A Compilation of U.S. Geological Survey Pesticide Concentration Data for Water and Sediment in the Sacramento–San Joaquin Delta Region: 1990–2010

Data Series 756

U.S. Department of the Interior
U.S. Geological Survey

Cover: View of the Sacramento–San Joaquin Delta region (photograph from California Department of Water Resources).

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By James L. Orlando

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U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
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U.S. Geological Survey, Reston, Virginia: 2013

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Conversion Factors

SI to Inch/Pound

Multiply	By	To obtain
	Length	
centimeter (cm)	0.3937	inch (in.)
millimeter (mm)	0.03937	inch (in.)
meter (m)	3.281	foot (ft)
kilometer (km)	0.6214	mile (mi)
kilometer (km)	0.5400	mile, nautical (nmi)
meter (m)	1.094	yard (yd)

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83)

Pesticide concentrations in water are given in micrograms per liter (µg/L) and nanograms per liter (ng/L). Pesticide concentrations is sediment are given in micrograms per kilogram (µg/kg).

Abbreviations

MDL	method detection limit
NASQAN	National Stream Quality Accounting Network
NAWQA	National Water Quality Assessment Program
NWIS	USGS National Water Information System
NWQL	USGS National Water Quality Laboratory
POD	pelagic organism decline
QC	Quality-control
USGS	U.S. Geological Survey

A Compilation of U.S. Geological Survey Pesticide Concentration Data for Water and Sediment in the Sacramento–San Joaquin Delta Region: 1990–2010

By James L. Orlando

Introduction

Beginning around 2000, abundance indices of four pelagic fishes (delta smelt, striped bass, longfin smelt, and threadfin shad) within the San Francisco Bay and Sacramento–San Joaquin Delta began to decline sharply (Sommer and others, 2007). These declines collectively became known as the pelagic organism decline (POD). No single cause has been linked to this decline, and current theories suggest that combinations of multiple stressors are likely to blame. Contaminants (including current-use pesticides) are one potential stressor being investigated for its role in the POD (Anderson, 2007). Pesticide concentration data collected by the U.S. Geological Survey (USGS) at multiple sites in the delta region over the past two decades are critical to understanding the potential effects of current-use pesticides on species of concern as well as the overall health of the delta ecosystem.

In April 2010, a compilation of contaminant data for the delta region was published by the State Water Resources Control Board (Johnson and others, 2010). Pesticide occurrence was the major focus of this report, which concluded that "there was insufficient high quality data available to make conclusions about the potential role of specific contaminants in the POD." The report cited multiple sources; however, data collected by the USGS were not included in the publication even though these data met all criteria listed for inclusion in the report.

What follows is a summary of publicly available USGS data for pesticide concentrations in surface water and sediments within the Sacramento–San Joaquin Delta region from the years 1990 through 2010. Data were retrieved though the USGS National Water Information System (NWIS) database, a publicly available online-data repository (U.S. Geological Survey, 1998), and from published USGS reports (also available online at *http://pubs.er.usgs.gov/*).

The majority of the data were collected in support of two long term USGS monitoring programs—National Water Quality Assessment Program (NAWQA; *http://water.usgs.gov/nawqa/*) and National Stream Quality Accounting Network (NASQAN; *http://water.usgs.gov/nasqan/*)—and through projects associated with the USGS Toxics Substances Hydrology Program (*http://toxics.usgs.gov/*). In addition, data were collected during multiple research projects that were supported by various federal, state, and local agencies.

Although these data have been previously published in some form, it is hoped that by focusing on samples collected within the delta region and presenting these data in a concise format, they will be a valuable resource for scientists, resource managers, and members of the public working to understand the role of pesticides in the POD and their potential effects on the overall health of the delta ecosystem.

Data Sources and Compilation Methodology

In an effort to facilitate comparisons to the data in Johnson and others (2010), similar sampling site and sampling date range criteria were used for the retrieval of pesticide data from the USGS NWIS database and published reports. Sampling sites were selected by creating a simple buffer of 30 miles around the legal delta boundary (fig. 1) by using ArcGIS (geographic information system) software (ESRI, Redlands, Calif.). A spatial dataset of all USGS surface-water sampling locations in the NWIS database was then overlain with the buffer, and all sites that fell within the buffer were selected (862 sites; fig. 1). A request was then submitted to the USGS California Water Science Center public information officer for all non-proprietary pesticide concentration data for water and sediment samples collected at these sites between January 1, 1990 and December 31, 2010. The NWIS data retrieval was completed on March 8, 2012, and represents all data meeting the previously described criteria present in the database at that time. All of the data have undergone review and approval and much of the data retrieved from NWIS have been previously published in USGS reports or scientific journals. Table 1 lists a number of these publications, which can be consulted for additional project specific details.

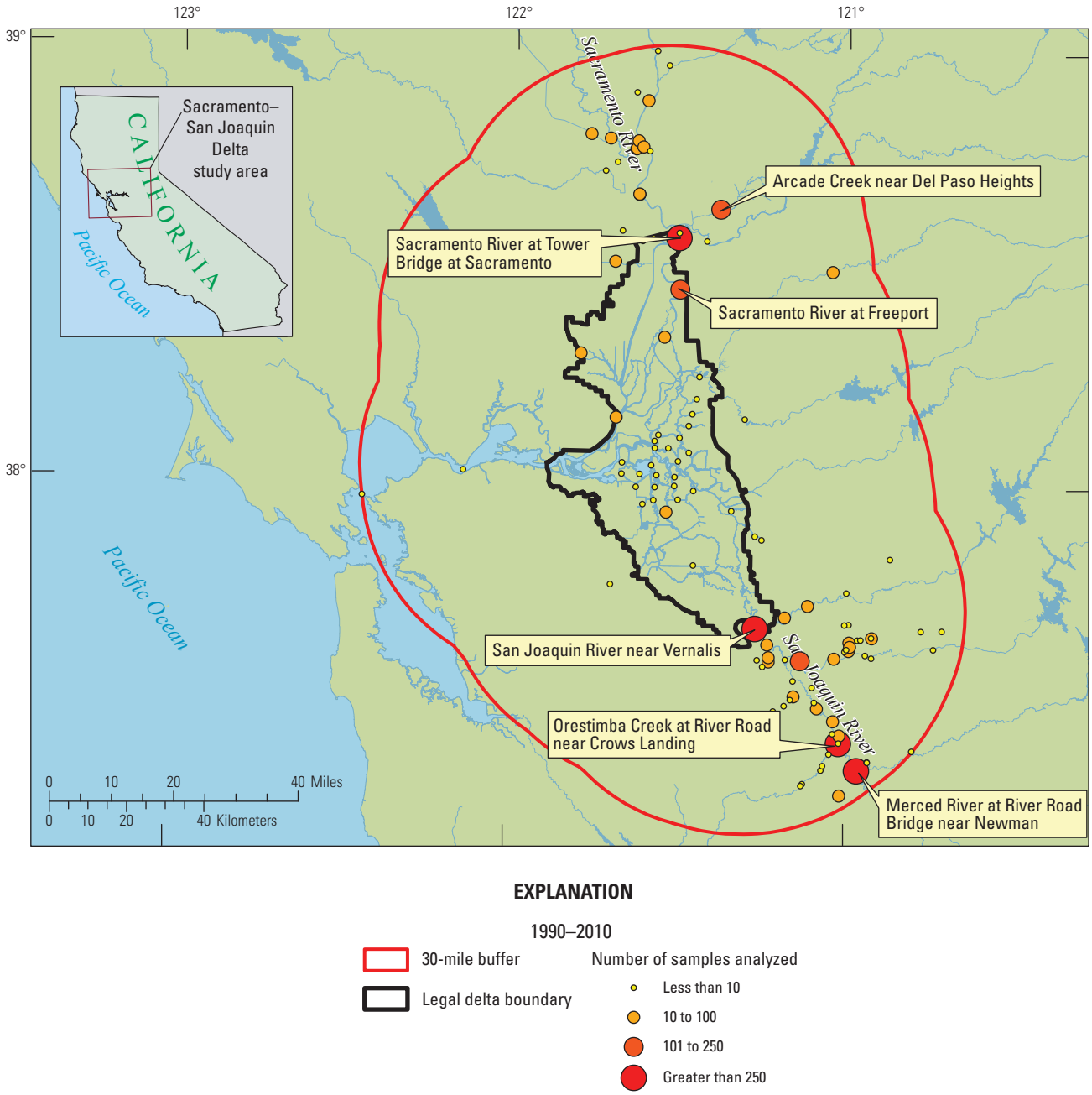

Figure 1. Sampling locations and number of samples collected, Sacramento–San Joaquin Delta region,1990–2010.

Table 1. Publications associated with pesticide data retrieved from the U.S. Geological Survey National Water Information System database.

References
Brown, L.R., Panshin, S.Y., Kratzer, C.R., Zamora, Celia, and Gronberg, J.M., 2004, Occurrence, distribution, instantaneous loads, and yields of dissolved pesticides in the San Joaquin River Basin, California, during summer conditions, 1994 and 2001: U.S. Geological Survey Scientific Investigations Report 2004-5083, 61 p.
Dileanis, P.D., Bennett, K.P., and Domagalski, J.L., 2002, Occurrence and transport of diazinon in the Sacramento River, California, and selected tributaries during three winter storms, January–February 2000: U.S. Geological Survey Water-Resources Investigations Report 2002-4101, 78 p.
Domagalski, J.L., 1996, Occurrence of dicofol in the San Joaquin River, California: Bulletin of Environmental Contamination and Toxicology, v. 57, no. 2.
Domagalski, J.L., 1996, Pesticides and pesticide degradation products in stormwater runoff: Sacramento River Basin, California: J.American Water Resources Assoc, v. 32, no. 5.
Domagalski, J.L., 1997, Pesticides in surface and ground water of the San Joaquin-Tulare Basins, California: Analysis of available data, 1966 through 1992: U.S. Geological Survey Water Supply Paper 2468, 74 p.
Domagalski, J.L., 2000, Pesticides in surface water measured at select sites in the Sacramento River Basin, California, 1996–1998: U.S. Geological Survey Water-Resources Investigations Report 2000-4203, 24 p.
Domagalski, J.L, and Dileanis, P.D., 2000, Water-quality assessment of the Sacramento River Basin, California: Water quality of fixed sites, 1996–1998: U.S. Geological Survey Water-Resources Investigations Report 2000-4247, 60 p.
Domagalski, J.L., and Kuivila, K.M., 1991, Transport and transformation of dissolved rice pesticides in the Sacramento River Delta, California: U.S. Geological Survey Open-File Report 91-227, 5 p.
Domagalski, J.L., and Munday, C., 2003, Evaluation of diazinon and chlorpyrifos concentrations and loads, and other pesticide concentrations, at selected sites in the San Joaquin Valley, California, April to August, 2001: U.S. Geological Survey Water-Resources Investigations Report 2003-4088, 60 p.
Domagalski, J.L., Dubrovsky, N.M., and Kratzer, C.R., 1997, Organic chemicals in the environment: Pesticides in the San Joaquin River, California: Inputs from dormant sprayed orchards: Journal of Environmental Quality, v. 26, no. 2, p. 454–465.
Domagalski, J.L., Knifong, D.L., MacCoy, D.E., Dileanis, P.D, Dawson, B.J., and Majewski, M.S., 1998, Water quality assessment of the Sacramento River Basin, California—Environmental setting and study design: U.S. Geological Survey Water-Resources Investigations Report 97-4254, 31 p.
Domagalski, J.L., Dileanis, P.D., Knifong, D.L., Munday, C.M., May, J.T., Dawson, B.J., Shelton, J.L., and Alpers, C.N., 2000, Water-quality assessment of the Sacramento River Basin, California, Water-quality, sediment and tissue chemistry, and biological data, 1995–1998: U.S. Geological Survey Open-File Report 2000-391.
Domagalski, J.L., Knifong, D.L., Dileanis, P.D., Brown, L.R., May, J.T., Connor, V., and Alpers, C.N., 2000, Water quality in the Sacramento River Basin, California, 1994–98: U.S. Geological Survey Circular 1215, 36 p.
Domagalski, J.L., Weston, D.P., Zhang, M., and Hladik, M., 2010, Pyrethroid insecticide concentrations and toxicity in streambed sediments and loads in surface waters of the San Joaquin Valley, California, USA: Environmental Toxicology and Chemistry, v. 29, no. 4, p. 813–823.
Dubrovsky, N.M., Kratzer, C.R., Brown, L.R., Gronberg, J.M., and Burow, K.R., 1998, Water quality in the San Joaquin-Tulare Basins, California, 1992–95: U.S. Geological Survey Circular 1159, 38 p.
Dubrovsky, N.M., Kratzer, C.R., Panshin, S.Y., Gronberg, J.A.M., and Kuivila, K.M., 2000, Pesticide transport in the San Joaquin River Basin: ACS Symposium Series, v. 751.
Hladik, M.L., Domagalski, J.L., and Kuivila, K.M., 2009, Concentrations and loads of suspended sediment-associated pesticides in the San Joaquin River, California and tributaries during storm events: Science of the Total Environment, v. 408, p. 356–364.
Kratzer, C.R., 1997, Transport of diazinon in the San Joaquin River Basin, California: U.S. Geological Survey Open-File Report 97-411, 17 p.
Kratzer, C.R., 1998, Pesticides in storm runoff from agricultural and urban areas in the Tuolumne River Basin in the vicinity of Modesto, California: U.S. Geological Survey Water-Resources Investigations Report 98-4017, 17 p.
Kratzer, C.R., 1998, Transport of sediment-bound organochlorine pesticides to the San Joaquin River, California: U.S. Geological Survey Open-File Report 97-655, 30 p.
Kratzer, C.R., 1999, Transport of diazinon in the San Joaquin River Basin, California: Journal of the American Water Resources Association, v. 35, no. 2, p. 379–395.
Kratzer, C.R., Zamora, C., and Knifong, D.L., 2002, Diazinon and chlorpyrifos loads in the San Joaquin River Basin, California, January and February 2000: U.S. Geological Survey Water-Resources Investigations Report 2002-4103, 45 p.
MacCoy, D.E., and Domagalski, J.L., 1999, Trace elements and organic compounds in streambed sediment and aquatic biota from the Sacramento River Basin, California, October and November 1995: U.S. Geological Survey Water-Resources Investigations Report 99-4151, 37 p.
Munday, Cathy, and Domagalski, J.L., 2003, Quality-control results for ground-water and surface-water data, Sacramento River Basin, California, National Water-Quality Assessment, 1996–1998: U.S. Geological Survey Water-Resources Investigations Report 2002-4201, 54 p.
Panshin, S., Dubrovsky, N.M., Gronberg, J.M., and Domagalski, J.L., 1998, Occurrence and distribution of dissolved pesticides in the San Joaquin River Basin, California: U.S. Geological Survey Water-Resources Investigations Report 98-4032, 88 p.
Pereira, W.E., Domagalski, J.L., Hostettler, F.D., Brown, L.R., and Rapp, J.B., 1996, Occurrence and accumulation of pesticides and organic contaminants in river sediment, water and clam tissues from the San Joaquin River and tributaries, California: Environmental Toxicology and Chemistry, v. 15, no. 2, p. 172–180.
Zamora, Celia, Kratzer, C.R., Majewski, M.S., and Knifong, D.L., 2003, Diazinon and chlorpyrifos loads in precipitation and urban and agricultural storm runoff during January and February 2001 in the San Joaquin River Basin, California: U.S. Geological Survey Water-Resources Investigations Report 2003-4091, 56 p.

USGS pesticide concentration data meeting the previously described criteria, but not in the NWIS database, were also compiled for this report. These data were published and described in detail in six USGS reports shown in table 2. These data were formatted to match the data retrieved from the NWIS database and are presented along with those data in appendix 1. Selected quality-control data associated with these environmental data are presented in appendix 2. As in Johnson and others (2010), the data presented in this report are briefly described for three periods; pre-POD (1990–1999), POD (2000–2002), and post-POD (2003–2010).

Some of the results in appendices 1 and 2 are reported as less than some numerical value. For data retrieved from the NWIS database, these numerical values represent a mixture of method detection limits and minimum reporting levels that are dependent on when the sample was analyzed because reporting procedures and analytical methods at the USGS National Water Quality Laboratory (NWQL) evolved over time. Details of how these values were determined are reported in two publications: National Water Quality Laboratory Technical Memorandum 1994-12 (U.S. Geological Survey, 1994) and Childress and others (1999). Additional details of reporting procedures used by the NWQL can be found in Maloney (2005), the individual analytical method reports cited in appendix 3, and at *http://nwql.usgs.gov/Public/techmemo.shtml.*

Data in appendix 1 that were derived from the USGS reports referenced in table 1 are also frequently reported as less than some numerical value. In the original reports, these data were reported as non-detections, but to correspond with the data retrieved from NWIS, these data were assigned numerical values that represent the method detection limits determined for their respective projects. For the purposes of this report, all data shown as less than some numerical value are considered to be non-detections when determining the number of detections for a particular pesticide.

