

**SAMPLING FOR PESTICIDE RESIDUES  
IN CALIFORNIA WELL WATER**

**1992 Well Inventory  
Data Base,  
Cumulative Report 1986-1992**

Seventh Annual Report to the Legislature,  
State Department of Health Services,  
Office of Environmental Health Hazard Assessment,  
and the State Water Resources Control Board

Pursuant to the  
Pesticide Contamination Prevention Act



California Environmental Protection Agency  
**DEPARTMENT OF PESTICIDE REGULATION**

December, 1992

EH 93-02

**California Environmental Protection Agency  
DEPARTMENT OF PESTICIDE REGULATION**

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by

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## EXECUTIVE SUMMARY

### PURPOSE:

The Pesticide Contamination Prevention Act (PCPA, see Appendix A, p. 90), requires that the Director of the Department of Pesticide Regulation (DPR) within the California Environmental Protection Agency maintain a statewide data base of wells sampled for pesticide active ingredients and that all agencies submit to the Director the results of any well sampling for the active ingredients of pesticides. The PCPA directs DPR, in consultation with the California Department of Health Services (CDHS) and the State Water Resources Control Board (SWRCB), to annually report: (1) specified information contained in the data base to the Legislature, the CDHS, the Office of Environmental Health Hazard Assessment, and the SWRCB; (2) actions taken by the Director and the SWRCB, including actions taken by the Regional Boards, to prevent pesticides from moving to ground water; and (3) factors contributing to the movement of pesticides to ground water.

### BACKGROUND:

Prior to 1979, very little well water sampling was conducted in California to determine if pesticide residues had reached ground water, because it was believed that pesticides did not have sufficient mobility or longevity in soil to migrate to ground water. In 1979, however, the soil fumigant 1,2-dibromo-3-chloropropane (DBCP) was detected in ground water in Lathrop, California. Since then, well sampling programs have been conducted throughout California by numerous agencies and private firms.

The well inventory data base was developed by DPR (then a division of the California Department of Food and Agriculture) in 1983, prior to the enactment of the PCPA in 1986. The purposes of the data base were to centralize reliable information on the occurrence of non-point source contamination of ground water by the agricultural use of pesticides and to facilitate graphical, numerical, and spatial analyses of the data. The contents of the data base were described in the report, Agricultural

Pesticide Residues in California Well Water: Development and Summary of a Well Inventory Data Base for Non-Point Sources (Cardozo et al., 1985). To meet the requirements of the PCPA, sampling results of both point sources (where the contaminant flows in a fairly distinct plume from an identifiable source) and non-point sources are now included in the data base.

This, the 1992 report, is the first cumulative report on the entire contents of the data base since the 1986 report (Brown, et al., 1986). A numerical summary of data contained in the data base by report year is in Table 1. A glossary of terms used in this report is in Appendix B (p. 103).

Interpretation of sampling results in the well inventory data base is subject to the following limitations:

1. Only data submitted to DPR between November 1, 1983 and June 30, 1992 are included and discussed in the report. The results of monitoring surveys were not always submitted as they were completed. Some results were submitted up to eight years later.
2. Data included in this report are not the results of a single study. Rather, they are the result of 251 separate monitoring surveys, designed and conducted by 35 government agencies and three private firms from 1971 through 1992 for varying purposes;
3. Pesticide residue detections in the well inventory do not represent a complete survey of ground water contamination in the state. The detected compounds are limited to only those for which the sample was specifically analyzed. Some areas of the state have never been sampled; a few areas have been sampled many times. Therefore, the data indicate which pesticides are present in California well water among those pesticides for which analyses were carried out, but not among all pesticides used statewide;
4. Sampling by agencies other than DPR is not necessarily related to suspected agricultural non-point sources of contamination. Consequently, it should not be assumed that the reported results are an indication of which pesticides are more or less likely to leach to ground water as a result of agricultural use.

Despite these limitations, the well inventory is a unique archive of ground water sampling data for a single state. Although data bases have been compiled in at least nine other states for the results of ground water monitoring for pesticides, only California centralizes monitoring results from all sampling agencies into a single collection point on an ongoing basis.

Table 1. Numerical Summary of Records Contained in the Well Inventory Data Base, by Year of Report.

CATEGORY	REPORT YEAR							TOTAL
	1986	1987	1988	1989	1990	1991	1992	
Total Analyses	71,093	5,163	39,972	8,157	30,058	24,881	81,369	260,693
Positive Analyses (a)	5,091	1,133	527	674	837	700	3,497	12,459
Confirmed Analyses (b)	498	983	336	627	715	580	876	4,615
Wells Sampled	8,987	574	3,074	752	2,784	1,557	4,741	17,713 (c)
Wells Reported with Detections	2,404	257	283	209	234	206	756	3,697 (c)
Wells with Confirmed Detections	166	180	115	181	163	146	143	957 (c)
Counties Sampled	53	20	41	33	53	30	52	58 (c)
Counties with Wells	23	14	17	22	26	19	28	44 (c)
Reported with Detections								
Counties with Wells Having	18	12	14	20	15	16	17	36 (c)
Confirmed Detections								
Pesticides and Related Compounds	160	79	167	96	191	186	125	273 (c)
Sampled For								
Pesticides and Related Compounds	16	15	25	15	27	20	40	68 (c)
Reported Detected								
Pesticides and Related Compounds	10	14	10	14	14	12	15	35 (c)
with Confirmed Detections								
Pesticides and Related Compounds	9	8	1	7	6	7	5	12 (c)
Detected in Ground Water as the								
Result of Legal, Agricultural Use(d)								

(a) Confirmed and unconfirmed detections are included in the positive analyses.

(b) Positive sampling results are designated as confirmed if a specific compound was detected in at least two discrete samples taken from the same well during a single monitoring survey.

(c) The total is not additive. It is a total of the unique items existing in a category (e.g., a single well that had sampling data reported in the 1986, 1988, and 1990 reports is counted one time only).

(d) Legal, agricultural use is the application of a pesticide, according to its labelled directions and in accordance with federal and state laws and regulations, for agricultural use as defined in Food and Agricultural Code Section 11408.

Sampling results contained in the well inventory data base can be used in the following applications:

1. Displaying the geographic distribution of well sampling;
2. Displaying the known geographic distribution of pesticide residues in wells among those wells sampled;
3. Identifying areas potentially sensitive to pesticide leaching;
4. Designing studies for future sampling.

#### **METHODS:**

The Act requires that the Director maintain a statewide data base of wells sampled for pesticide active ingredients. All sampling results reported to DPR were appraised to determine if they met the following criteria for inclusion in the data base:

1. Sampling results were for the analyses of agricultural-use pesticides (see Glossary) or their breakdown products;
2. Samples were taken from a well, i.e., from ground water, not surface water or soil;
3. Samples were obtained from an untreated and unfiltered system;
4. Location of each sampled well had to be identified by at least township/range/section according to the U.S. Geological Survey Public Lands Survey Coordinate system;
5. Data must not have been entered into the data base previously.

The data were entered into a computer and checked with computer verification programs for accuracy.

#### **MAJOR FINDINGS, 1986-1992:**

The results of 260,693 analyses of well water samples are included in the well inventory data base and are summarized and discussed in this report. The samples were taken during 251 separate ground water monitoring surveys submitted to DPR between November 1, 1983 and June 30, 1992. The surveys

were conducted by 35 government agencies and three private firms from 1971 through 1992. Overall, samples were taken from a total of 17,713 wells in all 58 counties and analyzed for one or more of 273 pesticide active ingredients and breakdown products.

The detection of 68 pesticides and related compounds in California well waters have been reported to DPR. Detections of 35 of the compounds in ground water were reported confirmed (i.e., the compound was detected in two discrete samples taken from a single well during the time period of a single monitoring survey). Pesticide residues were reported detected in 3,697 wells in 44 counties, and reported confirmed in a total of 957 wells in 36 counties. Compounds with confirmed detections were: alachlor; aldicarb; aldicarb sulfone; aldicarb sulfoxide; atrazine; bentazon; bromacil; carbon disulfide; chlorothalonil; chlorthal-dimethyl; 1,2-dichloropropane (1,2-D); 2,4-dichlorophenoxyacetic acid (2,4-D); 1,2-dibromo-3-chloropropane (DBCP); dichloro diphenyl trichloroethane (DDT); DDE (a breakdown product of DDT); diazinon; diuron; ethylene dibromide (EDB); endrin; molinate; molinate sulfoxide; monuron; naphthalene; ortho-dichlorobenzene; prometon; simazine; 2,4,5-trichlorophenoxyacetic acid (2,4,5-T); tebuthiuron; 1,1,2,2-tetrachloroethane; thiobencarb; toxaphene; 2,3,5,6-tetrachloroterephthalic acid (TPA, a breakdown product of chlorthal-dimethyl); 1,2,4-trichlorobenzene; trifluralin; and xylene.

Included in the 68 compounds reported detected were first-time detections of 14 compounds that were reported to DPR after the 1991 report was published: dicamba, 2,4-DP, ethylene dichloride, heptachlor and its breakdown product heptachlor epoxide, methoxychlor, methyl trithion, naphthalene, prometryn, propazine, 1,1,2,2-tetrachloroethane, tetrachloroethylene, thiobencarb, and 1,2,4-trichlorobenzene. Eight of these compounds are no longer registered for use in California and one is no longer registered for agricultural use; those detections have been reported to the SWRCB. Detections of the remaining five compounds are currently under investigation by DPR.

Also included in the 68 compounds reported detected are 22 other compounds, previously detected in other areas of California, that were reported with detections in new counties: alachlor, atrazine, bentazon, bromacil, carbon disulfide, chlorpyrifos, chlorthal-dimethyl, 1,2-D, 2,4-D, DBCP, diazinon, diuron, EDB, endrin, lindane, methyl bromide, ortho-dichlorobenzene,



prometon, silvex, simazine, toxaphene, and xylene. Seven of these compounds are no longer registered for use and have been reported to the SWRCB. Detections of the remaining 15 compounds are currently under investigation by DPR.

As specified by the PCPA, after an active ingredient of a pesticide has been detected in the ground waters of the state and the detection is verified by a second analytical method or a second analytical laboratory, the Director shall determine whether the pesticide reached ground water as a result of agricultural use in accordance with state and federal laws and regulations (i.e., legal, agricultural use).

Agricultural applications are considered by DPR to be the source of residues of 12 compounds detected in ground water: aldicarb sulfone, aldicarb sulfoxide, atrazine, bentazon, bromacil, 1,2-D, DBCP, diuron, EDB, prometon, simazine, and TPA.

Detections due to non-point source, legal agricultural use have been made in a total of 475 wells in 20 counties: Butte, Colusa, Contra Costa, Fresno, Glenn, Humboldt, Kern, Los Angeles, Merced, Orange, Placer, Riverside, Sacramento, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba.

Overall, simazine has been found most frequently (detected in 296 wells), atrazine and bentazon found in the most counties (10 each), and Tulare County has the largest number of wells (206) with detections resulting from legal, agricultural use.

Of the 12 compounds with detections attributed to agricultural applications, DBCP, EDB, and 1,2-D are no longer registered for use as active ingredients. Use of atrazine, bromacil, diuron, prometon, or simazine is controlled in Pesticide Management Zones (PMZs), where the pesticides were detected and determined to be present in ground water as a result of agricultural use. (A PMZ is a geographic surveying unit of approximately one square mile [a section] that is sensitive to ground water pollution.) Agricultural, outdoor institutional, and outdoor industrial uses of atrazine and prometon are prohibited within atrazine and prometon PMZs. Agricultural, outdoor institutional, and outdoor industrial uses of bromacil, diuron, and simazine

in non-crop areas and on rights-of-way are prohibited within bromacil, diuron, and simazine PMZs.

Regulations were adopted by DPR that prohibit the use of bentazon for the production of rice, limit bentazon use on other crops to non-irrigated or sprinkler-irrigated sites during April through July only, and prohibit the use of bentazon in Del Norte and Humboldt Counties.

Aldicarb had been used in the production of lily bulbs prior to 1983 in Del Norte County and prior to 1986 in Humboldt County when the use of aldicarb was prohibited in those counties following the detection of aldicarb or its breakdown products in ground water. Aldicarb and its breakdown products, aldicarb sulfone and aldicarb sulfoxide, were detected in Del Norte County. Aldicarb sulfone and aldicarb sulfoxide were detected in Humboldt County. Regulations were adopted by DPR to reduce the maximum rate of aldicarb that may be legally applied in other counties of the state and that prohibit the application of aldicarb from September 1 to March 1 of each year, during the time when rain is most likely, to further reduce the likelihood of aldicarb reaching ground water.

Although DPR's investigation suggests that the chlorthal-dimethyl metabolite TPA reached ground water as a result of agricultural use, TPA will not be regulated under the provisions of the PCPA. Degradation products of pesticides detected in ground water are reviewed through the AB 2021 detection response process when they pose a threat to public health and have migrated to ground water as a result of legal, agricultural use. At the request of DPR, the registrant of chlorthal-dimethyl submitted all available toxicology studies on TPA. After a review of the toxicological data, the Medical Toxicology Branch of DPR concluded that, at the levels detected in ground water, TPA does not pose a threat to public health. Therefore, TPA was not submitted into the AB 2021 detection response process.

#### **SUMMARY, REPORT YEARS 1986-1992:**

The well inventory data base contains information on the detection of 68 pesticides and related compounds in California well waters that was reported to DPR between November 1, 1983 and July 1, 1992. The data are from surveys

conducted in 1971 through 1992 by 35 government agencies and three private firms. The presence of 35 of the compounds in ground water was confirmed by a second, positive sample. Agricultural applications are considered by DPR to be the source of detections of 12 compounds in ground water: aldicarb sulfone, aldicarb sulfoxide, atrazine, bentazon, bromacil, 1,2-D, DBCP, diuron, EDB, prometon, simazine, and TPA.

DPR has taken the following actions between January 1, 1986 and June 30, 1992 to prevent pesticide contamination of ground water:

1. Adopted regulations to establish the Groundwater Protection List (GWPL) in Title 3, California Code of Regulations (3CCR) of pesticides that have the potential to pollute ground water. The GWPL is divided into two sublists: 6800(a) and 6800(b) (3CCR);

Pesticides with detections confirmed by approved verification methods in soil or ground water as a result of legal, agricultural use are placed in section 6800(a). Six pesticides are listed in this section: atrazine, bentazon, bromacil, diuron, prometon, and simazine. Pesticides listed in section 6800(b) of the GWPL have been identified as having the potential to leach to ground water because of (1) their physical and chemical properties and (2) language on their label allowing for their application to the soil. A total of 48 chemicals are listed in section 6800(b);

DPR has proposed regulations to add aldicarb to section 6800(a) and three additional pesticides to section 6800(b): chlorothalonil; 2,4-D, alkanolamine salts; and endothall;

2. Completed 118 agricultural use determinations for detections of 33 pesticide active ingredients and breakdown products. Other agricultural use determinations are currently in progress. As a result of the determinations, eight compounds have been identified as having been found in ground water as a result of legal, agricultural use: aldicarb sulfone, aldicarb sulfoxide, atrazine, bentazon, bromacil, diuron, prometon, and simazine. Atrazine, bentazon, bromacil, diuron, prometon, and simazine are listed in section 6800(a) of the GWPL;

Although agricultural applications of DBCP, EDB, and 1,2-D are considered by DPR to be the source of residues of those compounds that have been detected in ground water, they are not listed on the GWPL because they are no longer registered for use as active ingredients in California. Because levels of TPA detected in ground water were determined to not pose a threat to public health, pursuant to Food and Agricultural Code section 13149, TPA was not listed in section 6800(a) of the GWPL;

3. Adopted regulations to establish PMZs for the pesticides atrazine, bromacil, diuron, prometon, and/or simazine in one or more of the following counties: Contra Costa, Fresno, Glenn, Los Angeles, Merced, Orange, Riverside, Stanislaus, Tehama, and Tulare. DPR has

proposed regulations to establish additional PMZs in Kern, Placer, and Solano Counties, and to regulate the use of all 6800(a) compounds in all PMZs;

4. Adopted regulations designating pesticides containing active ingredients listed in section 6800(a) as restricted materials when labeled for agricultural, outdoor industrial, or outdoor institutional use, and requiring a permit for possession or use of such pesticides within a PMZ for that chemical. Permits are issued by county agricultural commissioners for the use of chemicals, at a specific site, that are restricted pesticides. Restricted pesticides, for various reasons, are potentially more hazardous than other pesticides. A groundwater protection advisory, written by a licensed pest control advisor who has completed the Groundwater Protection Training Program approved and administered by DPR, must be submitted to the county agricultural commissioner when applying for a permit to use a pesticide containing a chemical listed in section 6800(a) in a PMZ for that chemical;
5. Proposed regulations that would require a groundwater protection advisory, written by a licensed pest control advisor who has completed the Groundwater Protection Training Program approved and administered by DPR, be submitted to the county agricultural commissioner when applying for a permit to use a pesticide containing a chemical listed in section 6800(a) in any PMZ;
6. Adopted regulations that prohibit the use of the pesticide bentazon on rice, limit bentazon use on other crops to non-irrigated or sprinkler-irrigated sites during April through July only, and prohibit the use of bentazon in Del Norte and Humboldt Counties;
7. Adopted regulations that reduce the maximum rate of the pesticide aldicarb that may be legally applied to certain agricultural and ornamental crops. The regulations also prohibit the application of aldicarb from September 1 to March 1 of each year, during the time when rain is most likely, to further reduce the likelihood of aldicarb reaching ground water. DPR has proposed regulations that would list aldicarb in section 6800(a) as a pesticide that has been detected in ground water;
8. Adopted regulations that would allow chemicals listed in section 6800(a) of the GWPL to be used for research purposes in any area of the state authorized by the Director;
9. Conducted ground water monitoring surveys for pesticides in wells located in sections adjacent to PMZs, and for chemicals placed in section 6800(b) of the GWPL. Chemicals listed in 6800(b) have been identified as having the potential to leach to ground water because of (1) their physical and chemical properties and (2) language on their label allowing for their application to the soil;

Sampled wells for aldicarb residues in areas where aldicarb has been applied for agricultural use. Taken soil samples from a representative number of PMZs in order to determine compliance with regulations prohibiting or modifying use of pesticides within PMZs.

Actions taken by the SWRCB in 1992 to prevent pesticides from entering ground water included:

1. Participated on a regular basis in meetings of DPR's interagency Pesticide Advisory Committee, Pesticide Registration and Evaluation Committee, Pest Management Advisory Committee, and State Environmental Hazard Assessment Committee;
2. Reviewed the U.S. Environmental Protection Agency's (USEPA) July 1992 draft document "Pesticides State Management Plan Guidance for Ground Water Protection" and provided comments to DPR for a joint response to USEPA;
3. Met with U.S. Geological Survey scientists to discuss studies dealing with pesticides and ground water;
4. In cooperation with DPR, developing an Implementation Plan to implement the Memorandum of Understanding regarding pesticides and water quality which was approved by the two agencies;
5. Reviewed DPR's proposed amendments to regulations dealing with the GWPL and PMZs and provided comments to DPR;
6. Submitted a workplan to USEPA for Federal Fiscal Year 1993 funding for pesticides and ground water-related work pursuant to Section 106 of the Clean Water Act;
7. Reviewed DPR's notices of "Materials Entering Evaluation" on an ongoing basis and advised DPR on potential water quality impacts of pesticide registration and use decisions.

Actions taken by the nine Regional Water Quality Control Boards to prevent and/or mitigate the impact of pesticides on ground water include site contamination assessment investigations, development and implementation of remediation plans (including site and ground water clean-up), and monitoring. In addition, some situations involving pesticide detections in soil and water were referred to appropriate agencies for follow-up action.

Factors that contribute to ground water contamination by pesticides used in agriculture include amounts used and method of application, irrigation practices, the physicochemical characteristics of the pesticide, soil type, and climate. Regulation of pesticides to prevent residues from entering ground water as a result of non-point source agricultural use depends on scientific knowledge of how pesticides move to ground water. The role each factor plays in the contamination process is not fully understood. DPR environmental scientists are continuing their work to understand these factors by conducting field studies on pesticide movement; investigating contaminated wells; compiling extensive data bases; and reviewing the work

of other scientists. The knowledge gained from these activities will be used to develop recommendations for pesticide use practices that will prevent ground water contamination by the agricultural use of pesticides.

## PREFACE

This report fulfills the requirements contained in section 13152, subdivision (e) of the Food and Agricultural Code, directing the Department of Pesticide Regulation (DPR) to report specified information on sampling for pesticide residues in California ground water to the Legislature, the California Department of Health Services, the Office of Environmental Health Hazard Assessment, and the State Water Resources Control Board (SWRCB) annually by December 1.

This is the seventh annual report and the first comprehensive report on the entire contents of the well inventory since the 1986 report, Brown, et al., 1986. This report presents data reported to DPR between November 1, 1983 and July 1, 1992 from ground water sampling surveys conducted in 1971 through 1992.

The PCPA requires that the annual report give the location of wells for which sampling results were reported. Although well locations are specified by state well number or township/range/section in the data base, listing individual results by township, range, and section in this report is not possible due to the large number of wells sampled. Instead, sampling locations are summarized by county.

The information in this report is presented in four parts: Parts I, II, and III were written by staff of DPR. Part IV was written by staff of the SWRCB.

## ACKNOWLEDGEMENTS

The authors wish to thank the following DPR staff for their help in compiling data for the well inventory data base and for their help with producing this report: Donald Emukpoeruo, Elizabeth Fernandez, Jo Ann Baluyut, and Mekayla Griggs for help with data collection; Brad Winters, Steve Kishaba, Wanjiru Kimaru, Donald Emukpoeruo, Elizabeth Fernandez, Jo Ann Baluyut, and Nina Rechken for help with data processing; Steve Kishaba, Wanjiru Kimaru, and Brad Winters for programming; Donald Emukpoeruo, Elizabeth Fernandez, Jo Ann Baluyut, Nina Rechken, and Adrienne Watson for word processing; and Linda Heath Clark, Muffet Wilkerson, Elizabeth Fernandez, Nina Rechken, and Adrienne Watson for graphics. We are also grateful to the many reviewers who contributed substantive and editorial comments.

In addition, we acknowledge the contributions made by staff of cooperating federal, state, local, and private agencies. Finally, we thank the many individuals who, by contributing their data, time, and effort, made this data base and report possible.

## DISCLAIMER

The mention of commercial products, their source or their use in connection with material reported herein is not to be construed as either an actual or implied endorsement of such product.



