Department of Pesticide Regulation

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MEMORANDUM

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DATE: July 17, 2012

SUBJECT: METHYL BROMIDE AIR MONITORING RESULTS FOR 2011

INTRODUCTION

In August 2011, the California Department of Pesticide Regulation (DPR) and the U.S. Environmental Protection Agency (U.S. EPA) entered into an Agreement to resolve a civil rights complaint filed under Title VI of the Civil Rights Act of 1964 (Title VI). Title VI prohibits intentional discrimination and discriminatory effects on the basis of race, color, and national origin by recipients of federal financial assistance. The complaint alleged that annual renewal of methyl bromide in 1999 discriminated against Latino school children. While DPR disagreed with the allegations made in the complaint, it agreed to take certain actions set forth in the Agreement in order to resolve the matter.

One provision of the Agreement requires DPR to expand on-going monitoring of methyl bromide air concentrations and to share these monitoring results with U.S. EPA and the public on an annual basis. The methyl bromide monitoring specified in the Agreement is a continuation and expansion of two projects, one by DPR and one by the California Air Resources Board (ARB). Starting in February 2011, DPR implemented a statewide Air Monitoring Network for measuring pesticides in air for various rural agricultural communities. DPR collected one set of 24-hour weekly air samples from three California communities (Salinas, Shafter, and Ripon) to monitor for 34 pesticides and 4 pesticide breakdown products, including methyl bromide. At the request of DPR, ARB began monitoring for several fumigant pesticides in 2010 at two communities (Camarillo/Oxnard and Santa Maria). Methyl bromide was among the compounds collected once every six days for a 15-month study starting

August 10, 2010 and was scheduled to end on November 30, 2011. Under the Agreement, methyl bromide monitoring will continue in all five communities until the end of 2013. Additionally, DPR and ARB began monitoring near Watsonville in January 2012.

Prior to the Agreement, the primary objective of the methyl bromide monitoring was to measure the effectiveness of the regulatory restrictions implemented by DPR and county agricultural commissioners. Methyl bromide use restrictions to protect bystanders and workers include application method requirements, buffer zones around fumigated fields, and regional use limits (township caps). Camarillo/Oxnard, Salinas, and Santa Maria (and Watsonville) are among the highest use areas for methyl bromide and are appropriate locations for measuring the effectiveness of the restrictions.

This memorandum reports methyl bromide monitoring results from all five sampling locations for the 2011 calendar year. Pesticide use data for 2011 and other information are not available, so comparisons, correlations, or modeling with methyl bromide applications are not possible at the current time. Comparisons to earlier monitoring or analysis of trends have not been conducted. (NOTE: Results for Watsonville will be included in next year's report.)

MATERIALS AND METHODS

The following summarizes the sampling and analysis procedures. More detailed descriptions are given in the monitoring protocols available at <http://www.cdpr.ca.gov/docs/emon/airinit/air_network.htm> and <http://www.cdpr.ca.gov/docs/emon/pubs/tac/tacpdfs/2011_ambient_protocol_final.pdf>.

Sampling Locations (Figure 1)

DPR's Air Monitoring Network includes one site in each of three communities: Ripon, Salinas, and Shafter. Salinas is an area of high methyl bromide use. Ripon and Shafter are areas with high use of other pesticides included in the monitoring, but not methyl bromide. ARB's monitoring includes one site in each of two communities: Camarillo/Oxnard and Santa Maria. Both of these areas have high use of methyl bromide.

Figure 1. Map showing all 5 sampling locations

Sample Collection

Air samples collected as part of the Air Monitoring Network were collected using SilcoCan® canisters (Restek cat. no. 24142-65) with a flow controller set to collect 24-hour weekly samples. Air sampler flow rates were measured using a DryCal ® flow meter at the beginning of the sampling period and the end of sampling period. The weekly starting day varied through the week and was randomly selected. Actual start times were left to the discretion of the specific sampling personnel assigned for each location.

Air samples collected by ARB personnel as part the 2010 DPR pesticide study were collected using a Tisch Environmental 3–Channel Canister Sampler. The sampler was automated to collect a 24-hour air sample into a SilcoCan® canister (Restek cat. no. 24142-65) once every six days. Sample collection would commence at 00:01 and would automatically be terminated at 23:59 of the sampling day.

Analytical Methods

Air samples collected as part of the Air Monitoring Network were processed by the California Department of Food and Agriculture (CDFA), Center for Analytical Chemistry Laboratory. Air canisters were analyzed for volatile organic compounds using a method similar to U.S. EPA method TO-15.

Air samples collected as part of the 2010 DPR pesticide study were processed by the California ARB Organics Laboratory Section (OLS) of the Northern Laboratory Branch. Air canisters were analyzed for volatile organic compounds using OLS Method MLD058. Method MLD058 is a gas chromatographic method utilizing an Automated Sample Concentrator, capillary gas chromatography, and Ion Trap Mass Spectrometry.