Data produced by the NWQL and reported in appendices 1 and 2 with an “E” qualifier, meaning “estimated or having a higher degree of uncertainty” represent detections of an analyte at concentrations below the method detection limit (MDL); between the long-term MDL and the laboratory reporting level; or, in rare cases, greatly elevated concentrations that exceed the calibration standards of the analytical instrument (National Water Quality Laboratory Technical Memorandum 1994-12 and Childress and others, 1999). Data produced by the Organic Chemistry Research Laboratory are reported with an “E” qualifier if the result was below the MDL determined during the specific project described in the reports referenced in table 1. Estimated data from these sources (7,370 results) are, for the purposes of this report, considered to be confirmed detections of a particular pesticide; however, these data should be used with the understanding that their uncertainty is greater than that of data reported without an “E” remark code.

Quality-Control Data Summary

Two USGS laboratories, the NWQL located in Lakewood, Colo., and the Organic Chemistry Research Laboratory located in Sacramento, Calif., were responsible for the majority of analyses presented in this report. Each laboratory adheres to rigorous quality-control protocols. Documents describing the protocols followed at the NWQL, along with descriptions of analytical methods, are available at *http://nwql.usgs.gov/nwql.shtml,* and specific analytical method references are in appendix 3. Quality-control (QC) data and detailed descriptions of the analytical methods used by the Sacramento laboratory are presented in the reports cited in table 1. Lastly, prior to release to the public through the NWIS database or through published reports, all data were subject to multiple levels of review to ensure the quality of the data.

Three types of QC data were retrieved from the NWIS database: field blanks, field replicates, and field-spike samples. A total of 406 QC samples were retrieved (398 surface-water QC samples and 8 sediment QC samples), representing 37 sites over the 1990–2010 period. Out of the 406 samples, there were 130 field blanks, 161 field-replicates, and 115 field-spike samples. These data are presented in appendix 2.

Field blanks are collected to test the effectiveness of equipment cleaning procedures and to assess contamination due to field and laboratory handling of the sample. In brief, of the 130 field blanks retrieved from NWIS (127 water and 3 sediment), 20 water samples had detections of at least one pesticide (including “E” values). There were a total of 15 detections of a pesticide above its MDL in 6 of these samples, with 1 sample (site 11274538 collected on August 8, 1992) accounting for 9 detections. Only two samples (site 11273500 collected on January 12, 2000, and site 11303500 collected on June 21, 2001) had pesticide detections greater than 10 times the respective MDLs of the pesticides present (diazinon and chlorpyrifos in the former sample and simazine in the latter). All other results were non-detections.

Field replicates are collected to assess variability for a given sample matrix and to test the reproducibility of results for a set of laboratory procedures. Listed in appendix 2 are 161 field-replicate samples (156 water and 5 sediment samples) with 9,149 environmental sample and replicate sample analyte pairs. These included 1,166 paired detections of a pesticide in both the environmental sample and its replicate (including estimated values), with relative standard deviations ranging from 0 to 123 percent. Fifty analyte pairs exceeded a relative standard deviation of 25 percent, although thirteen of these exceedances were due to one sample pair (site 11274538, collected on June 17, 1992). Of the 1,166 paired detections, there were 372 instances in which both the environmental and

Table 2. U.S. Geological Survey series reports from which pesticide concentration data were compiled.

Data source	Publication reference	Publication URL
1	Smalling, K.L., Orlando, J.L., and Kuivila, K.M., 2005, Analysis of pesticides in surface water and sediment from Yolo Bypass, California, 2004–2005: U.S. Geological Survey Scientific Investigations Report 2005-5220, 20 p.	*http://pubs.usgs.gov/sir/2005/5220/*
2	Orlando, J.L., and Kuivila, K.M., 2004, Changes in rice pesticide use and surface water concentrations in the Sacramento River watershed, California: U.S. Geological Survey Scientific Investigations Report 2004-5097, 28 p.	*http://pubs.usgs.gov/sir/2004/5097/*
3	Orlando, J.L., Jacobson, L.A., and Kuivila, K.M., 2004, Dissolved pesticide and organic carbon concentrations detected in surface waters, northern Central Valley, California, 2001–2002: U.S. Geological Survey Open-File Report 2004-1214, 32 p.	*http://pubs.usgs.gov/of/2004/1214/*
4	Orlando, J.L., Kuivila, K.M., and Whitehead, A., 2003, Dissolved pesticide concentrations detected in storm-water runoff at selected sites in the San Joaquin River Basin, California, 2000–2001: U.S. Geological Survey Open-File Report 03-0101, 16 p.	*http://pubs.usgs.gov/of/2003/ofr03101/*
5	Orlando, J.L., and Kuivila, K.M., 2006, Seasonal changes in concentrations of dissolved pesticides and organic carbon in the Sacramento-San Joaquin Delta, California 1994–1996: U.S. Geological Survey Data Series Report 197, 31 p.	*http://pubs.usgs.gov/ds/2006/197/*
6	MacCoy, D., Crepeau, K.L., and Kuivila, K.M., 1995, Dissolved pesticide data for the San Joaquin River at Vernalis and the Sacramento River at Sacramento, California, 1991–94: U.S. Geological Survey Open-File Report 95-110, 27 p.	*http://pubs.usgs.gov/of/1995/0110/report.pdf*

replicate values were estimates. In these cases, the uncertainty associated with the “E” values is likely similar to the differences between the replicate values, and therefore, these pairs had acceptable agreement and relative standard deviations were not determined. There were an additional 192 instances of a detection of an analyte in either the replicate sample or the environmental sample where there was no corresponding detection in the other sample (including estimated values). In only 39 of these instances did the detection exceed 1.5 times the analyte’s MDL, and no particular sample or analyte accounted for a substantial portion of these unpaired detections. Finally, there were 7,791 instances in which both the environmental and replicate samples were reported as nondetections, which was considered acceptable agreement.

Field-spike samples are used to assess analyte recovery, degradation, sorption, and interferences caused by the sampling matrix. These data are presented in appendix 2 for 115 water samples collected at 21 sites as total concentrations (spike concentration plus environmental concentration). For information on spiking levels, the reader can consult the method references listed in appendix 2.

Quality-control data contained within the USGS reports listed in table 1 fully met the data-quality objectives of the studies described in the respective reports. As a result, all the environmental data in these reports were deemed satisfactory and are included in appendix 1. Each report contains a detailed written description of the quality-assurance procedures followed and QC data produced for that study, which can be used as a reference. Quality-control data for these studies are not included in appendix 2.

Environmental Data Summary

Overview

From 1990 to 2010, a total of 3,370 (3,249 water and 121 sediment), samples were collected at 113 surface-water sites in the delta region and analyzed for pesticides by USGS laboratories (fig. 1 and table 3, at back of report). During this period, 276 pesticides and pesticide degradates were analyzed in water samples and 127 were analyzed in sediments, although not all pesticides were analyzed in every sample because analytical methods changed over time. These analyses yielded a total of 155,340 individual pesticide concentration results (152,703 results for water samples and 2,637 results for sediment samples), including “E” values and “less than” results as described earlier.

Overall, 124 pesticides were detected in water and 37 in sediments (including “E” values). Herbicides were the most commonly analyzed and detected type of pesticide in water samples, and a variety of chemical classes were represented. Insecticides were the most common type of pesticide analyzed and detected in sediment samples, and these were primarily organochlorines and pyrethroids (tables 4 and 5, at back of report). The majority of the samples (2,187) were collected at six sites: Arcade Creek near Del Paso Heights, Merced River at River Road Bridge near Newman, Orestimba Creek at River Road near Crows Landing, Sacramento River at Freeport, Sacramento River at Tower Bridge at Sacramento, and San Joaquin River near Vernalis) (fig. 1 and table 2). Table 6 (at back of report) lists the number

of samples analyzed for pesticides for each sampling site per year from 1990 to 2010. The total number of samples collected per year was large in the early 1990s, then decreased until 1999, but peaked in 2001 preceding a general decline (fig. 2). The number of sites sampled per year peaked in 1994–95 (fig. 3). Seasonally, the greatest number of samples was collected during the winter (December–February), and the least in the fall (September–November), as shown in table 7 (at back of report) and figure 4.

Pre-POD (1990–1999)

During the pre-POD years, a total of 1,566 samples were collected from 81 surface-water sites within 30 miles of the delta and analyzed by USGS laboratories for pesticides. Of these, 1,520 were water samples and 46 were sediment samples. During this period, water samples were analyzed for 112 pesticides and degradates, and sediment samples were analyzed for 42, although not every sample was analyzed for all of the compounds. During this period, 65 pesticides were detected in water and 25 were detected in sediment. Details on the types and classes of pesticides analyzed and detected in the water and sediment samples can be found in tables 4 and 5, respectively. Samples were collected from sites within the delta as well as from tributaries to the delta. Approximately 70 percent of the samples were collected from four sites: the Merced River at River Road Bridge near Newman, Orestimba Creek at River Road near Crows Landing, Sacramento River at Tower Bridge at Sacramento, and San Joaquin River near Vernalis (fig. 5).

POD (2000–2002)

During the POD years, a total of 1,200 samples were collected from 40 surface-water sites and analyzed by USGS laboratories for pesticides. No sediment samples were collected during this time. During this period, water samples were analyzed for 194 unique pesticides and degradates, although not every compound was analyzed for in every sample. Overall, 91 pesticides were detected. Details on the types and classes of pesticides analyzed and detected can be found in table 4 (at back of report). Samples generally were collected from sites outside the legal boundary of the delta, with the majority of samples collected from the San Joaquin River or its tributaries (fig. 6).

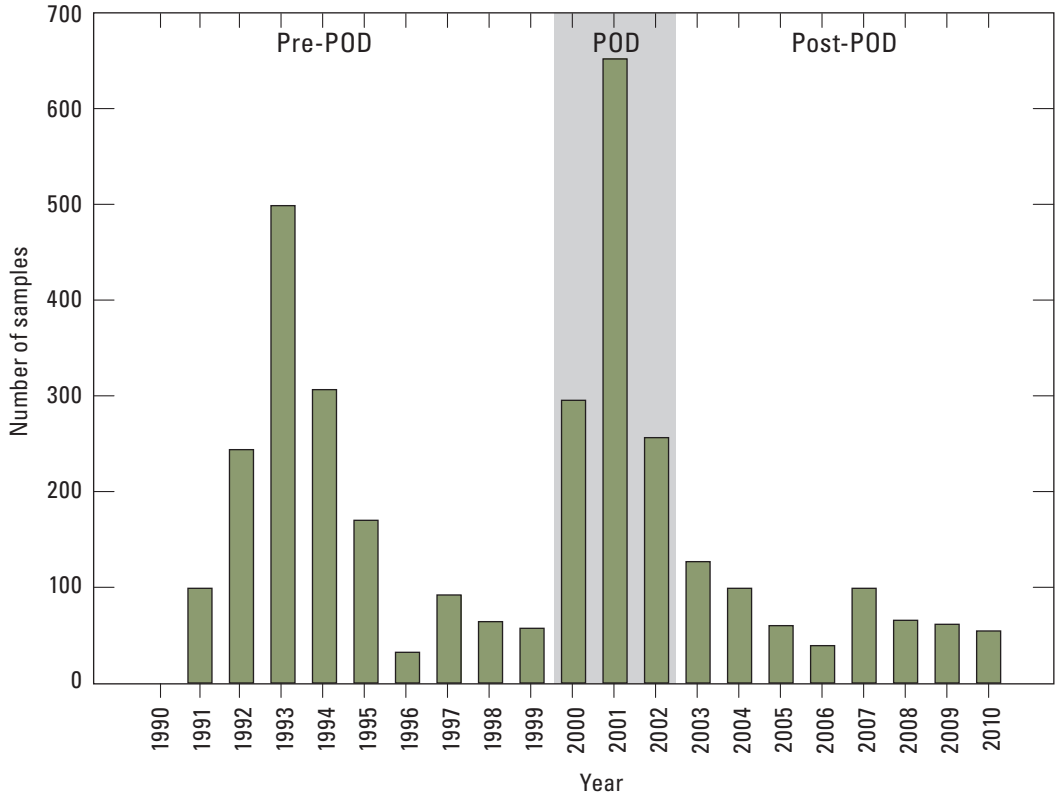

Figure 2. Number of samples collected per year from the Sacramento–San Joaquin Delta region, 1990–2010.

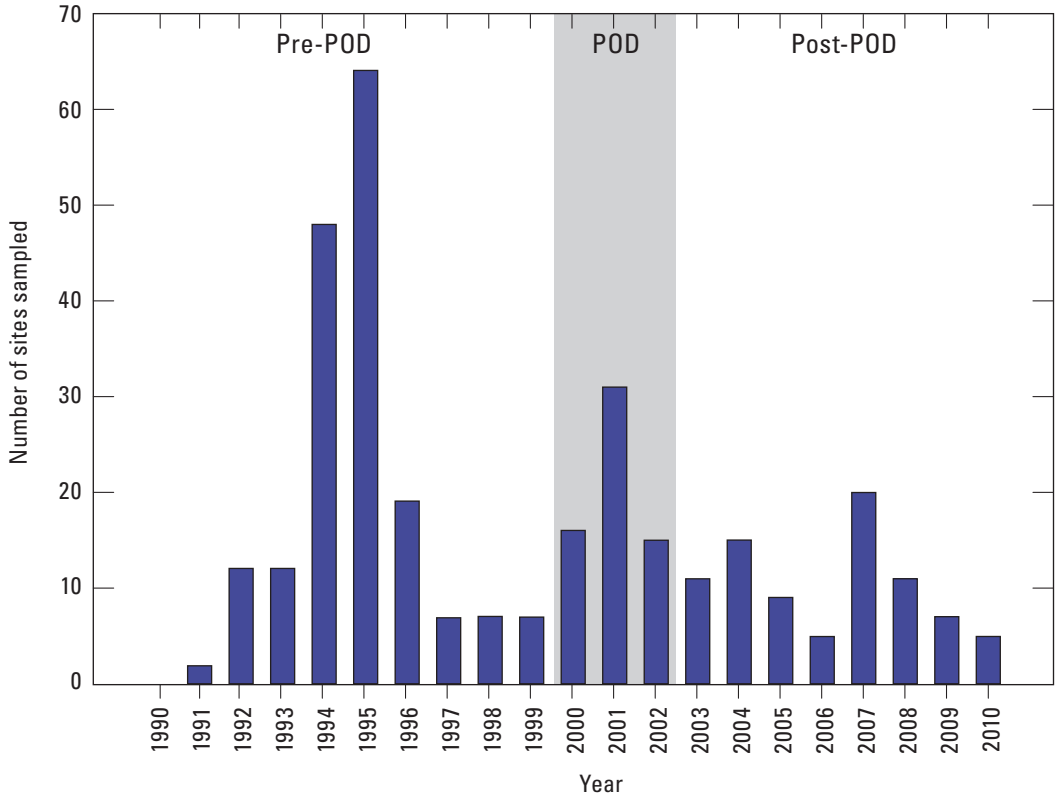

Figure 3. Number of sites sampled per year from the Sacramento–San Joaquin Delta region, 1990–2010.