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AB 1803	Assembly Bill No. 1803 (Connelly, 1983), Health and Safety Code, sections 4026.2 and 4026.3.
AB 2021	Assembly Bill No. 2021 (Connelly, 1985), Food and Agricultural Code, sections 13141 through 13152.
Act	The Pesticide Contamination Prevention Act of 1985; (AB 2021).
AL	action level
BDPA	The Birth Defect Prevention Act of 1984; (SB 950)
Cal/EPA	California Environmental Protection Agency
3CCR	Title 3, California Code of Regulations
CCRWQCB	Central Coast Region, Regional Water Quality Control Board
DPR	Department of Pesticide Regulation
CDHS	California Department of Health Services
CIMIS	California Irrigation Management Information Systems
1,2-D	propylene dichloride; 1,2-dichloropropane
1,3-D	1,3-dichloropropene
2,4-D	2,4-dichlorophenoxyacetic acid
DBCP	1,2-dibromo-3-chloropropane
DDD	1,1-dichloro-2,2-bis(p-chlorophenyl) ethane
DDE	a breakdown product of DDT
DDT	dichloro diphenyl trichloroethane
DWR	California Department of Water Resources
DCPA	chlorthal-dimethyl
EDB	ethylene dibromide
EHAP	Environmental Hazards Assessment Program
ELISA	enzyme-linked immunosorbent assay
EMPM	Environmental Monitoring and Pest Management Branch (DPR)
EPTC	s-ethyl dipropylthiocarbamate
ETo	reference evapotranspiration
ETU	ethylene thiourea
FAC	Food and Agricultural Code
GC	gas chromatography
GWPA	ground water protection advisory
GWPL	Ground Water Protection List
HAL	health advisory level
HPLC	high performance liquid chromatography



Koc	soil adsorption coefficient
MCL	maximum contaminant level
MDL	minimum detection limit
MRR	minimum reporting requirement
MS	mass spectroscopy
MTP	monomethyl 2,3,5,6-tetrachloroterephthalate acid
NCRWQCB	North Coast Region, Regional Water Quality Control Board
PCA	pest control adviser
PCPA	The Pesticide Contamination Prevention Act of 1985
PDRP	Pesticide Detection Response Process
PMZ	pesticide management zone
ppb	parts per billion
ppm	parts per million
RWQCB	Regional Water Quality Control Board
SCS	Soil Conservation Service
SNV	specific numerical value
SWRCB	State Water Resources Control Board
TPA	2,3,5,6-tetrachloroterephthalic acid
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

**I. WELL INVENTORY DATA BASE**

## I. WELL INVENTORY DATA BASE

### INTRODUCTION

This report presents information about California water wells that have been sampled for the presence of pesticide residues. The sampling results were compiled during the period November 1, 1983 through June 30, 1992 by the Department of Pesticide Regulation ([DPR], formerly a division of the California Department of Food and Agriculture, now a department within the California Environmental Protection Agency [Cal/EPA]). The report includes a discussion of actions taken by DPR and the State Water Resources Control Board ([SWRCB], also part of Cal/EPA), including the nine Regional Water Quality Control Boards, to prevent pesticides from entering ground water (Section II, page 26), and of factors contributing to the movement of pesticides to ground water as a result of agricultural use (Section III, page 46).

#### Background of the Well Inventory Data Base:

Prior to 1979, very little well water sampling was conducted in California to determine if pesticide residues had reached ground water, because it was believed that pesticides did not have sufficient mobility or longevity in soil to migrate to ground water. In 1979, however, the soil fumigant 1,2-dibromo-3-chloropropane (DBCP) was detected in ground water in Lathrop, California. Since then, well sampling programs have been conducted throughout California by numerous agencies and private firms.

In 1983, the Environmental Hazards Assessment Program (EHAP) of DPR developed the well inventory data base in order to identify reliable information on the occurrence of non-point source (not traceable to a single definable location) contamination of ground water due to the agricultural use of pesticides, and to facilitate graphical, numerical, and spatial analyses of the data. The contents of the data base were described in the report, Agricultural Pesticide Residues in California Well Water: Development and Summary of a Well Inventory Data Base for Non-Point Sources (Cardozo, et al., 1985).

On January 1, 1986, the Pesticide Contamination Prevention Act (PCPA, see Appendix A, p. 90) added sections 13141 through 13152 to Division 7 of the Food and Agricultural Code (FAC). The PCPA requires DPR to maintain a statewide data base of wells sampled for the active ingredients of pesticides (FAC section 13152(c)) and to report annually to the Legislature, the SWRCB, the California Department of Health Services (CDHS), and the Office of Environmental Health Hazard Assessment specific information from the data base, as well as actions taken by the Director of DPR and the SWRCB to prevent pesticides from migrating to ground water (FAC section 13152(e)). The first annual report pursuant to the PCPA, Sampling for Pesticide Residues in California Well Water: 1986 Well Inventory Data Base (Brown, et al., 1986), presented data from the original data base, plus additional data received by DPR from early 1984 through August 31, 1986. Since the passage of the PCPA, both point source (where the contaminant flows in a fairly distinct plume from an identifiable source) and non-point source data are included in the well inventory, although the majority of sampling results are from non-point sources.

Annual updates of the 1986 report have included the results of well sampling data submitted to DPR and results of investigations of pesticides detected in ground water for each annual reporting period. The 1992 report is the first cumulative report on the entire contents of the well inventory data base since the 1986 report.

Each annual report contained the following information:

1. Number of wells sampled;
2. Number of wells, by county, that had detections of pesticide residues;
3. Status of detected pesticides;
4. Factors contributing to pesticide movement to ground water as a result of agricultural use;
5. Actions taken to prevent pesticides from entering ground water.

It should be noted that data included in the well inventory are not the results of a single study. Rather, they are the result of 251 separate monitoring surveys, designed and conducted by 35 agencies and three private firms for various purposes, and do not represent a comprehensive study of ground water contamination in the state by agricultural-use pesticides. The data only indicate which pesticides are present in California well water

among pesticides analyzed for in the areas where samples were taken, but not among all pesticides used statewide.

Despite these limitations, the well inventory is a unique archive of ground water sampling data for a single state. Although data bases have been compiled in at least nine other states for the results of ground water monitoring for pesticides, only California centralizes monitoring results from all sampling agencies into a single collection point on an ongoing basis. A glossary of terms used in the 1992 report is provided in Appendix B, page 103.

## MATERIALS AND METHODS

### Data Collection:

Section 13152, subdivision (c) of the PCPA, requires all agencies that sample wells for pesticides to submit their sampling data and analytical results to DPR for inclusion in the well inventory data base. DPR has notified appropriate agencies of this law and requested them to submit required information on a DPR reporting form, on a form of their own, or on magnetic tape.

All sampling results reported to DPR were appraised to determine if they met the following criteria for inclusion in the data base:

1. Sampling results were for the analyses of pesticides or pesticide breakdown products;
2. Samples were taken from a well;
3. Samples were obtained from an untreated and unfiltered system;
4. Location of each sampled well had to be identified by at least township/range/section according to the U.S. Geological Survey's Public Lands Survey Coordinate system;
5. Data must not have been entered into the data base previously.

Agencies supplied well sampling data as published reports, raw laboratory results, or retrievals of information on floppy disks or magnetic tape from their data bases. Published reports were examined to determine if the data met the above criteria. In the case of unpublished laboratory results, verbal confirmation was requested from appropriate agency staff and noted in file records. For evaluation purposes, print-outs were made of data received on floppy disks or magnetic tape.

The PCPA also requires that DPR, the SWRCB, and CDHS jointly agree on minimum well sampling requirements for all results submitted to DPR. The agencies agreed upon the following minimum reporting requirements, effective December 1, 1986, which are applicable only to well samples taken after that date:

1. State well number (township/range/section/tract/sequence number/base and meridian);
2. County;
3. Date of sample (month/day/year);
4. Chemical analyzed for;
5. Individual sample concentration, in parts per billion;
6. Minimum detectable limit, in parts per billion;
7. Sampling agency;
8. Analyzing laboratory;
9. Street address of well location;
10. Well type;
11. Sample type (e.g., initial or confirmation).

Optional information to be included when available:

1. Method of analysis;
2. Well depth (in feet);
3. Depths of top and bottom perforations of the well casing (in feet);
4. Depth of standing water in the well at time of sampling (in feet);
5. Year the well was drilled;
6. Whether a driller's log was located;
7. Known or suspected source of contamination.

Data collection required a significant amount of interagency cooperation to ensure that submitted sampling data contained the required information.

#### **Data Preparation:**

The analytical results for each pesticide residue or related chemical in a well water sample constitute one record in the well inventory data base. The format used for records in the data base is explained in Appendix C, page 114.

Unless they were received on computer tape, data that met the prescribed criteria were handcoded on forms for keypunching. A number was assigned to each sampling survey under which all pertinent records and notes were filed. State well numbers were obtained from the Department of Water Resources (DWR) and noted on the original data sheets for DPR surveys.

#### **Data Entry into the Permanent Data Base:**

The completed coding forms were sent to the Franchise Tax Board for

keypunching. After keypunching, the data were returned to DPR on magnetic tape and loaded onto a computer. Print-outs of the data were generated, proofread against the original data, and edited as necessary. Data received on computer tape were converted to the well inventory data base format by computer program. An additional program was then run on the transformed data to assign to each record a code (called the sample-type) which designated whether the analysis was negative, confirmed positive, or unconfirmed positive (see page 8).

Before being added to the permanent well inventory data base, each record was run through verification programs developed by DPR staff. An explanation of each program follows.

1. Column verification:  
Certain values are allowed for each column in a data base record. The column verification program tests data validity by comparing the values entered in a column to its allowable values. For instance, the third column of the township field may contain either "N" or "S"; any other value will be rejected as an error.
2. Field verification includes the following programs:
  - a. Township/range/section (T/R/S) verification:  
The townships, ranges, and sections assigned to each county by the U.S. Geological Survey's Public Lands Survey Coordinate System were coded and entered into a computer file. A program was written to compare that file with the values entered for the township, range, and section in each record.
  - b. Base Meridian verification:  
Six counties in California (Kern, San Luis Obispo, Trinity, Inyo, Siskiyou, and San Bernardino) are intersected by the Public Lands Survey baseline/meridian boundaries. Data for a single well reported with different base meridians but under the same well number would exist as two unique wells in the data base. This program examines the township and range for each well number in the affected counties to verify that the assigned base meridian is accurate.
3. Unique Address verification:  
The well location address for each new record is checked against the existing well location entered for each unique well number in the data base. When a discrepancy is found, the new record is flagged as an error.

Data identified by the computer verification programs as requiring further investigation were examined and edits were made as necessary. The data were

then entered into the permanent well inventory data base and summary tables were produced for the annual report.

### CONTENTS OF THE WELL INVENTORY DATA BASE

All well sampling results that met minimum reporting requirements were entered into the well inventory, including initial, unconfirmed detections of pesticides. Unconfirmed detections triggered investigative monitoring surveys by DPR when the reported compound was a pesticide registered for agricultural, outdoor industrial, or outdoor institutional use. Therefore, unconfirmed detections are included in the discussion of detections reported to DPR.

However, except for Tables 1 and 4, summary tables of the data base contents (pages 182 through 211) do not include unconfirmed detections. Unconfirmed detections cannot be presented with the same confidence as confirmed detections which have subsequent, positive samples validating the presence of a pesticide in ground water.

Prior to the adoption of minimum reporting requirements on December 1, 1986, detections were not designated as confirmed or unconfirmed. In fact, 4,472 detections included in the data base before December 1, 1986 were called simply "positives". After minimum reporting requirements were adopted, however, all sampling results were designated as confirmed, unconfirmed, or negative before being entered into the data base. An explanation of the classification of sampling results follows.

#### Classification of Sampling Results:

Positive sampling results submitted by agencies other than DPR are designated as confirmed if a specific compound was detected in two discrete samples taken from the same well during the time period of a single monitoring survey. However, confirmed detections resulting from non-DPR surveys are not subject to regulatory action by the Director without further investigation by DPR to determine if the detection can be verified according to the standards prescribed in the PCPA.



Section 13149(d) of the PCPA requires that the detection of a pesticide in ground water shall result from an analytical method approved by DPR and that the initial detection shall be verified within 30 days after the initial detection by a second analytical method or a second analytical laboratory approved by DPR. Criteria have been set by DPR (Bierman, 1989; see Appendix D, page 119) for determining whether the detection of a pesticide or its breakdown product in ground water meet the standards of section 13149(d). Confirmed detections meeting the criteria are considered verified according to the PCPA and are subject to regulatory action by the Director.

An unconfirmed detection is the detection of a pesticide in a single sample taken from a well during the time period of a single monitoring survey. Confirmation of the initial detection by a second positive sample was not possible because (1) only a single sample was taken from the well or (2) analyses of all other samples taken from the well during the survey were negative for the compound under investigation. Unconfirmed detections may represent valid detections of pesticide residues or they may have been due to sample contamination; therefore, they cannot be presented with the same confidence as confirmed detections which have subsequent positive, discrete samples validating the presence of a pesticide.

A negative analysis is a well water sample in which pesticide residues were not detected at or above the minimum detection limit (MDL) of the instruments used for analysis of the compound under investigation.

#### Summary of Data:

The well inventory data base contains 260,693 records. Each record represents an analysis of a ground water sample for the presence of a pesticide active ingredient or breakdown product. The samples were taken from 17,713 wells throughout California. Analyses have been run for an overall total of 273 pesticide active ingredients and breakdown products. A numerical summary of the records added to the data base annually, including cumulative totals, is presented in Table 1, page 183.

The records are the result of 251 separate well sampling surveys submitted to DPR between November 1, 1983 and June 30, 1992. All sampling results that met the minimum reporting requirements were added to the well inventory data base. The data are from surveys conducted in 1971 through 1992 by 35

agencies and three private firms. A list of agencies and firms reporting ground water monitoring results, number of surveys reported, number of wells sampled, and number of analyses reported, per agency, is given in Table 2, page 184.

Results presented in the 1992 cumulative report are summarized in three ways: (1) by pesticide active ingredient and breakdown product, indicating those sampled for and those detected; (2) by county, reporting where sampling occurred and where pesticides were detected; and (3) by sampling year, indicating when well samples were taken and detections made.

## RESULTS BY PESTICIDE

### Sampling Distribution

Information on 273 pesticide active ingredients and breakdown products is included in the well inventory. A list of compounds having analytical results in the data base, including number of counties and wells sampled, total analyses reported, and number of wells and analyses with confirmed detections, is given in Table 3, page 185.

Sampling frequency varied among the pesticides. For example, 60 compounds were each analyzed for in at least 1,000 wells per compound; in comparison, 67 other pesticides were analyzed for in only 10 wells per compound. A comparison of the pesticides most frequently analyzed for, by number of wells and number of counties sampled, illustrates this variation. The five pesticides most frequently analyzed for, by number of wells sampled, were: DBCP (9,086 wells); 1,2-dichloropropane [1,2-D] (7,152); 1,3-dichloropropene [1,3-D] (6,964); simazine (6,860); and methyl bromide (6,734). By number of counties sampled, the seven pesticides most frequently analyzed for, were: 2,4-dichlorophenoxyacetic acid [2,4-D] (56 counties); simazine (55); and 1,2-D; endrin; lindane; 2,4,5-trichlorophenoxypropionic acid [silvex]; and toxaphene (54 counties each). This variation in sampling distribution means that detections reported in the well inventory do not represent the true extent of ground water contamination in California.

### Detections

Of the 273 compounds analyzed for, 68 pesticide active ingredients and

breakdown products have been reported as detected during the period November 1, 1983 through June 30, 1992. Table 4, page 191, provides the total number of counties and wells sampled, the number of counties and wells with detections, range of concentrations found, and drinking water standards set by California or the federal government (e.g. Maximum Contaminant Level) for each compound reported detected. Both confirmed and unconfirmed detections are included in Table 4.

Confirmed detections have been reported for 35 of the 68 compounds reported detected. The number of wells with confirmed detections of residues, by county and pesticide, is given in Table 5, page 204.

Out of a total of 17,713 wells sampled, pesticide residues were reported confirmed in 957 wells (5.4%). DBCP (confirmed in 346 wells) was most frequently reported detected, then simazine (308 wells), diuron (176), and atrazine (111). Of the 35 compounds with confirmed detections, seven were each detected in a total of four wells or less; 15 were detected in a single well only.

Since the 1991 report was published, first-time detections of 14 of the 68 compounds were reported to DPR: dicamba; 2-(2,4-dichlorophenoxy)propionic acid (2,4-DP); ethylene dichloride; heptachlor and its breakdown product heptachlor epoxide; methoxychlor; methyl trithion; naphthalene; prometryn; propazine; 1,1,2,2-tetrachloroethane; tetrachloroethylene; thiobencarb; and 1,2,4-trichlorobenzene. Twenty-two other compounds, previously detected in other areas of California, were reported with detections in new counties: alachlor; atrazine; bentazon; bromacil; carbon disulfide; chlorpyrifos; chlorthal-dimethyl; 1,2-D; 2,4-D; DBCP; diazinon; diuron; ethylene dibromide (EDB); endrin; lindane; methyl bromide; ortho-dichlorobenzene; prometon; silvex; simazine; toxaphene; and xylene. Eight of these compounds are no longer registered for use in California and one pesticide is no longer registered for agricultural use; those detections have been reported to the SWRCB. Detections of the remaining five compounds are currently under investigation by DPR.

Twenty-two other pesticides of the 68 reported detected, previously detected in other areas of California, were reported with detections in new counties.

Seven of these compounds are no longer registered for use. Detections of the remaining 15 compounds are currently under investigation by DPR.

A summary of the results of investigations conducted by DPR during the period 1979 through June 30, 1992 to determine the probable source of residues for 42 of the 68 detected compounds follows.

Number of Compounds	Summary of Investigation of Detection(s)
12	Specified detections considered by DPR to be the result of legal, agricultural use: aldicarb sulfone and aldicarb sulfoxide (breakdown products of aldicarb); atrazine; bentazon; bromacil; 1,2-D; DBCP; diuron; EDB; prometon; simazine; and TPA;
12	Not detected (ND) in follow-up sampling: aldicarb; benomyl; captan; carbaryl; carbofuran; dimethoate; endothall; ethylene thiourea (ETU); malathion; monomethyl 2,3,5,6-tetrachloroterephthalate acid ([MTP] a breakdown product of chlorthal-dimethyl); tebuthiuron; and trifluralin;
6	Detections currently under investigation (CUI) by DPR: dicamba; 2,4-DP; lindane; methoxychlor; prometryn; and thiobencarb;
1	No longer registered for agricultural use when detections reported to DPR: monuron;
2	Detected in unsealed, uncovered wells (UW), but not in other, nearby wells: molinate and molinate sulfoxide (a breakdown product of molinate);
9	Detections due to two or more of the following reasons - not registered for use in California, PS, ND, CUI, UW: alachlor; carbon disulfide; chlorpyrifos; chorthal-dimethyl; 1,3-D; 2,4-D; diazinon; methyl bromide; and xylene.

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(More information on pesticide active ingredients and breakdown products with detections determined to be due to legal, agricultural use can be found in Section II, page 26.)

Detections reported for 26 of the detected compounds were not investigated by DPR. A summary of the status of those compounds follows.

Number of  
Compounds

Status of Pesticide or Related Compound

- 
- |    |  |
|----|--|
| 12 | Not registered for use, detected at point-source contamination sites only: aldrin; chlordane; 1,1-dichloro-2,2-bis(p-chlorophenyl) ethane (DDD); DDE (a breakdown product of DDT); dichloro diphenyl trichloroethane (DDT); dieldrin; dinoseb; endrin; propham; 2-(2,4,5-trichlorophenoxy)propionic acid (silvex); toxaphene; and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T); |
| 11 | Not registered for use when detections reported to DPR: dichlorprop; ethylene dichloride; heptachlor; heptachlor epoxide (a breakdown product of heptachlor); methyl trithion; mexacarbate; ortho-dichlorobenzene; propazine; 1,1,2,2-tetrachloroethane; tetrachloroethylene; and 1,2,4-trichlorobenzene;  |
| 1  | Not registered for agricultural use when detections reported to DPR: naphthalene;  |
| 1  | Detection at point-source contamination site reported by Regional Water Quality Control Board (RWQCB): endosulfan;   |
| 1  | Detection in unsealed well reported by RWQCB: chlorothalonil.  |

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Overall, confirmed and unconfirmed detections attributed to a point-source have been reported for 28 compounds in 13 counties. Pesticide active ingredients and breakdown products reported with point-source detections were: aldicarb sulfone; aldicarb sulfoxide; aldrin; atrazine; bromacil; carbaryl; chlordane; chlorothalonil; chlorthal-dimethyl; 1,2-D; 2,4-D; DBCP; DDD; DDE; DDT; diazinon; dieldrin; dinoseb; endosulfan; endrin; lindane; prometon; propham; silvex; simazine; 2,4,5-T; toxaphene; and xylene. Residues found at point-source contamination sites were the only detections reported for ten compounds: aldrin, chlordane, chlorothalonil, DDD, DDE, DDT, dieldrin, dinoseb, endosulfan, and propham.

### RESULTS BY COUNTY

#### Sampling Distribution

Sampling results have been reported for all 58 counties in California. The

number of confirmed and total wells sampled, number of confirmed and total pesticides analyzed for, and total number of analyses reported are shown by county in Table 6, page 205.

The number of pesticides sampled for per county ranged from one (Mariposa) to 166 (Santa Clara). The number of wells sampled per county ranged from one (Alpine) to 3,612 (Fresno). The number of analyses reported per county ranged from six (Alpine) to 34,191 (Los Angeles). Over half the counties were sampled for less than 75 pesticides total. Over half were sampled for fewer than 100 wells total, countywide. This variation is attributable not only to differences in pesticide use among counties, but also to differences in design of well sampling studies among various agencies.

A tabular summary of all pesticides analyzed for, by county, (giving number of wells sampled, number of wells with confirmed detections, and number of analyses run for each compound) is given in Appendix E, page 123.

### Detections

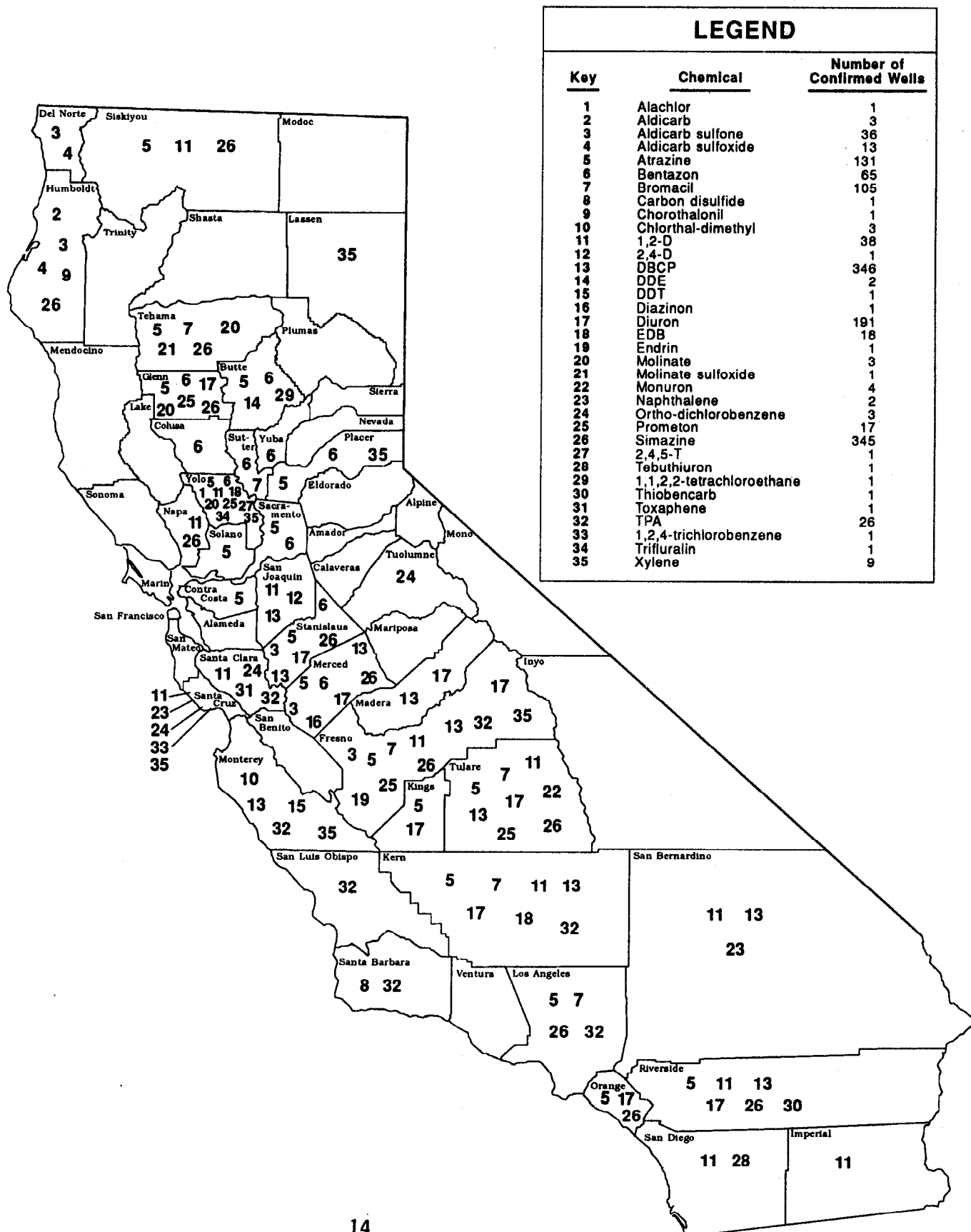
Since the 1991 report was released, a total of 24 counties were reported with first-time detections of pesticides previously found in ground water in other areas of California. A summary of those detections, by pesticide and county, is given in Table 7, page 207.