Method Detection Limit and Reporting Limit

The method detection limit (MDL) is the lowest concentration of a pesticide (analyte) that a chemical method can reliably detect. The laboratory determined the method detection limit for each analyte by analyzing a standard at a concentration with a signal to noise ratio of 2.5 to 5. Since air samples are being analyzed by two different laboratories with different sample methods and instruments, each lab had different MLDs which are listed in Table 1.

Table 1. Method Detections Limits for methyl bromide

Laboratory	MDL parts per billion (ppb)
CDFA	0.10*
ARB-OLS	0.03

***Note**: CDFA initially had a detection limit of 1.00 ppb, however, at the request of DPR, they were able to improve their analytical method and lower the MLD to 0.10 ppb. Samples analyzed before June 14, 2012 (date when new MLD went into effect) were analyzed using the higher detection limit of 1.00 ppb.

Health Evaluation Methods

DPR compares measured ambient air concentrations to human health screening levels to determine what, if any, action to take. No state or federal agency has established regulatory health standards for pesticides in ambient air (some agencies have developed occupational standards, or site-specific standards). Therefore, DPR in consultation with the Office of Environmental Health Hazard Assessment and others has developed health screening levels for monitored pesticides to place the results in a health based context. Although not regulatory standards, these screening levels can be used in the process of evaluating the air monitoring results. A measured air level that is below the screening level for a given pesticide would generally not be considered to represent a significant health concern and would not generally undergo further evaluation, but also should not automatically be considered "safe" and could undergo further evaluation. By the same token, a measured level that is above the screening level would not necessarily indicate a significant health concern, but would indicate the need for a further and more refined evaluation. Significant exceedances of the screening levels could be of health concern and would indicate the need to explore the imposition of mitigation measures.

DPR primarily uses screening levels for pesticides for which it has not completed a comprehensive health evaluation (risk assessment). For methyl bromide, DPR has completed a peer-reviewed risk assessment, as well as revised the legal requirements for the use of methyl bromide to reduce exposures and achieve specific target air concentrations. DPR's methyl bromide regulatory target concentration for acute exposure (average air concentration for one day) is 210 ppb. DPR's regulatory target concentration for subchronic exposure (average air concentration for one month) is 5 ppb. DPR has not established a regulatory target concentration for chronic exposure, but the screening level (average air concentration for one year) derived from the risk assessment is 1 ppb.

Invalid Samples

A total of two air samples were invalid. Both samples were taken from the Ripon sampling location and both were invalid due to an ending pressure outside of the accepted criteria. The air samples lost were from February 3, 2011 and December 1, 2011 and were not replaced.

RESULTS

Laboratory matrix spikes and matrix blanks were included with every set of samples extracted and analyzed at the laboratory and are part of the laboratory quality control (QC) program. The matrix spikes are conducted to assess accuracy and precision; the blanks are to check for contamination at the laboratory. Methyl bromide recovery in the matrix spike samples was 97.5 percent (%) on average. None of the laboratory matrix blank samples showed any methyl bromide concentrations. Collocated duplicate air canister samples were collected as part of QC process, with relative differences ranging from 0% to 9%. Field matrix spikes and field blanks for volatile organic compound sampling were not taken due to a lack of method availability.

A total of 268 samples were collected from all five sampling locations for the 2011 calendar year. The Camarillo/Oxnard and Santa Maria sampling locations were part of the pesticide study conducted by ARB while the Salinas, Shafter, and Ripon sampling locations were part of the Air Monitoring Network. Samples from Santa Maria and Camarillo/Oxnard were taken from January 1, 2011 – December 31, 2011, while samples from Salinas, Shafter, and Ripon were collected from February 1, 2011 – December 31, 2011.

Of the 268 samples, 178 (66.4%) contained no detectable amount and were below the LOQ (quantifiable). Of the 268 samples, 90 (33.6%) contained detections above the LOQ (quantifiable). Table 2 lists the number of detections for each sampling location.

Table 2. Detections of methyl bromide by sampling location

Location	Number of possible detections	Total number of quantifiable detections	Percent of quantifiable detections
Camarillo/Oxnard	60	37	61.7%
Ripon	46	9	19.6%
Salinas	48	9	18.7%
Santa Maria	67	31	46.3%
Shafter	47	4	8.5%

Acute exposure: Table 3 presents the highest one-day concentration at all five sampling locations. The highest 1-day concentration detected for methyl bromide was 3.80 ppb at Santa Maria. This concentration was approximately 100x below the acute regulatory target concentration of 210 ppb established by DPR. Figure 2 shows the one-day methyl bromide concentrations from all five sampling locations as a time series. Most of the highest air concentrations detected occur from August to November, with maximum concentrations occurring in September.