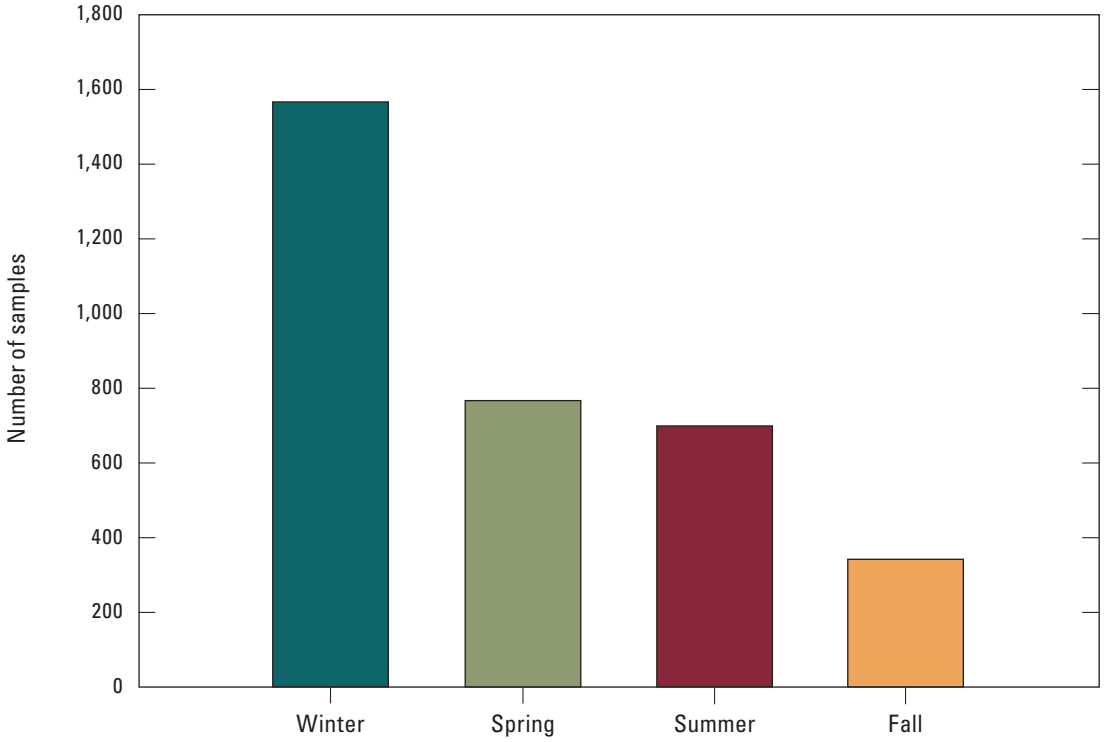

Figure 4. Number of samples collected per season from the Sacramento–San Joaquin Delta region, 1990–2010.

Figure 5. Sampling locations and number of samples collected in the Sacramento–San Joaquin Delta region, 1990–1999.

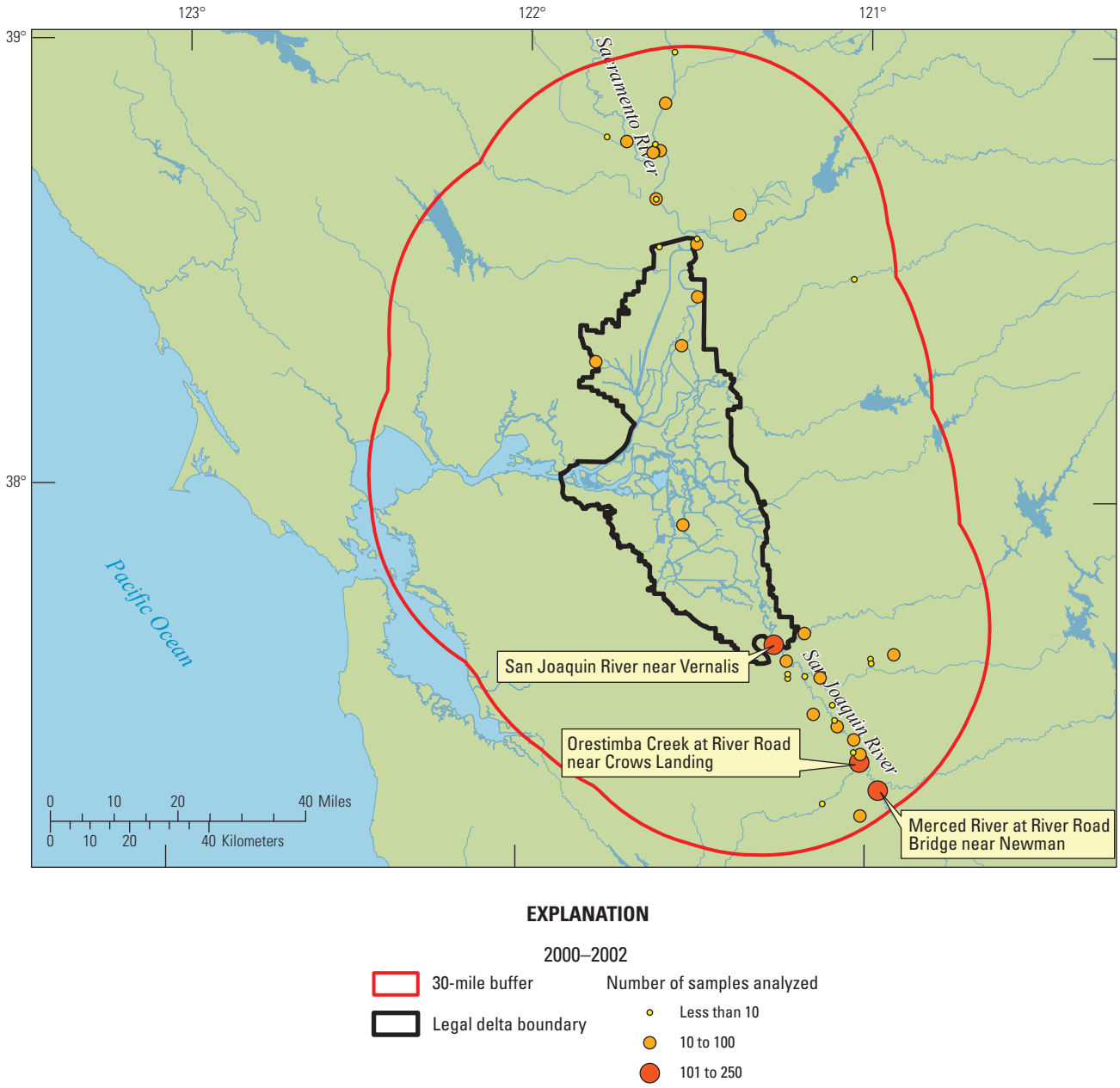

Figure 6. Sampling locations and number of samples collected in the Sacramento–San Joaquin Delta region, 2000–2002.

Post-POD (2003–2010)

During the post-POD years, a total of 604 samples were collected from 39 surface-water sites and analyzed by USGS laboratories for pesticides. Of these, 529 were water samples and 75 were sediment samples. During this period, 257 pesticides and degradates were analyzed in water samples, and 107 were analyzed in sediment samples, although not all of the compounds were analyzed in every sample. Overall, 92 pesticides were detected in water and 13 in sediment. Details on the types and classes of pesticides analyzed and detected in the water and sediment samples can be found in tables 4 and 5, respectively. During this period, the majority of samples were collected at two sites representing the two major inputs to the delta: Sacramento River at Freeport and San Joaquin River near Vernalis (fig. 7).

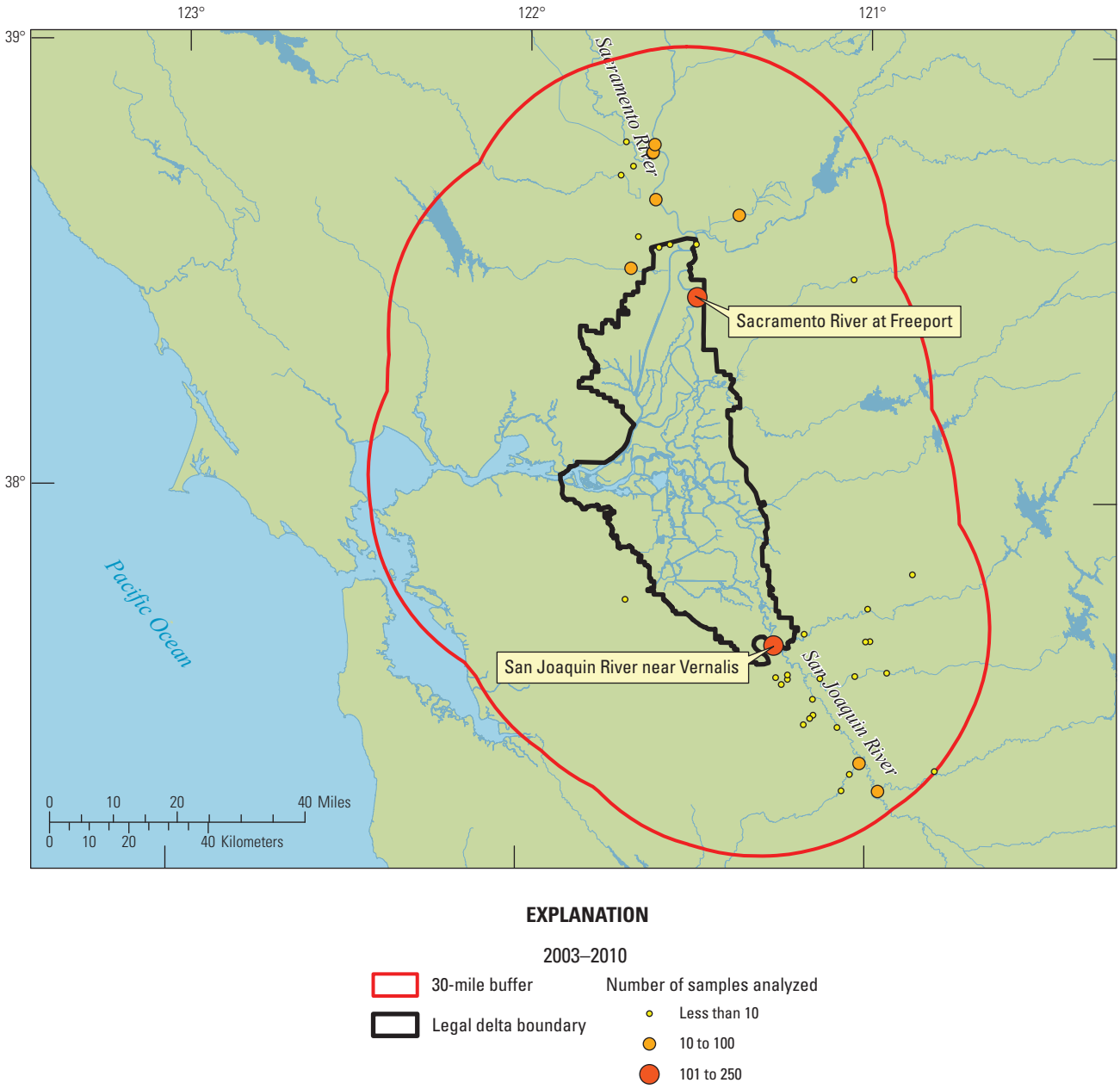

Figure 7. Sampling locations and number of samples collected in the Sacramento–San Joaquin Delta region, 2003–2010.

Acknowledgements

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Table 3. U.S. Geological Survey sampling sites with pesticide data, and the number of samples collected in the Sacramento–San Joaquin Delta region for different types of samples, 1990–2010.

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NAD83, North American Datum of 1983; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	Latitude	Longitude	Datum	Total samples analyzed	Water samples analyzed	Suspended-sediment samples analyzed	Bed-sediment samples analyzed
AMERICAN R A SACRAMENTO CA	11447000	38.5680	–121.4233	NAD83	1	0	0	1
ANDERSON RD DR A ORESTIMBA C NR CROWS LANDING CA	372143121033901	37.3619	–121.0619	NAD83	2	1	1	0
ARCADE C NR DEL PASO HEIGHTS CA	11447360	38.6418	–121.3827	NAD83	125	123	0	2
BEAR R A HWY 70 NR RIO OSO CA	385821121323201	38.9724	–121.5433	NAD83	1	0	0	1
BEAVER SLOUGH NR THORNTON CA*	381215121264901	38.2042	–121.4471	NAD83	7	7	0	0
BRUSHY POND NR LIVERMORE, CA	374630121414701	37.7750	–121.6964	NAD83	4	2	0	2
CACHE C INFLOW TO SETTLING BASIN NR WOODLAND	384340121434401	38.7277	–121.7300	NAD83	4	4	0	0
COLUMBIA CUT NR MIDDLE RIVER CA*	380125121303601	38.0238	–121.5100	NAD83	4	4	0	0
COLUSA BASIN DR A RD 99E NR KNIGHTS LANDING CA	11390890	38.8124	–121.7741	NAD83	33	32	0	1
CONNECTION SLOUGH NR MIDDLE RIVER CA*	380000121340801	38.0000	–121.5690	NAD83	5	5	0	0
COSUMNES R A MICHIGAN BAR CA	11335000	38.5002	–121.0452	NAD83	13	13	0	0
DEL PUERTO C (AT HYW 33) CA	373048121093000	37.5133	–121.1594	NAD83	3	0	0	3
DEL PUERTO C AT VINEYARD ROAD NR PATTERSON	11274653	37.5208	–121.1497	NAD83	44	36	4	4
DEL PUERTO C NR PATTERSON CA	11274630	37.4866	–121.2091	NAD83	2	1	1	0
DEL PUERTO CREEK AT ROGERS ROAD NR PATTERSON CA	372958121103401	37.4994	–121.1772	NAD83	3	0	0	3
DRY C A CLAUS RD BRIDGE A MODESTO CA	373925120550701	37.6569	–120.9197	NAD83	22	22	0	0
DRY C A GALLO BRIDGE BL HWY 132 A MODESTO CA	373811120590001	37.6363	–120.9844	NAD83	14	14	0	0
DRY C A LEASK BRIDGE BL CASHMAN C NR WATERFORD CA	374027120424201	37.6741	–120.7127	NAD83	1	1	0	0
DRY C AT REGIONAL PARK AT MODESTO CA	373907120574100	37.6519	–120.9624	NAD83	1	0	0	1
E CANAL A KIRKVILLE RD NR NICOLAUS CA	385433121381601	38.9091	–121.6389	NAD83	1	0	0	1
EMPIRE CUT NR MIDDLE RIVER CA*	375817121300001	37.9715	–121.5000	NAD83	4	4	0	0
FALSE R NR OAKLEY CA*	11313440	38.0558	–121.6669	NAD83	6	6	0	0
FARABUINDO STORMDRAIN A CLAUS RD A MODESTO CA	373927120551301	37.6574	–120.9213	NAD83	1	1	0	0
FEATHER R BL STAR BEND NR NICOLAUS CA	390020121344201	39.0054	–121.5794	NAD83	10	10	0	0
FEATHER R NR NICOLAUS	11425000	38.8905	–121.6044	NAD83	25	24	0	1
FEATHER R NR VERONA CA	384752121375301	38.7977	–121.6325	NAD83	25	25	0	0
FRENCH CAMP SLOUGH A AIRPORT WAY NR STOCKTON CA*	375252121145401	37.8810	–121.2494	NAD83	1	1	0	0
FRENCH CAMP SLOUGH A FRENCH CAMP CA*	375320121160801	37.8889	–121.2690	NAD83	6	6	0	0
GRANT LINE CN A TRACY RD BRIDGE CA*	11313200	37.8208	–121.4513	NAD83	5	5	0	0
HARDING DRAIN A CARPENTER RD NR PATTERSON CA	11274560	37.4644	–121.0322	NAD83	38	37	0	1
HIGHLINE CN NR DELHI CA	372349120475901	37.3969	–120.7997	NAD83	1	1	0	0