Pesticide residues have been confirmed in wells in 36 counties. The five counties having the most wells with confirmed detections were: Tulare (195 wells), Fresno (185), Kern (109), Glenn (67), and Stanislaus (65).

California counties with confirmed detections of pesticides in well water are shown in Figure 1, page 14. By percentage of wells with confirmed detections, pesticide residues were most frequently detected in wells in Glenn County, where 20.1% of the total wells sampled had confirmed detections of pesticide residues, followed by Tulare (16.6%), Humboldt (9.6%), Kern (9.2%), and Madera (7.9%).

The most pesticides detected and confirmed in a single county was 11. Confirmed detections of 11 separate compounds were made in Fresno County. In Yolo County, confirmed detections were made of 10 compounds. It is

Figure 1. California counties with confirmed detections of pesticide residues in well water. Results are for data reported during the period November 1, 1983 through June 30, 1992.



interesting to note that although a similar number of confirmed detections were made in the two counties, a total of 155 pesticides were analyzed for in Fresno County, while a total of 89 compounds were analyzed for in Yolo County. Santa Clara, with the most chemicals (166) analyzed for in a single county, had confirmed detections of only four compounds.

Point-source detections have been reported in 13 counties: Butte, Fresno, Humboldt, Lassen, Merced, Monterey, Placer, San Diego, Santa Clara, Santa Cruz, Stanislaus, Sutter, and Yolo.

## RESULTS BY YEAR OF SAMPLING

### Sampling Distribution

Analytical results for samples taken from wells in 1971 through 1992 are included in the well inventory. Sampling results for 1992 include data received through June 30, 1992. The confirmed versus total number of wells sampled and number of analyses reported, are shown by year of sampling in Table 8, page 208.

Beginning in 1984, the number of analyses increased considerably due to public water system monitoring conducted by CDHS pursuant to Assembly Bill (AB) 1803. Regulatory monitoring requirements for public water systems account for approximately 70% of all analytical results in the well inventory.

CDHS monitoring data will be supplied to DPR every six months as a result of the Memorandum of Understanding (MOU) signed by DPR and CDHS on June 10, 1992. Under the provisions of the MOU, CDHS will supply monitoring data to DPR every six months and DPR will provide CDHS with ground water monitoring results that are confirmed positive for pesticide residues. DPR will also report to CDHS all results of monitoring conducted for pesticides placed on the Ground Water Protection List (GWPL) found in section 6800 of Title 3, California Code of Regulations. (More information on the GWPL is given in Section II, page 26.)

### Detections

The number of years well sampling was conducted is compared to the number of



years confirmed detections were reported, by county, in Table 9, page 209. The ratio of number of years confirmed detections were reported versus number of years sampling was conducted ranged from 13/13 (Kern County) to 0/11 (Mendocino and Ventura Counties). Well sampling was conducted for ten or more years in twenty counties. A total of 14 counties (24.1%) had confirmed detections in at least one-half of the years sampling was conducted (average number of years of sampling was 11.6).

## DISCUSSION OF RESULTS

Sampling results presented in this report cannot be compared directly with cumulative results reported in 1986 because (1) most results were reported simply as positive or negative in 1986, not as confirmed or unconfirmed; (2) minimum reporting requirements became effective in December 1986 (after the 1986 report was released); and (3) the data included in the well inventory are not the results of a single, statistically designed study representing a complete survey of ground water contamination in the state. Nevertheless, the well inventory contains information on the results of well monitoring studies conducted throughout California over the last 15 years and can be used in the following applications:

1. Displaying the geographic distribution of well sampling;
2. Displaying the known geographic distribution of pesticide residues in wells among wells sampled;
3. Identifying areas potentially sensitive to pesticide leaching;
4. Designing studies for future sampling.

### Actions Taken by DPR on Reported Detections of Pesticide Residues

Follow-up monitoring studies to determine the probable source of residues for 42 of the 68 detected compounds were conducted by DPR. Investigations were not conducted for detections of the remaining 26 compounds because 24 were no longer registered for use at the time the detections were reported to DPR; the detection of one compound was reported due to poor well construction; and one compound was not registered for agricultural use when the detection was reported to DPR.

After review by DPR, detections of pesticides in ground water were forwarded to the SWRCB for further investigation if they fell into the following categories: pesticides not currently registered for use (e.g., DBCP); pesticides registered for other than agricultural or outdoor uses; and pesticides determined not to be present in ground water as a result of legal agricultural, outdoor institutional, or outdoor industrial use. This last category includes point source detections. The SWRCB and nine Regional Water Quality Control Boards (RWQCBs) implement California's system of water quality control. Overseeing mitigation measures and monitoring ground water at point-source sites are under the jurisdiction of the SWRCB.

Residues of aldicarb, reported as aldicarb sulfone, were detected in monitoring wells at test plots in Fresno, Merced, and Stanislaus Counties. Aldicarb had been applied at the sites during field research studies under an experimental use permit. The Central Valley RWQCB has performed assessment work at the Fresno and Merced sites, and is continuing to assess contamination of the Stanislaus site on an ongoing basis.

**Erratum:** In 1987, an unconfirmed detection of 1,3-dichloropropene (1,3-D) in Riverside County was reported by CDHS as a result of AB 1803 monitoring. The detection was reported in the 1987 well inventory report as a point-source detection. The detection, resulting from a nonagricultural source, was not made at a point-source contamination site. In addition, a transcription error had been made in reporting the original analytical results, indicating that 1,3-D had been detected. In fact, follow-up samples taken from the well by CDHS and DPR clearly indicated the presence of the compound 1,2-D, not 1,3-D. In 1992, CDHS issued a memorandum to correct the original report (see Appendix F, page 179). The record has been corrected in the data base.

#### **Results of Detections Investigated by DPR**

Of the 42 compounds investigated by DPR, agricultural applications are considered by DPR to be the source of residues of 12 of the compounds detected in ground water. Two compounds were detected in unsealed wells; 12 were not detected in follow-up monitoring; six compounds are currently under investigation by DPR; one pesticide was not registered for agricultural use at the time its detection was reported to DPR; and investigations conducted for nine compounds had various results. A summary of DPR's investigation of

detections of the 42 pesticide active ingredients and breakdown products follows.

The 12 compounds with reported detections not verified in follow-up investigations by DPR were: aldicarb, benomyl, captan, carbaryl, carbofuran, dimethoate, endothall, ETU, malathion, MTP, tebuthiuron, and trifluralin. FAC section 13149(d) of the PCPA requires that detections of a pesticide in ground water shall result from an analytical method approved by DPR and shall be verified, within 30 days, by a second analytical method or a second analytical laboratory approved by DPR. Since detections are rarely reported to DPR within 30 days, two positive samples are usually required to verify a reported detection. Initial detections of the 12 compounds listed above were not verified because either no pesticide residues were detected in follow-up samples, or pesticide residues were detected in only one of the follow-up samples and could not be verified by a second positive sample. In some cases, verification was not likely because the original detection was reported as "tenuous" by the reporting agency. Although the PCPA requires that agencies report the results of ground water monitoring for pesticides to DPR in a timely manner, there is often considerable delay between the time a detection is made and when it is reported to DPR. For example, over 80 follow-up investigations currently in progress were triggered by detections made in 1984 through 1989 that were not reported to DPR until 1992.

Investigations of multiple detections of alachlor, carbon disulfide, chlorpyrifos, chlorthal-dimethyl, 1,3-D, 2,4-D, diazinon, methyl bromide, and xylene had various results. For example, out of 14 xylene detections, two were determined to not be due to agricultural use because other components of gasoline were detected; six initial detections were not confirmed in follow-up samples; three detections were made at point-source contamination sites; and three are currently under investigation by DPR.

Detections of molinate in three wells, and molinate and molinate sulfoxide in another well, were determined to not be due to agricultural use. Samples taken from wells near the original, positive wells contained no detectable levels of molinate residues, and the wells with detections were not covered or sealed against surface water run-off.

Six pesticides reported with detections are currently under investigation by DPR: 2,4-DP, dicamba, lindane, methoxychlor, prometryn, and thiobencarb.

Detections of monuron in four wells were determined to not be due to agricultural use. Although monuron was formerly used as a soil sterilant on rights-of-way, it was registered in California only to control algae in home aquariums at the time the detections were reported. EHAP sampled wells near the original, positive wells, but no monuron residues were detected.

Agricultural applications are considered to be the source of residues of 12 compounds: aldicarb sulfone and aldicarb sulfoxide (breakdown products of the active ingredient aldicarb), atrazine, bentazon, bromacil, 1,2-D, DBCP, diuron, EDB, prometon, simazine, and TPA. Legal agricultural use is the application of a pesticide in accordance with its labelled directions, and federal and state laws and regulations. Agricultural use is defined in FAC section 11408 (see Glossary, p. 103).

**Pesticide Residues Detected in Ground Water That Were Determined To Be the Result of Legal, Agricultural Use During the Period January 1, 1986 through June 30, 1992**

Sections 13149 through 13151 of the PCPA describe a process in which the detection of a pesticide residue in ground water (or soil at certain depths) is investigated, evaluated, and when necessary, mitigated. This process, called the Pesticide Detection Response Process (PDRP), requires that an investigation be conducted to determine whether a detection of pesticide residues in well water is the result of legal, agricultural use (see also Section II, page 26). As a result of such investigations, aldicarb sulfone, aldicarb sulfoxide, atrazine, bentazon, bromacil, diuron, prometon, and simazine were determined to be present in ground water as the result of non-point source, legal agricultural use.

DBCP, EDB, and 1,2-D were not reviewed through the PDRP because their use as pesticide active ingredients was no longer allowed in California when the PCPA became effective. The uses of DBCP and EDB were suspended in California in 1977 and 1982, respectively. Regulations were adopted by DPR in 1985 that prohibit the use or sale of pesticides in California in which 1,2-D exceeds 0.5% of the total formulation. Aldicarb sulfone, aldicarb sulfoxide, atrazine, bentazon, bromacil, diuron, prometon, and simazine have

been reviewed through the PDRP and regulations were adopted by DPR to modify their use for ground water protection purposes (see Section II, Table 2, page 42).

Although DPR's investigation suggests that the chlorthal-dimethyl metabolite TPA reached ground water as a result of agricultural use, TPA will not be reviewed under the provisions of the PCPA. Pesticide degradation products that are detected in ground water are reviewed through the PDRP, pursuant to FAC section 13149, when they pose a threat to public health and have migrated to ground water as a result of legal, agricultural use. At the request of the Department, the registrant submitted all available toxicology studies on TPA. After a review of the toxicological data, the Medical Toxicology Branch of DPR concluded that, at the levels detected in ground water, TPA does not pose a threat to public health. Therefore, TPA was not submitted into the PDRP.

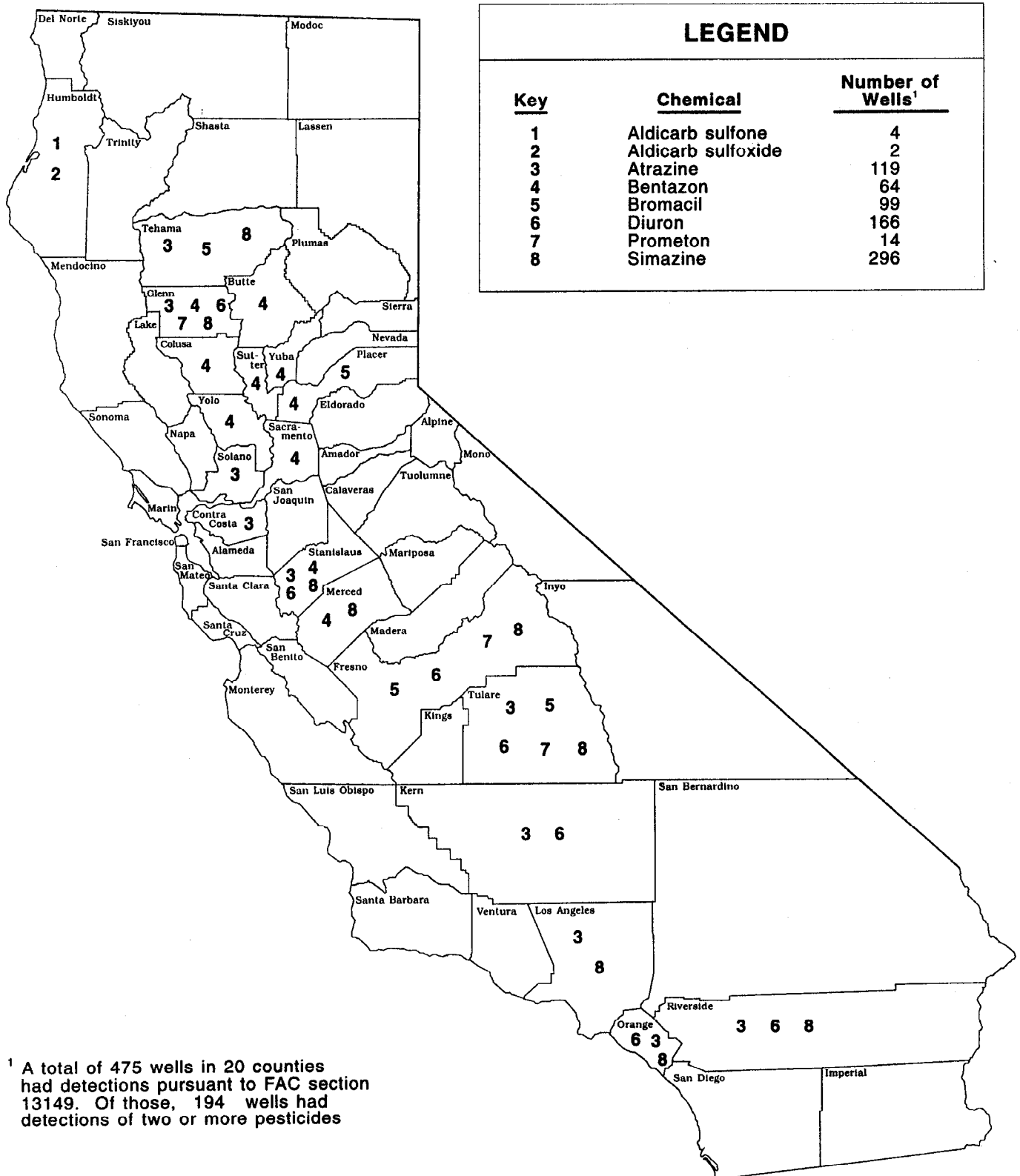
Pursuant to FAC section 13149, 475 wells have been found to contain pesticide residues as a result of non-point source, legal agricultural use. (More than one pesticide was detected in 194 (41%) of the 475 wells.) Simazine (296 wells) was detected most frequently, followed by diuron (166 wells), atrazine(119), bromacil (99), and bentazon (64). Prometon was found in 14 wells, aldicarb sulfone in four wells, and aldicarb sulfoxide in two wells. The distribution of wells with detections of residues of currently registered pesticides that were determined to be due to legal, agricultural use is given by county in Figure 2 on the following page.

**Detections, by County, of Pesticide Residues in Ground Water Determined To Be the Result of Legal, Agricultural Use During the Period January 1, 1986 through June 30, 1992**

Pesticide residues determined to be the result of non-point source, legal agricultural use were detected in wells in 20 counties: Butte, Colusa, Contra Costa, Fresno, Glenn, Humboldt, Kern, Los Angeles, Merced, Orange, Placer, Riverside, Sacramento, Solano, Stanislaus, Sutter, Tehama, Tulare, Yolo, and Yuba.

Atrazine and bentazon were each detected in ten counties, simazine in nine counties, diuron in seven counties, bromacil in four counties, prometon in three counties, and aldicarb sulfone and aldicarb sulfoxide were each

Figure 2. California counties with detections in well water of active ingredients of pesticides or breakdown products of pesticides currently registered for use, made pursuant to Food and Agricultural Code (FAC) section 13149. Results are for data reported during the period November 1, 1983 through June 30, 1992.



<sup>1</sup> A total of 475 wells in 20 counties had detections pursuant to FAC section 13149. Of those, 194 wells had detections of two or more pesticides

detected in one county. Glenn and Tulare Counties each had detections of five compounds that were determined to be present in ground water as a result of legal, agricultural use. A single compound was detected in Butte, Colusa, Contra Costa, Sacramento, Solano, Sutter, Yolo, and Yuba Counties. Two to four compounds were detected in each of the remaining ten counties.

Of the 475 wells with detections attributed to legal, agricultural use, 206 (43%) are located in Tulare County. Altogether, Tulare, Glenn (73 wells), Fresno (56), and Los Angeles (55) Counties account for 82% of all wells with such detections. The remaining wells with detections due to agricultural use are distributed throughout 16 counties. Wells with detections of residues of pesticides currently registered for use, by county, that were determined to be the result of legal, agricultural use are given in Table 10, page 210.

**Detections, by Year, of Pesticide Residues in Ground Water Determined To Be the Result of Legal, Agricultural Use During the Period January 1, 1986 through June 30, 1992**

During 1986, specified detections of atrazine, bromacil, diuron, prometon, and simazine were determined by DPR to be present in ground water as a result of legal, agricultural use. (Agricultural applications of DBCP, EDB, and 1,2-D are presumed by DPR to be the source of residues of those compounds that have been detected in ground water. However, because DBCP and EDB are no longer registered for use and 1,2-D is no longer allowed for use as an active ingredient, detections of those compounds are not investigated further by DPR to determine if they are the result of legal, agricultural use.)

In 1987, a detection of atrazine in Los Angeles County was attributed to legal, agricultural use. In 1988, three new compounds were determined to be present in ground water due to such use: aldicarb sulfone, aldicarb sulfoxide, and bentazon. In addition, first-time detections of diuron in Glenn County and simazine in Merced County were made. By 1989, bentazon had been detected in nine additional counties. That same year, atrazine was detected for the first time in Orange, Riverside, Stanislaus, and Tehama Counties; bromacil was found in Fresno and Tehama Counties; diuron in Fresno and Tulare Counties; prometon in Fresno County; and simazine in Stanislaus

and Tehama Counties. In 1990, diuron was detected for the first time in Orange County. In 1991, three additional counties were determined to have pesticide detections due to agricultural use: atrazine and diuron in Kern County, atrazine in Solano County, and bromacil in Placer County. That year diuron was detected in Stanislaus County for the first time. For 1992, detections reported as of June 30th were made in counties where the detected pesticides had previously been found.

Detections of active ingredients and breakdown products of pesticides currently registered for use that were determined to be present in ground water as the result of legal, agricultural use are given, by year, in Table 11, page 211.

### LIMITATIONS ON INTERPRETING THE DATA

Interpretation of sampling results in the well inventory data base are subject to the following limitations:

1. Only data submitted to DPR between November 1, 1983 and June 30, 1992 are included and discussed in this report. The results of monitoring surveys were not always submitted as they were completed. Some results were submitted up to eight years later.
2. The data included in this report are not the results of a single study. Rather, they are the result of 249 separate monitoring surveys, designed and conducted by 35 agencies and three private firms for various purposes.
3. Pesticide residue detections in the well inventory do not represent a complete survey of ground water contamination in the state. The pesticides detected are limited to those for which the sample was specifically analyzed. Some areas of the state have never been sampled; a few areas have been sampled many times. Therefore, the data indicate which pesticides are present in California well water among those pesticides for which analyses were carried out, but not among all pesticides used statewide.
4. Sampling by agencies other than DPR is not necessarily related to suspected agricultural non-point sources of contamination. Consequently, it should not be assumed that the submitted results are an indication of which pesticides are more or less likely to leach to ground water as a result of non-point source agricultural use.



Despite these limitations, the information contained in the well inventory data base on pesticide residues can be used in all of the following applications:

1. Displaying the geographic distribution of well sampling;
2. Displaying the known geographic distribution of pesticide residues in wells among those wells sampled;
3. Identifying areas potentially sensitive to pesticide leaching;
4. Designing studies for future sampling.

### SUMMARY

Overall, 17,713 wells throughout California have been sampled for a total of 273 pesticide active ingredients and breakdown products. This data was reported to DPR between November 1, 1983 and July 1, 1992.

Including confirmed and unconfirmed detections, 68 pesticides and related compounds have been reported detected in California well waters. Confirmed detections were reported for a total of 35 compounds in 36 counties.

During the 1992 report year (September 1, 1991 through June 30, 1992), fourteen compounds never reported previously to DPR with detections, were reported as detected. Twenty-two other compounds, previously detected in other areas of California, were reported with detections in new counties. Agricultural applications are considered by DPR to be the source of residues of 12 compounds detected in ground water: aldicarb sulfone and aldicarb sulfoxide (breakdown products of the active ingredient aldicarb), atrazine, bentazon, bromacil, 1,2-D, DBCP, diuron, EDB, prometon, simazine, and TPA. Three of these compounds, 1,2-D, DBCP, and EDB, are no longer registered for use in California. Regulations have been adopted by DPR to modify the use of aldicarb, atrazine, bentazon, bromacil, diuron, prometon, and simazine for ground water protection purposes. Although DPR's investigation suggests that the chlorthal-dimethyl metabolite TPA can occur in ground water as a result of agricultural use, it will not be regulated under the provisions of the PCPA because the levels detected were determined to not pose a threat to public health, pursuant to FAC section 13149.

Of the remaining 23 compounds with confirmed detections, 12 are no longer registered for use in California, three were detected in unsealed wells and were not detected in samples taken from other, nearby wells, three were not detected in follow-up sampling, one was detected at a point-source contamination site, and one is currently under investigation by DPR. Investigations of three compounds found at different sites had various results, including some that were not detected in follow-up sampling, some that were found at point-source sites, and some that are currently under investigation by DPR.

Regulation of pesticides to prevent residues from entering ground water as a result of agricultural use depends on scientific knowledge of how pesticides move to ground water. Factors that contribute to ground water contamination by pesticides used in agriculture include amounts used and method of application, irrigation practices, the physicochemical characteristics of the pesticide, soil type, and climate.

The role each factor plays in the contamination process is not fully understood. DPR environmental scientists are continuing their work to understand these factors by conducting field studies on pesticide movement; using computer models; investigating contaminated wells; compiling extensive data bases; and reviewing the work of other scientists. Information from recent studies conducted by DPR on factors contributing to ground water contamination by pesticides is given in Section III, page 47. The results of DPR field investigations of wells reported with detections of pesticides is given in Section II, page 27.