Table 3. Highest one-day concentration of methyl bromide by sampling location

Location	Highest 1-day concentration (ppb)	Acute Regulatory Target (ppb)
Camarillo/Oxnard	1.40	210
Ripon	0.76	210
Salinas	1.56	210
Santa Maria	3.80	210
Shafter	0.76	210

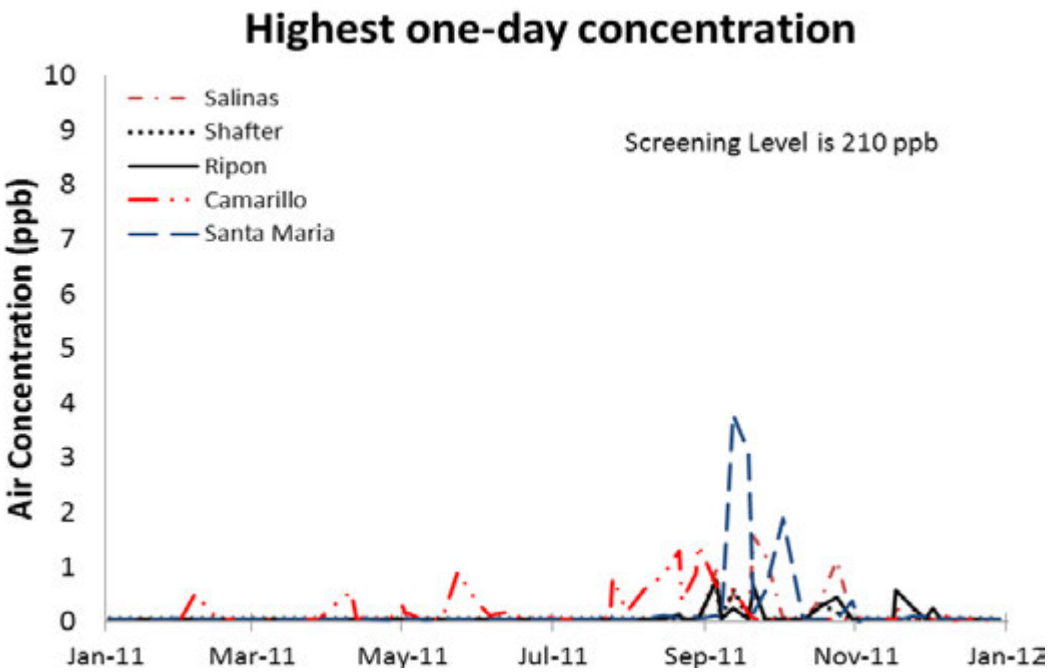

Figure 2. Highest 1-day (acute) concentrations detected for the five monitoring locations

Subchronic exposure: Table 4 shows the highest 4-week average concentrations for methyl bromide at all five sampling locations. The highest 4-week rolling average concentration was found in Santa Maria with a concentration of 1.62 ppb. No methyl bromide 4-week rolling average concentrations from any sampling location exceeded the regulatory target concentration for the subchronic exposure (4-week) periods. Figure 3 presents the highest 4-week concentrations measured in all five sampling locations, compared with the subchronic target concentration of 5 ppb. The 4-week rolling average concentrations were calculated using one-half the MDL for samples with no detectable amount, and a value halfway between the MDL and the LOQ for samples with trace (unquantifiable) concentrations. 4-week rolling average concentrations refers to the average of a moving 4-week period (i.e., average of weeks 1, 2, 3, and 4; average of weeks 2, 3, 4, and 5, etc.).

Table 4. The highest of rolling 4-week air concentrations by sampling location

Location	Highest 4-week rolling concentration (ppb)	Subchronic Regulatory Target (ppb)
Camarillo/Oxnard	0.87	5
Ripon	0.43	5
Salinas	1.06	5
Santa Maria	1.62	5
Shafter	0.36	5

