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SUBJECT: METHYL BROMIDE AIR MONITORING RESULTS FOR 2012

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 DPR's annual registration 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 October 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; methyl bromide monitoring will continue until the end of 2013 in this location as well.

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, 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 is the second yearly memorandum on methyl bromide monitoring as part of the Agreement and it reports methyl bromide monitoring results from all six sampling locations (Salinas, Shafter, Ripon, Camarillo/Oxnard, Santa Maria, and Watsonville) for the 2012 calendar year. This report also compares the 2012 monitoring results with the monitoring results from the 2011 calendar year. Pesticide use data for 2012 and other information are not available, so comparisons, correlations, or modeling with methyl bromide applications are not possible at this time.

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>
<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 three communities: Camarillo/Oxnard, Santa Maria, and Watsonville. All three of these areas have historically high use of methyl bromide.

Figure 1. Map showing all six sampling locations.

Sample Collection

Air samples collected as part of the Air Monitoring Network (AMN) 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 the 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 2012 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 AMN 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's method TO-15.

Air samples collected as part of the 2010 DPR pesticide study were processed by the 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 MDLs which are listed in Table 1.

Table 1. Method Detections Limits for methyl bromide.

Laboratory	Method Detection Limit (ppb)
CDFA	0.10
ARB-OLS	0.03

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 California 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", it 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 parts per billion (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 seven air samples of the 379 collected were invalid. Six samples taken from the Watsonville sampling location were invalid due to an ending pressure outside of the accepted criteria or due to sampling time being outside of the accepted time frame. One sample taken from the Camarillo sampling location was invalid due to an ending pressure outside of the accepted criteria. Table 2 lists the invalid samples for the 2012 sampling year.

Table 2. Invalid samples: Detections of methyl bromide by sampling location.

Sample ID	Site Location	Sampling Date	Comments/Reason for invalid status
TX011429	Watsonville	2/3/2012	Invalid – Canister Received at Zero Pressure
TX011461	Camarillo/Oxnard	2/15/2012	Invalid – Canister Received at Zero Pressure
TX011462	Watsonville	2/15/2012	Invalid – Sampling Time out of Range: >25
TX011499	Watsonville	3/4/2012	Invalid – Canister Received at Zero Pressure
TX011525	Watsonville	3/11/2012	Invalid – Sampling Time out of Range: >25
TX011970	Watsonville	9/24/2012	Invalid – Sampling Time out of Range: <23
TX012088	Watsonville	11/23/2012	Invalid – Canister Received at Zero Pressure

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 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 CDFA matrix spike samples was 94.8% on average and 100.8% on average for samples analyzed by ARB's OLS laboratory. None of the lab matrix blank samples showed any methyl bromide concentrations. Co-located duplicate air canister samples were collected as part of the quality control process, with absolute percent differences ranging from 0% to 44.1% for all samples. Field matrix spikes, due to CDFA's lack of method availability, were only analyzed by ARB's OLS laboratory for samples collected from Camarillo, Santa Maria, and Watsonville. An overall field matrix spike sample recovery of 100.8% for all three sampling sites was attained.

A total of 369 samples were collected from all six sampling locations for the 2012 calendar year. The Camarillo/Oxnard, Santa Maria, and Watsonville sampling locations were part of the pesticide study conducted by ARB while the Salinas, Shafter, and Ripon sampling locations were part of the AMN. Samples from all six sites were collected from January 1, 2012 – December 31, 2012.

Of the 369 samples, 289 (78.3%) contained no detectable amount and were below the LOQ (limit of quantification; i.e., not quantifiable). Of the 369 samples, 80 (21.7%) contained detections above the LOQ (quantifiable). Table 3 lists the number of detections for each sampling location.

Table 3. Detections of methyl bromide by sampling location.

Location	Number of possible detections	Total number of quantifiable detections	Percent of quantifiable detections (%)
Watsonville	69	26	37.7
Santa Maria	73	25	34.2
Camarillo/Oxnard	71	19	26.8
Ripon	52	4	7.7
Salinas	52	4	7.7
Shafter	52	2	3.8

Table 4 contains yearly comparisons for five air sampling locations (air samples were first collected from Watsonville on January 1, 2012). Four sampling locations (Ripon, Salinas, Camarillo, and Shafter) experienced a 55% or greater decrease in quantifiable detections in 2012 compared to 2011. Santa Maria had the lowest yearly percentage difference of -26.0%.

Table 4. Comparisons of detections of methyl bromide by sampling location and year.

Location	2011		2012		
	Possible detections	Percentage of Quantifiable detections (%)	Possible detections	Percentage of Quantifiable detections (%)	Yearly Difference (%)
	60	61.7	71	26.8	-56.6
Ripon	46	19.6	52	7.7	-60.7
Salinas	48	18.9	52	7.7	-59.0
Santa Maria	67	46.3	73	34.2	-26.0
Shafter	47	8.5	52	3.8	-54.8
Watsonville	NA	NA	69	37.7	-----

Acute exposure: Table 5 presents the highest one-day concentration at all six sampling locations. The highest 1-day concentration detected for methyl bromide in 2012 was 3.40 ppb at Camarillo. This concentration was approximately 100 times below the acute regulatory target concentration of 210 ppb established by DPR. Figure 2 shows the one-day methyl bromide concentrations from all six sampling locations as a time series for sampling years 2011 and 2012. The highest air concentrations detected occur from July to November, with maximum concentrations occurring in September for 2011 and July for 2012.