Table 3. U.S. Geological Survey sampling sites with pesticide data, and the number of samples collected in the Sacramento–San Joaquin Delta region for different types of samples, 1990–2010.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NAD83, North American Datum of 1983; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	Latitude	Longitude	Datum	Total samples analyzed	Water samples analyzed	Suspended-sediment samples analyzed	Bed-sediment samples analyzed
HOG SLOUGH NR THORNTON CA*	381009121273601	38.1693	–121.4600	NAD83	3	3	0	0
HOSPITAL C A RIVER RD NR PATTERSON CA	373842121131800	37.6105	–121.2247	NAD83	11	4	4	3
HOSPITAL CREEK NR VERNALIS CA	373615121152801	37.6041	–121.2588	NAD83	3	0	0	3
INGRAM C A RIVER RD NR PATTERSON CA	373747121125200	37.6005	–121.2247	NAD83	11	4	4	3
INGRAM CREEK NR GRAYSON CA	373521121142801	37.5891	–121.2422	NAD83	3	0	0	3
KNIGHTS LANDING RIDGE CUT NR KNIGHTS LANDING CA	384455121414001	38.7486	–121.6944	NAD83	6	6	0	0
LITTLE CONNECTION SLOUGH NR TERMINOUS CA*	380336121300201	38.0600	–121.5006	NAD83	5	5	0	0
LITTLE POTATO SLOUGH NR TERMINOUS CA*	11336800	38.1144	–121.4972	NAD83	4	4	0	0
MCHENRY STORMDRAIN A BODEM ST A MODESTO CA	373847120590801	37.6463	–120.9866	NAD83	16	16	0	0
MERCED R A RIVER ROAD BRIDGE NR NEWMAN CA	11273500	37.3510	–120.9619	NAD83	281	277	1	3
MERCED R NR STEVINSON CA	11272500	37.3708	–120.9305	NAD83	1	0	0	1
MIDDLE R AT MIDDLE RIVER CA*	11312676	37.9427	–121.5341	NAD83	32	32	0	0
MIDDLE R NR HOLT CA*	11312685	38.0031	–121.5108	NAD83	5	5	0	0
MOKELUMNE R A ANDRUS ISLAND NR TERMINOUS CA*	11336930	38.1061	–121.5711	NAD83	5	5	0	0
MOKELUMNE R A WOODBRIDGE CA*	11325500	38.1585	–121.3036	NAD83	1	0	0	1
MOKELUMNE R NR THORNTON CA	381519121262401	38.2553	–121.4400	NAD83	4	4	0	0
NEWMAN WASTEWAY A HWY 33 NR GUSTINE CA	371903120585400	37.2933	–121.0121	NAD83	15	13	2	0
NINTH ST STORMDRAIN A SEVENTH ST BR A MODESTO CA	373749120593701	37.6302	–120.9947	NAD83	1	1	0	0
OAKDALE ID DRAINAGE A ELLENWOOD RD NR WATERFORD CA	374024120462401	37.6733	–120.7744	NAD83	1	1	0	0
OLD R A BACON ISLAND CA*	11313405	37.9699	–121.5722	NAD83	6	6	0	0
OLD R A FRANKS TRACT NR BETHEL ISLAND CA*	380300121344801	38.0500	–121.5800	NAD83	4	4	0	0
OLD R A QUIMBY ISLAND NR BETHEL ISLAND CA*	11313434	38.0272	–121.5644	NAD83	5	5	0	0
OLIVE AVE DR NR PATTERSON CA	373027121051401	37.5074	–121.0883	NAD83	6	4	2	0
ORESTIMBA C A ORESTIMBA C RD NR NEWMAN CA	371912121071201	37.3199	–121.1210	NAD83	10	10	0	0
ORESTIMBA C NR NEWMAN CA	11274500	37.3155	–121.1252	NAD83	3	2	1	0
ORESTIMBA CR AT RIVER RD NR CROWS LANDING CA	11274538	37.4135	–121.0160	NAD83	360	346	9	5
ORESTIMBA CREEK AT EASTIN ROAD NR CROWS LANDING CA	372106121035701	37.3516	–121.0669	NAD83	3	0	0	3
ORESTIMBA CREEK AT MORRIS ROAD NR CROWS LANDING CA	372320121023301	37.3888	–121.0435	NAD83	3	0	0	3
PIPER SLOUGH NR BETHEL ISLAND CA*	380148121365201	38.0300	–121.6145	NAD83	4	4	0	0
POND NR WOODWARD RESERVOIR NR OAKDALE, CA	375019120520201	37.8386	–120.8672	NAD83	6	3	0	3
POTATO SLOUGH NR TERMINOUS CA*	380524121314801	38.0900	–121.5300	NAD83	4	4	0	0
RIVER RD DR A ORESTIMBA C NR CROWS LANDING CA	372451121005201	37.4141	–121.0155	NAD83	2	1	1	0

Table 3. U.S. Geological Survey sampling sites with pesticide data, and the number of samples collected in the Sacramento–San Joaquin Delta region for different types of samples, 1990–2010.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NAD83, North American Datum of 1983; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	Latitude	Longitude	Datum	Total samples analyzed	Water samples analyzed	Suspended-sediment samples analyzed	Bed-sediment samples analyzed
SACRAMENTO R A ALAMAR CA	384030121373601	38.6749	–121.6277	NAD83	11	11	0	0
SACRAMENTO R A FREEPORT CA*	11447650	38.4560	–121.5013	NAD83	181	180	0	1
SACRAMENTO R A GREENS LANDING CA*	11447810	38.3457	–121.5461	NAD83	25	25	0	0
SACRAMENTO R A HWY 5 NR WOODLAND CA	384027121373401	38.6741	–121.6272	NAD83	26	26	0	0
SACRAMENTO R A KNIGHTS LANDING CA	11391000	38.8030	–121.7164	NAD83	26	26	0	0
SACRAMENTO R A RIO VISTA CA*	11455420	38.1599	–121.6866	NAD83	18	18	0	0
SACRAMENTO R A SACRAMENTO CA*	11447500	38.5866	–121.5055	NAD83	10	10	0	0
SACRAMENTO R A VERONA CA	11425500	38.7743	–121.5983	NAD83	1	0	0	1
SACRAMENTO R A VERONA MARINA NR VERONA CA	384701121370401	38.7836	–121.6178	NAD83	24	24	0	0
SACRAMENTO R AT TOWER BRIDGE AT SACRAMENTO CA*	383430121302001	38.5749	–121.5066	NAD83	527	527	0	0
SACRAMENTO SLOUGH NR KNIGHTS LANDING CA	11391100	38.7791	–121.6386	NAD83	39	39	0	0
SACRAMENTO SLOUGH NR VERONA CA	384649121381101	38.7802	–121.6375	NAD83	37	37	0	0
SAN FRANCISCO BAY A PT SAN PABLO CA*	375812122261201	37.9699	–122.4378	NAD83	1	1	0	0
SAN JOAQUIN R A BOULDIN ISLAND NR TERMINOUS CA*	380524121341201	38.0900	–121.5700	NAD83	4	4	0	0
SAN JOAQUIN R A LAIRD PARK NR GRAYSON CA	373324121090401	37.5566	–121.1522	NAD83	3	0	0	3
SAN JOAQUIN R A PATTERSON BR NR PATTERSON CA	11274570	37.4938	–121.0805	NAD83	50	47	2	1
SAN JOAQUIN R AT MAZE RD BRIDGE NR MODESTO CA	11290500	37.6399	–121.2294	NAD83	20	20	0	0
SAN JOAQUIN R BL WSID PMP AB TUOL R NR WESTLEY CA	373621121102801	37.6058	–121.1755	NAD83	7	7	0	0
SAN JOAQUIN R NR CROWS LANDING CA	11274550	37.4319	–121.0138	NAD83	23	23	0	0
SAN JOAQUIN R NR STOCKTON CA*	375649121202101	37.9469	–121.3402	NAD83	7	7	0	0
SAN JOAQUIN R NR VERNALIS CA	11303500	37.6760	–121.2663	NAD83	713	704	4	5
SAND MOUND SLOUGH A BETHEL ISLAND CA*	380000121373001	38.0000	–121.6252	NAD83	5	5	0	0
SF PUTAH C A MACE RD NR DAVIS CA	383109121414601	38.5192	–121.6961	NAD83	11	11	0	0
SONOMA STORMDRAIN A SCENIC DRIVE A MODESTO CA	373910120570601	37.6527	–120.9527	NAD83	1	1	0	0
SOUTH MOKELUMNE R NR ISELTON CA*	380712121333601	38.1200	–121.5600	NAD83	4	4	0	0
SPANISH GRANT COMBINED DRAIN NR PATTERSON CA	11274554	37.4358	–121.0335	NAD83	7	4	2	1
STANISLAUS R A CASWELL STATE PARK NR RIPON CA	374209121103800	37.7024	–121.1783	NAD83	69	64	2	3
STANISLAUS R A RIPON CA	11303000	37.7297	–121.1105	NAD83	23	22	0	1
STANISLAUS RIVER AT MCHENRY AVE NR ESCALON CA	374537120594101	37.7602	–120.9958	NAD83	2	0	0	2
STEVINSON LOWER LATERAL NR STEVINSON CA	372217120554700	37.3713	–120.9308	NAD83	2	2	0	0
STORM DRAIN INLET S SIDE WENTWORTH LN A MODESTO CA	374115120591601	37.6877	–120.9880	NAD83	2	2	0	0
STORM DRAIN INLET W SIDE WHITEHORSE AVE A MODESTO	374111121000301	37.6866	–121.0010	NAD83	1	1	0	0

Table 3. U.S. Geological Survey sampling sites with pesticide data, and the number of samples collected in the Sacramento–San Joaquin Delta region for different types of samples, 1990–2010.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NAD83, North American Datum of 1983; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	Latitude	Longitude	Datum	Total samples analyzed	Water samples analyzed	Suspended-sediment samples analyzed	Bed-sediment samples analyzed
SUISUN BAY AT MARTINEZ CA*	380200122082701	38.1999	–122.1419	NAD83	5	5	0	0
SYCAMORE SLOUGH NR TERMINOUS CA*	380831121281201	38.1420	–121.4700	NAD83	5	5	0	0
TAYLOR SLOUGH NR BETHEL ISLAND CA*	380148121400401	38.0300	–121.6680	NAD83	4	4	0	0
TOE DRAIN A YOLO BYPASS NR WEST SACRAMENTO CA	383425121350201	38.5736	–121.5839	NAD83	7	7	0	0
TUOLUMNE R A CARPENTER RD BRIDGE A MODESTO CA	373632121014701	37.6088	–121.0308	NAD83	19	16	0	3
TUOLUMNE R A MITCHELL RD BRIDGE A MODESTO CA	373701120561601	37.6169	–120.9388	NAD83	8	5	0	3
TUOLUMNE R A MODESTO CA	11290000	37.6269	–120.9880	NAD83	29	28	0	1
TUOLUMNE R A SHILOH RD BRIDGE NR GRAYSON CA	11290200	37.6033	–121.1313	NAD83	102	98	1	3
TURLOCK ID CERES MAIN SPILL NR CERES CA	373639120551001	37.6108	–120.9205	NAD83	1	1	0	0
TURLOCK ID HICKMAN SPILL NR HICKMAN CA	373753120441101	37.6313	–120.7374	NAD83	1	1	0	0
TURNER CUT NR HOLT CA*	11311300	37.9925	–121.4539	NAD83	6	6	0	0
ULATIS C A BROWNS RD NR ELMIRA CA	11455261	38.3066	–121.7947	NAD83	42	42	0	0
WERNER SLOUGH NR KNIGHTSEN CA*	375737121361501	37.9603	–121.6042	NAD83	6	6	0	0
WEST SIDE STORMDRAIN A NEECE DRIVE A MODESTO CA	373731120595401	37.6252	–120.9994	NAD83	1	1	0	0
WESTPORT DRAIN NR MODESTO CA	373232121053900	37.5422	–121.0952	NAD83	3	3	0	0
WHITE SLOUGH NR TERMINOUS CA*	380448121280801	38.0800	–121.4690	NAD83	3	3	0	0
WILLOW SLOUGH BYPASS A CTY RD 105 NR DAVIS CA	383524121403401	38.5900	–121.6761	NAD83	5	5	0	0
YOLO BYPASS A I-80 NR W SACRAMENTO CA	11453120	38.5669	–121.6152	NAD83	7	7	0	0

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Acetochlor oxanilic acid	184992-44-4	Degradate	Chloroacetanilide	0	0	54	0	17	0
Acetochlor sulfonic acid	187022-11-3	Degradate	Chloroacetanilide	0	0	54	1	17	0
Acetochlor sulfynilacetic acid	618113-86-3	Degradate	Chloroacetanilide	0	0	0	0	1	0
Acetochlor	34256-82-1	Herbicide	Chloroacetanilide	289	0	858	0	481	0
Acifluorfen	50594-66-6	Herbicide	Diphenyl ether	209	0	62	0	57	0
Acrylonitrile	107-13-1	Fumigant	Nitrile	39	0	0	0	17	0
Alachlor oxanilic acid	171262-17-2	Degradate	Chloroacetanilide	0	0	54	0	17	0
sec-Alachlor sulfonic acid	–	Degradate	Chloroacetanilide	0	0	0	0	1	0
Alachlor sulfonic acid	142363-53-9	Degradate	Chloroacetanilide	0	0	54	4	17	0
Alachlor sulfynilacetic acid	494847-39-1	Degradate	Chloroacetanilide	0	0	0	0	1	0
Alachlor	15972-60-8	Herbicide	Chloroacetanilide	1,287	84	1,169	6	527	2
Aldicarb sulfone	1646-88-4	Degradate	*N*-Methyl carbamate	207	0	62	0	57	0
Aldicarb sulfoxide	1646-87-3	Degradate	*N*-Methyl carbamate	207	0	62	1	57	0
Aldicarb	116-06-3	Insecticide	*N*-Methyl carbamate	207	1	62	0	57	0
Aldrin	309-00-2	Insecticide	Organochlorine	14	0	0	0	0	0
Allethrin	584-79-2	Insecticide	Pyrethroid	0	0	0	0	5	0
2-Amino-*N*-isopropylbenzamide	30391-89-0	Degradate	Amide	0	0	7	0	58	0
Aminomethylphosphonic acid	1066-51-9	Degradate	Phosphonoglycine	0	0	8	5	75	58
Atrazine	1912-24-9	Herbicide	Triazine	1,459	306	1,169	544	528	131
Azinphos-methyl oxygen analog	961-22-8	Degradate	Organophosphorus	0	0	19	0	406	0
Azinphos-methyl	86-50-0	Insecticide	Organophosphorus	652	80	1,114	51	482	4
Azoxystrobin	131860-33-8	Fungicide	Strobin	0	0	0	0	5	0
Bendiocarb	22781-23-3	Insecticide	*N*-Methyl carbamate	0	0	62	0	57	0
Benfluralin	1861-40-1	Herbicide	2,6-Dinitroaniline	652	21	858	7	481	2
Benomyl	17804-35-2	Fungicide	Benzimidazole	0	0	62	1	57	9
Bensulfuron-methyl	83055-99-6	Herbicide	Sulfonylurea	0	0	62	1	57	0
Bentazon	25057-89-0	Herbicide	Unclassified	209	13	62	4	57	4
Bifenthrin	82657-04-3	Insecticide	Pyrethroid	0	0	7	0	63	0
Boscalid	188425-85-6	Fungicide	Anilide	0	0	0	0	5	0
Bromacil	314-40-9	Herbicide	Uracil	207	11	62	8	57	2
Bromomethane	74-83-9	Fumigant	Halogenated organic	40	0	0	0	17	0
Bromoxynil	1689-84-5	Herbicide	Hydroxybenzonitrile	209	1	62	2	57	0
Butylate	2008-41-5	Herbicide	Thiocarbamate	1,287	39	1,157	23	180	1
2-(4-*tert*-Butylphenoxy)-cyclohexanol	1942-71-8	Degradate	Unclassified	0	0	7	1	58	24
Carbaryl	63-25-2	Insecticide	*N*-Methyl carbamate	1,666	288	1,230	452	585	156
Carbofuran	1563-66-2	Insecticide	*N*-Methyl carbamate	1,699	207	1,216	139	506	16
Carbon disulfide	75-15-0	Fungicide	Unclassified	39	9	0	0	17	1
Carbophenothion	786-19-6	Insecticide	Organophosphorus	0	0	17	0	0	0