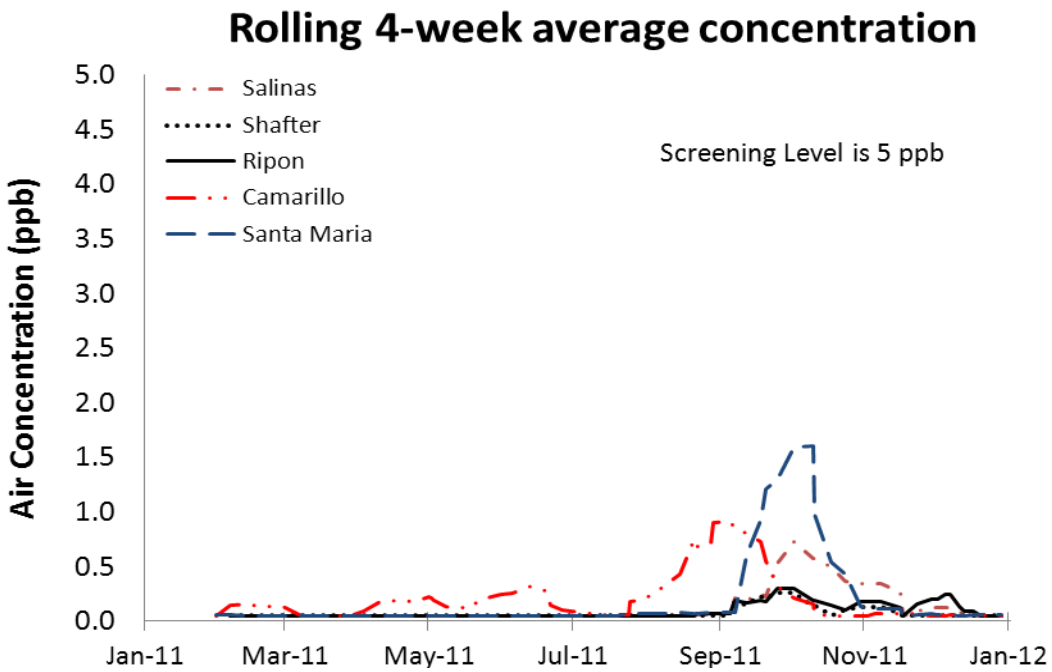

Figure 3. Rolling 4-week average (subchronic) concentrations detected for the five monitoring locations. Concentrations are presented as rolling or moving averages (i.e., average of weeks 1,2,3, and 4; average of weeks 2,3,4, and 5, etc.).

Chronic exposure: Table 6 shows methyl bromide's 1-year average concentrations for all sampling locations. No locations exceeded the screening levels for the chronic exposure period. The highest overall average concentration measured was 0.26 ppb at Salinas. Camarillo/Oxnard had the second highest 1-year average concentration of 0.23 ppb.

Table 6. 1-year overall average air concentrations by sampling location

Location	1-year overall average concentration (ppb)	Chronic Screening Level (ppb)
Camarillo/Oxnard	0.23	1
Ripon	0.17	1
Salinas	0.26	1
Santa Maria	0.20	1
Shafter	0.11	1

DISCUSSION AND CONCLUSIONS

For 2011, all measured air concentrations were less than one-third of DPR's regulatory targets or screening level, indicating that the restrictions on use of methyl bromide are keeping air concentrations well below the health protective targets set by DPR. The concentrations cannot be compared to use levels because the pesticide use data for 2011 are not yet available. However, the time periods and communities with higher concentrations are consistent with historical use patterns.

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APPENDIX A
RESULTS OF INDIVIDUAL SAMPLES

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Salinas	A00006	02/01/11	02/02/11	ND	1.0
Salinas	A00010	02/09/11	02/10/11	ND	1.0
Salinas	A00016	02/16/11	02/17/11	ND	1.0
Salinas	A00019	02/22/11	02/23/11	ND	1.0
Salinas	A00031	03/02/11	03/03/11	ND	1.0
Salinas	A00033	03/07/11	03/08/11	ND	1.0
Salinas	A00044	03/16/11	03/17/11	ND	1.0
Salinas	A00045	03/21/11	03/22/11	ND	1.0
Salinas	A00053	03/29/11	03/30/11	ND	1.0
Salinas	A00064	04/04/11	04/05/11	ND	1.0
Salinas	A00065	04/13/11	04/14/11	ND	1.0
Salinas	A00079	04/19/11	04/20/11	ND	1.0
Salinas	A00080	04/25/11	04/26/11	ND	1.0
Salinas	A00092	05/04/11	05/05/11	ND	1.0
Salinas	A00100	05/09/11	05/10/11	ND	1.0
Salinas	A00106	05/18/11	05/19/11	ND	1.0
Salinas	A00112	05/23/11	05/24/11	ND	1.0
Salinas	A00120	06/01/11	06/02/11	ND	1.0
Salinas	A00122	06/06/11	06/07/11	ND	1.0
Salinas	A00134	06/16/11	06/17/11	ND	1.0
Salinas	A00144	06/20/11	06/21/11	ND	0.1
Salinas	A00152	06/29/11	06/30/11	ND	0.1
Salinas	A00158	07/05/11	07/06/11	ND	0.1
Salinas	A00159	07/11/11	07/12/11	ND	0.1
Salinas	A00170	07/20/11	07/21/11	ND	0.1
Salinas	A00176	07/25/11	07/26/11	ND	0.1
Salinas	A00177	08/04/11	08/05/11	ND	0.1
Salinas	A00184	08/08/11	08/09/11	ND	0.1
Salinas	A00196	08/15/11	08/16/11	ND	0.1
Salinas	A00203	08/24/11	08/25/11	0.11	0.1
Salinas	A00205	08/29/11	08/30/11	ND	0.1
Salinas	A00217	09/07/11	09/08/11	0.95	0.1
Salinas	A00225	09/14/11	09/15/11	0.50	0.1
Salinas	A00226	09/19/11	09/20/11	1.56	0.1
Salinas	A00232	09/27/11	09/28/11	1.24	0.1
Salinas	A00238	10/03/11	10/04/11	ND	0.1