Table 5. Highest one-day concentration of methyl bromide by sampling location for calendar year 2012.

Location	Highest 1-day concentration (ppb)	Acute Regulatory Target (ppb)
Camarillo/Oxnard	3.40	210
Watsonville	1.50	210
Santa Maria	0.77	210
Ripon	0.69	210
Salinas	0.65	210
Shafter	0.55	210

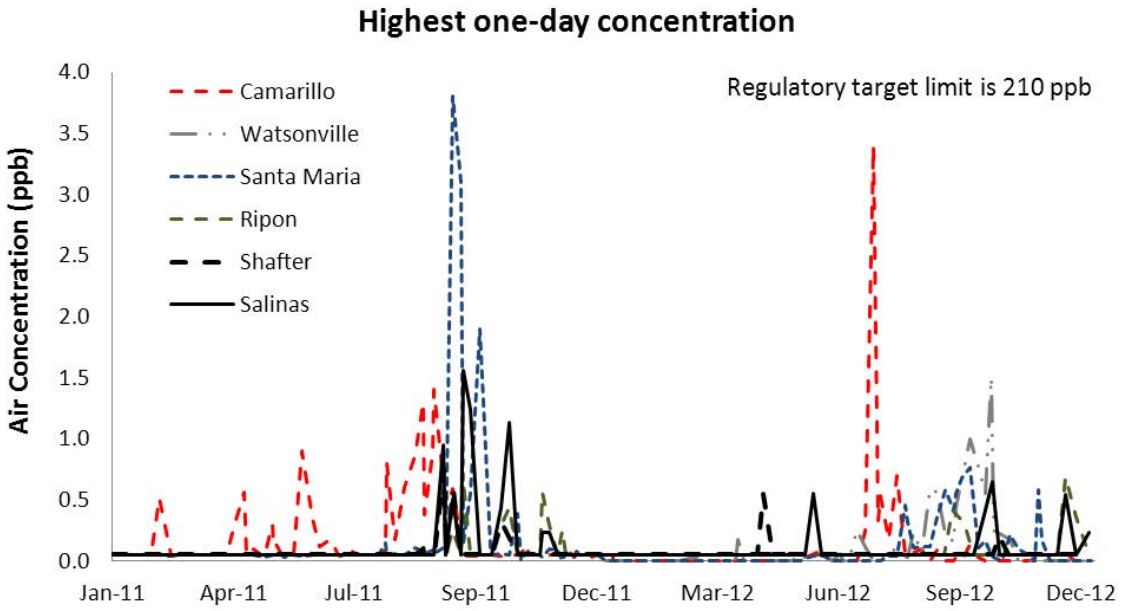

Figure 2. Highest one-day (acute) concentrations of methyl bromide detected for the six monitoring locations for calendar year 2012.

Yearly change of values of highest 1-day concentrations for all six locations are listed on Table 6. Highest 1-day methyl bromide concentrations in four of the six locations were lower in 2012 than in 2011.

Table 6. Comparisons of detections of methyl bromide by sampling location.

Location	2011 Highest 1-day concentration (ppb)	2012 Highest 1-day concentration (ppb)
Camarillo/Oxnard	1.40	3.40
Watsonville	NA	1.50
Santa Maria	3.80	0.77
Ripon	0.76	0.69
Salinas	1.56	0.65
Shafter	0.76	0.55

Subchronic exposure: Table 7 shows the highest 4-week average concentrations for methyl bromide at all six sampling locations. The highest 4-week rolling average concentration was found in Watsonville with a concentration of 0.85 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 six sampling locations as a time series for sampling years 2011 and 2012, 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. Four-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 7. The highest of rolling 4-week methyl bromide concentrations by sampling location.

Location	Highest 4-week rolling concentration (ppb)	Subchronic Regulatory Target (ppb)
Watsonville	0.85	5
Camarillo/Oxnard	0.78	5
Santa Maria	0.50	5
Ripon	0.29	5
Salinas	0.28	5
Shafter	0.18	5

Yearly change of 4-week rolling concentrations for all six locations are listed on Table 8. All five sampling locations with sampling results for both years had lower peak concentrations in 2012 compared to 2011.

Table 8. Comparisons of detections of methyl bromide by sampling location and year.

Location	2011 Highest 4-week rolling concentration (ppb)	2012 Highest 4-week rolling concentration (ppb)
Camarillo/Oxnard	0.87	0.78
Ripon	0.43	0.29
Salinas	1.06	0.28
Santa Maria	1.62	0.50
Shafter	0.36	0.18
Watsonville	NA	0.85