The knowledge gained from these activities will be used to develop recommendations for pesticide use practices that will prevent ground water contamination by the agricultural use of pesticides.

**II. ACTIONS TAKEN BY THE DEPARTMENT OF PESTICIDE REGULATION  
TO PREVENT PESTICIDES FROM ENTERING GROUND WATER  
AS A RESULT OF AGRICULTURAL USE**

## II. ACTIONS TAKEN BY THE DEPARTMENT OF PESTICIDE REGULATION TO PREVENT PESTICIDES FROM ENTERING GROUND WATER AS A RESULT OF AGRICULTURAL USE

### Environmental Hazards Assessment Program

The Environmental Hazards Assessment Program (EHAP) of the Environmental Monitoring and Pest Management Branch provides the lead role in implementing the Department of Pesticide Regulation's (DPR's) environmental protection programs. EHAP designs and conducts field studies on pesticide movement in air, soil, surface and ground water; conducts monitoring for pesticides in ground water; investigates wells with reported detections of pesticides; compiles extensive data bases; reviews scientific literature; and writes regulations to prevent pesticide contamination of ground water. A summary of these actions follows.

### BACKGROUND

#### Specific Numerical Values

Registrants of pesticides registered for agricultural use are required by section 13144 of the Food and Agricultural Code (FAC) to submit to the Director acceptable data for certain physical and chemical properties of pesticide active ingredients including the following: water solubility, soil adsorption coefficient, hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation. These physical and chemical properties are characteristics that the PCPA associates with the potential of a pesticide to leach through soil to ground water.

The Department is required to establish Specific Numerical Values (SNVs) for these physical and chemical properties of pesticide active ingredients registered for agricultural use. SNVs are numerical thresholds for mobility and longevity of an active ingredient in soil established to predict which active ingredients have the potential to leach to ground water. Solubility and soil adsorption describe the mobility of an active ingredient in soil; hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation describe its longevity. An SNV has not been established for field dissipation as of December 1, 1992 because of insufficient data.

The SNVs were calculated using a procedure described in the report, "The Pesticide Contamination Prevention Act: Setting Specific Numerical Values" (Wilkerson and Kim 1986). The report was revised in 1988, 1989, and 1991 (Johnson 1991).

The SNVs were established by regulation in section 6804 of Title 3, California Code of Regulations (3 CCR) in 1989, and were revised in a rulemaking action on October 19, 1990. The Department proposed regulations in 1991 which would revise the existing SNV for aerobic soil metabolism and would establish an SNV for anaerobic soil metabolism.

After they are placed in regulation, the revised SNVs are compared with the physical and chemical property data for each pesticide active ingredient contained in a product registered for agricultural use. Chemicals with properties that exceed the SNVs are reported to the Legislature, the State Department of Health Services, the Office of Environmental Health Hazards Assessment, and the State Water Resources Control Board annually in the report, "Status Report, Pesticide Contamination Prevention Act, Annual Report to the Legislature", published by DPR.

#### Ground Water Protection List

The Director is required by FAC section 13145(d) to establish a list, called the Groundwater Protection List (GWPL), of pesticides that have the potential to pollute groundwater. Pesticide active ingredients with properties that exceed the SNVs and which are labeled for use under any of the following conditions are placed on the GWPL in section 6800 (3 CCR): (1) application to or injection into the soil or ground by ground-based application equipment (as defined in 3 CCR section 6000.5) or by chemigation; or (2) the label of the pesticide requires or recommends that the application be followed, within 72 hours, by flood or furrow irrigation.

The Department divided the GWPL into sublists 6800(a) and 6800(b). Pesticides found in soil or ground water, pursuant to FAC section 13149, as a result of legal, agricultural use, are placed in section 6800(a). Chemicals which have not been found in soil or ground water as a result of legal, agricultural use but which exceed the SNVs and with use patterns specified in FAC section 13145(d) are placed in section 6800(b). Six

chemicals are currently listed in section 6800(a): atrazine, bentazon, bromacil, diuron, prometon, and simazine. Pesticides which contain chemicals listed in section 6800(a) are designated as restricted materials and are subject to certain use and reporting requirements. A total of 48 chemicals are listed in section 6800(b). Pesticides that contain chemicals listed in section 6800(b) are subject to monitoring as specified in FAC section 13148(a).

The Director is required to adopt regulations to carry out two other provisions of FAC section 13145(d). (1) Any person who uses a pesticide listed on the GWPL must report to the county agricultural commissioner the use of the pesticide on a form prescribed by the Director. The reporting deadline shall conform to the deadline established for the reporting of the use of restricted materials. The reports must include the specific site where the pesticide was applied, and detail the kind and amount of pesticides used. (2) Dealers of pesticides must make quarterly reports to the Director of all sales of pesticides that can only be sold by licensed dealers, including lists of all sales by purchases. In addition, regulations were adopted by DPR in May of 1992 which require that sales of pesticides on the GWPL be reported quarterly by licensed pesticide dealers within 30 days following the end of each quarter of the calendar year.

Effective January 1, 1990, the Department adopted regulations which require all agricultural pesticide use to be reported monthly to the county agricultural commissioner, who, in turn, reports the use data to DPR.

#### The Pesticide Detection Response Process

Detections of residues of pesticides in ground water may be the result of monitoring surveys conducted by DPR or may be reported to DPR by local, state, federal, or nongovernment agencies that conduct monitoring. DPR's response to detections of pesticides in ground water (referred to as the Pesticide Detection Response Process or PDRP) is established in FAC sections 13149 through 13151. During this process, the detection of a pesticide residue in soil or ground water is investigated, evaluated, and when necessary, mitigated.

The investigative phase of the PDRP includes verification of the detection

and an agricultural use determination. These investigative activities include a determination of whether:

- (1) the residue detected, be it active ingredient, breakdown product, or any other specified ingredient, is from a pesticide that is registered for agricultural use in California;
- (2) the application of such a pesticide in the vicinity of the detection was reasonably likely;
- (3) a point source was not a likely cause;
- (4) a non-agricultural use of the pesticide was not a likely source; or
- (5) a non-pesticidal source was not a likely cause.

#### **Agricultural Use Determinations**

During an investigation of a detection of pesticide residues in ground water, DPR conducts two types of surveys. First, a well monitoring survey is conducted to determine if there is a second well in the same area as the reported positive well that contains confirmed detections of the pesticide under investigation. This helps in determining that the residue did not result from a point source. The well survey consists of collecting water samples from a minimum of five wells that are in the same section as the reported positive well and/or in one or more of the three sections located closest to the positive well. Well selection is based on proximity to the positive well. Second, a land use survey is conducted to identify potential sources of the contamination and to gather information on the physical features of the area surrounding the positive well. Locations and sizes of crop and non-crop areas (such as natural vegetation, residences or industry) are identified on a map, and the area immediately surrounding the well is carefully investigated.

Samples taken from the selected wells are analyzed to confirm the initial detection. FAC section 13149(d) of the PCPA requires that the detection of a pesticide or its breakdown product in ground water is the result of an analytical method approved by the Department and is verified, within 30 days, by a second analytical method or a second analytical laboratory approved by the Department. Criteria have been set (Bierman, 1989; see Appendix D, p. 119) for meeting these requirements. Detections meeting the

criteria are designated as verified. Pesticide active ingredients with verified detections of residues in ground water, determined by DPR to be present as the result of legal agricultural use, are subject to regulatory action by the Director. Initial detections that are not verified are removed from the PDRP.

As of June 30, 1992, a total of 118 agricultural use determinations had been completed for detections of 33 pesticide active ingredients and breakdown products. Results of the investigations conducted by DPR during the period January 1, 1988 through June 30, 1992 are given in Table 1, p. 36.

#### Evaluation of Pesticides Under the PDRP

The evaluation phase of the PDRP commences when the Department notifies the appropriate registrants of their opportunity to request a hearing. If requested, a hearing of the Pesticide Registration and Evaluation Committee (PREC) subcommittee is held pursuant to FAC sections 13149 and 13150. After completion of the hearing, the PREC subcommittee issues its findings and recommendations to the Director of DPR, who then takes certain actions pursuant to section 13150(d). These actions may include the adoption of regulations which modify the use of a pesticide to reduce its likelihood of reaching ground water, or the suspension or cancellation of use of a pesticide active ingredient in California.

Seven pesticide active ingredients have been evaluated under the PDRP: aldicarb, atrazine, bentazon, bromacil, diuron, prometon, and simazine. DPR has adopted regulations to modify the use of the seven compounds for ground water protection purposes; their status is given in Table 2, page 42.

Use of atrazine, bromacil, diuron, prometon, or simazine in Pesticide Management Zones (PMZs), where the pesticides were detected and determined to be present in ground water as a result of agricultural use, is regulated. (A PMZ is a geographic surveying unit of approximately one square mile [a section] that; is sensitive to ground water pollution.) County maps showing the location of PMZs that have been established in regulation are shown in Figures 1 through 10 in Appendix H, page 212.



## MONITORING RESULTS

### Adjacent Section Monitoring

The Department samples wells located in sections adjacent to PMZs to determine if the adjacent sections are also sensitive to ground water pollution. A land use survey is also conducted to determine if pesticides regulated in PMZs may have been used in the area under investigation. Those results, together with analyses of the well samples and any other available evidence, are used to determine whether an adjacent section should also be declared a PMZ.

As of June 30, 1992, 279 adjacent sections have been sampled by DPR. As a result, 146 additional sections were identified as PMZs. A summary of the results of adjacent section monitoring studies conducted from 1988 through June 30, 1992 is given in Table 3, p. 45.

### Ground Water Protection List Monitoring

In order to more accurately determine the mobility and persistence of pesticide active ingredients placed in section 6800(b) (3CCR) of the GWPL, the Director is required by FAC section 13145(d) to conduct soil and ground water monitoring in areas of the state where the pesticide is primarily used or where other factors indicate a probability that the pesticide may migrate to ground water.

Before any monitoring begins, the active ingredients are ranked according to various factors to determine in which order and to what extent the chemicals should be monitored for under commercial agricultural conditions in California. First priority for monitoring is given to active ingredients that (1) have been detected in ground water in other states due to non-point sources or (2) are given a high priority for human health risk assessment according to the mandates of the Birth Defect Prevention Act. Between 25 and 40 wells are sampled for active ingredients given first priority. Second priority active ingredients are selected based on pounds of active ingredient sold per year and on a combination of the compound's physical and chemical factors. Between 15 and 25 wells are sampled for this group. Remaining chemicals on the list are given third priority for monitoring and 10 to 15 wells are monitored.

In February and March of 1991, a study (Johnson et al., 1992) was conducted (1) to determine if pesticides placed in 6800(b) have migrated to ground water and (2) to statistically test the selection process, based on the SNVs, for identifying pesticides with the potential to leach to ground water. Samples were taken for 11 pesticides listed on the GWPL and 36 other pesticides or pesticide breakdown products. Each pesticide was sampled for in areas reporting high use of the pesticide. Six separate wells were sampled for each active ingredient; in all, a total of 216 wells in 17 counties were sampled. As a result of this sampling, four pesticides were detected in ground water: atrazine, bromacil, diuron, and simazine. All four had previously been detected in ground water and have been placed on sublist (a) of the GWPL; no other compounds were detected.

In March, 1992, sampling was conducted for butylate, cycloate, EPTC, and methyl isothiocyanate, all on the first priority list. The wells were sampled in seven counties reporting highest use of those pesticides, according to 1988 pesticide use data. Of the 112 wells sampled, none contained detectable residues of the four compounds. However, two wells, one in Kings County and one in Merced County, did contain low concentrations of diuron.

### Aldicarb Monitoring

To ensure that the agricultural use of aldicarb does not pollute ground water in counties where it is registered for use, EHAP has monitored for the presence of aldicarb and its breakdown products (aldicarb sulfone and aldicarb sulfoxide) by conducting well surveys in 1990 and 1991.

A survey of 47 wells was conducted in September and October 1990 in areas of the San Joaquin Valley where high aldicarb use was reported in 1986, 1987 and 1988. The counties sampled were Fresno (9 wells), Kern (10), Kings (10), Madera (7), Merced (3), and Tulare (8). Sixty percent of the wells were located in sections where aldicarb was used in 1986, 1987, and 1988, and 20 percent had applications in two of the three years. None of the sampled wells contained detectable aldicarb residues.

In December of 1991, a survey of 50 different wells was conducted in the San Joaquin Valley. The counties sampled were Fresno (10 wells), Kern (10),

Kings (10), Madera (7), Merced (3), and Tulare (10). Eighty-two per cent of the wells were located in sections where aldicarb was used in 1986 through 1988. Again, none of the sampled wells contained detectable aldicarb residues.

### Compliance Monitoring

Regulations to prevent continued ground water contamination in PMZs include prohibiting certain uses of chemicals listed in section 6800(a) 3 CCR. To assure compliance with those prohibitions, the Department conducts yearly soil monitoring in approximately 10% of the PMZs identified for each regulated pesticide. County Agricultural Commissioners' staff assisted in locating sites in each selected PMZ where the regulated chemical might have been used based on historical-use patterns. Replicate, shallow soil samples were collected at each site and analyzed for the targeted herbicide.

During the period July 1, 1989 through June 30, 1990, compliance monitoring was conducted in six atrazine PMZs: two each in Glenn and Los Angeles Counties, and one each in Contra Costa and Tulare Counties.

During the period July 1, 1990 through June 30, 1991, compliance monitoring was conducted in 17 PMZs. Five atrazine PMZs, two each in Glenn and Los Angeles Counties and one PMZ in Tulare County, were monitored. Eight simazine PMZs, two each in Los Angeles and Tulare Counties, and one each in Fresno, Merced, Orange, and Riverside Counties, were monitored. Two diuron PMZs in Tulare County, one prometon PMZ in Glenn County, and one bromacil PMZ in Tulare County were monitored.

During the period July 1, 1991 through June 30, 1992, compliance monitoring was conducted in 12 sections that are PMZs for multiple pesticides. PMZs were sampled in Fresno, Glenn, Los Angeles, and Tulare Counties. Altogether, eight PMZs were sampled for atrazine, eight for simazine, one for bromacil, and two each for diuron and prometon.

Although residues of the pesticides being monitored for were detected in many of the sections, calculations made from the detected concentrations indicated that the residues were not from recent applications, except for

detections made in a simazine PMZ in Fresno County. That finding has been reported to DPR's Pesticide Use Enforcement Branch and the Fresno County Agricultural Commissioner.

For the first time, soil samples collected for the 1991-1992 study from atrazine, simazine, or prometon PMZs were analyzed using enzyme linked immunosorbent assay (ELISA). This method is much less expensive than standard chemical analytical methods and provides similar minimum detectable levels. However, the ELISA method provides a measure of total triazine residues and does not distinguish between atrazine, simazine, prometon, or other triazine residues. Results are reported as simazine equivalents; a measure of individual triazine herbicide concentrations cannot be obtained by the ELISA method used. Analyses of samples collected from bromacil or diuron PMZs were performed using standard gas chromatographic methods.

Table 1. Investigations conducted by the Department of Pesticide Regulation (DPR) to determine if pesticide residues detected in ground water were the result of non-point source, legal agricultural use, pursuant to Food and Agricultural Code (FAC) section 13149. Results are for investigations conducted during the period January 1, 1988 through June 30, 1992.

Active Ingredient or Breakdown Product Detected	County of Detection	Results of Investigation
Alachlor	San Bernardino	Currently under investigation by DPR.
36 Aldicarb sulfone, Aldicarb sulfoxide	Humboldt	Residues of aldicarb sulfone and aldicarb sulfoxide, breakdown products of the active ingredient aldicarb, detected in wells in Humboldt County were determined to be the result of non-point source, legal agricultural use.
Atrazine	Butte, Contra Costa, Fresno, Glenn, Kern, Kings, Los Angeles, Madera, Merced, Orange, Riverside, Sacramento, San Bernardino, San Joaquin, Solano, Stanislaus, Tehama, Tulare, Ventura, and Yolo	Atrazine residues in wells in Contra Costa, Fresno, Glenn, Kern, Los Angeles, Orange, Riverside, Solano, Stanislaus, Tehama, and Tulare Counties were determined to be the result of non-point source, legal agricultural use. Atrazine residues detected in Butte and Yolo Counties were found at point-source contamination sites. The Sacramento County detection was determined to not be the result of non-point source, legal agricultural use. Recent reports of atrazine detections in Kings, Madera, Merced, San Bernardino, San Joaquin, and Ventura Counties are currently under investigation by DPR.
Benomyl	Glenn	Initial detection was not confirmed in follow-up sampling; therefore, benomyl was removed from the Pesticide Detection Response Process (PDRP).

Table 1. (continued)

Active Ingredient or Breakdown Product Detected	County of Detection	Results of Investigation
Bentazon	Alameda, Butte, Colusa, Fresno, Glenn, Kern, Merced, Placer, Sacramento, San Joaquin, Stanislaus, Sutter, Tulare, Yolo, and Yuba	Residues of bentazon detected in wells in Butte, Colusa, Glenn, Kern, Merced, Placer, Sacramento, Stanislaus, Sutter, Yolo, and Yuba Counties were determined to be due to non-point source, legal agricultural use. Recent detections of bentazon in Alameda, Fresno, San Joaquin, Tulare, and Yuba Counties made during monitoring conducted for AB 1803 are currently under investigation by DPR.
Bromacil	Fresno, Kern, Los Angeles, Placer, Tehama, and Tulare	Residues of bromacil detected in wells in Fresno, Placer, Tehama, and Tulare Counties were determined to be the result of non-point source, legal agricultural use. Detections of bromacil reported in Kern and Los Angeles Counties are currently under investigation by DPR.
Captan	Glenn and Solano	Initial detections were not confirmed in follow-up sampling. Removed from the PDRP.
Carbaryl	Napa	Initial detection was not confirmed in follow-up sampling. Removed from the PDRP.
Carbon disulfide	San Luis Obispo, Santa Barbara, and Sonoma	Initial detections of residues in Santa Barbara County were not confirmed in follow-up sampling. Recent detections of carbon disulfide in San Luis Obispo and Sonoma Counties are currently under investigation by DPR.
Chlorpyrifos	Fresno	Currently under investigation by DPR.

Table 1. (continued)

Active Ingredient or Breakdown Product Detected	County of Detection	Results of Investigation
Chlorthal- dimethyl and its breakdown product TPA	Los Angeles, Monterey, San Luis Obispo, and Santa Clara	Chlorthal-dimethyl breakdown products were detected during monitoring conducted for the U.S. Environmental Protection Agency's National Pesticide Survey. In response, DPR conducted a monitoring survey to determine if residues of chlorthal-dimethyl occurred in ground water in agricultural areas of California where chlorthal-dimethyl is used. As a result of that survey, 2,3,5,6-tetrachloroterephthalic acid (TPA) was detected in wells in five counties. Pursuant to section 13149 (FAC), the Director is required to initiate a review process when a degradation product of a pesticide is found in ground water or in soil under certain conditions and is determined to pose a threat to public health. At the request of DPR, the registrant of chlorthal-dimethyl submitted all available toxicology studies on TPA, the degradation product detected. After review of the toxicological data, the Medical Toxicology Branch of DPR concluded that, at the levels detected in ground water, TPA does not pose a threat to public health. Since all the conditions specified in section 13149 for degradation products were not met, TPA was not entered into the PDRP. Detections of chlorthal-dimethyl in monitoring wells in Monterey County were made at point-source contamination sites. A recently reported detection of chlorthal-dimethyl in San Luis Obispo County is currently under investigation by DPR.
1,3-dichloro- propene (1,3-D)	Del Norte, Fresno, and Santa Clara	Initial detections of 1,3-D in Del Norte, Fresno, and Santa Clara Counties were not confirmed in follow-up sampling. A recent detection of 1,3-D in Fresno County is currently under investigation by DPR.

Table 1. (continued)

Active Ingredient or Breakdown Product Detected	County of Detection	Results of Investigation
2,4-dichloro- phenoxyacetic acid (2,4-D)	Butte, Colusa, Del Norte, Los Angeles, San Joaquin, San Mateo, and Yuba	Initial detections of 2,4-D in Butte, Colusa, and Del Norte Counties were not confirmed in follow-up sampling. Recent detections of 2,4-D in Los Angeles, San Joaquin, San Mateo, and Yuba Counties are currently under investigation by DPR.
Diazinon	Butte, Fresno, Kings, Monterey, and Tulare	Initial detections in Fresno and Monterey Counties were not confirmed in follow-up sampling. The Butte County detection was made at a point-source contamination site. Detections of diazinon in Kings and Tulare Counties recently reported to DPR are currently under investigation.
Dicamba	Fresno, Madera, and Tulare	Currently under investigation by DPR.
Diuron	Fresno, Glenn, Kern, Kings, Madera, Merced, Orange, Riverside, Stanislaus, and Tulare	Diuron residues detected in wells in Fresno, Glenn, Kern, Orange, Riverside, Stanislaus, and Tulare Counties were determined to be due to non-point source, legal agricultural use. Detections of diuron in Kings, Madera, and Merced Counties that were recently reported are currently under investigation by DPR.
2-(2,4- dichlorophenoxy) propionic acid (2,4-DP)	Fresno and Stanislaus	Currently under investigation by DPR.
Endothall	Butte	Initial detection was not confirmed in follow-up sampling. Removed from the PDRP.
Ethylene thiourea (ETU)	San Joaquin	Initial detection was not confirmed in follow-up sampling. Removed from the PDRP.



Table 1. (continued)

Active Ingredient or Breakdown Product Detected	County of Detection	Results of Investigation
Lindane	Los Angeles	Currently under investigation by DPR.
Methoxychlor	Los Angeles	Currently under investigation by DPR.
Methyl bromide	Tulare, Tuolumne, and Ventura	The initial detection of methyl bromide in Tuolumne County was not confirmed in follow-up sampling. Recent reports of methyl bromide detections in Tulare and Ventura Counties are currently under investigation by DPR.
Molinate	Glenn	DPR determined that the detection of molinate in a Glenn County unsealed well was not the result of non-point source, legal agricultural use. The detection was referred to the State Water Resources Control Board (SWRCB) which implements California's system of water quality control.
Monuron	Tulare	Monuron was not registered for agricultural use at the time the detection was reported (monuron is no longer registered for use). Therefore, this detection did not enter the PDRP and was referred to the SWRCB.
Prometon	Fresno, Glenn, Kern, Kings, Merced, Stanislaus, Tehama, Tulare, and Yolo	Prometon residues detected in wells in Fresno, Glenn, and Tulare Counties were determined to be due to non-point source, legal agricultural use. Prometon residues were not detected in follow-up sampling conducted to investigate a detection in Tehama County. Prometon residues detected in Yolo County were made at a point-source contamination site. Recent detections of prometon in Fresno, Kern, Kings, Merced, and Stanislaus Counties are currently under investigation by DPR.
Prometryn	Kern and Kings	Currently under investigation by DPR.