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Salinas	A00244	10/11/11	10/12/11	ND	0.1
Salinas	A00254	10/20/11	10/21/11	0.44	0.1
Salinas	A00263	10/25/11	10/26/11	1.13	0.1
Salinas	A00271	11/03/11	11/04/11	ND	0.1
Salinas	A00272	11/08/11	11/09/11	ND	0.1
Salinas	A00279	11/17/11	11/18/11	0.23	0.1
Salinas	A00291	11/22/11	11/23/11	0.23	0.1
Salinas	A00297	12/01/11	12/02/11	ND	0.1
Salinas	A00303	12/05/11	12/06/11	ND	0.1
Salinas	A00309	12/11/11	12/12/11	ND	0.1
Salinas	A00316	12/19/11	12/20/11	ND	0.1
Salinas	A00323	12/28/11	12/29/11	ND	0.1
Shafter	B00006	02/09/11	02/10/11	ND	1.0
Shafter	B00012	02/16/11	02/17/11	ND	1.0
Shafter	B00018	02/23/11	02/24/11	ND	1.0
Shafter	B00024	02/28/11	03/01/11	ND	1.0
Shafter	B00030	03/09/11	03/10/11	ND	1.0
Shafter	B00036	03/14/11	03/15/11	ND	1.0
Shafter	B00042	03/23/11	03/24/11	ND	1.0
Shafter	B00049	03/28/11	03/29/11	ND	1.0
Shafter	B00055	04/06/11	04/07/11	ND	1.0
Shafter	B00061	04/12/11	04/13/11	ND	1.0
Shafter	B00068	04/19/11	04/20/11	ND	1.0
Shafter	B00074	04/25/11	04/26/11	ND	1.0
Shafter	B00080	05/03/11	05/04/11	ND	1.0
Shafter	B00086	05/09/11	05/10/11	ND	1.0
Shafter	B00093	05/18/11	05/19/11	ND	1.0
Shafter	B00100	05/24/11	05/25/11	ND	1.0
Shafter	B00106	06/01/11	06/02/11	ND	1.0
Shafter	B00112	06/06/11	06/07/11	ND	1.0
Shafter	B00118	06/14/11	06/15/11	ND	1.0
Shafter	B00124	06/20/11	06/21/11	ND	0.1
Shafter	B00130	06/29/11	06/30/11	ND	0.1
Shafter	B00137	07/05/11	07/06/11	ND	0.1
Shafter	B00145	07/13/11	07/14/11	ND	0.1
Shafter	B00151	07/18/11	07/19/11	ND	0.1
Shafter	B00158	07/26/11	07/27/11	ND	0.1
Shafter	B00168	08/01/11	08/02/11	ND	0.1
Shafter	B00170	08/10/11	08/11/11	ND	0.1
Shafter	B00177	08/16/11	08/17/11	ND	0.1