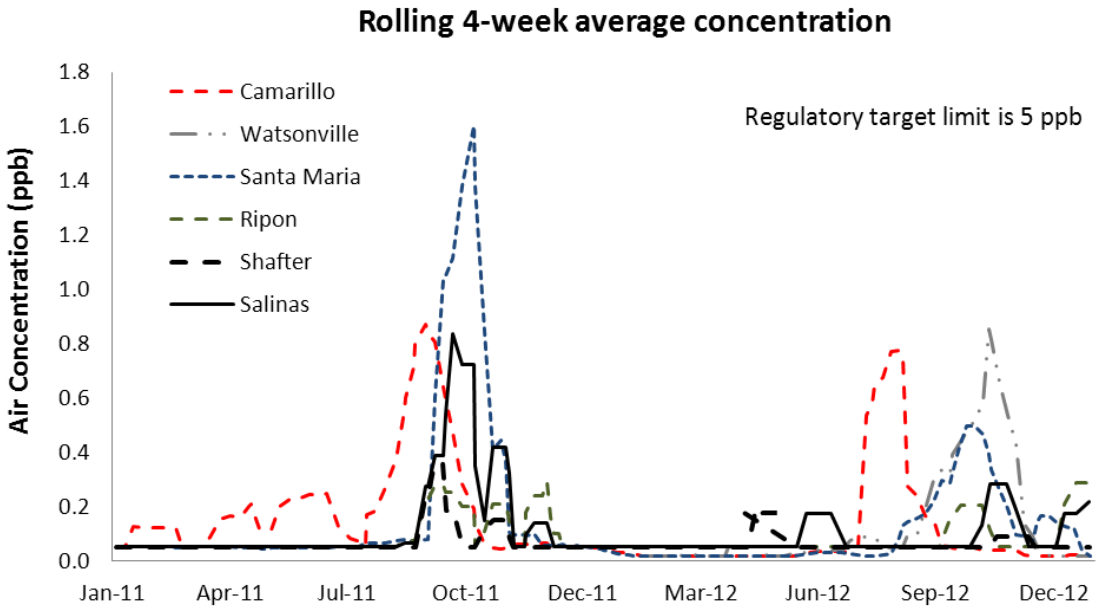

Figure 3. Rolling 4-week average (subchronic) concentrations of methyl bromide detected for the five monitoring locations. Concentrations are presented as rolling or moving averages (i.e., average of weeks 1, 2, 3, and 4; average of weeks 2, 3, 4, and 5, etc.).

Chronic exposure: Table 9 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 0.13 ppb at Watsonville. Camarillo had the second highest 1-year average concentration of 0.10 ppb.

Table 9. 1-year overall average air concentrations by sampling location.

Location	1-year overall average concentration (ppb)	Chronic Screening Level (ppb)
Watsonville	0.13	1
Camarillo/Oxnard	0.10	1
Santa Maria	0.09	1
Salinas	0.09	1
Ripon	0.08	1
Shafter	0.06	1

All five sampling locations (Camarillo, Ripon, Santa Maria, Salinas, and Shafter) that had sampling results for both 2011 and 2012 years all had lower yearly average concentrations in 2012 compared to 2011 (Table 10).

Table 10. Comparisons of detections of methyl bromide by sampling location.

Location	2011 1-year overall average concentration (ppb)	2012 1-year overall average concentration (ppb)
Camarillo/Oxnard	0.23	0.10
Ripon	0.17	0.08
Salinas	0.26	0.09
Santa Maria	0.20	0.09
Shafter	0.11	0.06
Watsonville	NA	0.13

DISCUSSION AND CONCLUSIONS

For 2012, all measured air concentrations were less than DPR's regulatory targets or screening level, indicating that the restrictions on use of methyl bromide are keeping air concentrations below the health protective targets set by DPR. The 2012 concentrations were generally lower than those concentrations detected for the same time periods in 2011. The time periods and communities with higher concentrations are consistent with historical use patterns.

APPENDIX A
RESULTS OF INDIVIDUAL SAMPLES FOR 2012

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Salinas	A00329	01/03/12	01/04/12	ND	0.1
Salinas	A00335	01/09/12	01/10/12	ND	0.1
Salinas	A00341	01/19/12	01/20/12	ND	0.1
Salinas	A00347	01/25/12	01/26/12	ND	0.1
Salinas	A00348	01/29/12	01/30/12	ND	0.1
Salinas	A00359	02/07/12	02/08/12	ND	0.1
Salinas	A00362	02/12/12	02/13/12	ND	0.1
Salinas	A00366	02/22/12	02/23/12	ND	0.1
Salinas	A00375	02/28/12	02/29/12	ND	0.1
Salinas	A00385	03/08/12	03/09/12	ND	0.1
Salinas	A00391	03/12/12	03/13/12	ND	0.1
Salinas	A00392	03/20/12	03/21/12	ND	0.1
Salinas	A00404	03/26/12	03/27/12	ND	0.1
Salinas	A00405	04/02/12	04/03/12	ND	0.1
Salinas	A00418	04/08/12	04/09/12	ND	0.1
Salinas	A00420	04/19/12	04/20/12	ND	0.1
Salinas	A00426	04/25/12	04/26/12	ND	0.1
Salinas	A00440	04/30/12	05/01/12	ND	0.1
Salinas	A00441	05/07/12	05/08/12	ND	0.1
Salinas	A00456	05/14/12	05/15/12	ND	0.1
Salinas	A00463	04/23/12	04/24/12	ND	0.1
Salinas	A00470	05/31/12	06/01/12	ND	0.1
Salinas	A00471	06/06/12	06/07/12	0.554	0.1
Salinas	A00479	06/12/12	06/13/12	ND	0.1
Salinas	A00494	06/18/12	06/19/12	ND	0.1
Salinas	A00497	06/24/12	06/25/12	ND	0.1
Salinas	A00507	07/05/12	07/06/12	ND	0.1
Salinas	A00512	07/10/12	07/11/12	ND	0.1
Salinas	A00521	07/18/12	07/19/12	ND	0.1
Salinas	A00529	07/23/12	07/24/12	ND	0.1
Salinas	A00541	07/30/12	07/31/12	ND	0.1
Salinas	A00542	08/06/12	08/07/12	ND	0.1
Salinas	A00549	08/12/12	08/13/12	ND	0.1
Salinas	A00564	08/24/12	08/25/12	ND	0.1
Salinas	A00565	08/29/12	08/30/12	ND	0.1
Salinas	A00572	09/05/12	09/06/12	ND	0.1
Salinas	A00586	09/11/12	09/12/12	ND	0.1