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Chloramben methyl ester	7286-84-2	Degradate	Benzoic acid	206	0	62	0	57	0
Chlordane (technical)	12789-03-6	Insecticide	Organochlorine	14	0	0	0	0	0
Chlorimuron-ethyl	90982-32-4	Herbicide	Sulfonylurea	0	0	62	1	57	0
2-Chloro-2′,6′-diethylacetanilide	6967-29-9	Degradate	Anilide	0	0	19	0	406	0
4-Chloro-2-methylphenol	1570-64-5	Insecticide	Unclassified	0	0	19	1	406	35
2-Chloro-4-isopropylamino-6-amino-*s*-triazine	6190-65-4	Degradate	Triazine	652	44	858	154	481	62
2-Chloro-6-ethylamino-4-amino-*s*-triazine	1007-28-9	Degradate	Triazine	0	0	62	10	57	1
4-Chlorophenyl methyl sulfone	98-57-7	Degradate	Unclassified	0	0	7	0	58	0
N-(4-Chlorophenyl)-*N*′-methylurea	5352-88-5	Herbicide	Urea	0	0	62	0	57	0
3-Chloropropene	107-05-1	Fumigant	Halogenated organic	39	0	0	0	17	0
Chlorothalonil	1897-45-6	Fungicide	Substituted Benzene	207	1	0	0	5	0
Chlorpyrifos oxygen analog	5598-15-2	Degradate	Organophosphorus	0	0	19	0	401	0
Chlorpyrifos	2921-88-2	Insecticide	Organophosphorus	1,459	401	1,186	513	528	242
Clomazone	81777-89-1	Herbicide	Unclassified	0	0	0	0	5	0
Clopyralid	1702-17-6	Herbicide	Pyridinecarboxylic acid	208	0	62	0	56	0
Cyanazine	21725-46-2	Herbicide	Triazine	1,286	237	1,102	157	402	0
Cycloate	1134-23-2	Herbicide	Thiocarbamate	0	0	378	4	161	0
Cyfluthrin	68359-37-5	Insecticide	Pyrethroid	0	0	19	0	411	0
λ-Cyhalothrin	91465-08-6	Insecticide	Pyrethroid	0	0	7	0	332	0
Cypermethrin	52315-07-8	Insecticide	Pyrethroid	0	0	19	0	411	0
Cyproconazole	94361-06-5	Fungicide	Azole	0	0	0	0	5	0
Cyprodinil	121552-61-2	Fungicide	Pyrimidine	0	0	0	0	5	0
2,4-D	94-75-7	Herbicide	Chlorophenoxy acid or ester	216	28	0	0	33	14
2,4-D methyl ester	1928-38-7	Herbicide	Chlorophenoxy acid or ester	0	0	0	0	33	1
2,4-DB	94-82-6	Herbicide	Chlorophenoxy acid or ester	209	3	62	1	57	0
DCPA monoacid	887-54-7	Degradate	Alkyl phthalate	209	0	62	0	57	0
DCPA	1861-32-1	Herbicide	Alkyl phthalate	1,277	527	1,169	270	528	147
p,p′-DDD	72-54-8	Degradate	Organochlorine	14	0	0	0	5	0
p,p′-DDE	72-55-9	Degradate	Organochlorine	666	146	846	142	139	20
p,p′-DDT	50-29-3	Degradate	Organochlorine	14	0	0	0	5	0
Deltamethrin	52918-63-5	Insecticide	Pyrethroid	0	0	0	0	5	0
Desulfinylfipronil amide	–	Degradate	Pyrazole	0	0	23	0	481	37
Desulfinylfipronil	–	Degradate	Pyrazole	0	0	23	1	486	100
Diazinon	333-41-5	Insecticide	Organophosphorus	1,458	876	1,186	978	528	228
Diazoxon	962-58-3	Degradate	Organophosphorus	0	0	4	0	69	1
1,2-Dibromo-3-chloropropane	96-12-8	Fumigant	Halogenated organic	40	0	0	0	17	0
1,2-Dibromoethane	106-93-4	Fumigant	Halogenated organic	40	0	0	0	17	0

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Dicamba	1918-00-9	Herbicide	Benzoic acid	216	2	62	0	57	0
Dichlobenil	1194-65-6	Herbicide	Substituted benzene	207	1	0	0	0	0
2,5-Dichloroaniline	95-82-9	Degradate	Anilide	0	0	7	0	58	0
3,4-Dichloroaniline	95-76-1	Degradate	Anilide	0	0	19	12	409	273
3,5-Dichloroaniline	626-43-7	Degradate	Anilide	0	0	7	0	331	13
1,4-Dichlorobenzene	106-46-7	Fumigant	Chlorinated aromatic	40	1	0	0	17	0
4,4′-Dichlorobenzophenone	90-98-2	Degradate	Organochlorine	0	0	7	2	58	18
1,2-Dichloroethane	107-06-2	Fumigant	Halogenated organic	40	0	0	0	17	0
1,2-Dichloropropane	78-87-5	Fumigant	Halogenated organic	40	0	0	0	17	0
1,3-Dichloropropane	142-28-9	Fumigant	Halogenated organic	40	0	0	0	17	0
Dichlorprop	120-36-5	Herbicide	Chlorophenoxy acid or ester	7	1	62	0	57	0
cis-1,3-Dichloropropene	10061-01-5	Fumigant	Halogenated organic	40	0	0	0	17	0
trans-1,3-Dichloropropene	10061-02-6	Fumigant	Halogenated organic	40	0	0	0	17	0
Dichlorvos	62-73-7	Insecticide	Organophosphorus	0	0	19	0	406	2
Dicrotophos	141-66-2	Insecticide	Organophosphorus	0	0	19	0	405	0
Dieldrin	60-57-1	Insecticide	Organochlorine	666	71	858	39	482	21
Diethatyl-ethyl	38727-55-8	Herbicide	Chloroacetanilide	0	0	311	8	0	0
2,6-Diethylaniline	579-66-8	Degradate	Anilide	652	12	858	0	482	0
Difenoconazole	119446-68-3	Fungicide	Azole	0	0	0	0	5	0
Dimethenamid oxanilic acid	–	Degradate	Amide	0	0	54	0	17	0
Dimethenamid sulfonic acid	205939-58-8	Degradate	Amide	0	0	54	0	17	0
Dimethenamid	87674-68-8	Herbicide	Amide	0	0	0	0	1	0
Dimethoate	60-51-5	Insecticide	Organophosphorus	0	0	19	2	406	49
(*E*)-Dimethomorph	113210-97-2	Fungicide	Morpholine	0	0	7	0	63	1
(*Z*)-Dimethomorph	113210-98-3	Fungicide	Morpholine	0	0	7	0	58	1
Dinoseb	88-85-7	Herbicide	Dinitrophenol derivative	209	0	62	0	57	0
Diphenamid	957-51-7	Herbicide	Amide	0	0	62	0	57	0
Disulfoton sulfone	218-20-8	Degradate	Organophosphorus	0	0	7	0	327	30
Disulfoton sulfoxide	218-23-9	Degradate	Organophosphorus	0	0	7	0	58	0
Disulfoton	298-04-4	Insecticide	Organophosphorus	652	1	852	0	403	2
Diuron	330-54-1	Herbicide	Urea	207	122	62	58	57	48
Endosulfan ether	3369-52-6	Degradate	Organochlorine	0	0	7	0	58	0
Endosulfan sulfate	1031-07-8	Degradate	Organochlorine	0	0	7	0	327	0
α-Endosulfan	959-98-8	Degradate	Organochlorine	14	0	7	0	327	0
β-Endosulfan	33213-65-9	Degradate	Organochlorine	0	0	7	0	58	0
Endrin	72-20-8	Insecticide	Organochlorine	14	1	0	0	0	0
EPTC	759-94-4	Herbicide	Thiocarbamate	1,286	367	1,157	393	449	91
Esfenvalerate	66230-04-4	Insecticide	Pyrethroid	183	0	0	0	5	0

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Ethalfluralin	55283-68-6	Herbicide	2,6-Dinitroaniline	1,287	86	1,157	20	179	9
Ethion monoxon	17356-42-2	Degradate	Organophosphorus	0	0	19	0	406	0
Ethion	563-12-2	Insecticide	Organophosphorus	0	0	36	0	406	0
Ethoprop	13194-48-4	Insecticide	Organophosphorus	652	9	846	16	403	27
p,p′-Ethyl-DDD	72-56-0	Degradate	Organochlorine	14	0	0	0	0	0
O-Ethyl-*O*-methyl-*S*-propylphosphorothioate	76960-87-7	Insecticide	Organophosphorus	0	0	7	0	58	0
2-[(2-Ethyl-6-methylphenyl)amino]-1-propanol	61520-53-4	Degradate	Unclassified	0	0	19	0	95	0
2-[(2-Ethyl-6-methylphenyl)amino]-2-oxoethanesulfonic acid	446027-17-4	Degradate	Unclassified	0	0	0	0	1	0
Etofenprox	80844-07-1	Insecticide	Pyrethroid	0	0	0	0	5	0
Famoxadone	131807-57-3	Fungicide	Oxazolidinedione	0	0	0	0	5	0
Fenamiphos sulfone	31972-44-8	Degradate	Organophosphorus	0	0	19	0	406	0
Fenamiphos sulfoxide	31972-43-7	Degradate	Organophosphorus	0	0	19	0	399	0
Fenamiphos	22224-92-6	Insecticide	Organophosphorus	0	0	19	0	406	0
Fenarimol	60168-88-9	Fungicide	Pyrimidine	0	0	0	0	5	0
Fenbuconazole	114369-43-6	Fungicide	Azole	0	0	0	0	5	0
Fenhexamid	126833-17-8	Fungicide	Anilide	0	0	0	0	5	0
Fenpropathrin	39515-41-8	Insecticide	Pyrethroid	0	0	0	0	5	0
Fenthion sulfoxide	3761-41-9	Degradate	Organophosphorus	0	0	7	0	58	0
Fenthion	55-38-9	Insecticide	Organophosphorus	0	0	7	0	58	0
Fenuron	101-42-8	Herbicide	Urea	207	0	62	0	57	0
Fipronil sulfide	120067-83-6	Degradate	Pyrazole	0	0	23	1	486	57
Fipronil sulfone	120068-36-2	Degradate	Pyrazole	0	0	23	1	486	56
Fipronil	120068-37-3	Insecticide	Pyrazole	0	0	23	0	486	82
Fluazinam	79622-59-6	Fungicide	2,6-Dinitroaniline	0	0	0	0	5	0
Fludioxonil	131341-86-1	Fungicide	Unclassified	0	0	0	0	5	0
Flufenacet oxanilic acid	201668-31-7	Degradate	Anilide	0	0	54	0	17	0
Flufenacet sulfonic acid	201668-32-8	Degradate	Anilide	0	0	54	0	17	0
Flufenacet	142459-58-3	Herbicide	Anilide	0	0	0	0	1	0
Flumetralin	62924-70-3	Herbicide	2,6-Dinitroaniline	0	0	7	0	58	0
Flumetsulam	98967-40-9	Herbicide	Triazolopyrimidine	0	0	62	0	57	1
Fluometuron	2164-17-2	Herbicide	Urea	207	0	62	0	57	0
Fluoxastrobin	193740-76-0	Fungicide	Strobin	0	0	0	0	5	0
Flusilazole	85509-19-9	Fungicide	Azole	0	0	0	0	5	0
Flutriafol	76674-21-0	Fungicide	Azole	0	0	0	0	5	0
τ-Fluvalinate	102851-06-9	Insecticide	Pyrethroid	0	0	0	0	5	0

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Fonofos oxygen analog	944-21-8	Degradate	Organophosphorus	0	0	19	0	116	0
Fonofos	944-22-9	Insecticide	Organophosphorus	1,459	103	1,169	19	482	0
Glufosinate	51276-47-2	Herbicide	Unclassified	0	0	8	0	75	0
Glyphosate	1071-83-6	Herbicide	Phosphonoglycine	0	0	8	2	75	43
α-HCH	319-84-6	Degradate	Organochlorine	652	24	846	14	134	0
Heptachlor epoxide	1024-57-3	Degradate	Organochlorine	14	0	0	0	0	0
Heptachlor	76-44-8	Insecticide	Organochlorine	14	0	0	0	0	0
Hexazinone	51235-04-2	Herbicide	Benzoylurea	0	0	263	216	403	289
2-Hydroxy-4-isopropylamino-6-ethylamino-*s*-triazine	2163-68-0	Herbicide	Triazine	0	0	62	18	57	5
3-Hydroxycarbofuran	16655-82-6	Degradate	*N*-Methyl carbamate	207	0	62	0	57	0
4-(Hydroxymethyl) pendimethalin	56750-76-6	Degradate	2,6-Dinitroaniline	0	0	5	0	31	0
Imazalil	35554-44-0	Fungicide	Azole	0	0	0	0	5	0
Imazaquin	81335-37-7	Herbicide	Imidazolinone	0	0	62	1	57	1
Imazethapyr	81335-77-5	Herbicide	Imidazolinone	0	0	62	3	57	0
Imidacloprid	138261-41-3	Insecticide	Neonicotinoid	0	0	62	0	57	15
Iodomethane	74-88-4	Fumigant	Halogenated organic	39	0	0	0	17	0
Iprodione	36734-19-7	Fungicide	Dicarboximide	0	0	19	9	411	45
Isofenphos	25311-71-1	Insecticide	Organophosphorus	0	0	19	0	405	0
2-Keto-molinate	24928-89-0	Degradate	Thiocarbamate	0	0	30	12	0	0
4-Keto-molinate	70874-92-9	Degradate	Thiocarbamate	0	0	30	30	0	0
Kresoxim-methyl	143390-89-0	Fungicide	Strobin	0	0	0	0	5	0
Lindane	58-89-9	Insecticide	Organochlorine	666	25	845	60	134	4
Linuron	330-55-2	Herbicide	Urea	859	3	908	5	191	1
Malaoxon	1634-78-2	Degradate	Organophosphorus	0	0	19	0	406	1
Malathion	121-75-5	Insecticide	Organophosphorus	1,459	96	1,183	154	528	48
MCPA	94-74-6	Herbicide	Chlorophenoxy acid or ester	209	13	62	6	56	2
MCPB	94-81-5	Herbicide	Chlorophenoxy acid or ester	209	0	62	0	57	0
Metalaxyl	57837-19-1	Fungicide	Xylylalanine	0	0	81	10	463	58
Metconazole	125116-23-6	Fungicide	Azole	0	0	0	0	5	0
Methidathion	950-37-8	Insecticide	Organophosphorus	807	164	330	41	452	31
Methiocarb	2032-65-7	Insecticide	*N*-Methyl carbamate	207	0	62	0	57	0
Methomyl	13749-94-5	Insecticide	*N*-Methyl carbamate	207	3	62	11	56	1
Methoprene	40596-69-8	Insecticide	Hormone mimic	0	0	0	0	5	0
p,p′-Methoxychlor	72-43-5	Degradate	Organochlorine	14	0	0	0	0	0
Methyl 3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropane-1-carboxylate	61898-95-1	Degradate	Pyrethroid	0	0	7	0	58	0
2-Methyl-4,6-dinitrophenol	534-52-1	Insecticide	Phenol	209	1	0	0	0	0

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Methyl paraoxon	950-35-6	Degradate	Organophosphorus	0	0	19	0	406	1
Methyl parathion	298-00-0	Insecticide	Organophosphorus	652	3	1,184	21	527	8
Methyl *trans*-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane-*1*-carboxylate	59897-94-8	Degradate	Pyrethroid	0	0	7	0	58	0
Metolachlor oxanilic acid	152019-73-3	Degradate	Chloroacetanilide	0	0	54	30	17	6
Metolachlor sulfonic acid	171118-09-5	Degradate	Chloroacetanilide	0	0	54	43	17	9
Metolachlor	51218-45-2	Herbicide	Chloroacetanilide	1,277	578	1,169	870	527	387
Metribuzin	21087-64-9	Herbicide	Triazinone	652	41	858	109	482	35
Metsulfuron-methyl	74223-64-6	Herbicide	Sulfonylurea	0	0	62	0	57	5
Mirex	2385-85-5	Insecticide	Organochlorine	14	0	0	0	0	0
Molinate	2212-67-1	Herbicide	Thiocarbamate	1,492	197	1,187	363	449	66
Myclobutanil	88671-89-0	Fungicide	Azole	0	0	19	12	411	112
1,4-Naphthoquinone	130-15-4	Herbicide	Naphthol	0	0	7	0	58	1
1-Naphthol	90-15-3	Herbicide	Naphthol	183	0	19	1	400	47
Napropamide	15299-99-7	Herbicide	Amide	1,287	171	1,157	215	180	8
Neburon	555-37-3	Herbicide	Urea	207	0	62	0	57	0
Nicosulfuron	111991-09-4	Herbicide	Sulfonylurea	0	0	62	0	57	0
Norflurazon	27314-13-2	Herbicide	Pyridazinone	207	14	62	48	57	12
Oryzalin	19044-88-3	Herbicide	2,6-Dinitroaniline	207	20	62	0	57	2
Oxamyl	23135-22-0	Insecticide	*N*-Methyl carbamate	207	0	62	1	57	0
Oxyfluorfen	42874-03-3	Herbicide	Diphenyl ether	0	0	263	60	373	71
Paraoxon	311-45-5	Degradate	Organophosphorus	0	0	7	0	58	0
Parathion	56-38-2	Insecticide	Organophosphorus	652	0	863	0	133	0
Pebulate	1114-71-2	Herbicide	Thiocarbamate	1,287	83	1,156	25	180	1
Pendimethalin	40487-42-1	Herbicide	2,6-Dinitroaniline	652	37	1,169	479	528	122
Pentachloroanisole	1825-21-4	Degradate	Ether	0	0	0	0	5	0
Pentachloronitrobenzene	82-68-8	Fungicide	Substituted benzene	0	0	0	0	5	0
cis-Permethrin	61949-76-6	Insecticide	Pyrethroid	652	4	858	1	482	0
Permethrin	52645-53-1	Insecticide	Pyrethroid	0	0	0	0	5	0
Phenothrin	26002-80-2	Insecticide	Pyrethroid	0	0	0	0	5	0
3-Phenoxybenzyl alcohol	13826-35-2	Degradate	Alcohol	0	0	7	0	37	0
Phorate oxygen analog	2600-69-3	Degradate	Organophosphorus	0	0	19	0	406	0
Phorate	298-02-2	Insecticide	Organophosphorus	652	0	875	0	482	0
Phosmet oxygen analog	3735-33-9	Degradate	Organophosphorus	0	0	19	0	330	0
Phosmet	732-11-6	Insecticide	Organophosphorus	0	0	330	1	413	0
Picloram	66-00-7	Herbicide	Pyridinecarboxylic acid	216	0	62	0	54	0
Piperonyl butoxide	51-03-6	Synergist	Unclassified	0	0	256	87	46	0
Profenofos	41198-08-7	Insecticide	Organophosphorus	0	0	7	0	58	0