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Shafter	B00184	08/22/11	08/23/11	ND	0.1
Shafter	B00191	08/30/11	08/31/11	ND	0.1
Shafter	B00198	09/06/11	09/07/11	0.76	0.1
Shafter	B00204	09/13/11	09/14/11	0.59	0.1
Shafter	B00210	09/21/11	09/22/11	ND	0.1
Shafter	B00216	09/26/11	09/27/11	ND	0.1
Shafter	B00227	10/03/11	10/04/11	ND	0.1
Shafter	B00233	10/10/11	10/11/11	ND	0.1
Shafter	B00239	10/20/11	10/21/11	0.32	0.1
Shafter	B00245	10/25/11	10/26/11	0.18	0.1
Shafter	B00251	11/03/11	11/04/11	ND	0.1
Shafter	B00258	11/08/11	11/09/11	ND	0.1
Shafter	B00264	11/16/11	11/17/11	ND	0.1
Shafter	B00271	11/21/11	11/22/11	ND	0.1
Shafter	B00281	11/30/11	12/01/11	ND	0.1
Shafter	B00347	12/05/11	12/06/11	ND	0.1
Shafter	B00288	12/15/11	12/16/11	ND	0.1
Shafter	B00294	12/19/11	12/20/11	ND	0.1
Shafter	B00300	12/28/11	12/29/11	ND	0.1
Ripon	C00011	02/07/11	02/08/11	ND	1.0
Ripon	C00016	02/15/11	02/16/11	ND	1.0
Ripon	C00020	02/22/11	02/23/11	ND	1.0
Ripon	C00029	03/01/11	03/02/11	ND	1.0
Ripon	C00034	03/08/11	03/09/11	ND	1.0
Ripon	C00041	03/15/11	03/16/11	ND	1.0
Ripon	C00048	03/21/11	03/22/11	ND	1.0
Ripon	C00054	03/29/11	03/30/11	ND	1.0
Ripon	C00055	04/04/11	04/05/11	ND	1.0
Ripon	C00066	04/13/11	04/14/11	ND	1.0
Ripon	C00081	04/19/11	04/20/11	ND	1.0
Ripon	C00087	04/26/11	04/27/11	ND	1.0
Ripon	C00088	05/02/11	05/03/11	ND	1.0
Ripon	C00094	05/11/11	05/12/11	ND	1.0
Ripon	C00113	05/16/11	05/17/11	ND	1.0
Ripon	C00118	05/25/11	05/26/11	ND	1.0
Ripon	C00126	06/01/11	06/02/11	ND	1.0
Ripon	C00133	06/08/11	06/09/11	ND	1.0
Ripon	C00132	06/13/11	06/14/11	ND	1.0
Ripon	C00137	06/22/11	06/23/11	ND	0.1
Ripon	C00142	06/28/11	06/29/11	ND	0.1