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Salinas	A00593	09/17/12	09/18/12	ND	0.1
Salinas	A00602	09/26/12	09/27/12	ND	0.1
Salinas	A00603	10/03/12	10/04/12	ND	0.1
Salinas	A00610	10/11/12	10/12/12	0.378	0.1
Salinas	A00617	10/17/12	10/18/12	0.651	0.1
Salinas	A00624	10/22/12	10/23/12	ND	0.1
Salinas	A00610	10/29/12	10/30/12	ND	0.1
Salinas	A00610	11/04/12	11/05/12	ND	0.1
Salinas	A00647	11/14/12	11/15/12	ND	0.1
Salinas	A00655	11/19/12	11/20/12	ND	0.1
Salinas	A00663	11/29/12	11/30/12	ND	0.1
Salinas	A00675	12/04/12	12/05/12	ND	0.1
Salinas	A00676	12/10/12	12/11/12	0.54	0.1
Salinas	A00690	12/18/12	12/19/12	ND	0.1
Salinas	A00698	12/28/12	12/29/12	0.229	0.1
Shafter	B00306	01/04/12	01/05/12	ND	0.1
Shafter	B00313	01/12/12	01/13/12	ND	0.1
Shafter	B00320	01/17/12	01/18/12	ND	0.1
Shafter	B00326	01/23/12	01/24/12	ND	0.1
Shafter	B00333	02/01/12	02/02/12	ND	0.1
Shafter	B00340	02/09/12	02/10/12	ND	0.1
Shafter	B00358	02/13/12	02/14/12	ND	0.1
Shafter	B00364	02/22/12	02/23/12	ND	0.1
Shafter	B00370	02/27/12	02/28/12	ND	0.1
Shafter	B00376	03/07/12	03/08/12	ND	0.1
Shafter	B00382	03/12/12	03/13/12	ND	0.1
Shafter	B00390	03/21/12	03/22/12	ND	0.1
Shafter	B00396	03/27/12	03/28/12	ND	0.1
Shafter	B00403	04/04/12	04/05/12	ND	0.1
Shafter	B00410	04/10/12	04/11/12	ND	0.1
Shafter	B00417	04/19/12	04/20/12	ND	0.1
Shafter	B00425	04/23/12	04/24/12	ND	0.1
Shafter	B00432	05/01/12	05/02/12	0.55	0.1
Shafter	B00439	05/08/12	05/09/12	ND	0.1
Shafter	B00446	05/17/12	05/18/12	ND	0.1
Shafter	B00453	05/24/12	05/25/12	ND	0.1
Shafter	B00460	05/30/12	05/31/12	ND	0.1
Shafter	B00468	06/05/12	06/06/12	ND	0.1
Shafter	B00476	06/13/12	06/14/12	ND	0.1
Shafter	B00483	06/18/12	06/19/12	ND	0.1

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Shafter	B00489	06/27/12	06/28/12	ND	0.1
Shafter	B00499	07/02/12	07/03/12	ND	0.1
Shafter	B00507	07/12/12	07/13/12	ND	0.1
Shafter	B00515	07/17/12	07/18/12	ND	0.1
Shafter	B00522	07/24/12	07/25/12	ND	0.1
Shafter	B00600	08/01/12	08/02/12	ND	0.1
Shafter	B00530	08/09/12	08/10/12	ND	0.1
Shafter	B00538	08/13/12	08/14/12	ND	0.1
Shafter	B00546	08/21/12	08/22/12	ND	0.1
Shafter	B00553	08/29/12	08/30/12	ND	0.1
Shafter	B00560	09/06/12	09/07/12	ND	0.1
Shafter	B00567	09/10/12	09/11/12	ND	0.1
Shafter	B00575	09/19/12	09/20/12	ND	0.1
Shafter	B00583	09/25/12	09/26/12	ND	0.1
Shafter	B00608	10/08/12	10/09/12	ND	0.1
Shafter	B00590	10/10/12	10/11/12	ND	0.1
Shafter	B00623	10/23/12	10/24/12	ND	0.1
Shafter	B00616	10/15/12	10/16/12	0.21	0.1
Shafter	B00631	10/30/12	10/31/12	ND	0.1
Shafter	B00638	11/05/12	11/06/12	ND	0.1
Shafter	B00647	11/14/12	11/15/12	ND	0.1
Shafter	B00654	11/19/12	11/20/12	ND	0.1
Shafter	B00661	11/27/12	11/28/12	ND	0.1
Shafter	B00668	12/03/12	12/04/12	ND	0.1
Shafter	B00677	12/12/12	12/13/12	ND	0.1
Shafter	B00684	12/17/12	12/18/12	ND	0.1
Shafter	B00691	12/26/12	12/27/12	ND	0.1
Ripon	C00315	01/05/12	01/06/12	ND	0.1
Ripon	C00316	01/09/12	01/10/12	ND	0.1
Ripon	C00327	01/18/12	01/19/12	ND	0.1
Ripon	C00335	01/23/12	01/24/12	ND	0.1
Ripon	C00336	02/02/12	02/03/12	ND	0.1
Ripon	C00342	02/06/12	02/07/12	ND	0.1
Ripon	C00355	02/15/12	02/16/12	ND	0.1
Ripon	C00361	02/21/12	02/22/12	ND	0.1
Ripon	C00367	02/28/12	02/29/12	ND	0.1
Ripon	C00374	03/05/12	03/06/12	ND	0.1
Ripon	C00375	03/15/12	03/16/12	ND	0.1
Ripon	C00384	03/19/12	03/20/12	ND	0.1
Ripon	C00388	03/28/12	03/29/12	ND	0.1