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Prometon	1610-18-0	Herbicide	Triazine	652	53	858	130	486	73
Prometryn	7287-19-6	Herbicide	Triazine	0	0	19	7	452	112
Propachlor oxanilic acid	70628-36-3	Degradate	Chloroacetanilide	0	0	0	0	1	0
Propachlor sulfonic acid	947601-88-9	Degradate	Chloroacetanilide	0	0	0	0	1	0
Propachlor	1918-16-7	Herbicide	Chloroacetanilide	652	4	846	2	134	0
Propanil	709-98-8	Herbicide	Anilide	652	10	846	25	408	32
Propargite	2312-35-8	Insecticide	Unclassified	652	121	830	89	403	24
Propetamphos	31218-83-4	Insecticide	Organophosphorus	0	0	7	0	58	0
Propham	122-42-9	Herbicide	Carbamate	207	0	62	0	57	0
cis-Propiconazole	112721-87-6	Fungicide	Azole	0	0	7	1	327	41
Propiconazole	60207-90-1	Fungicide	Azole	0	0	62	0	62	4
Propoxur	114-26-1	Insecticide	*N*-Methyl carbamate	207	0	62	33	57	8
Propyzamide	23950-58-5	Herbicide	Amide	652	56	858	22	487	4
Pyraclostrobin	175013-18-0	Fungicide	Strobin	0	0	0	0	5	0
Pyrimethanil	53112-28-0	Fungicide	Pyrimidine	0	0	0	0	5	0
Resmethrin	10453-86-8	Insecticide	Pyrethroid	0	0	0	0	5	0
Siduron	1982-49-6	Herbicide	Urea	0	0	62	4	57	0
Silvex	93-72-1	Herbicide	Chlorophenoxy acid or ester	216	0	0	0	0	0
Simazine	122-34-9	Herbicide	Triazine	1,459	1,049	1,169	1,008	528	439
Sulfometuron-methyl	74222-97-2	Herbicide	Sulfonylurea	0	0	62	3	57	6
Sulfotepp	3689-24-5	Insecticide	Organophosphorus	0	0	318	0	58	0
Sulprofos	35400-43-2	Insecticide	Organophosphorus	0	0	7	0	55	0
2,4,5-T	93-76-5	Herbicide	Chlorophenoxy acid or ester	216	0	0	0	0	0
Tebuconazole	107534-96-3	Fungicide	Azole	0	0	0	0	5	0
Tebupirimfos	96182-53-5	Insecticide	Organophosphorus	0	0	7	0	58	0
Tebupirimphos oxygen analog	–	Degradate	Organophosphorus	0	0	7	0	58	0
Tebuthiuron	34014-18-1	Herbicide	Urea	652	33	855	64	482	17
Tefluthrin acid benzyl ester	–	Degradate	Pyrethroid	0	0	7	0	16	0
Tefluthrin acid pentafluorobenzyl ester	–	Degradate	Pyrethroid	0	0	7	0	16	0
Tefluthrin	79538-32-2	Insecticide	Pyrethroid	0	0	7	0	332	1
Temephos	3383-96-8	Insecticide	Organophosphorus	0	0	7	0	55	0
Terbacil	5902-51-2	Herbicide	Uracil	652	2	906	0	191	3
Terbufos oxygen analog sulfone	56070-15-6	Degradate	Organophosphorus	0	0	19	0	406	0
Terbufos	13071-79-9	Insecticide	Organophosphorus	652	2	858	0	482	0
Terbuthylazine	5915-41-3	Insecticide	Triazine	0	0	18	1	406	1
Tetraconazole	112281-77-3	Fungicide	Azole	0	0	0	0	5	0
Tetramethrin	7696-12-0	Insecticide	Pyrethroid	0	0	0	0	5	0
Thiobencarb	28249-77-6	Herbicide	Thiocarbamate	1,486	97	1,187	235	449	75

Table 4. Number of water samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[**Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Detections 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Toxaphene	8001-35-2	Insecticide	Organochlorine	14	0	0	0	0	0
trans-Propiconazole	120523-07-1	Fungicide	Azole	0	0	7	1	327	40
Triadimefon	43121-43-3	Fungicide	Azole	0	0	0	0	5	0
Triadimenol	55219-65-3	Fungicide	Azole	0	0	0	0	5	0
Triallate	2303-17-5	Herbicide	Thiocarbamate	652	6	846	0	134	0
Tribenuron-methyl	101200-48-0	Herbicide	Sulfonylurea	0	0	13	0	0	0
Tribuphos	78-48-8	Herbicide	Organophosphorus	0	0	24	0	327	0
Triclopyr	55335-06-3	Herbicide	Chloropyridinyl	209	18	62	9	57	10
1,2,3-Trichloropropane	96-18-4	Fumigant	Halogenated organic	40	0	0	0	17	0
Trifloxystrobin	141517-21-7	Fungicide	Strobin	0	0	0	0	5	0
Triflumizole	68694-11-1	Fungicide	Azole	0	0	0	0	5	0
3-(Trifluoromethyl)aniline	98-16-8	Degradate	Anilide	0	0	7	0	58	0
Trifluralin	1582-09-8	Herbicide	2,6-Dinitroaniline	1,459	284	1,169	706	528	144
Triticonazole	131983-72-7	Fungicide	Azole	0	0	0	0	5	0
Zoxamide	156052-68-5	Fungicide	Benzamide	0	0	0	0	5	0

Table 5. Number of sediment samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.

[No sediment samples were analyzed during the 2000 to 2002 period. **Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Alachlor	15972-60-8	Herbicide	Chloroacetanilide	0	0	5	0
Aldrin	309-00-2	Insecticide	Organochlorine	46	1	1	0
Allethrin	584-79-2	Insecticide	Pyrethroid	0	0	74	0
Atrazine	1912-24-9	Herbicide	Triazine	0	0	5	0
Azobenzene	103-33-3	Fumigant	Amide	21	0	0	0
Azoxystrobin	131860-33-8	Fungicide	Strobin	0	0	5	0
Bifenthrin	82657-04-3	Insecticide	Pyrethroid	0	0	74	59
Boscalid	188425-85-6	Fungicide	Anilide	0	0	5	0
Butylate	2008-41-5	Herbicide	Thiocarbamate	0	0	5	0
Carbaryl	63-25-2	Insecticide	*N*-Methyl carbamate	0	0	5	0
Carbazole	86-74-8	Fumigant	Unclassified	21	1	0	0
Carbofuran	1563-66-2	Insecticide	*N*-Methyl carbamate	0	0	5	0
cis-Chlordane	5103-71-9	Insecticide	Organochlorine	20	2	1	0
trans-Chlordane	5103-74-2	Insecticide	Organochlorine	20	2	1	1
Chlordane plus degradates	–	Degradate	Organochlorine	67	21	0	0
Chloroneb	2675-77-6	Fungicide	Substituted benzene	20	0	0	0
Chlorothalonil	1897-45-6	Fungicide	Substituted benzene	0	0	5	0
Chlorpyrifos	2921-88-2	Insecticide	Organophosphorus	0	0	5	0
Clomazone	81777-89-1	Herbicide	Unclassified	0	0	5	0
p-Cresol	106-44-5	Insecticide	Phenol	21	10	0	0
Cycloate	1134-23-2	Herbicide	Thiocarbamate	0	0	5	0
Cyfluthrin	68359-37-5	Insecticide	Pyrethroid	0	0	74	4
λ-Cyhalothrin	91465-08-6	Insecticide	Pyrethroid	0	0	74	26
Cypermethrin	52315-07-8	Insecticide	Pyrethroid	0	0	74	3
Cyproconazole	94361-06-5	Fungicide	Azole	0	0	5	0
Cyprodinil	121552-61-2	Fungicide	Pyrimidine	0	0	5	0
DCPA	1861-32-1	Herbicide	Alkyl phthalate	21	1	5	0
o,p′-DDD	53-19-0	Degradate	Organochlorine	20	4	0	0
p,p′-DDD	72-54-8	Degradate	Organochlorine	20	8	6	0
p,p′-Ethyl-DDD	72-56-0	Degradate	Organochlorine	27	0	0	0
o,p′-DDE	3424-82-6	Degradate	Organochlorine	21	4	0	0
p,p′-DDE	72-55-9	Degradate	Organochlorine	21	18	6	0
DDT plus degradates	–	Degradate	Organochlorine	37	21	0	0
o,p′-DDT	789-02-6	Insecticide	Organochlorine	19	3	0	0
p,p′-DDT	50-29-3	Insecticide	Organochlorine	45	31	6	0
Deltamethrin	52918-63-5	Insecticide	Pyrethroid	0	0	74	0
Desulfinylfipronil	–	Degradate	Pyrazole	0	0	5	0
Diazinon	333-41-5	Insecticide	Organophosphorus	0	0	5	0
3,4-Dichloroaniline	95-76-1	Degradate	Anilide	0	0	5	0
3,5-Dichloroaniline	626-43-7	Degradate	Anilide	0	0	5	0
1,4-Dichlorobenzene	106-46-7	Fumigant	Chlorinated aromatic	21	0	0	0
Dieldrin	60-57-1	Insecticide	Organochlorine	46	24	1	0
Difenoconazole	119446-68-3	Fungicide	Azole	0	0	5	0
(*E*)-Dimethomorph	113210-97-2	Fungicide	Phenol	0	0	5	0
2-Methyl-4,6-dinitrophenol	534-52-1	Insecticide	Phenol	2	2	0	0
Disulfoton	298-04-4	Insecticide	Organophosphorus	0	0	5	0

Table 5. Number of sediment samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[No sediment samples were analyzed during the 2000 to 2002 period. **Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
α-Endosulfan	959-98-8	Degradate	Organochlorine	46	0	1	0
Endrin	72-20-8	Insecticide	Organochlorine	45	2	1	0
EPTC	759-94-4	Herbicide	Thiocarbamate	0	0	5	0
Esfenvalerate	66230-04-4	Insecticide	Pyrethroid	0	0	74	16
Ethalfluralin	55283-68-6	Herbicide	2,6-Dinitroaniline	0	0	5	0
Etofenprox	80844-07-1	Insecticide	Pyrethroid	0	0	5	0
Famoxadone	131807-57-3	Fungicide	Oxazolidinedione	0	0	5	0
Fenarimol	60168-88-9	Fungicide	Pyrimidine	0	0	5	0
Fenbuconazole	114369-43-6	Fungicide	Azole	0	0	5	0
Fenhexamid	126833-17-8	Fungicide	Anilide	0	0	5	0
Fenpropathrin	39515-41-8	Insecticide	Pyrethroid	0	0	74	2
Fipronil sulfide	120067-83-6	Degradate	Pyrazole	0	0	5	0
Fipronil sulfone	120068-36-2	Degradate	Pyrazole	0	0	5	0
Fipronil	120068-37-3	Insecticide	Pyrazole	0	0	5	0
Fludioxonil	131341-86-1	Fungicide	Unclassified	0	0	5	0
Fluoxastrobin	193740-76-0	Fungicide	Strobin	0	0	5	0
Flusilazole	85509-19-9	Fungicide	Azole	0	0	5	0
Flutriafol	76674-21-0	Fungicide	Azole	0	0	5	0
τ-Fluvalinate	102851-06-9	Insecticide	Pyrethroid	0	0	74	1
α-HCH	319-84-6	Degradate	Organochlorine	21	0	1	0
β-HCH	319-85-7	Degradate	Organochlorine	21	0	1	0
Heptachlor epoxide	1024-57-3	Degradate	Organochlorine	46	0	1	0
Heptachlor	76-44-8	Insecticide	Organochlorine	46	0	1	0
Hexachlorobenzene	118-74-1	Fungicide	Halogenated organic	21	0	1	0
Hexazinone	51235-04-2	Herbicide	Triazinone	0	0	5	0
Imazalil	35554-44-0	Fungicide	Azole	0	0	5	0
Iprodione	36734-19-7	Fungicide	Dicarboximide	0	0	5	0
Isodrin	465-73-6	Insecticide	Organochlorine	21	0	0	0
Kresoxim-methyl	143390-89-0	Fungicide	Strobin	0	0	5	0
Lindane	58-89-9	Insecticide	Organochlorine	46	6	1	0
Malathion	121-75-5	Insecticide	Organophosphorus	0	0	5	0
Metconazole	125116-23-6	Fungicide	Azole	0	0	5	0
Methidathion	950-37-8	Insecticide	Organophosphorus	0	0	5	0
Methoprene	40596-69-8	Insecticide	Hormone mimic	0	0	5	0
o,p′-Methoxychlor	30667-99-3	Degradate	Organochlorine	19	0	0	0
p,p′-Methoxychlor	72-43-5	Degradate	Organochlorine	44	0	1	0
4-Chloro-3-methylphenol	59-50-7	Insecticide	Unclassified	21	0	0	0
Methyl parathion	298-00-0	Insecticide	Organophosphorus	0	0	5	0
Metolachlor	51218-45-2	Herbicide	Chloroacetanilide	0	0	5	0
Mirex	2385-85-5	Insecticide	Organochlorine	46	1	1	0
Molinate	2212-67-1	Herbicide	Thiocarbamate	0	0	5	0
Myclobutanil	88671-89-0	Fungicide	Azole	0	0	5	0
Napropamide	15299-99-7	Herbicide	Amide	0	0	5	1
cis-Nonachlor	5103-73-1	Degradate	Organochlorine	20	2	0	0
trans-Nonachlor	39765-80-5	Degradate	Organochlorine	20	2	1	0
Oxychlordane	27304-13-8	Degradate	Organochlorine	21	0	0	0

Table 5. Number of sediment samples analyzed and detections found by pesticide and period for the Sacramento–San Joaquin Delta region, 1990–2010.—Continued

[No sediment samples were analyzed during the 2000 to 2002 period. **Abbreviations**: CAS, Chemical Abstracts Service; POD, Pelagic Organism Decline; –, not available]