Table 1. (continued)

Active Ingredient or Breakdown Product Detected	County of Detection	Results of Investigation
Simazine	Butte, Contra Costa, Fresno, Glenn, Humboldt, Kern, Kings, Los Angeles, Madera, Merced, Monterey, Napa, Orange, Riverside, San Bernardino, Solano, Stanislaus, Tehama, and Tulare	Simazine residues detected in wells in Fresno, Glenn, Los Angeles, Merced, Orange, Riverside, Stanislaus, Tehama, and Tulare Counties were determined to be the result of non-point source, legal agricultural use. Residues of simazine in wells in Butte, Contra Costa, Monterey, Napa, and Solano Counties were not detected in follow-up monitoring conducted to investigate initial detections of simazine in those counties. The detection of simazine in Humboldt County was made at a point-source contamination site. Recent reports of simazine detections in Fresno, Kern, Los Angeles, Madera, Merced, Monterey, Orange, Riverside, San Bernardino, Stanislaus, and Tulare Counties are currently under investigation by DPR.
Tebuthiuron	San Diego	Initial detection was not confirmed in follow-up sampling. Removed from the PDRP.
Thiobencarb	Los Angeles and Riverside	Currently under investigation by DPR.
Xylene	Fresno, Kern, Lassen, Los Angeles, Mono, Monterey, Placer, Sacramento, San Bernardino, San Luis Obispo, San Mateo, Santa Cruz, Sonoma, Tulare, and Tuolumne	Samples taken by DPR from wells with xylene detections in Fresno, Lassen, Monterey, and Placer Counties contained other components of gasoline. The xylene detections were, therefore, determined to not be the result of non-point source, legal agricultural use and were referred to the SWRCB. Initial detections of xylene in wells in Fresno, Mono, Sacramento, San Luis Obispo, Santa Cruz, and Tulare Counties were not confirmed in follow-up sampling. Recent reports of xylene detections in Fresno, Kern, Los Angeles, Monterey, San Bernardino, San Mateo, Santa Cruz, Sonoma, and Tulare Counties are currently under investigation by DPR.

Table 2. Status of pesticide active ingredients reviewed through the Pesticide Detection Response Process, as of June 30, 1992, pursuant to Food and Agricultural Code (FAC) section 13149.

Active Ingredient	Status
Aldicarb	<p>Use is prohibited in Humboldt and Del Norte Counties. DPR adopted regulations in July, 1990 that reduce the maximum rate of aldicarb that may be legally applied to certain agricultural and ornamental crops. The regulations also prohibit the application of aldicarb from September 1 to March 1 of each year, during the time when rain is most likely, to further reduce the likelihood of aldicarb reaching ground water. DPR proposed regulations in 1992 that would list aldicarb in Title 3, California Code of Regulations (3 CCR) section 6800(a), as a pesticide that has been detected in ground water pursuant to section 13149 (FAC). Under the proposed regulations, a groundwater protection advisory written by a licensed pest control advisor who has completed the Groundwater Protection Training Program approved and administered by DPR must be submitted to the county agricultural commissioner when applying for a permit to use a pesticide containing a chemical listed in section 6800(a) in any Pesticide Management Zone (PMZ). (A PMZ is a geographic surveying unit of approximately one square mile that is sensitive to ground water pollution.)</p>
Atrazine	<p>DPR adopted regulations in January, 1989 that added atrazine to section 6800(a) (3 CCR) and established PMZs for atrazine in Contra Costa, Glenn, Los Angeles, and Tulare Counties. Agricultural, outdoor institutional, and outdoor industrial use of pesticides containing atrazine within atrazine PMZs is prohibited. DPR adopted regulations in April, 1990 that established an additional atrazine PMZ in Los Angeles County. In July, 1992, DPR adopted regulations that established atrazine PMZs in Stanislaus and Tehama Counties, and additional PMZs in Glenn and Los Angeles Counties. DPR proposed regulations in 1992 that would establish PMZs in Kern, Placer, and Solano Counties, and additional PMZs in Fresno, Glenn, Orange, Stanislaus, and Tulare Counties. The proposed regulations would prohibit the use of atrazine for the purposes listed above in <u>all</u> sections identified as PMZs.</p>
Bentazon	<p>DPR adopted regulations in January, 1992 that added bentazon to section 6800(a) (3 CCR), prohibited the use of bentazon on rice, limited bentazon use to non-irrigated or sprinkler-irrigated sites during April through July, and prohibited the use of bentazon in Del Norte and Humboldt Counties. DPR proposed regulations in 1992 that would require a groundwater protection advisory written by a licensed pest control advisor who has completed the Groundwater Protection Training Program approved and administered by DPR must be submitted to the county agricultural commissioner when applying for a permit to use a pesticide containing a chemical listed in section 6800(a) in any PMZ.</p>

Table 2. (continued)

Active Ingredient	Status
Bromacil	<p>DPR adopted regulations in April, 1990 that added bromacil to section 6800(a) (3 CCR) and established bromacil PMZs in Tulare County. Agricultural, outdoor institutional, or outdoor industrial uses of bromacil in non-crop areas and on rights-of-way within bromacil PMZs are prohibited. DPR adopted regulations in July, 1992 that established bromacil PMZs in Fresno, and Tehama Counties, and additional PMZs in Tulare County. DPR proposed regulations in 1992 that would establish PMZs in Kern, Placer, and Solano Counties, and additional PMZs in Fresno, Glenn, Orange, Stanislaus, and Tulare Counties. The proposed regulations would modify the use of bromacil in <u>all</u> PMZs listed in regulation. Under the proposed regulations, a groundwater protection advisory written by a licensed pest control advisor who has completed the Groundwater Protection Training Program approved and administered by DPR must be submitted to the county agricultural commissioner when applying for a permit to use a pesticide containing a chemical listed in section 6800(a) in any PMZ.</p>
Diuron	<p>DPR adopted regulations in April, 1990 that added diuron to section 6800(a) (3 CCR) and that established PMZs for diuron in Tulare County. Agricultural, outdoor institutional, and outdoor industrial uses of diuron in non-crop areas or on rights-of-way are prohibited within diuron PMZs. DPR adopted regulations in July of 1992 which established additional diuron PMZs in Fresno, Tehama, and Tulare Counties. DPR proposed regulations in 1992 that would establish PMZs in Kern, Placer, and Solano Counties, and additional PMZs in Fresno, Glenn, Orange, Stanislaus, and Tulare Counties. The proposed regulations would modify the use of diuron for the purposes listed above in <u>all</u> sections identified as PMZs. Under the proposed regulations, a groundwater protection advisory written by a licensed pest control advisor who has completed the Groundwater Protection Training Program approved and administered by DPR must be submitted to the county agricultural commissioner when applying for a permit to use a pesticide containing a chemical listed in section 6800(a) in any PMZ.</p>
Prometon	<p>DPR adopted regulations in April, 1990 that list prometon in section 6800(a) (3 CCR) and that established prometon PMZs in Glenn County. Agricultural, outdoor institutional, and outdoor industrial uses of pesticides containing prometon are prohibited within prometon PMZs. DPR proposed regulations in 1992 that would establish PMZs in Kern, Placer, and Solano Counties, and additional PMZs in Fresno, Glenn, Orange, Stanislaus, and Tulare Counties. The proposed regulations would prohibit the use of prometon for the purposes listed above in <u>all</u> sections identified as PMZs.</p>

Table 2. (continued)

Active Ingredient	Status
Simazine	<p>DPR adopted regulations in April, 1990 that list simazine in section 6800(a) (3 CCR) and simazine PMZs in Fresno, Glenn, Los Angeles, Merced, Orange, Riverside, and Tulare Counties. Agricultural, outdoor industrial, and outdoor institutional use of pesticides containing simazine is prohibited within simazine PMZs. DPR adopted regulations in July, 1992 that established additional simazine PMZs in Fresno, Glenn, Los Angeles, Orange, Riverside, and Tulare Counties. DPR proposed regulations in 1992 that would establish PMZs in Kern, Placer, and Solano Counties, and additional PMZs in Fresno, Glenn, Orange, Stanislaus, and Tulare Counties. The proposed regulations would restrict the use of simazine in <u>all</u> PMZs listed in regulation. Under the proposed regulations, a groundwater protection advisory written by a licensed pest control advisor who has completed the Groundwater Protection Training Program approved and administered by DPR must be submitted to the county agricultural commissioner when applying for a permit to use a pesticide containing a chemical listed in section 6800(a) in any PMZ.</p>

Table 3. Comparison of number of sections sampled versus number of sections identified as Pesticide Management Zones (PMZs), by county, for monitoring studies conducted by the Department of Pesticide Regulation in sections adjacent to PMZs, 1988-1991.

Counties Monitored, by Year	# Adjacent Sections Sampled <sup>1</sup>	# Adjacent Sections Identified as PMZs
<b>1988:</b>		
Contra Costa	5	0
Fresno	17	11
Glenn	25	4
Los Angeles	18	10
Orange	4	2
Riverside	5	3
Tulare	39	17
<b>1989:</b>		
Fresno	24	13
Merced	8	0
Tehama	4	0
Tulare	18	10
<b>1990:</b>		
Fresno	2 <sup>2</sup>	2
Tulare	71	52
<b>1991:</b>		
Stanislaus	9	3
Fresno	30	19
Totals	<u>279</u>	<u>146</u>

<sup>1</sup> Unique sections were sampled each year. Samples could not be collected in some adjacent sections because no wells were present, existing wells were not suitable for sampling, or permission could not be obtained from well owners.

<sup>2</sup> These sections, located just across the county line, are adjacent to Tulare County PMZs.

**III. FACTORS CONTRIBUTING TO PESTICIDE MOVEMENT TO GROUND WATER  
AS A RESULT OF AGRICULTURAL USE**

## FACTORS CONTRIBUTING TO PESTICIDE MOVEMENT TO GROUND WATER AS A RESULT OF AGRICULTURAL USE

### Background

Ground water contamination can result from either a point or non-point source. Contamination from a point source, such as a spill or at a waste site, is the result of residues which are initially deposited and concentrated in a small, well-defined area. Residues leach from upper to lower soil layers, encountering and joining the flow of ground water at that point. The contamination can be traced to its point of origin by locating a specifically-shaped pattern of residues in the ground water called a plume. In contrast, contamination from a non-point source, such as legal, normal applications of agricultural chemicals to crops, cannot be traced to a single, definable location. Leaching, the process by which pesticide residues are dissolved in soil water and follow the movement of water through the soil matrix as it recharges a ground water aquifer, is a non-point source of contamination. Instead, the contaminants are dispersed over a large, poorly-defined area. When a non-point source results in contamination, locating a distinct residue plume is not possible and contaminant movement is very difficult to predict or trace to its source.

The PCPA requires the Department to include in the annual report a discussion of the factors that contribute to the movement of pesticides to ground water. These factors include volume of use, method of application, irrigation practices, physicochemical characteristics of pesticides, soil type, and climate.

These factors are discussed separately, beginning on page 52. For the past two years, however, EHAP scientists have been developing an integrated approach to identifying vulnerable areas in California. The project, which has been funded in part by the USEPA, provides a way to integrate a number of the contributing factors into one analysis. Climatic, soil, and geographic factors have been combined to provide unique spatial descriptions for the occurrence of pesticide residues in ground water. Other factors such as cropping patterns and specific agricultural practices will be added to provide further interpretation and meaning to the results. A discussion of this project follows.



## USING MULTIPLE FACTORS TO IDENTIFY AREAS VULNERABLE TO GROUND WATER CONTAMINATION

### Background

One common approach in using multiple factors to describe vulnerable areas has been to:

1. Devise a vulnerability index based on factors influencing the movement of pesticides to ground water. In most cases these factors relate to the leaching pathway.
2. Land areas are classified based on the vulnerability index.
3. Data on pesticide residues in well water samples are obtained either from previous studies or from a new study.
4. The presence or absence of pesticide residues in the samples is used to test correspondence with the index.

DRASTIC, a model used for predicting areas vulnerable to ground water contamination, employs methodology that is an example of this approach. However, tests of the use of the vulnerability index in the USEPA national well sampling study did not show good correspondence between DRASTIC scores and occurrence of contamination (USEPA, 1992). Some potential problems with this approach that may have caused the poor correspondence are:

1. Pesticide residues can reach ground water by routes other than leaching through soil. For example, surface runoff water carrying pesticide residues may stream directly down drainage wells (dry wells) to ground water.
2. The probability of detecting pesticide residues in a well is influenced by well location and depth of perforations in relation to the depth of ground water and direction of ground water flow from the residue source. For example, a domestic well situated near a field where pesticides are applied would seem likely to be affected by the applications. However, if leachate containing pesticide residues from the field encountered ground water at a higher elevation than the aquifer tapped by the well, then the residues would bypass the well.

Another approach used by Wilkerson et al. (1985) was to:

1. Identify, on a section (1 square-mile) basis, land use and geographic variables.
2. Derive a variable that describes vulnerability. The presence or absence of DBCP, in this approach, was used to discriminate between vulnerable and non-vulnerable areas.

3. Determine if the multiple land use and geographic variables could be related on a sectional basis to the vulnerability variable.

The study was conducted on four adjacent townships in Fresno County. No vulnerability patterns were evident from the study. Years later, however, nearly all sections previously labelled as non-vulnerable contained a positive DBCP detection in the Well Inventory database. The result of this approach can be interpreted in two ways. On the one hand, similarity in cropping patterns and land features indicated a similar probability for detection, a pattern noted once a greater number of well samples was available. But on the other hand, the small sample of wells used to discriminate between areas at the time the study was conducted was not able to predict actual vulnerability.

### Multiple Factor Study

Recently, through a USEPA grant, DPR has initiated a study integrating climatic, soil, and geographic information in order to identify areas in California vulnerable to ground water contamination. This evaluation may lead to identifying vulnerable areas before pesticide residues are found in ground water. It is anticipated that this procedure can also be used to prevent ground water contamination on a regional scale by allowing the development of ground water protection strategies for specific locations.

### Study Objective

To identify and evaluate climatic, soil, and geographic variables associated with sections of land in California that may be vulnerable to pesticide contamination.

### Study Design

The initial task was to gather descriptive information on climate, soil, and geographic variables in vulnerable sections. Statistical multivariate clustering techniques were then used to determine the level of similarity or dissimilarity between these sections. A known vulnerable section was defined as a section of land where pesticide residues had been found in ground water due to agricultural use. By definition, all current PMZs were included. Sections containing detections of aldicarb and bentazon were also included, as well as sections containing detections of some pesticides no longer registered for use. DBCP detections were omitted from the study

because the large number of detections could indicate a broad movement of residues between sections, an effect that would be exacerbated by DBCP's extremely long half-life and widespread use. This problem could exist with other pesticides, but less use and application to smaller land mass should have provided some assurance that detections of other pesticides were more reflective of local use. A total of 258 vulnerable sections were identified and placed in a data set.

Climate data were obtained from the Department of Water Resources (DWR) on-line data base which reports data from 130 California weather stations. Two sets of soil data were obtained. One data set identified the occurrence in vulnerable sections of each soil type, each denoted as a mapping unit. The other data set, obtained from the Soil Conservation Service (SCS), contained information on texture and other properties for each soil mapping unit surveyed in California. The data from the first set was used to extract soil information from the SCS data set providing information for each vulnerable section. One other geographic variable, depth to ground water, was obtained from a 1985 DWR report that contained information for specific wells with township, range, and section designations. Some areas, notably Humboldt, Del Norte and Santa Clara Counties, lacked information so values for these variables were obtained from well log information. For discussion purposes, depth to ground water is grouped as a soil variable. Soil information was missing for Los Angeles County, so only 180 of the 258 vulnerable sections were used in the analysis. Depth to ground water was lacking for an additional 9 sections, resulting in a final soils data set of 171 sections with 33 soil variables per section.

### Summary of Work Completed

Identification of unique clusters (i.e., groups of sections possessing similar, distinct characteristics) occurred in two phases. In the first phase, unique clusters of weather stations were identified using climate variables. Of the 171 sections, 7 in Del Norte and 4 in Humboldt County were shown to differ from the rest due to higher rainfall values and cooler summer temperatures. The remaining 160 sections were located in drier, hotter areas. The factors of high rainfall and moderate temperature were determined to be a unique combination of factors that merited special consideration in terms of pollution prevention because residue movement

would be highly dependent on weather conditions, especially in relation to rainfall.

In the second phase, soil type was used to identify unique clusters for the 160 sections near weather stations in the drier, hotter climate clusters. Irrigation inputs are more important in these areas, a situation where control over residue movement could be accomplished through agricultural management. Four variables were effective in identifying 5 soil clusters. The variables were the number of soil particles that pass through a No. 200 sieve (a variable that quantifies the texture of soils); a variable that indicated the presence of a water table above 5 feet; the average slope of a section; and a variable that indicated the presence of large soil particles such as cobbles or stones. In Table 1, sections in cluster 4 were separated from the rest primarily due to the presence of large soil particles. Sections in clusters 1 and 3 had a higher clay content than those in cluster 2. Clusters 1 and 3, though similar in clay soil texture, differed in that the presence of a water table above 5 feet was indicated in a portion of the clay soils.

Table 1. Means by cluster for soil variables produced by the 5 cluster solution for the Ward clustering method.

Cluster	Number of Vulnerable Sections	Soil	Water	Presence of	
		Texture <sup>a</sup> -----%-----	Table <sup>b</sup>	Slope	Large Particles <sup>c</sup> -----%-----
1	40	79	0.22	1.4	99
2	69	40	0.04	1.6	96
3	25	81	0.76	0.8	98
4	11	57	0	2.7	96
5	15	56	0.15	2.6	86

a Measured by the percentage by weight of soil particles that pass a No. 200 soil sieve. The smaller the percentage, the sandier the soil.

b Scale from 0-1 with a 0 value representing no soils in a section with a shallow water table above 1.5 m and a value of 1 representing all soils in a section with a shallow water table.

c Measured by the percentage by weight of soil particles that pass a No. 4 soil sieve. The smaller the percent, the more cobbles or stones present.

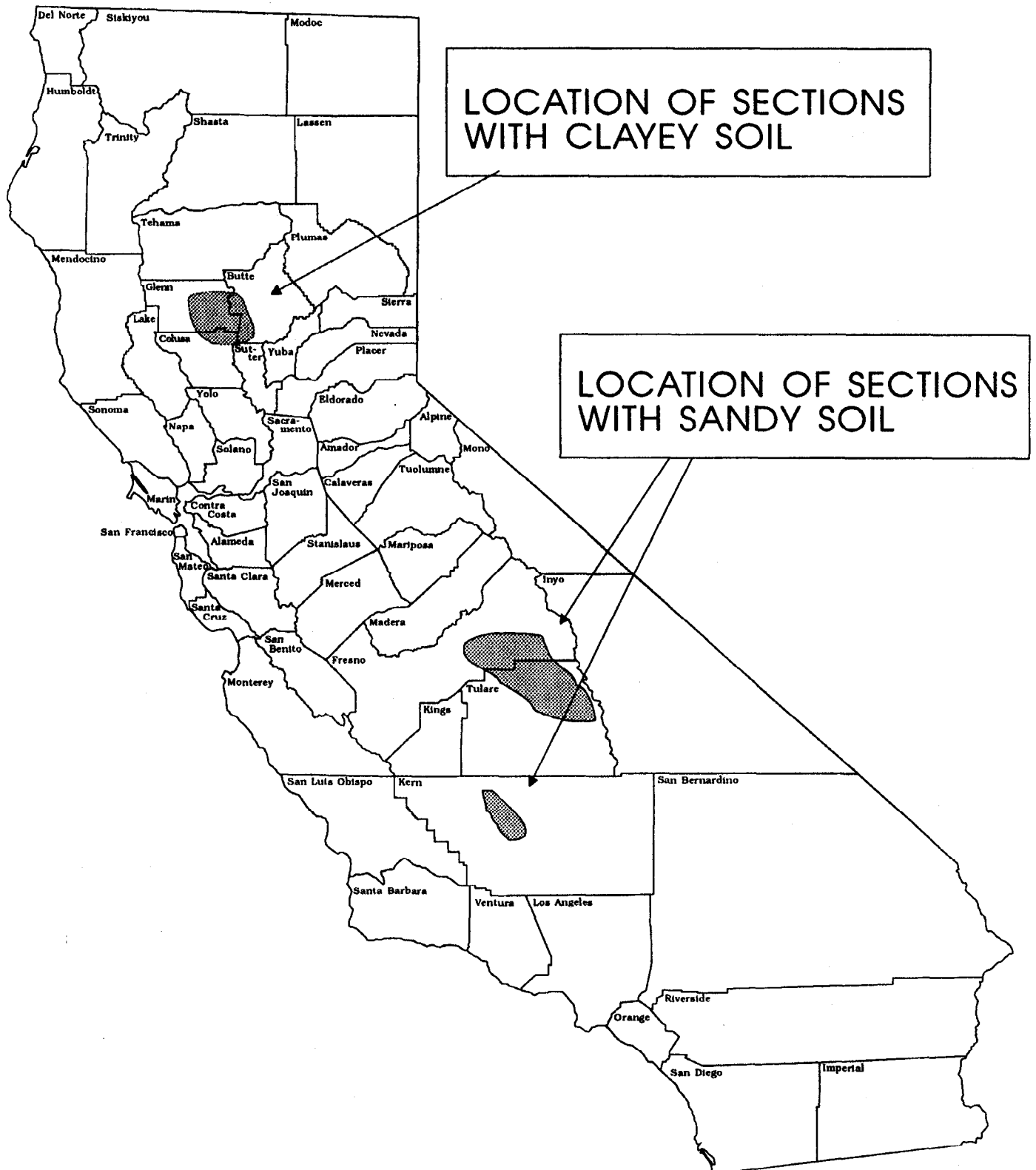
An assessment of the clustering results was conducted by mapping the location of sections as identified by cluster association. There was good geographic separation between clusters. Sandy sections in cluster 2 were predominately located in the San Joaquin Valley and in the Southern Desert areas, whereas the clayey sections in clusters 1 and 3 were located in the Sacramento Valley (Figure 1). Thus, the clustering appeared effective in providing a regional description to the location of vulnerable sections. If pathways of contamination can be shown to be dependent on variables associated with each cluster, then it could be possible to devise management strategies targeted for specific soil properties of a cluster. This approach could facilitate management decisions on a regional basis.

The final report to USEPA for fiscal year 91-92 will contain classification procedures derived from the cluster profiles. Additional studies are planned to validate the classification procedure for possible use in determining the vulnerability of sections in California that do not currently contain positive detections of residues in ground water.

#### **FACTORS CONTRIBUTING TO THE MOVEMENT OF PESTICIDES TO GROUND WATER**

Factors contributing to the movement of pesticides to ground water include method of application (pesticide use practices), irrigation practices, physicochemical characteristics of pesticides, soil type, and climate. Two routes by which pesticide residues can move to ground water are leaching and direct streaming. Leaching is the process by which pesticide residues are dissolved in soil water and follow the movement of water through the soil matrix as it recharges a ground water aquifer. Direct streaming is the movement of pesticide residues to ground water through direct routes such as dry wells or macropores. A summary of information from recent studies conducted by EHAP on the effect of these factors, including the leaching and direct streaming processes, follows.

Figure 1. Spatial location of sections in clusters 1 and 3 with predominantly clayey soil contrasted to locations of sections in cluster 2 with predominantly sandy soil.



## Pesticide Use Practices

### Leaching:

Pesticides found in ground water that originate from non-point sources are almost exclusively active ingredients that are applied to the soil.

Pesticides that are applied to foliage, such as protective foliar fungicides and many insecticides, may not be important leachers for two reasons: (1) exposure to sun enhances the rate of degradation and (2) concentrations that eventually reach the soil are low enough to allow for rapid degradation before leaching.

Also, there are no known differences in the leaching potential of different pesticide formulations, such as wettable powders, granulars, or emulsifiable concentrates. There has been some research on the use of slow-release formulations as a method to prevent pesticide movement through the soil. However, the results to date are still preliminary.

