party must propose a schedule for additional monitoring or source studies. Upon notification from the Executive Officer, the third-party must monitor any parameter in an area that lacks sufficient monitoring data (i.e., a data gap should be filled to assess irrigated agriculture’s effects on water quality).

The third-party should incorporate pesticide use information, as needed, to assist in its data evaluation. Wherever possible, the third-party should utilize tables or graphs that illustrate and summarize the data evaluation.

- Pesticides Monitoring

We appreciate the addition of the following language on the pesticide monitoring evaluation process (*shown in italics*) on page 4 of the MRP:

“The CRC shall propose the pesticides<sup>6</sup> to be monitored in their Annual Monitoring Report and provide the rationale for their proposal. *The pesticides to be monitored shall be reviewed as part of a rice-specific process by Water Board staff that includes input from qualified scientists and coordination with the Department of Pesticide Regulation.* Once the list is approved by the Executive Officer, the CRC shall monitor the list of pesticides in accordance with the terms and conditions of this MRP.

<sup>6</sup>Pesticides may include environmentally stable degradates of the registered active ingredient if acceptable analytical methods to detect the degradate are available (acceptable analytical methods are defined in Attachment C, Order No. R5-2010-0805 Monitoring and Reporting Program for California Rice Commission, Quality Assurance Project Plan Guidelines (QAPP Guidelines), and any revisions thereto approved by the Executive Officer). Potential degradates to evaluate will be identified through Central Valley Water Board and CRC consultation with the Department of Pesticide Regulation.”

- MRP Revisions

We appreciate the language on page 1 of the MRP that, along with other portions of the Rice Order, clarifies the Regional Board’s ability to modify the monitoring program to adapt to future needs:

*The Central Valley Water Board or Executive Officer may revise this MRP as it applies to the CRC or Growers governed by the Order. The Central Valley Water Board or Executive Officer may rescind this MRP and issue a new MRP as it applies to the CRC or Growers governed by the Order.*

- Proposed Surface Water Limitations

We appreciate the language on page 16 of the WDRs to include a trend of degradation (*shown in italics*):

III. Receiving Water Limitations  
A. Surface Water Limitations

1. Wastes discharged from Grower operations shall not cause or contribute to an exceedance of applicable water quality objectives in surface water *or a trend of degradation* that may threaten applicable Basin Plan beneficial uses, unreasonably affect applicable beneficial uses, or cause or contribute to a condition of pollution or nuisance.

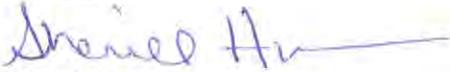
Our comments on the Tentative Rice Order follow up on our prior comments on the Administrative Draft Order, submitted on September 13, 2014. We request inclusion in the record the discussion on antidegradation provided on pages 2-4 of our September 13, 2013 comment letter, as this discussion may be important for the Regional Board to consider further during the long-term implementation of this order.

We appreciate the opportunity to discuss our stakeholder perspectives with Regional Board staff and the CRC. If there are significant changes made to the Rice Order or its attachment, prior to the March 27 or 28 public hearing, we request another public comment period.

Thank you for considering our comments and requests. We appreciate the public outreach efforts of the Regional Board on the ILRP, and the thoughtful discussions and responses to our stakeholder input.

Please contact Elissa Callman at 916-808-1424 if you have any questions or would like to discuss our comments. We look forward to working cooperatively with Regional Board staff on the completion of this order, and we look forward to working with your staff and the CRC during the implementation of the order.

Sincerely,



Sherill Huun  
Supervising Engineer

Cc:

Joe Karkoski, Central Valley Water Board  
Susan Fregien, Central Valley Water Board  
David Duncan, CDPR  
Nan Singhasemanon, CDPR  
KayLynn Newhart, CDPR  
Ali Rezvani, CDPH  
Dave Brent, Director  
Joe Robinson, Senior Deputy City Attorney  
Bill Busath, Engineering & Water Resources Manager  
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Pravani Vandeyar, Water Quality Superintendent  
Dave Phillips, Water Treatment Superintendent  
Forrest Williams, Sacramento County Department of Water Resources  
Vicki Butler, Sacramento County Department of Water Resources  
Dan Gwaltney, Sacramento County Department of Water Resources  
Dan Mount, City of West Sacramento  
Hubert Lai, EBMUD  
Elaine White, EBMUD  
Jacques DeBra, Woodland-Davis Clean Water Agency  
Tim Johnson, CRC  
Roberta Firoved, CRC

## **Attachment 1. Additional Information on Comment 1**

The following are requested modifications to Attachment B – MRP:

Pages 2-3, items B.1 and 2. *Suggested additions shown in italics.*

### III. Surface Water Monitoring Requirements

#### 1. Assessment monitoring

Assessment monitoring shall include field and general parameters, nutrients (nitrate + nitrite as nitrogen and total ammonia as nitrogen), at least two pesticides identified by CRC after evaluation and assessment as specified in Section III.C., and water column and sediment toxicity testing (Table 3). The Executive Officer may require monitoring of more than two pesticides if the Executive Officer determines that insufficient information is available to assess the potential threat to water quality of a pesticide or that available information suggests there could be a water quality threat associated with a pesticide. The pesticides shall be monitored twice during their peak use month and twice in the following month. Sediment toxicity, sediment TOC and grain size testing shall occur once during the pre-harvest drainage. The monitoring schedule for each pesticide shall be tailored to the peak use and/or time periods when the pesticides (respectively) are likely to be discharged to surface water. Water column toxicity testing with *Ceriodaphnia dubia* and *Pimephales promelas* shall occur during two monthly events when pesticides are monitored. For *Selenastrum capricornutum*, toxicity testing shall start during the month when pesticides are first applied and continue for a total of three months. Assessment monitoring shall begin when most rice fields start pesticides application and end with the *pre-harvest drainage and then re-start to include the winter drainage period, monitoring only the field measurements and general physical parameters at the primary sites during this period (see Table 3).*

#### 2. Modified assessment monitoring

Modified assessment monitoring shall include the field and general parameters, nutrients, and two pesticides (Table 3) selected based on results from the prior assessment year. The two selected pesticides shall be monitored twice during their peak use month and twice in the following month. The monitoring schedule for each pesticide shall be tailored to the peak use and/or time periods when the respective pesticides are likely to be discharged to surface water. The monitoring period shall be for at least two months of the growing season *and then re-start to include the winter field drainage period, monitoring only the field measurements and general physical parameters at the primary sites during this period (see Table 3).*

The following is additional supporting information:

Total organic carbon (TOC) monitoring in the water column is currently included in the Tentative Rice Order in assessment and modified assessment monitoring, which will occur twice monthly during the irrigation season (April/May through August) for two out of every five years, at seven sites. The addition of monitoring at the four primary sites in the timeframe of the February or March winter discharge that occurs for a significant amount of acreage planted to rice will provide important up to date representative data on this important water quality constituent. The field measurements and other general physical parameters listed in Table 3 of the MRP will all provide useful data.

The Tentative Rice Order includes the chemical constituents narrative water quality objective per Information Sheet (Att A), Section XV – Water Quality Objectives, and this objective is explained with regards to how to be interpreted in the Monitoring and Reporting Program (MRP) (Att B) Section VII – Water Quality Triggers.

The Regional Board’s Delta Drinking Water Policy specifically determined that organic carbon is to be included in the chemical constituents narrative as follows:

Finding 12 - The proposed Amendment modifies Basin Plan Chapter III (Water Quality Objectives) to clarify the existing Water Quality Objective for Chemical Constituents. The clarification will appear as a footnote stating that the existing objective applies to drinking water chemical constituents, such as organic carbon.

Footnote for existing Chemical Constituents narrative objective:

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.\*

\*This includes drinking water chemical constituents of concern, such as organic carbon.

The Delta Drinking Water Policy work group’s work on organic carbon concluded that additional data for agriculture would be useful; data for the Colusa Basin Drain was utilized in the organic carbon modeling work as representative of rice agriculture.

#### **Rice Cultivation Summary:**

The CRC prepared a Groundwater Assessment Report (GAR), dated July 2013, that presents general information on rice farm management. The timing varies each year based on weather and other growing conditions. Here is the summary which includes information that rice growers are implementing agricultural practices during the non-irrigation season (October through March).

“A continuous flood is maintained after stand establishment (approximately April through September) until draining for harvest. After harvest, about one-third to one-half of the fields is again flooded in the winter (from October through February)... Key events in the rice-farming cycle are field preparation, planting, fertilizer and pesticide (mainly herbicide) application, irrigation flooding, field drainage, harvest, winter flood-up, and winter drainage.”

Further, page 2-6 of the report provides a comparison of cultural practices for rice and shows that once water is applied for irrigation season, it is maintained at approximately five inches of depth until lowering for pesticide application or drainage for harvesting. Considerable work is done on the fields to prepare for straw management. Fields are chopped, stomped, and flooded for decomposition, while some is baled/removed or burned. It states that about one-third to two-thirds of the acreage is winter flooded between harvest (October) and drydown for spring field preparation (March).