Pesticide	CAS number	Pesticide type	Chemical class	Samples analyzed 1990–1999 (Pre-POD)	Detections 1990–1999 (Pre-POD)	Samples analyzed 2003–2010 (Post-POD)	Detections 2003–2010 (Post-POD)
Oxyfluorfen	42874-03-3	Herbicide	Diphenyl ether	0	0	5	0
Pebulate	1114-71-2	Herbicide	Thiocarbamate	0	0	5	0
Pendimethalin	40487-42-1	Herbicide	2,6-Dinitroaniline	0	0	5	0
Pentachloroanisole	1825-21-4	Degradate	Ether	21	0	5	0
Pentachloronitrobenzene	82-68-8	Fungicide	Substituted benzene	21	0	5	0
Pentachlorophenol	87-86-5	Insecticide	Phenol	1	1	0	0
Permethrin	52645-53-1	Insecticide	Pyrethroid	0	0	74	24
cis-Permethrin	61949-76-6	Insecticide	Pyrethroid	20	1	0	0
trans-Permethrin	61949-77-7	Insecticide	Pyrethroid	20	1	0	0
Phenothrin	26002-80-2	Insecticide	Pyrethroid	0	0	74	0
Phosmet	732-11-6	Insecticide	Organophosphorus	0	0	5	0
Piperonyl butoxide	51-03-6	Synergist	Unclassified	0	0	5	0
Prometon	1610-18-0	Herbicide	Triazine	0	0	5	0
Prometryn	7287-19-6	Herbicide	Triazine	0	0	5	0
Propanil	709-98-8	Herbicide	Anilide	0	0	5	0
Propiconazole	60207-90-1	Fungicide	Azole	0	0	5	0
Propyzamide	23950-58-5	Herbicide	Amide	0	0	5	0
Pyraclostrobin	175013-18-0	Fungicide	Strobin	0	0	5	3
Pyrimethanil	53112-28-0	Fungicide	Pyrimidine	0	0	5	0
Resmethrin	10453-86-8	Insecticide	Pyrethroid	0	0	74	2
Simazine	122-34-9	Herbicide	Triazine	0	0	5	0
Tebuconazole	107534-96-3	Fungicide	Azole	0	0	5	1
Tefluthrin	13494-80-9	Insecticide	Pyrethroid	0	0	74	0
Tetraconazole	112281-77-3	Fungicide	Azole	0	0	5	0
Tetramethrin	7696-12-0	Insecticide	Pyrethroid	0	0	74	0
Thiobencarb	28249-77-6	Herbicide	Thiocarbamate	0	0	5	0
Toxaphene	8001-35-2	Insecticide	Organochlorine	46	21	1	0
Triadimefon	43121-43-3	Fungicide	Azole	0	0	5	0
Triadimenol	55219-65-3	Fungicide	Azole	0	0	5	0
Trifloxystrobin	141517-21-7	Fungicide	Strobin	0	0	5	0
Triflumizole	68694-11-1	Fungicide	Azole	0	0	5	0
Trifluralin	1582-09-8	Herbicide	2,6-Dinitroaniline	0	0	5	0
Triticonazole	131983-72-7	Fungicide	Azole	0	0	5	0
Vinclozolin	50471-44-8	Fungicide	Dicarboximide	0	0	5	0
Zoxamide	156052-68-5	Fungicide	Benzamide	0	0	5	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
AMERICAN R A SACRAMENTO CA	11447000	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
ANDERSON RD DR A ORESTIMBA C NR CROWS LANDING CA	372143121033901	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
ARCADE C NR DEL PASO HEIGHTS CA	11447360	0	0	0	0	0	1	12	24	5	0	0	10	9	9	13	20	4	4	13	1	0	42	19	64
BEAR R A HWY 70 NR RIO OSO CA	385821121323201	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
BEAVER SLOUGH NR THORNTON CA*	381215121264901	0	0	0	0	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0
BRUSHY POND NR LIVERMORE, CA	374630121414701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4
CACHE C INFLOW TO SETTLING BASIN NR WOODLAND	384340121434401	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
COLUMBIA CUT NR MIDDLE RIVER CA*	380125121303601	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
COLUSA BASIN DR A RD 99E NR KNIGHTS LANDING CA	11390890	0	0	0	0	0	1	2	16	4	0	0	0	10	0	0	0	0	0	0	0	0	23	10	0
CONNECTION SLOUGH NR MIDDLE RIVER CA*	380000121340801	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
COSUMNES R A MICHIGAN BAR CA	11335000	0	0	0	0	0	0	0	0	0	0	0	3	6	1	3	0	0	0	0	0	0	0	9	4

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
DEL PUERTO C (AT HYW 33) CA	373048121093000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
DEL PUERTO C AT VINEYARD ROAD NR PATTERSON	11274653	0	0	1	0	2	2	0	0	0	0	11	23	0	0	0	0	0	4	1	0	0	5	34	5
DEL PUERTO C NR PATTERSON CA	11274630	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
DEL PUERTO CREEK AT ROGERS ROAD NR PATTERSON CA	372958121103401	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
DRY C A CLAUS RD BRIDGE A MODESTO CA	373925120550701	0	0	0	0	0	8	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	8	14	0
DRY C A GALLO BRIDGE BL HWY 132 A MODESTO CA	373811120590001	0	0	0	0	0	6	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	6	8	0
DRY C A LEASK BRIDGE BL CASHMAN C NR WATERFORD CA	374027120424201	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
DRY C AT REGIONAL PARK AT MODESTO CA	373907120574100	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
E CANAL A KIRKVILLE RD NR NICOLAUS CA	385433121381601	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
EMPIRE CUT NR MIDDLE RIVER CA*	375817121300001	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
FALSE R NR OAKLEY CA*	11313440	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
FARABUINDO STORMDRAIN A CLAUS RD A MODESTO CA	373927120551301	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
FEATHER R BL STAR BEND NR NICOLAUS CA	390020121344201	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10	0
FEATHER R NR NICOLAUS	11425000	0	0	0	0	0	1	0	0	0	0	14	10	0	0	0	0	0	0	0	0	0	1	24	0
FEATHER R NR VERONA CA	384752121375301	0	0	0	0	0	0	0	0	0	0	0	0	9	16	0	0	0	0	0	0	0	0	9	16
FRENCH CAMP SLOUGH A AIR-PORT WAY NR STOCKTON CA*	375252121145401	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
FRENCH CAMP SLOUGH A FRENCH CAMP CA*	375320121160801	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
GRANT LINE CN A TRACY RD BRIDGE CA*	11313200	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
HARDING DRAIN A CARPENTER RD NR PATTER-SON CA	11274560	0	0	22	3	1	0	0	0	0	1	9	2	0	0	0	0	0	0	0	0	0	27	11	0
HIGHLINE CN NR DELHI CA	372349120475901	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
HOG SLOUGH NR THORNTON CA*	381009121273601	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
HOSPITAL C A RIVER RD NR PATTERSON CA	373842121131800	0	0	0	0	2	2	0	0	0	0	0	2	0	0	0	0	0	4	1	0	0	4	2	5
HOSPITAL CREEK NR VERNALIS CA	373615121152801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
INGRAM C A RIVER RD NR PATTERSON CA	373747121125200	0	0	0	0	2	2	0	0	0	0	0	2	0	0	0	0	0	4	1	0	0	4	2	5
INGRAM CREEK NR GRAYSON CA	373521121142801	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
KNIGHTS LANDING RIDGE CUT NR KNIGHTS LANDING CA	384455121414001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0	6
LITTLE CONNECTION SLOUGH NR TERMINOUS CA*	380336121300201	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
LITTLE POTATO SLOUGH NR TERMINOUS CA*	11336800	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
MCHENRY STORMDRAIN A BODEM ST A MODESTO CA	373847120590801	0	0	0	0	0	6	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	6	10	0
MERCED R A RIVER ROAD BRIDGE NR NEWMAN CA	11273500	0	0	0	40	21	0	0	10	15	15	32	56	26	18	8	6	4	3	7	20	0	101	114	66
MERCED R NR STEVINSON CA	11272500	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
MIDDLE R AT MIDDLE RIVER CA*	11312676	0	0	0	5	4	2	1	0	0	0	0	20	0	0	0	0	0	0	0	0	0	12	20	0
MIDDLE R NR HOLT CA*	11312685	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
MOKELUMNE R A ANDRUS ISLAND NR TERMINOUS CA*	11336930	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
MOKELUMNE R A WOODBRIDGE CA*	11325500	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
MOKELUMNE R NR THORNTON CA	381519121262401	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
NEWMAN WASTE-WAY A HWY 33 NR GUSTINE CA	371903120585400	0	0	0	0	2	2	0	0	0	0	9	2	0	0	0	0	0	0	0	0	0	4	11	0
NINTH ST STOR-MDRAIN A SEVENTH ST BR A MODESTO CA	373749120593701	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
OAKDALE ID DRAINAGE A ELLENWOOD RD NR WATER-FORD CA	374024120462401	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
OLD R A BACON ISLAND CA*	11313405	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
OLD R A FRANKS TRACT NR BETHEL ISLAND CA*	380300121344801	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
OLD R A QUIMBY ISLAND NR BETHEL ISLAND CA*	11313434	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
OLIVE AVE DR NR PATTERSON CA	373027121051401	0	0	0	0	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	4	2	0
ORESTIMBA C A ORESTIMBA C RD NR NEW-MAN CA	371912121071201	0	0	0	0	0	0	0	0	0	0	4	6	0	0	0	0	0	0	0	0	0	0	10	0
ORESTIMBA C NR NEWMAN CA	11274500	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
ORESTIMBA CR AT RIVER RD NR CROWS LANDING CA	11274538	0	0	51	48	2	11	0	11	14	16	52	82	18	16	8	6	4	4	1	1	15	153	152	55
ORESTIMBA CREEK AT EASTIN ROAD NR CROWS LANDING CA	372106121035701	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
ORESTIMBA CREEK AT MORRIS ROAD NR CROWS LANDING CA	372320121023301	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
PIPER SLOUGH NR BETHEL ISLAND CA*	380148121365201	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
POND NR WOODWARD RESERVOIR NR OAKDALE, CA	375019120520201	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0	6
POTATO SLOUGH NR TERMINOUS CA*	380524121314801	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
RIVER RD DR A ORESTIMBA C NR CROWS LANDING CA	372451121005201	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
SACRAMENTO R A ALAMAR CA	384030121373601	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	11	0
SACRAMENTO R A FREEPORT CA*	11447650	0	0	0	0	0	1	2	16	12	12	12	9	9	9	11	18	18	16	12	12	12	43	30	108
SACRAMENTO R A GREENS LANDING CA*	11447810	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	25	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
SACRAMENTO R A HWY 5 NR WOODLAND CA	384027121373401	0	0	0	0	0	0	0	0	0	0	0	0	10	16	0	0	0	0	0	0	0	0	10	16
SACRAMENTO R A KNIGHTS LANDING CA	11391000	0	0	0	0	0	0	0	0	0	0	0	0	22	0	4	0	0	0	0	0	0	0	22	4
SACRAMENTO R A RIO VISTA CA*	11455420	0	0	0	13	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0
SACRAMENTO R A SACRAMENTO CA*	11447500	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	10	0
SACRAMENTO R A VERONA CA	11425500	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
SACRAMENTO R A VERONA MARINA NR VERONA CA	384701121370401	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	24	0
SACRAMENTO R AT TOWER BRIDGE AT SACRAMENTO CA*	383430121302001	0	92	141	191	70	3	1	0	0	0	16	12	0	1	0	0	0	0	0	0	0	498	28	1
SACRAMENTO SLOUGH NR KNIGHTS LANDING CA	11391100	0	0	0	0	0	0	2	0	0	0	0	9	9	8	11	0	0	0	0	0	0	2	18	19
SACRAMENTO SLOUGH NR VERONA CA	384649121381101	0	0	0	0	0	0	0	0	0	0	0	0	21	16	0	0	0	0	0	0	0	0	21	16
SAN FRANCISCO BAY A PT SAN PABLO CA*	375812122261201	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
SAN JOAQUIN R A BOULDIN ISLAND NR TERMINOUS CA*	380524121341201	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
SAN JOAQUIN R A LAIRD PARK NR GRAYSON CA	373324121090401	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
SAN JOAQUIN R A PATTERSON BR NR PATTERSON CA	11274570	0	0	1	0	5	0	0	0	0	0	1	41	0	0	0	0	0	0	2	0	0	6	42	2
SAN JOAQUIN R AT MAZE RD BRIDGE NR MODESTO CA	11290500	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	20	0
SAN JOAQUIN R BL WSID PMP AB TUOL R NR WESTLEY CA	373621121102801	0	0	0	0	5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5	2	0
SAN JOAQUIN R NR CROWS LANDING CA	11274550	0	0	0	0	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	23	0
SAN JOAQUIN R NR STOCKTON CA*	375649121202101	0	0	0	0	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0
SAN JOAQUIN R NR VERNALIS CA	11303500	0	7	22	189	72	18	1	12	12	12	72	118	46	17	8	6	8	25	24	22	22	345	236	132
SAND MOUND SLOUGH A BETHEL ISLAND CA*	380000121373001	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
SF PUTAH C A MACE RD NR DAVIS CA	383109121414601	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	11
SONOMA STOR-MDRAIN A SCENIC DRIVE A MODESTO CA	373910120570601	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
SOUTH MOKELUMNE R NR ISELTON CA*	380712121333601	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
SPANISH GRANT COMBINED DRAIN NR PATTERSON CA	11274554	0	0	1	0	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5	2	0
STANISLAUS R A CASWELL STATE PARK NR RIPON CA	374209121103800	0	0	0	0	1	0	0	0	0	0	20	43	0	0	0	0	0	3	2	0	0	1	63	5
STANISLAUS R A RIPON CA	11303000	0	0	1	1	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0	0
STANISLAUS RIVER AT MCHENRY AVE NR ESCALON CA	374537120594101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
STEVINSON LOWER LATERAL NR STEVINSON CA	372217120554700	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
STORM DRAIN INLET S SIDE WENTWORTH LN A MODESTO CA	374115120591601	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
STORM DRAIN INLET W SIDE WHITEHORSE AVE A MODESTO	374111121000301	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
SUISUN BAY AT MARTINEZ CA*	380200122082701	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
SYCAMORE SLOUGH NR TERMINOUS CA*	380831121281201	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
TAYLOR SLOUGH NR BETHEL ISLAND CA*	380148121400401	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
TOE DRAIN A YOLO BYPASS NR WEST SAC-RAMENTO CA	383425121350201	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
TUOLUMNE R A CARPENTER RD BRIDGE A MODESTO CA	373632121014701	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	16	0	3
TUOLUMNE R A MITCHELL RD BRIDGE A MODESTO CA	373701120561601	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	3
TUOLUMNE R A MODESTO CA	11290000	0	0	1	1	21	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0	0
TUOLUMNE R A SHILOH RD BRIDGE NR GRAYSON CA	11290200	0	0	0	0	1	0	0	0	0	0	19	49	29	0	0	0	0	3	1	0	0	1	97	4
TURLOCK ID CE-RES MAIN SPILL NR CERES CA	373639120551001	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
TURLOCK ID HICKMAN SPILL NR HICKMAN CA	373753120441101	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
TURNER CUT NR HOLT CA*	11311300	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
ULATIS C A BROWNS RD NR ELMIRA CA	11455261	0	0	0	0	0	0	0	0	0	0	0	20	22	0	0	0	0	0	0	0	0	0	42	0
WERNER SLOUGH NR KNIGHTSEN CA*	375737121361501	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0

Table 6. Number of samples by site analyzed for pesticides per year from 1990 to 2010 for the Sacramento–San Joaquin Delta region.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Samples analyzed 1990–1999 (Pre-POD)	Samples analyzed 2000–2002 (POD)	Samples analyzed 2003–2010 (Post-POD)
WEST SIDE STORMDRAIN A NEECE DRIVE A MODESTO CA	373731120595401	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
WESTPORT DRAIN NR MODESTO CA	373232121053900	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	2	0
WHITE SLOUGH NR TERMINOUS CA*	380448121280801	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
WILLOW SLOUGH BYPASS A CTY RD 105 NR DAVIS CA	383524121403401	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	5
YOLO BYPASS A I-80 NR W SACRAMENTO CA	11453120	0	0	0	0	0	0	0	2	2	1	1	0	0	0	1	0	0	0	0	0	0	5	1	1
Total numbers of samples		0	99	244	499	307	171	33	91	64	58	294	650	256	127	99	61	38	99	65	60	55	1,566	1,200	604

Table 7. Number of samples analyzed for pesticides per month from the Sacramento–San Joaquin Delta region from 1990 to 2010, by site.