### Direct Streaming

A recent DPR study was conducted to measure the concentration of herbicides in water sampled near dry well drainage structures (Braun and Hawkins, 1991). Excess water at the edge of fields occurred as a result of either winter rainfall or runoff from irrigation. Concentrations of herbicides in rain runoff ranged from 2.4 to 1,130 ppb for simazine, 3.1 to 890.5 ppb for diuron, and from non-detectable to 47.2 ppb for bromacil. Concentrations in water collected after irrigation events ranged from non-detectable to 25.2 ppb for simazine, non-detectable to 19.1 ppb for diuron, and from non-detectable to 4.7 ppb for bromacil. The presence of herbicide residue in these samples indicates that further study is needed to determine the effect of application and soil incorporation on mitigating the presence of residues found in water sampled near dry wells.

Although many pre-plant herbicides are applied to the soil surface, their actual site of action is the first few inches of soil where weed seeds germinate. In order to complete the application, most of these types of herbicides contain label statements recommending (in the absence of sufficient rainfall following application) watering-in the compound by

applying a small amount of water by sprinkler irrigation to the treated area in order to move the pesticide from the surface into the soil matrix. If a large rainfall event or heavy irrigation occurs instead of a light sprinkler irrigation, there is a greater risk that residues could be physically moved offsite with runoff water.

### Irrigation Practices

#### Leaching:

An irrigation study (Troiano, et al., 1990) was conducted by the EHAP in 1987 and 1988 to compare the effect of three amounts of deep percolating water (denoted by low, medium, and high) applied by four methods (drip, sprinkler, floor, and furrow) of irrigation on leaching of atrazine, an herbicide that has been found in ground water. The amount of water added was based on a water budgeting method that used measures of evapotranspiration (ET<sub>o</sub>), which is an estimate of the amount of water required to replenish that lost from soil evaporation and plant transpiration. The irrigation study indicated that use of available measures of ET<sub>o</sub> in conjunction with water budgeting methods could be an effective technique for controlling water and, subsequently, pesticide movement in soil. However, the use of ET<sub>o</sub> values in limiting pesticide movement will require further refinement when applied to different methods of irrigation. Models could aid in defining the requirement specific to each irrigation method for achieving the goal of preventing leaching.

One aspect of pesticide use that may be critical to leaching may be the timing of pesticide applications in relation to irrigation applications. A theory of soil adsorption (Di Toro, 1985) proposes that the longer a pesticide remains in contact with the soil, the more resistant it becomes to leaching because the pesticide becomes more tightly bound to soil over time. Current labels for several of the herbicides detected in California ground water recommend that the compound should be moved into soil with a small amount of water (e.g., 0.25 to 0.50 inches) if sufficient rainfall is not received within a specified period after application. Additions of greater than 0.50 inches of water could leach residue past the weed root zone, away



from the intended zone of pesticidal activity. This same result could occur from many small applications of water timed too closely in succession. Therefore, once the pesticide is watered into the zone of activity, the timing of the next irrigation may determine whether or not the pesticide leaches to ground water.

A study was conducted in 1990 (Troiano and Garretson, In Preparation) to determine if leaching of herbicides was reduced by lengthening the time between application of a pesticide and initiation of irrigation treatments. Bromacil and simazine were broadcast onto soil and immediately incorporated into soil with a 0.5-inch sprinkler application. Irrigation treatments commenced at 1, 7 or 14 days after the application and incorporation of the pesticide. After the initial water application, irrigations were applied one day per week for a six-week period. Results differed between herbicides. Contrasting results for bromacil and simazine can be explained by their dissimilar physicochemical properties. Estimates of soil half-life and water solubility are greater for bromacil than for simazine, and soil adsorption is less for bromacil than for simazine (Johnson, 1991). The practical interpretation of these data is that, under the conditions of this study, delaying irrigations following application of simazine and bromacil had no impact on pesticide leaching.

#### Direct Streaming:

Irrigation management may also be important in controlling off-site movement of pesticides to ground water by direct streaming. As indicated in the study by Braun and Hawkins (1991), a potential exists for herbicide residue to move off-site with runoff water. Runoff water is commonly produced in surface irrigation systems such as furrow, basin-flooding and border types of irrigation which can be very inefficient. One goal of research conducted by irrigation scientists is to increase the efficiency of applying irrigation water which can reduce the runoff and the potential of pesticides to contaminate ground water.

## Physicochemical Characteristics of Pesticides

### Leaching:

The physicochemical properties the PCPA associates with the potential of a pesticide to leach through soil are water solubility, soil adsorption (usually denoted by the coefficient of soil versus water partitioning), hydrolysis half-life due to microbial or chemical activity, field dissipation, and vapor pressure. These characteristics are used in models of pesticide transport through soils (Rao, 1985). Cohen, et al. (1984) estimated values of the characteristics to act as indicators of leaching potential. In addition, section 13144 (a) (FAC) requires DPR to set Specific Numerical Values (SNVs) for some of these characteristics that are used to identify pesticides with the potential to leach to ground water. The Department has updated the established SNV's described by Wilkerson and Kim (1986) in three reports entitled: Setting Revised Specific Numerical Values (Johnson, 1988, 1989 and 1991).

As indicated in the Irrigation Practices section, a difference in the leaching of bromacil and simazine was measured in the delayed irrigation study. This result was surprising because both compounds have been detected in well water and the study was conducted on sandy soil that was highly conducive to leaching. However, differences in their physicochemical properties indicate that bromacil could be considered a greater threat to leach than simazine. Bromacil has a greater water solubility and is less reactive with soil as reflected by a lower Koc value (Johnson, 1991).

## Soil Type and Properties

### Leaching:

Soil type is an important factor in determining the likelihood of a pesticide to leach to ground water in a given area. Teso et al. (1988) have described the occurrence of DBCP residues in ground water in eastern Fresno County in relation to soil type as a means of predicting the sensitivity of soils in Merced County to pesticide contamination of ground water. DPR has been developing a data base of soil types in mapped portions of California

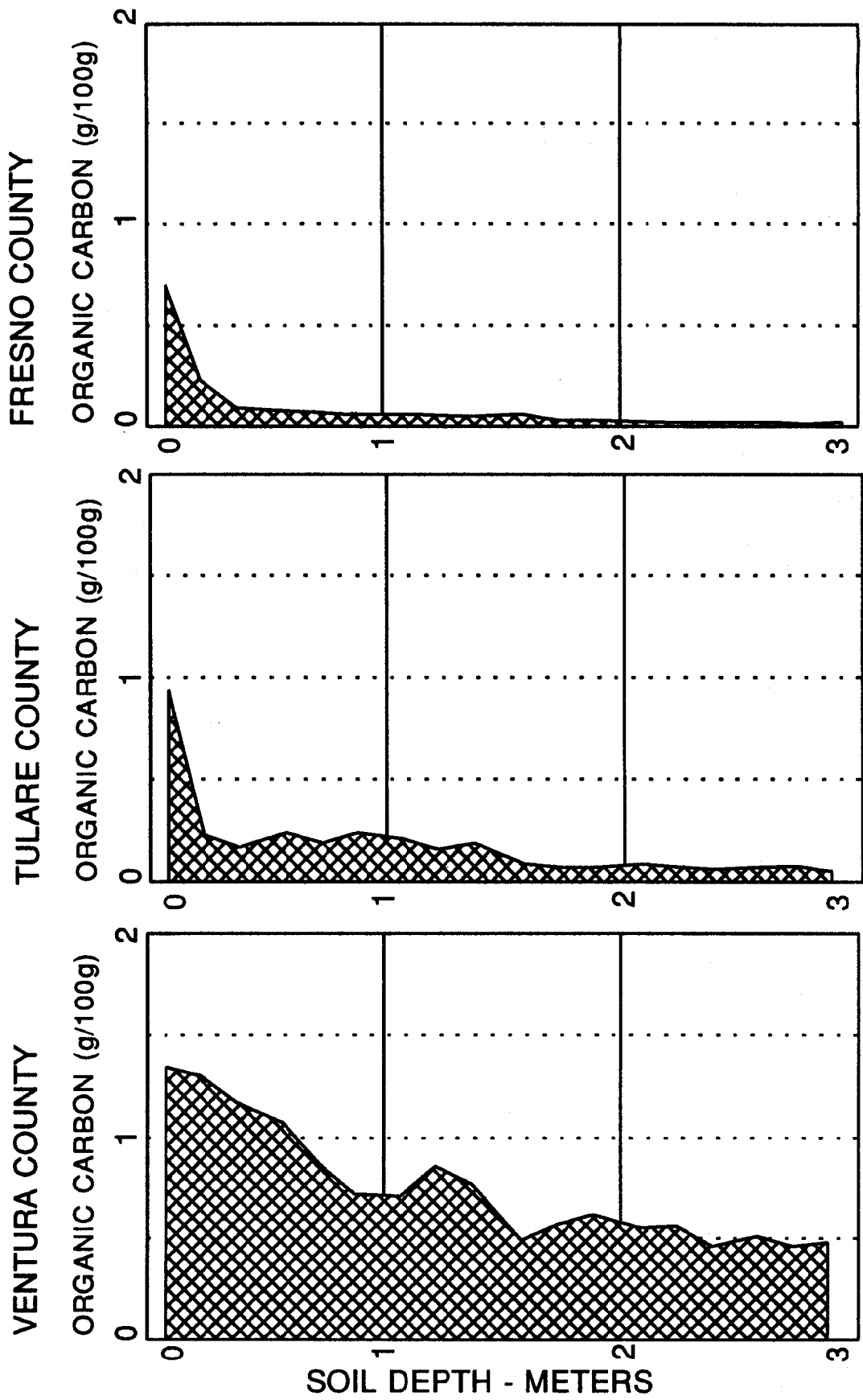
on a section basis; currently, soil types that are present in PMZs can be identified in a computer file. Evaluation of these data for regulatory use is ongoing.

Results from EHAP soil-coring studies indicate that organic carbon content of soil may be critical in determining the vulnerability of soils to leaching. Soils high in organic carbon tend to have a greater capacity to adsorb pesticides, which could result in increased rates of degradation, and thus, reduced rates of leaching. To test this possibility, soil core data are being compiled and compared to results of environmental sampling over broad areas. For example, one comparison was made between soil cores collected in Ventura County, an area where pesticides have not been found in ground water due to non-point sources, and soil cores in Tulare and Fresno Counties, areas that contain PMZs (Figure 1). Soil in Ventura County contained greater organic carbon at all depths than soil in Tulare or Fresno Counties (Welling et al., 1986). The distribution of organic carbon in Tulare and Fresno Counties may be described as a thin layer compared to that in Ventura County. More comparisons of a similar nature are needed to support the use of organic carbon content of soils as a predictive tool for determining future locations of PMZs. Such a tool could reduce reliance on the detection of pesticides in wells as the sole indicator of vulnerable areas.

#### Direct Streaming:

Under dry conditions, certain clay soils, known as Vertisols, develop large, deep cracks that may reach from 1 to 2.2 meters (3.3 to 7.2 feet) in depth. Such soils are known to exist in the Sacramento Valley in areas where pesticides have been detected in ground water. A study, funded by DPR, was conducted to measure the location of pesticide residues with respect to cracks in these soils (Graham and Ulery, 1990). Though the study was limited in scope, the authors concluded that detection of residues below the surface layer was apparently related to the presence of cracks in the soil. Movement of residues through soil features such as cracks presents a unique circumstance with respect to mitigating contamination of ground water because in the presence of such cracks, any pesticide active ingredient, regardless of physicochemical characteristics could move to ground water.

Figure 2. Comparison of organic carbon content in soil cores taken in Ventura, Tulare, or Fresno County.



Controlling pesticide movement could be attained only by management of the soil environment, if possible. This is an example where considerations of pesticide use must include geographical setting in order to derive effective mitigation decisions.

## Climate

### Leaching:

Climatic factors, such as precipitation, may override all of the previously mentioned factors in causing ground water contamination. An example of the influence of climate is the aldicarb residues detected in well water in Del Norte County (Lee, 1983). Because soils in that area are high in organic matter, they may be expected to retard pesticide movement. However, annual rainfall may be over 80 inches (2 meters), with as much as 50 inches (1.3 meters) occurring during the winter months from November to March. Aldicarb used to be applied in the fall to lily bulb fields to control nematode problems in the soil. The amount of winter rainfall was apparently sufficient to drive aldicarb residues to the shallow ground water located at about ten feet, in spite of the high soil organic matter.

A different result was observed in another DPR study (Troiano and Garretson, 1988). The effect of winter rain on movement of pesticides in the central San Joaquin Valley was investigated in the Fresno area. Because soils there are sandy, the area might be expected to be vulnerable to pesticide leaching from winter rainfall. However, winter rainfall is usually much less there than in the Northern Coastal areas (e.g., ten inches in the San Joaquin Valley compared to 50 inches on the North Coast). For the study, an inorganic ion tracer was detected at about the 1.7 meter (5.5 feet) depth in the soil, with some detected down to ten feet (3 meters), the lowest depth sampled. In contrast, most of the pesticide simazine, which is known to leach through soils, was recovered in the first 0.15 meters (0.5 feet) of soil, with some residues detected down to 1.9 meters (6 feet). At this site, there was some retardation in movement of the pesticide compared to water flow. In this situation, the amount of winter rainfall was

insufficient to move the major portion of simazine beyond the first six inches of soil. Thus, climatic conditions, such as heavy rainfall, must not be overlooked as important factors in the leaching of pesticides through soils, and they may be important considerations in timing applications of pesticides.

**IV. ACTIONS TAKEN BY THE STATE WATER RESOURCES CONTROL BOARD  
TO PREVENT PESTICIDES FROM ENTERING GROUND WATER**

**M e m o r a n d u m**

To : James W. Wells, Director  
Department of Pesticide Regulation  
1220 N Street, Room A-414  
Sacramento, CA 95814

Date : SEP 17 1992

*Walt Pettit*  
Walt Pettit  
Executive Director

From : **STATE WATER RESOURCES CONTROL BOARD**

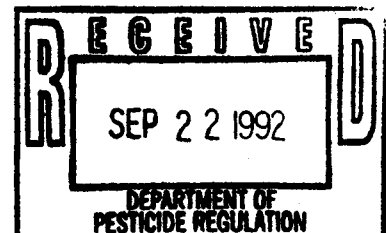
Subject: PESTICIDE CONTAMINATION PREVENTION ACT (AB 2021) ANNUAL  
REPORT (1992) TO THE LEGISLATURE

The Director of the Department of Pesticide Regulation (DPR), in consultation with the State Water Resources Control Board (State Water Board), is required under the Pesticide Contamination Act to report annually to the Legislature any actions taken by the DPR Director and the State Water Board to prevent economic poisons from migrating to ground waters of the State. The attached report is a summary of actions taken during the past year by the State Water Board and the California Regional Water Quality Control Boards for inclusion in the Report to the Legislature.

If we can be of further assistance, please feel free to telephone Jesse M. Diaz, Chief of the Division of Water Quality, at 657-0756. The staff person currently working on this issue is Jack Hodges, and he can be reached at 657-0682.

Attachment

cc: James M. Strock (with attachment)  
Secretary for Environmental Protection  
California Environmental Protection Agency  
555 Capitol Mall, Suite 235  
Sacramento, CA 95814





PESTICIDE CONTAMINATION PREVENTION ACT  
ANNUAL REPORT TO THE LEGISLATURE  
STATE WATER RESOURCES CONTROL BOARD (STATE WATER BOARD)  
DECEMBER 1992

A. STATE WATER BOARD

State Water Board staff participated in the following activities:

- State Water Board staff participated on a regular basis in meetings of the Department of Pesticide Regulation's (DPR) interagency Pesticide Advisory Committee, Pesticide Registration and Evaluation Committee, Pest Management Advisory Committee, and State Environmental Hazard Assessment Committee.
- Staff reviewed the U.S. Environmental Protection Agency's (USEPA) July 1992 draft document "Pesticides State Management Plan Guidance for Ground Water Protection" and provided comments to DPR for a joint response to USEPA.
- Staff met with U.S. Geological Survey scientists to discuss studies dealing with pesticides and ground water.
- Staff, in cooperation with DPR staff, is developing an Implementation Plan to implement the Memorandum of Understanding regarding pesticide and water quality which was approved by the two agencies.
- Staff reviewed DPR's proposed amendments to the regulations dealing with the Ground Water Protection List and Pesticide Management Zones and provided comments to DPR.
- Staff submitted a workplan to USEPA for Federal Fiscal Year 1993 funding for pesticides and ground water-related work pursuant to Section 106 of the Clean Water Act.
- On an ongoing basis, staff reviews DPR's notices of "Materials Entering Evaluation" and advises DPR on potential water quality impacts of pesticide registration and use decisions.

# STATE WATER RESOURCES CONTROL BOARD

P. O. Box 100, Sacramento, CA 95812-0100

Legislative and Public Affairs: (916) 657-2390  
Water Quality Information: (916) 657-0687

Clean Water Programs Information: (916) 739-4400  
Water Rights Information: (916) 657-2170

## CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARDS

### NORTH COAST REGION (1)

5550 Skylane Blvd. Suite A  
Santa Rosa, CA 95403  
(707) 576-2220

### SAN FRANCISCO BAY REGION (2)

2101 Webster Street, Ste. 500  
Oakland, CA 94612  
(510) 464-1255

### CENTRAL COAST REGION (3)

81 Higuera St., Suite 200  
San Luis Obispo, CA 93401-5414  
(805) 549-3147

### LOS ANGELES REGION (4)

101 Centre Plaza Drive  
Monterey Park, CA 91754-2156  
(213) 266-7500

### CENTRAL VALLEY REGION (5)

3443 Rottier Road  
Sacramento, CA 95827-3098  
(916) 361-5600

### Fresno Branch Office

3614 East Ashlan Ave.  
Fresno, CA 93726  
(209) 445-5116

### Redding Branch Office

415 Knollcrest Drive  
Redding, CA 96002  
(916) 224-4845

### LAHONTAN REGION (6)

2092 Lake Tahoe Boulevard, Suite 2  
South Lake Tahoe, CA 96150  
(916) 544-3481

### Victorville Branch Office

Civic Plaza,  
15428 Civic Drive, Suite 100  
Victorville, CA 92392-2359  
(619) 241-6583

### COLORADO RIVER BASIN REGION (7)

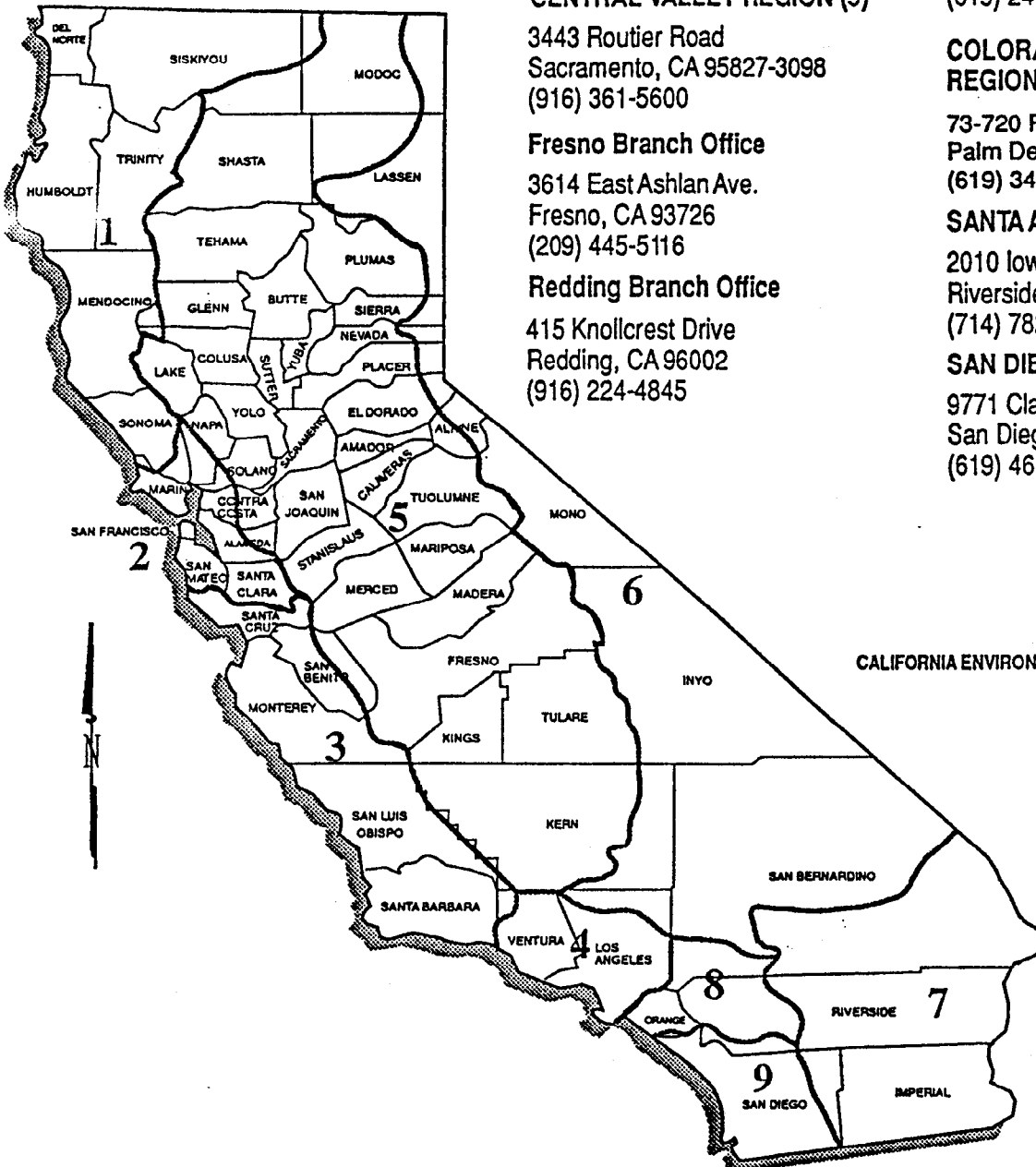
73-720 Fred Waring Drive, Suite 100  
Palm Desert, CA 92260  
(619) 346-7491

### SANTA ANA REGION (8)

2010 Iowa Avenue, Ste. 100  
Riverside, CA 92507-2409  
(714) 782-4130

### SAN DIEGO REGION (9)

9771 Clairemont Mesa Blvd. Ste. B  
San Diego, CA 92124  
(619) 467-2952



STATE OF CALIFORNIA  
*Pete Wilson, Governor*

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY  
*James M. Strock, Secretary*

5/22/92

Table 1

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, NORTH COAST REGION IN 1992**

<b>COUNTY</b>	<b>SITE</b>	<b>PESTICIDE</b>	<b>PREVENTION ACTION</b>
Del Norte	Smith River Plains	aldicarb, 1,-2-D	Ongoing monitoring program.
Humboldt	USFS Nursery McKinleyville	Dithiocarbamate	USFS monitoring with Regional Water Board support.
Humboldt	Blue Lake Forest Products	Pentachlorophenol, Tetrachlorophenol, Copper 8-Quinolinolate	State Superfund site with ongoing assessment.
Humboldt	Carlotta Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
Humboldt	Beaver Lumber Company Arcata	Pentachlorophenol, Tetrachlorophenol	Contamination cleanup.
Mendocino	L-P Corporation Covelo	Pentachlorophenol, Tetrachlorophenol	Investigation initiated. Sample results pending.
Siskiyou	Stone Forest Industries, Happy Camp	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination investigation.
Siskiyou	Hi-Ridge Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
Siskiyou	Pine Mountain Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
Trinity	Stone Forest Industries Burnt Ranch	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment.