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Ripon	C00153	07/06/11	07/07/11	ND	0.1
Ripon	C00160	07/11/11	07/12/11	ND	0.1
Ripon	C00166	07/19/11	07/20/11	ND	0.1
Ripon	C00172	07/27/11	07/28/11	ND	0.1
Ripon	C00174	08/04/11	08/05/11	ND	0.1
Ripon	C00186	08/08/11	08/09/11	ND	0.1
Ripon	C00192	08/17/11	08/18/11	ND	0.1
Ripon	C00196	08/23/11	08/24/11	0.15	0.1
Ripon	C00203	08/31/11	09/01/11	ND	0.1
Ripon	C00209	09/06/11	09/07/11	0.76	0.1
Ripon	C00107	09/14/11	09/15/11	0.25	0.1
Ripon	C00220	09/19/11	09/20/11	0.65	0.1
Ripon	C00222	09/28/11	09/29/11	ND	0.1
Ripon	C00228	10/04/11	10/05/11	ND	0.1
Ripon	C00240	10/12/11	10/13/11	ND	0.1
Ripon	C00247	10/17/11	10/18/11	0.29	0.1
Ripon	C00251	10/26/11	10/27/11	0.44	0.1
Ripon	C00259	11/01/11	11/02/11	ND	0.1
Ripon	C00260	11/09/11	11/10/11	ND	0.1
Ripon	C00271	11/14/11	11/15/11	0.57	0.1
Ripon	C00278	11/22/11	11/23/11	0.29	0.1
Ripon	C00291	12/09/11	12/10/11	0.25	0.1
Ripon	C00294	12/15/11	12/16/11	ND	0.1
Ripon	C00298	12/20/11	12/21/11	ND	0.1
Ripon	C00306	12/27/11	12/28/11	ND	0.1
Camarillo/Oxnard	TX010651	1/3/11	1/4/11	ND	0.03
Camarillo/Oxnard	TX010664	1/10/11	1/11/11	ND	0.03
Camarillo/Oxnard	TX010691	1/25/11	1/26/11	ND	0.03
Camarillo/Oxnard	TX010699	1/31/11	2/1/11	ND	0.03
Camarillo/Oxnard	TX010712	2/7/11	2/8/11	0.51	0.03
Camarillo/Oxnard	TX010723	2/14/11	2/15/11	0.10	0.03
Camarillo/Oxnard	TX010736	2/20/11	2/21/11	0.04	0.03
Camarillo/Oxnard	TX010764	3/7/11	3/8/11	ND	0.03
Camarillo/Oxnard	TX010767	3/9/11	3/10/11	ND	0.03
Camarillo/Oxnard	TX010773	3/14/11	3/15/11	ND	0.03
Camarillo/Oxnard	TX010792	3/21/11	3/22/11	ND	0.03
Camarillo/Oxnard	TX010813	3/29/11	3/30/11	ND	0.03
Camarillo/Oxnard	TX010814	4/3/11	4/4/11	0.30	0.03
Camarillo/Oxnard	TX010827	4/10/11	4/11/11	0.56	0.03
Camarillo/Oxnard	TX010840	4/12/11	4/13/11	ND	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Camarillo/Oxnard	TX010843	4/17/11	4/18/11	0.10	0.03
Camarillo/Oxnard	TX010844	4/19/11	4/20/11	0.03	0.03
Camarillo/Oxnard	TX010861	4/26/11	4/27/11	0.30	0.03
Camarillo/Oxnard	TX010868	5/2/11	5/3/11	0.14	0.03
Camarillo/Oxnard	TX010883	5/3/11	5/4/11	0.16	0.03
Camarillo/Oxnard	TX010881	5/8/11	5/9/11	ND	0.03
Camarillo/Oxnard	TX010903	5/17/11	5/18/11	ND	0.03
Camarillo/Oxnard	TX010907	5/23/11	5/24/11	0.90	0.03
Camarillo/Oxnard	TX010926	6/1/11	6/2/11	0.35	0.03
Camarillo/Oxnard	TX010928	6/5/11	6/6/11	0.12	0.03
Camarillo/Oxnard	TX010949	6/13/11	6/14/11	0.18	0.03
Camarillo/Oxnard	TX010966	6/21/11	6/22/11	0.04	0.03
Camarillo/Oxnard	TX010976	6/26/11	6/27/11	0.10	0.03
Camarillo/Oxnard	TX011009	7/4/11	7/5/11	ND	0.03
Camarillo/Oxnard	TX011010	7/14/11	7/15/11	ND	0.03
Camarillo/Oxnard	TX011022	7/25/11	7/26/11	0.09	0.03
Camarillo/Oxnard	TX011024	7/25/11	7/26/11	0.80	0.03
Camarillo/Oxnard	TX011042	8/1/11	8/2/11	0.18	0.03
Camarillo/Oxnard	TX011053	8/9/11	8/10/11	0.60	0.03
Camarillo/Oxnard	TX011063	8/16/11	8/17/11	0.86	0.03
Camarillo/Oxnard	TX011076	8/21/11	8/22/11	1.30	0.03
Camarillo/Oxnard	TX011075	8/22/11	8/23/11	0.38	0.03
Camarillo/Oxnard	TX011089	8/28/11	8/29/11	0.88	0.03
Camarillo/Oxnard	TX011087	8/29/11	8/30/11	1.40	0.03
Camarillo/Oxnard	TX011110	9/4/11	9/5/11	0.67	0.03
Camarillo/Oxnard	TX011132	9/7/11	9/8/11	0.41	0.03
Camarillo/Oxnard	TX011133	9/12/11	9/13/11	0.59	0.03
Camarillo/Oxnard	TX011140	9/18/11	9/19/11	0.17	0.03
Camarillo/Oxnard	TX011152	9/25/11	9/26/11	0.04	0.03
Camarillo/Oxnard	TX011165	10/3/11	10/4/11	0.04	0.03
Camarillo/Oxnard	TX011195	10/17/11	10/18/11	0.04	0.03
Camarillo/Oxnard	TX011224	10/30/11	10/31/11	0.05	0.03
Camarillo/Oxnard	TX011222	11/2/11	11/3/11	ND	0.03
Camarillo/Oxnard	TX011236	11/5/11	11/6/11	0.14	0.03
Camarillo/Oxnard	TX011248	11/16/11	11/17/11	ND	0.03
Camarillo/Oxnard	TX011256	11/17/11	11/18/11	ND	0.03