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Ripon	C00402	04/02/12	04/03/12	ND	0.1
Ripon	C00404	04/11/12	04/12/12	ND	0.1
Ripon	C00412	04/15/12	04/16/12	ND	0.1
Ripon	C00426	04/24/12	04/25/12	ND	0.1
Ripon	C00432	05/02/12	05/03/12	ND	0.1
Ripon	C00442	05/10/12	05/11/12	ND	0.1
Ripon	C00450	05/15/12	05/16/12	ND	0.1
Ripon	C00457	05/23/12	05/24/12	ND	0.1
Ripon	C00458	05/29/12	05/30/12	ND	0.1
Ripon	C00471	06/06/12	06/07/12	ND	0.1
Ripon	C00472	06/14/12	06/15/12	ND	0.1
Ripon	C00487	06/20/12	06/21/12	ND	0.1
Ripon	C00492	06/27/12	06/28/12	ND	0.1
Ripon	C00499	07/06/12	07/07/12	ND	0.1
Ripon	C00502	07/09/12	07/10/12	ND	0.1
Ripon	C00518	07/18/12	07/19/12	ND	0.1
Ripon	C00519	07/22/12	07/23/12	ND	0.1
Ripon	C00526	08/02/12	08/03/12	ND	0.1
Ripon	C00533	08/07/12	08/08/12	ND	0.1
Ripon	C00547	08/15/12	08/16/12	ND	0.1
Ripon	C00548	08/19/12	08/20/12	ND	0.1
Ripon	C00558	08/30/12	08/31/12	ND	0.1
Ripon	C00563	09/04/12	09/05/12	ND	0.1
Ripon	C00570	09/12/12	09/13/12	ND	0.1
Ripon	C00579	09/16/12	09/17/12	0.416	0.1
Ripon	C00594	09/27/12	09/28/12	0.307	0.1
Ripon	C00595	10/01/12	10/02/12	ND	0.1
Ripon	C00602	10/10/12	10/11/12	ND	0.1
Ripon	C00610	10/14/12	10/15/12	ND	0.1
Ripon	C00626	10/25/12	10/26/12	ND	0.1
Ripon	C00631	10/29/12	10/30/12	ND	0.1
Ripon	C00635	11/07/12	11/08/12	ND	0.1
Ripon	C00648	11/13/12	11/14/12	ND	0.1
Ripon	C00654	11/20/12	11/21/12	ND	0.1
Ripon	C00656	11/29/12	11/30/12	ND	0.1
Ripon	C00664	12/07/12	12/08/12	ND	0.1
Ripon	C00677	12/11/12	12/12/12	0.687	0.1
Ripon	C00685	12/19/12	12/20/12	0.364	0.1
Ripon	C00692	12/26/12	12/27/12	ND	0.1
Camarillo/Oxnard	TX011386	1/7/12	1/8/12	0.067	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Camarillo/Oxnard	TX011380	1/10/12	1/11/12	ND	0.03
Camarillo/Oxnard	TX011389	1/12/12	1/13/12	ND	0.03
Camarillo/Oxnard	TX011394	1/16/12	1/17/12	ND	0.03
Camarillo/Oxnard	TX011409	1/22/12	1/23/12	ND	0.03
Camarillo/Oxnard	TX011417	1/28/12	1/29/12	ND	0.03
Camarillo/Oxnard	TX011437	2/3/12	2/4/12	ND	0.03
Camarillo/Oxnard	TX011445	2/9/12	2/10/12	ND	0.03
Camarillo/Oxnard	TX011465	2/21/12	2/22/12	ND	0.03
Camarillo/Oxnard	TX011493	2/23/12	2/24/12	ND	0.03
Camarillo/Oxnard	TX011489	2/27/12	2/28/12	ND	0.03
Camarillo/Oxnard	TX011501	3/4/12	3/5/12	ND	0.03
Camarillo/Oxnard	TX011518	3/10/12	3/11/12	ND	0.03
Camarillo/Oxnard	TX011516	3/14/12	3/15/12	ND	0.03
Camarillo/Oxnard	TX011551	3/16/12	3/17/12	ND	0.03
Camarillo/Oxnard	TX011550	3/22/12	3/23/12	ND	0.03
Camarillo/Oxnard	TX011562	3/28/12	3/29/12	ND	0.03
Camarillo/Oxnard	TX011579	4/3/12	4/4/12	ND	0.03
Camarillo/Oxnard	TX011590	4/9/12	4/10/12	ND	0.03
Camarillo/Oxnard	TX011587	4/11/12	4/12/12	ND	0.03
Camarillo/Oxnard	TX011614	4/15/12	4/16/12	ND	0.03
Camarillo/Oxnard	TX011619	4/21/12	4/22/12	ND	0.03
Camarillo/Oxnard	TX011637	4/27/12	4/28/12	ND	0.03
Camarillo/Oxnard	TX011641	5/3/12	5/4/12	ND	0.03
Camarillo/Oxnard	TX011658	5/9/12	5/10/12	ND	0.03
Camarillo/Oxnard	TX011665	5/15/12	5/16/12	ND	0.03
Camarillo/Oxnard	TX011671	5/17/12	5/18/12	ND	0.03
Camarillo/Oxnard	TX011693	5/21/12	5/22/12	ND	0.03