Table 2

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, SAN FRANCISCO BAY REGION IN 1992**

<u>COUNTY</u>	<u>SITE</u>	<u>PESTICIDE</u>	<u>PREVENTION ACTION</u>
Alameda	Parker & Amchem	2,4-D	Soil removal in September 1988 (work completed). Ground water assessment ongoing. Regional Water Board Order No. 91-079 specifies schedules for investigations and cleanup.
Contra Costa	Chevron	Endrin, Lindane, Dieldrin, DDT	Submitted closure plan for Class I impoundment. A cut-off well with a ground water extraction trench around the impoundment has been constructed.
Alameda	Jones-Hamilton	Pentachlorophenol	Regional Water Board Order No. 89-110 specified time schedule for investigation/cleanup. Ground water cleanup underway.
Alameda	Port of Oakland (Embarcadero Cove)	Chlordane, Penta- chlorophenol	Department of Health Services has lead. Additional investigation/cleanup requested.
Alameda	Lincoln Properties (Orsetti Site)	DDE, 2,4-D	Alameda County Water District has lead.
Alameda	FMC, Newark	EDB	Regional Water Board Order No. 89-055 specified time schedule for investigation and cleanup. Ground water cleanup underway.
Contra Costa	Levin Metals	Aldrin, 4,4'-DDD, 4-DDE o,p,-DDT, Dieldrin & BHC	USEPA Lead Cleanup.
Contra Costa	FMC, Richmond	DDT, DDD, DDE, Dieldrin Chlordane, Tedion, Endosulfan, Ethion, Carbophenothion, & Heptachlor	DHS Lead Cleanup.
Contra Costa	ICI Americas	Vapam, Devrinol, Ordram	Site cleanup order issued in 1991.

Table 3

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, CENTRAL COAST REGION IN 1992**

<b>COUNTY</b>	<b>SITE</b>	<b>PESTICIDE</b>	<b>PREVENTION ACTION</b>
Santa Cruz	WFS-Greengro, Watsonville	1,2-D, Endosulfan	Remedial action plan being drafted.
Santa Cruz	WFS, Watsonville	DDT, DDD, and Endosulfan (Alpha & Beta)	Remedial action plan being drafted.
Santa Clara	Castle Veg Tech, Morgan Hill	Toxaphene, Endrin, Lindane, Endosulfan	Contamination assessment underway.
Monterey	WFS, Salinas	Dinoseb	Plume definition underway.
Monterey	Soilservice, King City	EDB, Dichloropropane, DDT, Toxaphene	Remedial action system operating.
Santa Barbara	J.R. Simplot Inc. Guadalupe	Benzene, Toluene, Xylenes	Plume definition to be started soon.
Monterey	NH <sub>3</sub> Service Company Salinas	1,2-D	Remedial action system under construction.
Monterey	John Pryor, Soledad	1,2-D, Toluene, p-Bromofluorobenzene	Plume definition underway.
Santa Barbara	Olocco Ag Services Santa Barbara	Endosulfan, 1,2-D, Ethylbenzene, Toluene, Xylenes, Endrin	Site assessment ongoing.
Monterey	Castlerock Estates	Toxaphene	Plume determination underway.

Table 4

ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, LOS ANGELES REGION IN 1992

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Los Angeles	U.S. Post Office (formerly Challenger Cook Brothers, Inc.), City of Industry	Lindane (gamma-BHC)	Additional soil and soil vapor assessment work ongoing. To date, a relationship between site soils and pesticides has not been confirmed.
Los Angeles	Montrose Chemical Company, Torrance	DDT	Cleanup and Abatement Order issued for site assessment and remediation. The site is on federal NPD (Superfund) list. USEPA is the lead agency on this case.

Table 5

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, CENTRAL VALLEY REGION IN 1992**

<u>COUNTY</u>	<u>SITE</u>	<u>PESTICIDE</u>	<u>PREVENTION ACTION</u>
Fresno	Thompson Hayward Agriculture & Nutrition	Alpha-BHC, Beta-BHC, Gamma-BHC, Dieldrin, DBCP, Diphenamid, Heptachlor, Heptachlor Epoxide	State Superfund site. Contamination assessment ongoing.
	FMC Corporation	Aldrin, Dieldrin, DDT, DDD, DDE, Heptachlor, Lindane, Toxaphene, Ethyl Parathion, Malathion, Ethion, Endosulfan, Dimethoate, Furadan, DNOC, DNBP	State Superfund site. Remedial investigation/feasibility study in progress. ROD signed.
	Agro-West, Inc.	BHC, Dicofol, Endosulfan, Dacthal, 2,4-D, Diuron, Methomyl, Neburon, Propham	State Superfund site. Hydrogeologic assessment report submitted pursuant to the Toxic Pits Cleanup Act. Surface impoundment has been closed.
	Britz, Inc. Five Points	Toxaphene, DDT, Dinoseb	State Superfund site. Partial contamination assessment submitted. Additional contamination assessment ongoing. Approximately 2,400 cubic yards of contaminated soils excavated from "hot spots" at this site.
	Chevron Chemical Company	Toxaphene, Arsenic	Pesticide contaminated soils have been removed. Site clean and has been closed.
	Fresno County Wells*	DBCP, EDB, 1,2-D	Pesticides detected in 146 wells (AB 1803 sampling). Assessment on hold. No WIP funds.
	Central Valley Aviation	Unspecified	Assessment ongoing.
	Union Carbide Test Plot	Aldicarb	Additional contamination assessment ongoing.
	Coalinga Airport	DDT, Chlorpyrifos, DEF, Ethion, Disyston	Contamination assessment requested.
	Spain Air	Ethion, DEF, Parathion, Trithion, Dinoseb, Paraquat, DDE, DDT, Endosulfan II	Assessment ongoing.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Fresno	UC Agricultural Field Station, Westside AFS (Five Points)	Simazine, Diuron, Prometon, MCPA	Both field stations are currently undergoing contamination assessment and installation of monitoring wells.
	UC Agricultural Field Station, Kearney Agricultural Center, Parlier	DDD, DDE, Simazine Chlorpropham	See above.
	Occidental Chemical/J.R. Simplot	Dieldrin	Surface impoundment excavated and closed. Monitoring of ground water continues.
Kern	Brown & Bryant, Inc., Arvin	1,2-D, 1,3-D, DBCP, EDB, Dinoseb	Federal Superfund site. Contamination assessment report requested.
	Puregro Company, Bakersfield	DBCP	State Superfund site. Further assessment conducted. Closure plan requested.
	Guimarra Vineyard	DBCP	Contamination assessment and pond closure plan requested. (J.R. Simplot-Edison).
	Dick Garriott Crop Dusting, Bakersfield	Chlordane, DDE, DDT, PCNB, Endosulfan I & II, Methoxychlor, Carbofuran, Carbaryl, Bufencarb, DEF, Tedion, Diazinon, Chlorpyrifos, Ethyl Parathion, Diuron, Dinoseb, Dicamba	Cleanup and Abatement Order issued. TPCA site. HAR completed. Work in progress to determine extent of ground water degradation. Impoundment is covered.
	Wasco Airport	Aldrin, Lindane, Endrin, Chlordane, Methoxychlor, DDT, DDD, DDE, Thimet, Malathion, Methyl Parathion, Paraoxon, Disyston, Omite, Paraquat	Site closed. Chapter 15 cap constructed above former toxic pit. WDRs adopted.
	USDA, Shafter	Dichlobenil, EPTC, Prometryne, DDT, DDE, DDD, Dieldrin, Toxaphene, Silvex, PCP, Chlorpropham, Ametryn, Atrazine	Developing a closure plan.
	Brown and Bryant, Inc., Shafter	Chlordane, DDD, DDE, DDT, Dieldrin, Endrin, Heptachlor, Toxaphene	State Superfund site. Contamination assessment ongoing.



COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Kern	Kern County Wells*	DBCP, 1,2-D, EDB	Pesticides detected in 57 wells (AB 1803 sampling).
Madera	Western Farm Service, Inc.	Dinoseb, DBCP, Dieldrin	Additional contaminant assessment requested. Closure plan accepted. WDRs developed for impoundment closure. HAR completed.
	Chowchilla Municipal Airport	Dieldrin, Alpha-BHC, Endosulfan, PCNB, DDT, DDE, Lindane	Contamination assessment requested.
	Madera County Wells*	DBCP, 1,2-D, EDB	DBCP detected in 2 wells (AB 1803 sampling).
Tulare	Mefford Field, City of Tulare	p,p'-DDT, p,p'-DDE, 2,4,5-TP, Dicamba, DNBP, Diuron	Contamination assessment and mitigation reports requested.
	Tulare Airport	2,4-D, DNBP	Assessment ongoing.
	Kaweah Crop Dusters	DDT, 2,4-D, 2,4,5-T, Methoxychlor	Department of Health Services Remedial Action Order issued January 1984. Cleanup of surface impoundment in progress.
	Harmon Field (County of Tulare)	DDT, DDE, TDE, Toxaphene, Methoxychlor, Endosulfan, Dieldrin	Department of Health Services Action Order issued March 1989. HAR complete. Remedial investigation/feasibility study nearly completed.
	Western	Aldrin, DDE, Heptachlor, Gamma-BHC, Demeton, Malathion, Phorate, Brodan, Diuron, Propachlor, Siduron, Chlorpyrifos, DEF	Hydrogeologic assessment and closure plan underway pursuant to Toxic Pits Cleanup Act. Cleanup and Abatement order has been issued.
	Tulare County Wells*	1,2-D	1,2-D detected in wells (AB 1803 sampling).
	Sacramento	Sacramento Army Depot	Diazinon, Dursban

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Sacramento	McClellan Air Force Base	Aldrin, Alpha-BHC, Beta-BHC, Delta-BHC, Gamma-BHC, (Lindane), 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Dieldrin, Alpha Endosulfan, Endosulfan Sulfate, Heptachlor, Heptachlor Epoxide, 2,4-D, 2,4,5-T, 2,4,5-TP	Ground water cleanup underway.
San Joaquin	Occidental Chemical	2,4-D, 2,4,5-T, DEF, Toxaphene, Lindane, EDB, DBCP, Dieldrin, Delnav, Dimethoate, Disulfoton, Sevin, Heptachlor, DDT, DDE, DDD, Aldrin, Methyl Parathion, Ethyl Parathion	Site remediation occurring pursuant to stipulation and judgement approving settlement (1981).
	Defense Depot, Tracy	Bromacil	Assessment ongoing.
	San Joaquin County Wells*	DBCP	Pesticides detected in 18 wells (AB 1803 sampling). Assessment ongoing.
	Sharpe Army Depot, Stockton	Bromacil	Assessment ongoing.
	Marley Cooling	Arsenic, Copper, Chromium	Toxic Pits Cleanup Act site.
	McCormick & Baxter	Pentachlorophenol, Creosote	Toxic Pits Cleanup Act site.
	U.S. Navy Communication Station	DDD	Assessment ongoing.
	Triple "E" Produce	Chloroform	Assessment ongoing.
Stanislaus	Pure Gro/Brea Agricultural Service, Stockton	1,2-D	Soil and ground water investigation ongoing.
	Chemagic (manufacturing site; highly contaminated soil, and moderate levels in ground water)	BHC, DDT	Ongoing monitoring. Ground water treatment alternatives being evaluated. Field inspection and sampling.
	Geer Road Landfill	1,1-DCA, 1,1,1-TCA, TCE, PCA, Freons	Assessment continuing under monitoring program. Corrective action plan submitted.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Stanislaus	Stanislaus County Wells*	DBCP	DBCP detected in 42 wells (AB 1803 sampling). Assessment began February 1987. Ten Modesto City wells are included in a State Superfund study.
Stanislaus	Union Carbide Test Plots	Aldicarb	Additional assessment work ongoing.
	Shell Agricultural (Research facility; pesticide in ground water probably the result of use on test plots)	Bladex	Working with Shell on site evaluation. Bladex pollution contained on-site.
	Thunderbolt Riverbank (wood treatment facility)	Chromium	Evaluation of site for contamination and secondary containment of treatment solutions. Ground water extraction appears successful.
	Hawke Dusters (pesticides and possible breakdown products in ground water under rinse water storage pond)	Dicofol, Methomyl, PCNB, Copper	Enforcement action against site owners in order to obtain site assessment and cleanup.
		1,2-DCE, Chloroform, 1,2-DCA, 1,1,1-TCA, Carbon Tetrachloride, Bromodichloromethane	Cleanup and Abatement Order issued. Toxic Pits Cleanup Act site.
	Valley Wood	Copper, Chromium, Arsenic	Out-of-court settlement. Federal Superfund site. Interim cleanup in progress.
	City of Turlock Airport	Dieldrin, Protham, Neburon	Contaminated soil removed. Ground water being monitored.
Merced	Merced County Wells*	DBCP, Atrazine, Simazine	Pesticides detected in 25 wells (AB 1803 sampling).
	Merced Municipal Airport	DDT, DDD, DDE, Endosulfan, Toxaphene, Alachlor, Endrin, Captan, Dicofol, Methoxychlor	Phase II investigation to determine extent of contamination.
	Hamburg Ranch	DDT and Derivatives, Endosulfan, Toxaphane, Namacur, Ethyl Parathion	Extent of soil contamination has been determined. Excavation is underway. Extent of ground water contamination must still be determined and soil bioremediation done.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Sutter	Bowles Flying Service	2,4-D, Bolero, Diuron, Metalaxyl, Ordram, Simazine	Assessment ongoing. Toxic Pits Cleanup Act site. Cease and Desist Order issued.
Yolo	Frontier Fertilizer Company, Davis	EDB	Cleanup and Abatement Order issued. State Superfund initiated.
	DOW Elanco, Davis Agricultural Research	Picloram, Dinoseb, 1,2-D 1,2-Dichloroethane	Cleanup of soils in progress, ground water monitoring continuing.
	Yolo County Wells*	1,2-D, EDB	Pesticides detected in two wells (AB 1803 sampling).
	U.C. Davis	Chlorpyrifos, Dicamba, Atrazine, Aldrin	Remediation workplan requested.
Modoc	FSOT, Inc., Canby	Pentachlorophenol	Contaminated soil removed and Cleanup and Abatement Order rescinded. No further action required.
Siskiyou	Roseburg Forest Products, Mt. Shasta	Pentachlorophenol	Soil and ground water investigation indicated no site contamination. No further action required.
Shasta	Calaran Lumber Company, Redding	Pentachlorophenol	Cleanup and Abatement Order issued. Contaminated soil removed, monitoring wells installed, and ground water monitoring in progress.
	Fibreboard Corporation, Burney Operations	Pentachlorophenol	Site cleanup completed and area paved. Monitoring wells installed and ground water monitoring in progress.
	Roseburg Forest Products, Paul Bunyan Facility	Pentachlorophenol	Discharger paved over contaminated soil and installed lysimeters. Monitoring in progress.
	Sierra Pacific Industries, Central Valley	Pentachlorophenol	Dip system removed and area paved. Monitoring of runoff during storm periods indicates PCP still discharging to surface waters. Staff requesting further remediation.
	Sierra Pacific Industries, Old Champion Facility	Pentachlorophenol	Contaminated soil removed and site considered clean. No further action required.
Tehama	Crane Mills, Paskenta	Pentachlorophenol	Contaminated soil removed and ground water monitoring in progress.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Tehama	Louisiana-Pacific, Red Bluff	Pentachlorophenol	Contaminated soil removed and ground water monitoring in progress.
	Waulevo, Inc., Corning	Pentachlorophenol	Tank and contaminated soil removed. No further action required.
Plumas	Siskiyou-Plumas Lumber Company Quincy Operations	Pentachlorophenol	Contaminated soil removed and ground water monitoring wells installed. Monitoring of ground water continuing.
Solano	Wickes Forest Industries	Chrome	Ground water cleanup underway.
Colusa	Moore Aviation (pesticides in ground water under rinse water disposal site)	2,4-D, MCPA	Site cleanup and ground water remediation. Soils bioremediation appears to be nearing completion. Revised ground water program was recently issued.
Glenn	Willows Airport (pesticides at low levels in shallow ground water under disposal pond site)	Toxaphene, Endosulfan, Diuron, 2,4-D, Dinoseb, Dicamba	Pond closed, contaminated soil removed, and ongoing ground water monitoring.
Kings	Lemoore N.A.S.	Unspecified	Investigation ongoing.
	Blair Field	2,4-D, Dicofol, Diazinon, Propargite	Investigation of rinse water discharge to earthen ditch.
	Blair Aviation	Trifluralin, Mevinphos, Phorate	Contamination assessment requested.
	Lakeland	DDT, Toxaphene	Toxic Pits Cleanup Act site. Hydrogeologic assessment report is late; Cleanup and Abatement Order has been issued. Referred to Attorney General.
Tuolumne	Tuolumne County Wells*	Methylene Chloride	Methylene chloride detected in one well (AB 1803 sampling).

\* Number of wells under investigation from AB 1803 sampling.

- Fresno County - 30
- Kern County - 2
- Tulare County - 2
- Merced County - 24
- Stanislaus County - 1
- Yolo County - 2
- Tuolumne County - 1

Table 6

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, LAHONTAN REGION IN 1992**

As part of its self-monitoring program, the Lake Tahoe Golf Course samples monitoring wells for pesticide active ingredients. On April 25, 1991, pentachloronitrobenzene (active ingredient in fungicide) was detected in three monitoring wells. On May 20, 1991, Regional Water Board staff collected samples from the wells and split the samples for analyses by both the Region's contract laboratory and by the Lake Tahoe Golf Course's laboratory. Upon this retest, all samples and subsequent self-monitoring reports have shown no detectable levels of pentachloronitrobenzene. Individual domestic supply wells are located near the golf course but were not sampled.

Table 7

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, COLORADO RIVER BASIN REGION IN 1992**

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Imperial	Central Brave Agricultural Service	4,4'-DDE, Endosulfan	Recalcitrant Discharger. Referred to Attorney General for nonpayment of fees.
	City of Brawley	4,4'-DDE, Dieldrin	Contaminated soil excavated and transported to Class I facility. Site closed.
	Visco Flying Service	4,4'-DDE, 4,4'-DDD, 4,4'-DDT, Endosulfan I & II	Impoundment remediated, capped, and closed in place.
	U.C. Davis Agricultural Field Station	Dacthal, Diuron	Completed remedial work, site closed in place.
	J.R. Simplot Company, Sandin Siding Facility	Dieldrin, 4,4'-DDT, Endrin	Cleanup and Abatement Order issued. Site in remediation process.
	Stoker Company	Endosulfan I & II, Dinoseb, 2,4-DB	Closure of surface impoundment.
	Ross Flying Service	4,4'-DDD, 4,4'-DDE 4,4'-DDT, Dieldrin	Closure of surface impoundment. Quarterly monitoring of ground water.
Riverside	West Coast Flying	Endosulfan I & II, Disulfoton,	Recalcitrant Discharger. Referred to Attorney General for nonpayment of fees.
	Woten Aviation Services	Disyston, DEF, Ethyl Parathion, Methyl Parathion	Cleanup and Abatement Order issued. USEPA has lead in cleanup.
	Foster Gardner, Inc., Coachella Facility	1,2-Dichloroethane, 1,2-D, Ethylene Dibromide	Cleanup and Abatement Order issued October 1991.
	Farmers Aerial Service, Inc.	4,4'-DDE, Endosulfan I	Closure of disposal area.
	Coachella Valley Mosquito Abatement District	DDT	Under investigation.

Table 8

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, SANTA ANA REGION IN 1992**

There are currently 99 confirmed detections of pesticides in the Santa Ana Region. Only one of these has been attributed to a point source discharge. Ground water extraction and treatment at this site is being performed under an order issued by the Regional Water Board. With the exception of this, all detections on this list are from domestic and agricultural production wells. Ninety six of these wells contain dibromochloropropane (DBCP), four contain simazine, and one contains 1,2-dichloropropane (two wells contain both DBCP and simazine).

The presence of DBCP in the Region's ground water has resulted in both an actual and threatened impact on the beneficial use of water as a drinking water supply, since 77 of the 94 wells containing DBCP are drinking water wells.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Orange	Great Western Savings, Irvine	1,2-D, EDB, 1,2-DCA	NDPES permit issued November 1986. Ground water extraction and treatment continuing. Permit is to be extended for another five years.
Riverside	Sunnymead MWC (Wells 3 & 4 mun.)	DBCP	Both wells were sold to Eastern Municipal Water District in February 1991. Customers are being served by the new District from other supply sources. One well is being completely rehabilitated. The other well will be used for emergency purposes only.
	Arlington Basin	DBCP	Construction of a 7 MGD reverse osmosis plant with partial flow through a GAC unit for treatment of TDS, NO <sup>3</sup> and DBCP was completed in September 1990. About 4 MGD of ground water is treated and 2.7 MGD is bypassed. Treated water is mixed with the bypassed water and discharged to a local channel for ground water recharge purposes. Salt brine (0.8 MGD) is discharged to the Santa Ana Regional Interceptor which discharges to the ocean via the Orange County sewage treatment plant.
	City of Corona (Well 8, mun.)	Simazine	Well has been completely rehabilitated. Simazine was not detected in the sampling after rehabilitation work. No further action being taken.
	Home Gardens CWD (Wells 2 & 3, mun.)	DBCP, Simazine	Water purveyor has closed these wells and is now purchasing water from City of Riverside.



COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Riverside	City of Riverside, Twin Spring, mun.	DBCP	Well is out of service. No mitigation measures in effect.
	Victoria Farm MWC (Well 01, mun.)	DBCP	Well is being used; DBCP concentration is below Maximum Contaminant Level after water is blended with water purchased from the City of San Bernardino.
	City of Corona (Well 17, mun.)	Simazine	Well is being used. Trace of DBCP was detected in March 1991 sampling.
	City of Riverside (Russell "B")	Simazine	Water is being blended with other supply wells in the area.
	City of Riverside (1st Street)	DBCP	Well is not being used due to high concentrations of DBCP. No mitigation measures in effect.
	City of Riverside (Electric Street, mun.)	DBCP	Well is being blended with other supply wells; blended water is sampled on a weekly basis.
	City of Riverside (Palmyrita, mun.)	DBCP	Well is not being used due to high concentrations of DBCP. No mitigation measures in effect.
	City of Riverside (3 wells, mun.)	DBCP	Water from Hunt Wells No. 6, 10, and 11 is being blended with other wells in the area.
	City of Riverside (4 wells, emergency, Downtown Riverside)	DBCP	No mitigation measures in effect. These four wells are also contaminated with industrial organic solvents. Investigation is underway to determine the source of the solvents.
	Riverside County Hall Record, (pr)	DBCP	No mitigation measures in effect. VOCs such as TCE and PCE have also been found. Well is used for emergency purposes only.
	Loma Linda University, Arlington, (Wells 1 & 2, mun.)	DBCP	The University is currently working with the City of Riverside to tie into the City domestic water supply distribution system. These two wells will be used for irrigation purposes at the school.
	City of Riverside (Moor-Griffith, mun.)	DBCP	Water is blended with other supply wells in the area.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Riverside	Home Gardens School (mun.)	DBCP	Well was abandoned about two years ago. The school is now using water from Home Gardens Water District.
	Lake Hemet MWD (Wells A and B, mun.)	DBCP	Well A is being used for domestic purposes. No trace of DBCP has been found during the past two rounds of sampling. Well B is being used by a local farmer for irrigation purposes.
	Buschlen, Dwight (mun.)	DBCP	Well was abandoned about four years ago. A second well on the property with traces of DBCP is being used for irrigation only.
San Bernardino	Gage System Wells (11 wells, mun.)	DBCP	The City of Riverside operates the Gage System which consists of 13 wells located along the Santa Ana River. These wells are being blended for domestic use. The City of Riverside is currently evaluating findings of a recent study by the U.S. Bureau of Reclamation regarding application of Granular Activated Carbon (GAC) technology to these wells. This study was sponsored by the Bureau and several local water agencies. The City of Riverside is currently facing some difficulties in proceeding with their application, since trace amounts of Radon have been detected in some of these wells. The City is planning to install three deep wells in the area to increase their blending capacity.
	Bunker Hill Basin: Crafton/Redlands area (32 wells)	DBCP	The City of Redlands started construction of a 6,000 gpm GAC treatment system in September 1991. This GAC system will treat ground water from two wells. Treated water will be put into the local water supply distribution system. Funding for this system is from the State Water Board (\$2.8 million) and Bond money through the State Expenditure Plan (\$1.9 million) which is managed by Department of Toxic Substance Control. The system is scheduled to be on line in October 1992.
	South San Bernardino Company Water District (4 wells, mun.)	DBCP	All four wells are out of service. The City of San Bernardino Water Department purchased the water district in July 1991. The City now supplies all the customers in the area.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Bernardino	Cucamonga CWD (4 wells, mun.)	DBCP	Well No. 13 has not been used since 1991. The other three wells are standby wells and are used on a limited basis. Water is being purchased from MWD.
	Monte Vista CWD (3 wells, mun.)	DBCP	All three wells are on stand-by status. Water is being purchased from MWD.
	City of Upland (15 wells)	DBCP	Seven wells are out of operation. Eight wells are currently being used and are being blended with other supply wells.
	City of Loma Linda (6 wells, mun.)	DBCP	Two wells have been abandoned. One well is out of operation due to high nitrates. DBCP concentration in all the wells is the MCL. The City also purchases treated water from the City of San Bernardino.