Camarillo/Oxnard	TX011267	11/23/11	11/24/11	ND	0.03
Camarillo/Oxnard	TX011280	11/29/11	11/30/11	ND	0.03
Camarillo/Oxnard	TX011293	12/2/11	12/3/11	ND	0.03
Camarillo/Oxnard	TX011308	12/7/11	12/8/12	0.09	0.03
Camarillo/Oxnard	TX011310	12/11/11	12/12/11	0.03	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Camarillo/Oxnard	TX011312	12/13/11	12/14/11	ND	0.03
Camarillo/Oxnard	TX011332	12/17/11	12/18/11	ND	0.03
Camarillo/Oxnard	TX011366	12/23/11	12/24/11	0.03	0.03
Camarillo/Oxnard	TX011364	12/29/11	12/30/11	ND	0.03
Santa Maria	TX010649	1/2/11	1/3/11	ND	0.03
Santa Maria	TX010665	1/10/11	1/11/11	ND	0.03
Santa Maria	TX010679	1/17/11	1/18/11	ND	0.03
Santa Maria	TX010692	1/25/11	1/26/11	ND	0.03
Santa Maria	TX010700	1/31/11	2/1/11	0.07	0.03
Santa Maria	TX010706	2/6/11	2/7/11	ND	0.03
Santa Maria	TX010724	2/14/11	2/15/11	0.04	0.03
Santa Maria	TX010726	2/15/11	2/16/11	ND	0.03
Santa Maria	TX010735	2/21/11	2/22/11	ND	0.03
Santa Maria	TX010750	2/28/11	3/1/11	ND	0.03
Santa Maria	TX010765	3/7/11	3/8/11	ND	0.03
Santa Maria	TX010772	3/13/11	3/14/11	ND	0.03
Santa Maria	TX010776	3/15/11	3/16/11	ND	0.03
Santa Maria	TX010790	3/20/11	3/21/11	ND	0.03
Santa Maria	TX010801	3/28/11	3/29/11	ND	0.03
Santa Maria	TX010815	4/3/11	4/4/11	ND	0.03
Santa Maria	TX010818	4/10/11	4/11/11	ND	0.03
Santa Maria	TX010838	4/12/11	4/13/11	ND	0.03
Santa Maria	TX010833	4/17/11	4/18/11	ND	0.03
Santa Maria	TX010854	4/25/11	4/26/11	0.03	0.03
Santa Maria	TX010866	5/1/11	5/2/11	ND	0.03
Santa Maria	TX010882	5/8/11	5/9/11	ND	0.03
Santa Maria	TX010888	5/10/11	5/11/11	0.03	0.03
Santa Maria	TX010900	5/16/11	5/17/11	ND	0.03
Santa Maria	TX010901	5/17/11	5/18/11	ND	0.03
Santa Maria	TX010909	5/23/11	5/24/11	0.04	0.03
Santa Maria	TX010921	5/31/11	6/1/11	ND	0.03
Santa Maria	TX010929	6/5/11	6/6/11	ND	0.03
Santa Maria	TX010950	6/13/11	6/14/11	ND	0.03
Santa Maria	TX010955	6/19/11	6/20/11	ND	0.03
Santa Maria	TX010963	6/21/11	6/22/11	ND	0.03
Santa Maria	TX010975	6/26/11	6/27/11	ND	0.03
Santa Maria	TX010988	7/4/11	7/5/11	ND	0.03
Santa Maria	TX011008	7/13/11	7/14/11	ND	0.03
Santa Maria	TX011014	7/18/11	7/19/11	ND	0.03
Santa Maria	TX011016	7/19/11	7/20/11	ND	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Santa Maria	TX011020	7/24/11	7/25/11	0.15	0.03
Santa Maria	TX011038	7/31/11	8/1/11	0.06	0.03
Santa Maria	TX011047	8/7/11	8/8/11	ND	0.03
Santa Maria	TX011059	8/15/11	8/16/11	0.11	0.03
Santa Maria	TX011072	8/21/11	8/22/11	0.08	0.03
Santa Maria	TX011073	8/22/11	8/23/11	0.06	0.03
Santa Maria	TX011090	8/28/11	8/29/11	0.09	0.03
Santa Maria	TX011088	8/29/11	8/30/11	0.06	0.03
Santa Maria	TX011111	9/5/11	9/6/11	0.11	0.03
Santa Maria	TX011131	9/12/11	9/13/11	3.80	0.03
Santa Maria	TX011138	9/18/11	9/19/11	3.10	0.03
Santa Maria	TX011142	9/20/11	9/21/11	0.15	0.03
Santa Maria	TX011151	9/25/11	9/26/11	0.55	0.03
Santa Maria	TX011164	10/2/11	10/3/11	1.90	0.03
Santa Maria	TX011181	10/10/11	10/11/11	0.12	0.03
Santa Maria	TX011183	10/11/11	10/12/11	ND	0.03
Santa Maria	TX011200	10/18/11	10/19/11	0.06	0.03
Santa Maria	TX011208	10/24/11	10/25/11	0.05	0.03
Santa Maria	TX011216	10/30/11	10/31/11	0.39	0.03
Santa Maria	TX011232	11/5/11	11/6/11	0.07	0.03
Santa Maria	TX011241	11/11/11	11/12/11	0.06	0.03
Santa Maria	TX011249	11/16/11	11/17/11	ND	0.03
Santa Maria	TX011255	11/17/11	11/18/11	0.03	0.03
Santa Maria	TX011266	11/23/11	11/24/11	0.10	0.03
Santa Maria	TX011279	11/29/11	11/30/11	0.09	0.03
Santa Maria	TX011285	12/5/11	12/6/11	0.07	0.03
Santa Maria	TX011309	12/11/11	12/12/11	0.04	0.03
Santa Maria	TX011314	12/13/11	12/14/11	0.08	0.03
Santa Maria	TX011331	12/20/11	12/21/11	0.05	0.03
Santa Maria	TX011335	12/23/11	12/24/11	ND	0.03
Santa Maria	TX011343	12/29/11	12/30/11	ND	0.03