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	January	February	March	April	May	June	July	August	September	October	November	December
AMERICAN R A SACRAMENTO CA	11447000	0	0	0	0	0	0	0	0	0	0	1	0
ANDERSON RD DR A ORESTIMBA C NR CROWS LANDING CA	372143121033901	2	0	0	0	0	0	0	0	0	0	0	0
ARCADE C NR DEL PASO HEIGHTS CA	11447360	12	13	11	16	12	11	9	6	9	9	10	7
BEAR R A HWY 70 NR RIO OSO CA	385821121323201	0	0	0	0	0	0	0	0	0	1	0	0
BEAVER SLOUGH NR THORNTON CA*	381215121264901	0	0	0	1	0	4	0	0	1	0	0	1
BRUSHY POND NR LIVERMORE CA	374630121414701	0	2	0	0	0	2	0	0	0	0	0	0
CACHE C INFLOW TO SETTLING BASIN NR WOODLAND CA	384340121434401	0	2	2	0	0	0	0	0	0	0	0	0
COLUMBIA CUT NR MIDDLE RIVER CA*	380125121303601	0	0	1	0	0	1	0	0	1	0	1	0
COLUSA BASIN DR A RD 99E NR KNIGHTS LANDING CA	11390890	2	2	2	3	5	6	5	1	1	2	2	2
CONNECTION SLOUGH NR MIDDLE RIVER CA*	380000121340801	0	0	1	0	1	1	0	0	1	0	1	0
COSUMNES R A MICHIGAN BAR CA	11335000	1	2	2	1	1	1	0	1	0	1	1	2
DEL PUERTO C (AT HYW 33) CA	373048121093000	0	0	0	1	0	0	1	0	1	0	0	0
DEL PUERTO C AT VINEYARD ROAD NR PATTERSON CA	11274653	7	7	0	4	5	8	7	4	1	1	0	0
DEL PUERTO C NR PATTERSON CA	11274630	2	0	0	0	0	0	0	0	0	0	0	0
DEL PUERTO CREEK AT ROGERS ROAD NR PATTERSON CA	372958121103401	0	0	0	1	0	0	1	0	1	0	0	0
DRY C A CLAUS RD BRIDGE A MODESTO CA	373925120550701	3	18	1	0	0	0	0	0	0	0	0	0
DRY C A GALLO BRIDGE BL HWY 132 A MODESTO CA	373811120590001	3	9	2	0	0	0	0	0	0	0	0	0
DRY C A LEASK BRIDGE BL CASHMAN C NR WATERFORD CA	374027120424201	0	1	0	0	0	0	0	0	0	0	0	0
DRY C AT REGIONAL PARK AT MODESTO CA	373907120574100	0	0	0	0	0	0	0	0	0	1	0	0
E CANAL A KIRKVILLE RD NR NICOLAUS CA	385433121381601	0	0	0	0	0	0	0	0	0	1	0	0
EMPIRE CUT NR MIDDLE RIVER CA*	375817121300001	0	0	1	0	0	1	0	0	1	0	1	0
FALSE R NR OAKLEY CA*	11313440	0	0	1	0	1	2	0	0	1	0	0	1
FARABUINDO STORMDRAIN A CLAUS RD A MODESTO CA	373927120551301	0	1	0	0	0	0	0	0	0	0	0	0
FEATHER R BL STAR BEND NR NICOLAUS CA	390020121344201	5	5	0	0	0	0	0	0	0	0	0	0
FEATHER R NR NICOLAUS CA	11425000	7	17	0	0	0	0	0	0	0	0	1	0
FEATHER R NR VERONA CA	384752121375301	10	13	2	0	0	0	0	0	0	0	0	0
FRENCH CAMP SLOUGH A AIRPORT WAY NR STOCKTON CA*	375252121145401	0	0	0	0	0	0	0	0	1	0	0	0
FRENCH CAMP SLOUGH A FRENCH CAMP CA*	375320121160801	0	0	0	1	0	2	1	0	1	0	0	1
GRANT LINE CN A TRACY RD BRIDGE CA*	11313200	0	0	0	1	0	2	1	0	0	0	0	1
HARDING DRAIN A CARPENTER RD NR PATTERSON CA	11274560	6	6	0	2	4	6	5	5	1	1	0	2

Table 7. Number of samples analyzed for pesticides per month from the Sacramento–San Joaquin Delta region from 1990 to 2010, by site.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	January	February	March	April	May	June	July	August	September	October	November	December
HIGHLINE CN NR DELHI CA	372349120475901	0	0	0	0	0	0	0	1	0	0	0	0
HOG SLOUGH NR THORNTON CA*	381009121273601	0	0	1	0	0	0	0	0	1	0	1	0
HOSPITAL C A RIVER RD NR PATTERSON CA	373842121131800	3	0	0	1	0	3	2	1	1	0	0	0
HOSPITAL CREEK NR VERNALIS CA	373615121152801	0	0	0	1	0	0	1	0	1	0	0	0
INGRAM C A RIVER RD NR PATTERSON CA	373747121125200	3	0	0	1	0	3	2	1	1	0	0	0
INGRAM CREEK NR GRAYSON CA	373521121142801	0	0	0	1	0	0	1	0	1	0	0	0
KNIGHTS LANDING RIDGE CUT NR KNIGHTS LANDING CA	384455121414001	1	3	2	0	0	0	0	0	0	0	0	0
LITTLE CONNECTION SLOUGH NR TERMINOUS CA*	380336121300201	0	0	1	0	0	2	0	0	1	0	1	0
LITTLE POTATO SLOUGH NR TERMINOUS CA*	11336800	0	0	1	0	0	2	0	0	0	0	1	0
MCHENRY STORMDRAIN A BODEM ST A MODESTO CA	373847120590801	10	6	0	0	0	0	0	0	0	0	0	0
MERCED R A RIVER ROAD BRIDGE NR NEWMAN CA	11273500	40	66	24	25	22	29	22	16	7	9	5	16
MERCED R NR STEVINSON CA	11272500	0	0	0	0	0	0	0	0	0	1	0	0
MIDDLE R AT MIDDLE RIVER CA*	11312676	8	15	2	1	4	0	0	0	1	0	0	1
MIDDLE R NR HOLT CA*	11312685	0	0	1	0	1	1	0	0	1	0	1	0
MOKELUMNE R A ANDRUS ISLAND NR TERMINOUS CA*	11336930	0	0	1	0	0	3	0	0	0	0	1	0
MOKELUMNE R A WOODBRIDGE CA*	11325500	0	0	0	0	0	0	0	0	0	1	0	0
MOKELUMNE R NR THORNTON CA	381519121262401	0	0	0	1	0	1	0	0	1	0	0	1
NEWMAN WASTEWAY A HWY 33 NR GUSTINE CA	371903120585400	5	6	0	0	0	3	0	1	0	0	0	0
NINTH ST STORMDRAIN A SEVENTH ST BR A MODESTO CA	373749120593701	0	1	0	0	0	0	0	0	0	0	0	0
OAKDALE ID DRAINAGE A ELLENWOOD RD NR WATERFORD CA	374024120462401	0	1	0	0	0	0	0	0	0	0	0	0
OLD R A BACON ISLAND CA*	11313405	0	0	1	0	1	2	0	0	1	0	1	0
OLD R A FRANKS TRACT NR BETHEL ISLAND CA*	380300121344801	0	0	1	0	1	0	0	0	1	0	1	0
OLD R A QUIMBY ISLAND NR BETHEL ISLAND CA*	11313434	0	0	1	0	1	1	0	0	1	0	1	0
OLIVE AVE DR NR PATTERSON CA	373027121051401	2	0	0	0	0	3	0	1	0	0	0	0
ORESTIMBA C A ORESTIMBA C RD NR NEWMAN CA	371912121071201	4	6	0	0	0	0	0	0	0	0	0	0
ORESTIMBA C NR NEWMAN CA	11274500	1	2	0	0	0	0	0	0	0	0	0	0
ORESTIMBA CR AT RIVER RD NR CROWS LANDING CA	11274538	65	80	25	30	32	33	35	32	10	8	4	6
ORESTIMBA CREEK AT EASTIN ROAD NR CROWS LANDING CA	372106121035701	0	0	0	1	0	0	1	0	1	0	0	0

Table 7. Number of samples analyzed for pesticides per month from the Sacramento–San Joaquin Delta region from 1990 to 2010, by site.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	January	February	March	April	May	June	July	August	September	October	November	December
ORESTIMBA CREEK AT MORRIS ROAD NR CROWS LANDING CA	372320121023301	0	0	0	1	0	0	1	0	1	0	0	0
PIPER SLOUGH NR BETHEL ISLAND CA*	380148121365201	0	0	1	0	1	0	0	0	1	0	0	1
POND NR WOODWARD RESERVOIR NR OAKDALE, CA	375019120520201	0	0	2	0	0	4	0	0	0	0	0	0
POTATO SLOUGH NR TERMINOUS CA*	380524121314801	0	0	1	0	0	2	0	0	0	0	1	0
RIVER RD DR A ORESTIMBA C NR CROWS LANDING CA	372451121005201	2	0	0	0	0	0	0	0	0	0	0	0
SACRAMENTO R A ALAMAR CA	384030121373601	5	6	0	0	0	0	0	0	0	0	0	0
SACRAMENTO R A FREEPORT CA*	11447650	19	20	14	16	17	16	14	12	12	10	13	18
SACRAMENTO R A GREENS LANDING CA*	11447810	11	10	4	0	0	0	0	0	0	0	0	0
SACRAMENTO R A HWY 5 NR WOODLAND CA	384027121373401	10	14	2	0	0	0	0	0	0	0	0	0
SACRAMENTO R A KNIGHTS LANDING CA	11391000	5	11	10	0	0	0	0	0	0	0	0	0
SACRAMENTO R A RIO VISTA CA*	11455420	2	11	0	1	0	2	0	0	1	0	0	1
SACRAMENTO R A SACRAMENTO CA*	11447500	0	0	0	0	3	3	4	0	0	0	0	0
SACRAMENTO R A VERONA CA	11425500	0	0	0	0	0	0	0	0	0	1	0	0
SACRAMENTO R A VERONA MARINA NR VERONA CA	384701121370401	11	9	4	0	0	0	0	0	0	0	0	0
SACRAMENTO R AT TOWER BRIDGE AT SACRAMENTO CA*	383430121302001	61	92	52	40	31	36	39	35	36	38	33	34
SACRAMENTO SLOUGH NR KNIGHTS LANDING CA	11391100	4	5	6	4	4	4	4	1	4	0	2	1
SACRAMENTO SLOUGH NR VERONA CA	384649121381101	10	15	2	0	3	4	3	0	0	0	0	0
SAN FRANCISCO BAY A PT SAN PABLO CA*	375812122261201	0	1	0	0	0	0	0	0	0	0	0	0
SAN JOAQUIN R A BOULDIN ISLAND NR TERMINOUS CA*	380524121341201	0	0	1	0	0	1	0	0	1	0	1	0
SAN JOAQUIN R A LAIRD PARK NR GRAYSON CA	373324121090401	0	0	0	0	0	1	1	0	0	1	0	0
SAN JOAQUIN R A PATTERSON BR NR PATTERSON CA	11274570	10	12	0	3	5	9	6	4	0	1	0	0
SAN JOAQUIN R AT MAZE RD BRIDGE NR MODESTO CA	11290500	0	0	0	3	5	4	5	3	0	0	0	0
SAN JOAQUIN R BL WSID PMP AB TUOL R NR WESTLEY CA	373621121102801	0	0	0	0	0	5	1	1	0	0	0	0
SAN JOAQUIN R NR CROWS LANDING CA	11274550	0	0	0	3	5	4	7	4	0	0	0	0
SAN JOAQUIN R NR STOCKTON CA*	375649121202101	0	0	0	1	0	4	0	0	1	0	0	1
SAN JOAQUIN R NR VERNALIS CA	11303500	153	221	72	62	29	40	30	30	19	15	14	28
SAND MOUND SLOUGH A BETHEL ISLAND CA*	380000121373001	0	0	1	0	1	1	0	0	1	0	0	1
SF PUTAH C A MACE RD NR DAVIS CA	383109121414601	0	3	5	3	0	0	0	0	0	0	0	0
SONOMA STORMDRAIN A SCENIC DRIVE A MODESTO CA	373910120570601	0	1	0	0	0	0	0	0	0	0	0	0

Table 7. Number of samples analyzed for pesticides per month from the Sacramento–San Joaquin Delta region from 1990 to 2010, by site.—Continued

[**Abbreviations**: A, at; AB, above; AVE, Avenue; BL, below; BR, Bridge; C, Creek; CA, California; CN, Canal; CTY, City; DR, Drive; E, East; HWY, Highway; ID, Irrigation District; LN, Lane; NR, near; PMP, Pump; PT, Point; R, River; RD, Road; S, South; SF, South Fork; ST, Street; TUOL, Tuolumne; W, West; WSID, West Stanislaus Irrigation District; *, Site may be tidally influenced under certain flow conditions]

Station name	Station number	January	February	March	April	May	June	July	August	September	October	November	December
SOUTH MOKELUMNE R NR ISELTON CA*	380712121333601	0	0	1	0	0	1	0	0	1	0	1	0
SPANISH GRANT COMBINED DRAIN NR PATTERSON CA	11274554	2	0	0	0	0	3	0	1	0	1	0	0
STANISLAUS R A CASWELL STATE PARK NR RIPON CA	374209121103800	17	27	0	3	5	6	6	4	0	1	0	0
STANISLAUS R A RIPON CA	11303000	7	13	0	0	0	1	0	0	0	1	0	1
STANISLAUS RIVER AT MCHENRY AVE NR ESCALON CA	374537120594101	0	0	0	0	0	0	1	0	0	1	0	0
STEVINSON LOWER LATERAL NR STEVINSON CA	372217120554700	0	2	0	0	0	0	0	0	0	0	0	0
STORM DRAIN INLET S SIDE WENTWORTH LN A MODESTO CA	374115120591601	0	2	0	0	0	0	0	0	0	0	0	0
STORM DRAIN INLET W SIDE WHITEHORSE AVE A MODESTO CA	374111121000301	0	1	0	0	0	0	0	0	0	0	0	0
SUISUN BAY AT MARTINEZ CA*	380200122082701	0	5	0	0	0	0	0	0	0	0	0	0
SYCAMORE SLOUGH NR TERMINOUS CA*	380831121281201	0	0	1	0	0	3	0	0	0	0	1	0
TAYLOR SLOUGH NR BETHEL ISLAND CA*	380148121400401	0	0	1	0	1	0	0	0	1	0	0	1
TOE DRAIN A YOLO BYPASS NR WEST SACRAMENTO CA	383425121350201	0	0	4	3	0	0	0	0	0	0	0	0
TUOLUMNE R A CARPENTER RD BRIDGE A MODESTO CA	373632121014701	0	7	9	0	0	1	1	0	0	1	0	0
TUOLUMNE R A MITCHELL RD BRIDGE A MODESTO CA	373701120561601	0	4	1	0	0	1	1	0	0	1	0	0
TUOLUMNE R A MODESTO CA	11290000	8	16	2	0	0	1	0	0	0	1	0	1
TUOLUMNE R A SHILOH RD BRIDGE NR GRAYSON CA	11290200	23	39	8	5	10	6	6	4	0	1	0	0
TURLOCK ID CERES MAIN SPILL NR CERES CA	373639120551001	0	1	0	0	0	0	0	0	0	0	0	0
TURLOCK ID HICKMAN SPILL NR HICKMAN CA	373753120441101	0	1	0	0	0	0	0	0	0	0	0	0
TURNER CUT NR HOLT CA*	11311300	0	0	1	0	0	3	0	0	1	0	1	0
ULATIS C A BROWNS RD NR ELMIRA CA	11455261	15	17	10	0	0	0	0	0	0	0	0	0
WERNER SLOUGH NR KNIGHTSEN CA*	375737121361501	0	0	1	0	1	2	0	0	1	0	1	0
WEST SIDE STORMDRAIN A NEECE DRIVE A MODESTO CA	373731120595401	0	1	0	0	0	0	0	0	0	0	0	0
WESTPORT DRAIN NR MODESTO CA	373232121053900	0	0	0	0	0	2	0	1	0	0	0	0
WHITE SLOUGH NR TERMINOUS CA*	380448121280801	0	0	1	0	0	1	0	0	1	0	0	0
WILLOW SLOUGH BYPASS A CTY RD 105 NR DAVIS CA	383524121403401	1	2	2	0	0	0	0	0	0	0	0	0
YOLO BYPASS A I-80 NR W SACRAMENTO CA	11453120	1	3	3	0	0	0	0	0	0	0	0	0
Total numbers of samples		579	856	309	241	212	304	224	170	133	110	103	129

Appendix

Appendix 1. U.S. Geological Survey Pesticide Concentration Data for Environmental Water and Sediment Samples Collected at Surface-Water Sampling Sites in the Sacramento–San Joaquin Delta Region 1990–2010.

Appendix table provided as a separate Microsoft® Excel file.

Appendix 2. U.S. Geological Survey Pesticide Concentration Data for Quality-Control Water and Sediment Samples Collected at Surface-Water Sampling Sites in the Sacramento–San Joaquin Delta Region 1990–2010.

Appendix table provided as a separate Microsoft® Excel file.

Appendix 3. References for Analytical Methods Applicable to Data Presented in Appendices 1 and 2.

Appendix 3. References for analytical methods applicable to data presented in appendices 1 and 2.

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Crepeau, K.L., Domagalski, J.L., and Kuivila, K.M., 1994, Methods of analysis and quality-assurance practices of the U.S. Geological Survey Organic Laboratory, Sacramento, California—Determination of pesticides in water by solid-phase extraction and capillary-column gas chromatography/mass spectrometry: U.S. Geological Survey Open-File Report 94-362, 17 p.
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