Camarillo/Oxnard	TX011694	5/27/12	5/28/12	ND	0.03
Camarillo/Oxnard	TX011715	6/2/12	6/3/12	0.037	0.03
Camarillo/Oxnard	TX011721	6/8/12	6/9/12	0.071	0.03
Camarillo/Oxnard	TX011741	6/14/12	6/15/12	0.052	0.03
Camarillo/Oxnard	TX011760	6/20/12	6/21/12	ND	0.03
Camarillo/Oxnard	TX011763	6/26/12	6/27/12	ND	0.03
Camarillo/Oxnard	TX011757	6/28/12	6/29/12	ND	0.03
Camarillo/Oxnard	TX011778	7/2/12	7/3/12	ND	0.03
Camarillo/Oxnard	TX011792	7/8/12	7/9/12	ND	0.03
Camarillo/Oxnard	TX011796	7/14/12	7/15/12	0.24	0.03
Camarillo/Oxnard	TX011814	7/20/12	7/21/12	3.4	0.03
Camarillo/Oxnard	TX011810	7/24/12	7/25/12	0.33	0.03
Camarillo/Oxnard	TX011822	7/26/12	7/27/12	0.53	0.03
Camarillo/Oxnard	TX011840	8/1/12	8/2/12	0.18	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Camarillo/Oxnard	TX011846	8/7/12	8/8/12	0.7	0.03
Camarillo/Oxnard	TX011864	8/13/12	8/14/12	0.054	0.03
Camarillo/Oxnard	TX011869	8/15/12	8/16/12	0.044	0.03
Camarillo/Oxnard	TX011906	8/19/12	8/20/12	0.073	0.03
Camarillo/Oxnard	TX011898	8/25/12	8/26/12	0.1	0.03
Camarillo/Oxnard	TX011903	8/31/12	9/1/12	ND	0.03
Camarillo/Oxnard	TX011925	9/6/12	9/7/12	0.086	0.03
Camarillo/Oxnard	TX011928	9/12/12	9/13/12	ND	0.03
Camarillo/Oxnard	TX011945	9/18/12	9/19/12	ND	0.03
Camarillo/Oxnard	TX011939	9/20/12	9/21/12	0.032	0.03
Camarillo/Oxnard	TX011966	9/24/12	9/25/12	ND	0.03
Camarillo/Oxnard	TX011976	9/30/12	10/1/12	0.14	0.03
Camarillo/Oxnard	TX011984	10/6/12	10/7/12	0.034	0.03
Camarillo/Oxnard	TX011993	10/12/12	10/13/12	ND	0.03
Camarillo/Oxnard	TX011990	10/16/12	10/17/12	ND	0.03
Camarillo/Oxnard	TX012020	10/18/12	10/19/12	ND	0.03
Camarillo/Oxnard	TX012031	10/30/12	10/31/12	ND	0.03
Camarillo/Oxnard	TX012053	11/5/12	11/6/12	ND	0.03
Camarillo/Oxnard	TX012067	11/11/12	11/12/12	ND	0.03
Camarillo/Oxnard	TX012068	11/17/12	11/18/12	ND	0.03
Camarillo/Oxnard	TX012074	11/20/12	11/21/12	ND	0.03
Camarillo/Oxnard	TX012095	11/23/12	11/24/12	ND	0.03
Camarillo/Oxnard	TX012105	11/29/12	11/30/12	ND	0.03
Camarillo/Oxnard	TX012111	12/5/12	12/6/12	ND	0.03
Camarillo/Oxnard	TX012132	12/11/12	12/12/12	ND	0.03
Camarillo/Oxnard	TX012128	12/13/12	12/14/12	0.041	0.03
Camarillo/Oxnard	TX012143	12/17/12	12/18/12	ND	0.03
Camarillo/Oxnard	TX012144	12/23/12	12/24/12	ND	0.03
Camarillo/Oxnard	TX012165	12/29/12	12/30/12	ND	0.03
Santa Maria	TX011360	1/4/12	1/5/12	ND	0.03
Santa Maria	TX011368	1/10/12	1/11/12	ND	0.03
Santa Maria	TX011379	1/12/12	1/13/12	ND	0.03
Santa Maria	TX011391	1/16/12	1/17/12	ND	0.03
Santa Maria	TX011404	1/22/12	1/23/12	ND	0.03
Santa Maria	TX011416	1/31/12	2/1/12	ND	0.03
Santa Maria	TX011428	2/3/12	2/4/12	ND	0.03
Santa Maria	TX011442	2/9/12	2/10/12	ND	0.03
Santa Maria	TX011451	2/15/12	2/16/12	ND	0.03
Santa Maria	TX011471	2/21/12	2/22/12	ND	0.03
Santa Maria	TX011469	2/23/12	2/24/12	ND	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Santa Maria	TX011479	2/27/12	2/28/12	ND	0.03
Santa Maria	TX011497	3/4/12	3/5/12	ND	0.03
Santa Maria	TX011517	3/10/12	3/11/12	ND	0.03
Santa Maria	TX011515	3/14/12	3/15/12	ND	0.03
Santa Maria	TX011532	3/16/12	3/17/12	ND	0.03