Therefore, we believe that monitoring should be conducted during this period at the primary monitoring sites, in a timing that would ideally follow as best practical the February or March winter discharge.

## Historical ILRP Monitoring Data:

### **Non-irrigation Season for CRC Order -**

Non-irrigation season (October through March) monitoring has been very limited during the Rice Waiver Program. There has been no regular TOC monitoring required during the non-irrigation season, but turbidity was sampled periodically in 2006, 2007, and 2008. Since 2009 no additional non-irrigation season monitoring has been conducted for any constituents. In 2006, turbidity samples were collected at the primary sites in March (50 – 200 NTU) and October (20 NTU). In 2007, turbidity samples were collected at the primary sites in February (60 NTU) and October (20-70 NTU). In 2008, turbidity samples were collected at the primary sites in March (30 – 90 NTU) and October (20 – 50 NTU).

### **UC Davis ILRP Monitoring Projects, Phase II -**

The Aquatic Ecosystems Analysis Laboratory at the UC Davis John Muir Institute of the Environment monitored surface for numerous constituents including organic carbon from 2004 through 2007. Because the study was designed to evaluate seasonal and temporal changes in water quality, it included irrigation season and storm season monitoring. It is possible that the study collected some data that may be representative of conditions after the winter rice field discharges.

### **UC Davis Edge of Field Study –**

The first study was brief, running from September to December 2005. The TOC of the rice field outlets ranged from 3.7 to 47.3 mg/L.

The CRC participated in another UC Davis study, the Edge of Field Study, as part of their MRP requirements, to compare discharge quality of flooded fields and burned fields (Study Component 1) and evaluate the difference between field outlets and downstream peripheral drains (Study Component 2). This study included sampling of TOC and other general constituents in the rice field outlets and downstream peripheral drains (100 feet downstream) and was summarized in the 2009 Annual Monitoring Report (pp. 5-46 – 5-76). Data was collected between May 2006 and April 2008, for both growing (June – September) and winter (November – March) seasons. There were 457 TOC/DOC (dissolved organic carbon) samples collected during the study period for rice outlet locations. There were 1,278 TOC/DOC samples collected during the study period for peripheral drains.

- Field Outlets – TOC 0.8 – 84.82 mg/L, median 11.46 mg/L, DOC 0.01 – 77.34 mg/L, median 9.28 mg/L
- Peripheral Drains – TOC 0.005 – 107.2 mg/L, median 8.8 mg/L, DOC 0.005 – 84.89 mg/L, median 7.3 mg/L
- Supply Canals – ND – 13.6 mg/L, median 1.7 mg/L

Winter TOC/DOC was higher than growing season. Incorporated straw fields were higher than burned fields. Outlet levels were much higher than inlet levels. TOC levels were similar in outlet and peripheral drain samples. TOC/DOC levels were much higher in the outlets during the winter.

We understand that the results of this study do not represent the levels that may be detected in downstream receiving waters, like the primary monitoring sites. However, the results do show the potential for rice winter discharges to contribute to downstream organic carbon levels.

**Other Historical Agricultural Monitoring Studies/Reports:**

The following papers include discussion of winter conditions and organic carbon:

Ruark et al. Seasonal Losses of DOC and TDS from Rice Production System in Northern California. 2010.

“Based on our data, it is evident that the export of DOC from these fields can contribute to increased DOC concentrations in the Sacramento River, but rice fields may not be the cause of peak DOC concentrations typically observed later in the winter season.”

Oh et al. The Role of Irrigation Runoff and Winter Rainfall on DOC in an Agricultural Watershed. 2013. Willow Slough Watershed, 2006 – 2008.

“More than 80% of field crops in California are flood irrigated (Cooley et al., 2009) including alfalfa and rice, and thus the field could act as a temporary wetland releasing DOC from soils and plant residue to flooded water until the irrigated water is discharged to the stream. This transient flood period and low irrigation water discharge can result in high DOC concentrations for several months (Fig. 4).”

Krupa et. Al. Control on DOC Composition and Export from Rice Dominated Systems. 2011.

“Rice straw residues are a potentially important DOC source, as Ruark et al. (2010) found that the burning of rice straw in the winter, versus the widespread practice of rice straw incorporation into the soil by plowing, significantly lowered DOC concentration and flux in rice field outflow. This is also important to the THMFP of DOC leaving these systems, because vascular plant materials are highly aromatic DOC sources (Hernes et al. 2008; Spencer et al. 2009, 2010).”