Santa Maria	TX011537	3/22/12	3/23/12	ND	0.03
Santa Maria	TX011560	3/28/12	3/29/12	ND	0.03
Santa Maria	TX011577	4/3/12	4/4/12	ND	0.03
Santa Maria	TX011588	4/9/12	4/10/12	ND	0.03
Santa Maria	TX011586	4/11/12	4/12/12	ND	0.03
Santa Maria	TX011596	4/15/12	4/16/12	ND	0.03
Santa Maria	TX011613	4/21/12	4/22/12	ND	0.03
Santa Maria	TX011624	4/27/12	4/28/12	ND	0.03
Santa Maria	TX011639	5/3/12	5/4/12	ND	0.03
Santa Maria	TX011650	5/9/12	5/10/12	ND	0.03
Santa Maria	TX011663	5/15/12	5/16/12	ND	0.03
Santa Maria	TX011669	5/17/12	5/18/12	ND	0.03
Santa Maria	TX011674	5/21/12	5/22/12	ND	0.03
Santa Maria	TX011692	5/27/12	5/28/12	ND	0.03
Santa Maria	TX011696	6/2/12	6/3/12	0.035	0.03
Santa Maria	TX011716	6/8/12	6/9/12	0.054	0.03
Santa Maria	TX011730	6/14/12	6/15/12	0.036	0.03
Santa Maria	TX011743	6/20/12	6/21/12	ND	0.03
Santa Maria	TX011759	6/26/12	6/27/12	ND	0.03
Santa Maria	TX011762	6/28/12	6/29/12	ND	0.03
Santa Maria	TX011770	7/2/12	7/3/12	ND	0.03
Santa Maria	TX011777	7/8/12	7/9/12	ND	0.03
Santa Maria	TX011795	7/14/12	7/15/12	ND	0.03
Santa Maria	TX011808	7/20/12	7/21/12	ND	0.03
Santa Maria	TX011811	7/24/12	7/25/12	ND	0.03
Santa Maria	TX011821	7/26/12	7/27/12	ND	0.03
Santa Maria	TX011829	8/1/12	8/2/12	0.041	0.03
Santa Maria	TX011842	8/7/12	8/8/12	0.04	0.03
Santa Maria	TX011852	8/13/12	8/14/12	0.46	0.03
Santa Maria	TX011868	8/15/12	8/16/12	0.32	0.03
Santa Maria	TX011880	8/19/12	8/20/12	0.11	0.03
Santa Maria	TX011887	8/25/12	8/26/12	0.12	0.03
Santa Maria	TX011900	8/31/12	9/1/12	0.12	0.03
Santa Maria	TX011918	9/6/12	9/7/12	0.36	0.03
Santa Maria	TX011927	9/12/12	9/13/12	0.58	0.03
Santa Maria	TX011946	9/18/12	9/19/12	0.42	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Santa Maria	TX011938	9/20/12	9/21/12	0.55	0.03
Santa Maria	TX011955	9/24/12	9/25/12	0.68	0.03
Santa Maria	TX011968	9/30/12	10/1/12	0.77	0.03
Santa Maria	TX011977	10/6/12	10/7/12	0.11	0.03
Santa Maria	TX011988	10/12/12	10/13/12	0.17	0.03
Santa Maria	TX011995	10/16/12	10/17/12	0.045	0.03
Santa Maria	TX012010	10/18/12	10/19/12	0.031	0.03
Santa Maria	TX012027	10/24/12	10/25/12	ND	0.03
Santa Maria	TX012029	10/30/12	10/31/12	0.21	0.03
Santa Maria	TX012041	11/5/12	11/6/12	0.1	0.03
Santa Maria	TX012058	11/11/12	11/12/12	0.062	0.03
Santa Maria	TX012069	11/17/12	11/18/12	ND	0.03
Santa Maria	TX012073	11/20/12	11/21/12	0.58	0.03
Santa Maria	TX012084	11/23/12	11/24/12	0.17	0.03
Santa Maria	TX012106	11/29/12	11/30/12	ND	0.03
Santa Maria	TX012112	12/5/12	12/6/12	ND	0.03
Santa Maria	TX012130	12/11/12	12/12/12	ND	0.03
Santa Maria	TX012127	12/13/12	12/14/12	ND	0.03
Santa Maria	TX012137	12/17/12	12/18/12	ND	0.03
Santa Maria	TX012145	12/23/12	12/24/12	ND	0.03
Santa Maria	TX012166	12/29/12	12/30/12	ND	0.03
Watsonville	TX011410	1/4/12	1/5/12	ND	0.03
Watsonville	TX011378	1/10/12	1/11/12	ND	0.03
Watsonville	TX011381	1/12/12	1/13/12	ND	0.03
Watsonville	TX011392	1/16/12	1/17/12	ND	0.03
Watsonville	TX011407	1/22/12	1/23/12	ND	0.03
Watsonville	TX011411	1/28/12	1/29/12	ND	0.03
Watsonville	TX011439	2/9/12	2/10/12	ND	0.03
Watsonville	TX011468	2/21/12	2/22/12	ND	0.03
Watsonville	TX011466	2/23/12	2/24/12	ND	0.03
Watsonville	TX011480	2/27/12	2/28/12	ND	0.03
Watsonville	TX011514	3/14/12	3/15/12	0.037	0.03
Watsonville	TX011529	3/16/12	3/17/12	ND	0.03
Watsonville	TX011531	3/20/12	3/21/12	ND	0.03
Watsonville	TX011547	3/22/12	3/23/12	ND	0.03
Watsonville	TX011548	3/23/12	3/24/12	ND	0.03
Watsonville	TX011561	3/28/12	3/29/12	ND	0.03
Watsonville	TX011581	4/3/12	4/4/12	ND	0.03
Watsonville	TX011593	4/9/12	4/10/12	ND	0.03
Watsonville	TX011591	4/11/12	4/12/12	0.18	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Watsonville	TX011610	4/15/12	4/16/12	ND	0.03
Watsonville	TX011615	4/21/12	4/22/12	ND	0.03
Watsonville	TX011622	4/27/12	4/28/12	ND	0.03
Watsonville	TX011638	5/3/12	5/4/12	ND	0.03
Watsonville	TX011642	5/9/12	5/10/12	ND	0.03
Watsonville	TX011664	5/15/12	5/16/12	ND	0.03
Watsonville	TX011673	5/17/12	5/18/12	ND	0.03
Watsonville	TX011686	5/21/12	5/22/12	ND	0.03
Watsonville	TX011695	5/27/12	5/28/12	0.064	0.03
Watsonville	TX011707	6/2/12	6/3/12	ND	0.03
Watsonville	TX011718	6/8/12	6/9/12	0.046	0.03
Watsonville	TX011731	6/14/12	6/15/12	0.053	0.03
Watsonville	TX011742	6/20/12	6/21/12	ND	0.03
Watsonville	TX011755	6/26/12	6/27/12	0.06	0.03
Watsonville	TX011764	6/28/12	6/29/12	ND	0.03
Watsonville	TX011771	7/2/12	7/3/12	ND	0.03
Watsonville	TX011790	7/8/12	7/9/12	0.25	0.03
Watsonville	TX011794	7/14/12	7/15/12	0.12	0.03
Watsonville	TX011806	7/20/12	7/21/12	ND	0.03
Watsonville	TX011812	7/24/12	7/25/12	ND	0.03
Watsonville	TX011824	7/26/12	7/27/12	ND	0.03
Watsonville	TX011839	8/1/12	8/2/12	0.077	0.03
Watsonville	TX011845	8/7/12	8/8/12	0.1	0.03
Watsonville	TX011867	8/13/12	8/14/12	0.038	0.03
Watsonville	TX011870	8/15/12	8/16/12	0.035	0.03
Watsonville	TX011881	8/19/12	8/20/12	0.23	0.03
Watsonville	TX011897	8/25/12	8/26/12	0.069	0.03
Watsonville	TX011901	8/31/12	9/1/12	0.59	0.03
Watsonville	TX011919	9/6/12	9/7/12	0.56	0.03
Watsonville	TX011929	9/12/12	9/13/12	0.22	0.03
Watsonville	TX011944	9/18/12	9/19/12	0.16	0.03
Watsonville	TX011940	9/20/12	9/21/12	0.44	0.03
Watsonville	TX011971	9/30/12	10/1/12	1.0	0.03
Watsonville	TX011980	10/6/12	10/7/12	0.78	0.03
Watsonville	TX011992	10/12/12	10/13/12	0.55	0.03
Watsonville	TX011996	10/16/12	10/17/12	1.5	0.03
Watsonville	TX012006	10/18/12	10/19/12	0.25	0.03
Watsonville	TX012032	10/24/12	10/25/12	0.21	0.03
Watsonville	TX012034	10/30/12	10/31/12	0.18	0.03
Watsonville	TX012045	11/5/12	11/6/12	ND	0.03
Watsonville	TX012056	11/11/12	11/12/12	ND	0.03

Sampling Location	Sample Number	Date Started	Date Ended	Detected Concentration (ppb)	Detection Limit (ppb)
Watsonville	TX012076	11/17/12	11/18/12	ND	0.03
Watsonville	TX012075	11/20/12	11/21/12	ND	0.03
Watsonville	TX012108	11/30/12	12/1/12	ND	0.03
Watsonville	TX012109	12/5/12	12/6/12	ND	0.03
Watsonville	TX012131	12/11/12	12/12/12	ND	0.03
Watsonville	TX012129	12/13/12	12/14/12	ND	0.03
Watsonville	TX012139	12/17/12	12/18/12	ND	0.03
Watsonville	TX012190	12/23/12	12/24/12	ND	0.03
Watsonville	TX012191	12/29/12	12/30/12	ND	0.03