Table 9

**ACTIONS TAKEN BY THE CALIFORNIA REGIONAL WATER  
QUALITY CONTROL BOARD, SAN DIEGO REGION IN 1992**

<b>COUNTY</b>	<b>SITE</b>	<b>PESTICIDE</b>	<b>PREVENTION ACTION</b>
San Diego	City of Oceanside Water Utility District (Well No. 12-11S/4W-18L1 S)	1,2-D	This backup drinking water well is located in the San Luis Rey River Valley. 1,2-D of up to 2.3 ppm has been detected in this well. The City of Oceanside is continuing monitoring of this well and reports to the County.
	Truly Nolen Exterminating, Inc.	Aldrin, Dieldrin, Chlordane	This is an on-site abandoned well which allegedly received pesticide wastes several years ago. The pesticide constituents in the soil and ground water include Aldrin, Dieldrin, and Chlordane. Contaminated soil has been removed. Ground water is being monitored.
	San Pasqual Valley (three wells)	Ethylene Dibromide	Ground water monitoring ongoing.

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## APPENDICES

**A. THE PESTICIDE CONTAMINATION PREVENTION ACT**

**Assembly Bill No. 2021**

**CHAPTER 1298**

**An act to add Article 15 (commencing with Section 13141) to Chapter 2 of Division 7 of the Food and Agricultural Code, relating to water contamination.**

[Approved by Governor September 30, 1985. Filed with Secretary of State September 30, 1985.]

**LEGISLATIVE COUNSEL'S DIGEST**

**AB 2021, Connelly. Economic poisons: groundwaters.**

(1) Existing law does not require registrants of economic poisons to submit specified information relating to contamination of groundwaters as part of the initial registration or renewal of registration process.

This bill would enact the Pesticide Contamination Prevention Act. The bill would require each registrant of an economic poison registered for agricultural use to submit specified information to the Director of Food and Agriculture, not later than December 1, 1986, relating generally to the impact of the economic poison on water sources. The bill would provide for an extension for submission of some of this information for up to 2 years, as specified, but in no event later than December 1, 1989. Since violation of these provisions would be a misdemeanor, the bill would impose a state-mandated local program. Inadequate information on a particular economic poison would be defined to be a groundwater protection data gap after a specified determination by the director. The director would be prohibited from registering or renewing the registration of an economic poison with a groundwater protection data gap after December 1, 1988, for economic poisons applied with ground-based application equipment or by chemigation and after December 1, 1989, for economic poisons intended for use with other than ground-based application equipment, unless the registrant has been granted a current extension under the bill.

The director would be required to establish the Groundwater Protection List of specified economic poisons and to report specified information to the Legislature, the State Department of Health Services, and the State Water Resources Control Board not later than December 1, 1987, regarding economic poisons, as specified.

The director would be required to perform a soil and water monitoring program pursuant to a specified schedule and would be required to report all monitoring results to the State Department of Health Services and the board.

The bill would require the director, on or before December 1, 1987, and annually thereafter, to request a budget appropriation in order to fund specified activities under the bill.

The bill would also require the director to cancel the registration of economic poisons with specified criteria relating to groundwater findings unless the registrant is granted an extension or the director makes specified findings.

The bill would also require the director to maintain a specified well sampling data base and, not later than June 30, 1986, the director, the State Department of Health Services, and the board, jointly, would be required to establish minimum requirements for well sampling that would apply to all agencies conducting the sampling after December 1, 1986. This requirement would impose a state-mandated local program on local agencies so affected. The director would be required to report annually, commencing on December 1, 1986, to the State Department of Health Services and the board on well sampling, as specified.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement, including the creation of a State Mandates Claims Fund to pay the costs of mandates which do not exceed \$500,000 statewide and other procedures for claims whose statewide costs exceed \$500,000.

This bill would provide that reimbursement shall be made pursuant to those statutory procedures and, if the statewide cost does not exceed \$500,000, shall be payable from the State Mandates Claims Fund, except that, for certain costs, the bill would provide that no reimbursement is required for a specified reason.

(3) The bill would provide that, notwithstanding Section 2231.5 of the Revenue and Taxation Code, this bill does not contain a repealer, as required by that section; therefore, the provisions of the bill would remain in effect unless and until they are amended or repealed by a later enacted bill.

*The people of the State of California do enact as follows:*

SECTION 1. Article 15 (commencing with Section 13141) is added to Chapter 2 of Division 7 of the Food and Agricultural Code, to read:

Article 15. The Pesticide Contamination Prevention Act

13141. The Legislature finds and declares all of the following:

(a) It is the right of every citizen in this state to drink safe, potable, wholesome, and pure drinking water.

(b) The health and economic prosperity of rural communities and individual farm families in the state are threatened by contaminated drinking water supplies because of their proximity to the use of pesticides.

(c) Pesticide contaminants and other organic chemicals are being

found at an ever increasing rate in underground drinking water supplies.

(d) The United States Environmental Protection Agency has concluded that evidence of relatively localized levels of pesticide pollution should be treated as a warning of more widespread, future contamination.

(e) Groundwater once polluted cannot be easily cleaned up; thus, there is a considerable potential that groundwater pollution will continue long after actions have been taken to restrict application of the pesticide to land.

(f) Due to the potential widespread exposure to public drinking water supplies from pesticide applications to the land and the resultant risk to public health and welfare, the potential for pollution of groundwater due to pesticide use must be considered in the registration, renewal, and reregistration process.

(g) It is the purpose of this article to prevent further pesticide pollution of the groundwater aquifers of this state which may be used for drinking water supplies.

13142. For the purposes of this article, the following definitions apply:

(a) "Board" means the State Water Resources Control Board.

(b) "Groundwater protection data gap" means that, for a particular economic poison, the director, after study, has been unable to determine that each study required pursuant to subdivision (a) of Section 13143 has been submitted or that each study submitted pursuant to subdivision (a) of Section 13143 is valid, complete, and adequate.

(c) "Henry's Law constant" is an indicator of the escaping tendency of dilute solutes from water and is approximated by the ratio of the vapor pressure to the water solubility at the same temperature.

(d) "Soil adsorption coefficient" is a measure of the tendency of economic poisons, or their biologically active transformation products, to bond to the surfaces of soil particles.

(e) "Pesticide registrant" means a person that has registered an economic poison pursuant to this chapter.

(f) "Agricultural use" has the same meaning as defined in Section 11408.

(g) "Active ingredient" has the same meaning as defined in Section 136 of Title 7 of the United States Code.

(h) "Economic poison" has the same meaning as defined in Section 12753.

(i) "Degradation product" means a substance resulting from the transformation of an economic poison by physicochemical or biochemical means.

(j) "Pollution", for the purposes of this article, means the introduction into the groundwaters of the state of an active ingredient, other specified product, or degradation product of an

active ingredient of an economic poison above a level, with an adequate margin of safety, that does not cause adverse health effects.

(k) "Chemigation" means a method of irrigation whereby an economic poison is mixed with irrigation water before the water is applied to the crop or the soil.

(l) "Soil microbial zone" means the zone of the soil below which the activity of microbial species is so reduced that it has no significant effect on pesticide breakdown.

13143. (a) Not later than December 1, 1986, a person that has registered an economic poison in California for agricultural use shall submit to the director the information prescribed in this subdivision. The information shall be submitted for each active ingredient in each economic poison registered. The registrant shall submit all of the following information:

- (1) Water solubility.
- (2) Vapor pressure.
- (3) Octanol-water partition coefficient.
- (4) The soil adsorption coefficient.
- (5) Henry's Law constant.

(6) Dissipation studies, including hydrolysis, photolysis, aerobic and anaerobic soil metabolism, and field dissipation, under California or similar environmental use conditions.

(7) Any additional information the director determines is necessary.

(b) The director also may require the information prescribed in subdivision (a) for other specified ingredients and degradation products of an active ingredient in any economic poison. The director shall also require this information when the State Department of Health Services or the board submits a written request for the information to the director, if the State Department of Health Services or the board specifies the reasons why they consider the information necessary. The director shall deny the request upon a written finding that, based on available scientific evidence, the request would not further the purposes of this article.

(c) All information submitted pursuant to subdivision (a) shall be presented in English and summarized in tabular form on no more than three sheets of paper with the actual studies, including methods and protocols attached. All information shall, at a minimum, meet the testing methods and reporting requirements provided by the Environmental Protection Agency Pesticide Assessment Guidelines, Subdivision D Series 60 to 64, inclusive, for product chemistry and Subdivision N Series 161 to 164, inclusive, for environmental fate, including information required for degradation products in specific studies. With prior approval from the director, registrants may use specified alternative protocols as permitted by the United States Environmental Protection Agency guidelines, if the director finds use of the protocol is consistent with, and accomplishes the objectives of, this article. Studies conducted on active ingredients in the

formulation of economic poisons shall meet the same testing methods as required for studies conducted on active ingredients. The department, in consultation with the board, may, in addition, require specified testing protocols that are specific to California soil and climatic conditions. The director may give a pesticide registrant an extension of up to two years if it determines that this additional time is necessary and warranted to complete the studies required in paragraph (6) of subdivision (a). No extension of the deadline for these studies shall go beyond December 1, 1989. When seeking the extension, the registrant shall submit to the director a written report on the current status of the dissipation studies for which the extension is being sought. For registrants granted an extension pursuant to this section, Section 13145 shall be effective upon the completion date established by the director.

(d) The director may grant the registrant an extension beyond the one authorized in subdivision (c), if all of the following conditions are met:

(1) The registrant submits a written request to the director for an extension beyond the one granted pursuant to subdivision (c). The request shall include the reasons why the extension is necessary and the findings produced by the study up to the time the request is made.

(2) The director finds that the registrant has made every effort to complete the studies required in paragraph (6) of subdivision (a) within the required time limits of the extension granted pursuant to subdivision (c) and that those studies could not be completed within the required time limits due to circumstances beyond the control of the registrant.

(3) The director establishes a final deadline, not to exceed one year beyond the time limit of the extension granted pursuant to subdivision (c), and a schedule of progress by which the registrant shall complete the studies required in paragraph (6) of subdivision (a).

(e) After December 1, 1986, no registration of any new economic poison shall be granted unless the applicant submits all of the information required by the director pursuant to this article and the director finds that the information meets the requirements of this article.

13144. (a) Not later than December 1, 1986, the department shall establish specific numerical values for water solubility, soil adsorption coefficient (K<sub>oc</sub>), hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation. The values established by the department shall be at least equal to those established by the Environmental Protection Agency. The department may revise the numerical values when the department finds that the revision is necessary to protect the groundwater of the state. The numerical values established or revised by the department shall always be at least as stringent as the values being used by the Environmental



Protection Agency at the time the values are established or revised by the department.

(b) Not later than December 1, 1987, and annually thereafter, the director shall report the following information to the Legislature, the State Department of Health Services, and the board for each economic poison registered for agricultural use:

(1) A list of each active ingredient, other specified ingredient, or degradation product of an active ingredient of an economic poison for which there is a groundwater protection data gap.

(2) A list of each economic poison that contains an active ingredient, other specified ingredients, or degradation product of an active ingredient which is greater than one or more of the numerical values established pursuant to subdivision (a), or is less than the numerical value in the case of soil adsorption coefficient, in both of the following categories:

(A) Water solubility or soil adsorption coefficient (Koc).

(B) Hydrolysis, aerobic soil metabolism, anaerobic soil metabolism, or field dissipation.

(3) For each economic poison listed pursuant to paragraph (2) for which information is available, a list of the amount sold in California during the most recent year for which sales information is available and where and for what purpose the economic poison was used, when this information is available in the pesticide use report.

(c) The department shall determine to the extent possible, the toxicological significance of the degradation products and other specified ingredients identified pursuant to paragraph (2) of subdivision (b).

13145. (a) Any registrant of an economic poison identified in paragraph (1) of subdivision (b) of Section 13144 shall be subject to a fine of up to ten thousand dollars (\$10,000) for each day the groundwater protection data gap exists. In determining the amount of the fine, the director shall consider both of the following:

(1) The extent to which the registrant has made every effort to submit valid, complete, and adequate information within the required time limits.

(2) Circumstances beyond the control of the registrant that have prevented the registrant from submitting valid, complete, and adequate information within the required time limits.

(b) If there is a dispute between the director and a registrant regarding the existence of a groundwater protection data gap and the director desires to levy a fine on the registrant pursuant to this section, the director shall submit the issues of the dispute to the subcommittee created pursuant to subdivision (b) of Section 13150. The subcommittee shall review the evidence submitted by the registrant and the director and make recommendations to the director on whether or not the groundwater data gap exists.

(c) The provisions of subdivisions (a) and (b) shall not apply to pesticide products whose registration has lapsed or has been

cancelled, or to products that have been granted a current extension pursuant to Section 13143.

(d) The director shall, by regulation, establish a list of economic poisons that have the potential to pollute groundwater. The list shall be entitled the Groundwater Protection List. Notwithstanding the provisions of Chapter 3.5 (commencing with Section 11340) of Division 3 of Title 2 of the Government Code, the director shall immediately place all economic poisons identified in paragraph (2) of subdivision (b) of Section 13144 on the Groundwater Protection List and shall regulate the use of these economic poisons if the economic poison is intended to be applied to or injected into the soil by ground-based application equipment or by chemigation, or the label of the economic poison requires or recommends that the application be followed, within 72 hours, by flood or furrow irrigation. The director shall adopt regulations to carry out the provisions of this article. The regulations shall include, but are not limited to, the following:

(1) Any person who uses an economic poison which has been placed on the Groundwater Protection List is required to report to the county agricultural commissioner the use of the economic poison on a form prescribed by the director. The reporting deadline shall conform to the deadline established for the reporting of the use of restricted materials.

(2) Dealers of economic poisons shall make quarterly reports to the director of all sales of economic poisons. This report shall include lists of all sales by purchases.

13146. (a) The director shall not register or renew the registration of an economic poison intended to be applied to or injected into the ground by ground-based application equipment or by chemigation after December 1, 1988, if there is a groundwater protection data gap for that economic poison, unless the registrant has been granted a current extension pursuant to Section 13143.

(b) The director shall not register or renew the registration of an economic poison intended for use with other than ground-based application equipment after December 1, 1989, if there is a groundwater protection data gap for that economic poison, unless the registrant has been granted a current extension pursuant to Section 13143.

(c) If a registrant does not comply with the information requirements of Section 13143, the department shall file the information requirements of Section 13143 in accordance with procedures provided in subparagraph (B) of paragraph (2) of subsection (c) of Section 136a of Title 7 of the United States Code. In order to carry out this section, the director has the same authority to require information from registrants of active pesticide ingredients that the administrator of the Environmental Protection Agency has pursuant to subparagraph (B) of paragraph (2) of subsection (c) of Section 136a of Title 7 of the United States Code.

On or before July 1, 1986, the director shall, by regulation, prescribe procedures for resolving disputes or funding the filing of the information requirements of Section 13143. The procedures may include mediation and arbitration. The arbitration procedures, insofar as practical, shall be consistent with the federal act, or otherwise shall be in accordance with the commercial arbitration rules established by the American Arbitration Association. The procedures shall be established so as to resolve any dispute with the timetable established in Section 13143.

(d) For an active ingredient or economic poison for which a registrant or registrants do not provide the information required pursuant to Section 13143, the director may determine the active ingredient or economic poison to be critical to agricultural production and the director may utilize assessments charged to those registrants of the active ingredient for which the information is required pursuant to Section 13143 in amounts necessary to cover the department's expenses in obtaining the information. The assessment shall be made pursuant to Section 12824. The director may also request an appropriation to be used in combination with assessments to obtain the required information.

13147. On or before December 1, 1987, and annually thereafter, the director shall request a budget appropriation in order to meet the reasonable and anticipated costs of conducting soil and water monitoring pursuant to Section 13148, a review of data submitted pursuant to Section 13143, and the administration of economic poisons placed on the Groundwater Protection List pursuant to this article.

13148. (a) In order to more accurately determine the mobility and persistence of the economic poisons identified pursuant to paragraph (2) of subdivision (b) of Section 13144 and to determine if these economic poisons have migrated to groundwaters of the state, the director shall conduct soil and groundwater monitoring statewide in areas of the state where the economic poison is primarily used or where other factors identified pursuant to Section 13143 and subdivision (b) of Section 13144, including physicochemical characteristics and use practices of the economic poisons, indicate a probability that the economic poison may migrate to the groundwaters of the state. The monitoring shall commence within one year after the economic poison is placed on the Groundwater Protection List and shall be conducted in accordance with standard protocol and testing procedures established pursuant to subdivision (b). Monitoring programs shall replicate conditions under which the economic poison is normally used in the area of monitoring. In developing a monitoring program, the director shall coordinate with other agencies that conduct soil and groundwater monitoring.

(b) Within 90 days after an economic poison is placed on the Groundwater Protection List pursuant to subdivision (d) of Section

13145, the director, in consultation with the board, shall develop a standard protocol and testing procedure for each economic poison identified pursuant to subdivision (d) of Section 13145.

(c) The director shall report all monitoring results to the State Department of Health Services and the board.

13149. (a) Within 90 days after an economic poison is found under any of the conditions listed in paragraph (1), (2), or (3), the director shall determine whether the economic poison resulted from agricultural use in accordance with state and federal laws and regulations, and shall state in writing the reasons for the determination.

(1) An active ingredient of an economic poison has been found at or below the deepest of the following depths:

(A) Eight feet below the soil surface.

(B) Below the root zone of the crop where the active ingredient was found.

(C) Below the soil microbial zone.

(2) An active ingredient of an economic poison has been found in the groundwaters of the state.

(3) The economic poison has degradation products or other specified ingredients which pose a threat to public health and which have been found under the conditions specified for active ingredients in either paragraph (1) or (2).

(b) Upon a determination by the director that an economic poison meets any of the conditions specified in paragraph (1), (2), or (3) of subdivision (a) as a result of agricultural use in accordance with state and federal laws and regulations, the director shall immediately notify the registrant of the determination and of the registrant's opportunity to request a hearing pursuant to subdivision (c).

(c) Any economic poison that meets any of the conditions in subdivision (b) shall be subject to the provisions of Section 13150, provided the registrant of the economic poison requests, within 30 days after the notice is issued, that the subcommittee conduct a hearing, as described in Section 13150. Notwithstanding any other provision of law, if the registrant does not request the hearing within 30 days after the notice is issued, the director shall cancel the registration of the economic poison.

(d) For the purposes of this section, any finding of an economic poison shall result from an analytical method approved by the department and shall be verified, within 30 days, by a second analytical method or a second analytical laboratory approved by the department.

13150. The director may allow the continued registration, sale, and use of an economic poison which meets any one of the conditions specified in Section 13149 if all of the following conditions are met:

(a) The registrant submits a report and documented evidence which demonstrate both of the following:

(1) That the presence in the soil of any active ingredient, other specified ingredient, or degradation product does not threaten to pollute the groundwaters of the state in any region within the state in which the economic poison may be used according to the terms under which it is registered.

(2) That any active ingredient, other specified ingredient, or degradation product that has been found in groundwater has not polluted, and does not threaten to pollute, the groundwater of the state in any region within the state in which the economic poison may be used according to the terms under which it is registered.

(b) A subcommittee of the director's pesticide registration and evaluation committee, consisting of one member each representing the director, the State Department of Health Services, and the board, holds a hearing, within 180 days after it is requested by the registrant, to review the report and documented evidence submitted by the registrant and any other information or data which the subcommittee determines is necessary to make a finding.

(c) The subcommittee, within 90 days after the hearing is conducted, makes any of the following findings and recommendations:

(1) That the ingredient found in the soil or groundwater has not polluted and does not threaten to pollute the groundwaters of the state.

(2) That the agricultural use of the economic poison can be modified so that there is a high probability that the economic poison would not pollute the groundwaters of the state.

(3) That modification of the agricultural use of the economic poison pursuant to paragraph (2) or cancellation of the economic poison will cause severe economic hardship on the state's agricultural industry, and that no alternative products or practices can be effectively used so that there is a high probability that pollution of the groundwater of the state will not occur. The subcommittee shall recommend a level of the economic poison that does not significantly diminish the margin of safety recognized by the subcommittee to not cause adverse health effects.

When the subcommittee makes a finding pursuant to paragraph (2) or (3), it shall determine whether the adverse health effects of the economic poison are carcinogenic, mutagenic, teratogenic, or neurotoxic.

(d) The director, within 30 days after the subcommittee issues its findings, does any of the following:

(1) Concurs with the subcommittee finding pursuant to paragraph (1) of subdivision (c) of Section 13149,

(2) Concurs with the subcommittee finding pursuant to paragraph (2) of subdivision (c) of Section 13149, and adopts modifications that result in a high probability that the economic poison would not pollute the groundwaters of the state,

(3) Concurs with the subcommittee findings pursuant to

paragraph (3) of subdivision (c), or determines that the subcommittee finding pursuant to paragraph (2) of subdivision (c) will cause severe economic hardship on the state's agricultural industry. In either case, the director shall adopt the subcommittee's recommended level or shall establish a different level, provided the level does not significantly diminish the margin of safety to not cause adverse health effects.

(4) Determines that, contrary to the finding of the subcommittee, no pollution or threat to pollution exists. The director shall state the reasons for his or her decisions in writing at the time any action is taken, specifying any differences with the subcommittee's findings and recommendations. The written statement shall be transmitted to the appropriate committees of the Senate and Assembly, the Department of Health Services, and the board.

When the director takes action pursuant to paragraph (2) or (3), he or she shall determine whether the adverse health effects of the economic poison are carcinogenic, mutagenic, teratogenic, or neurotoxic.

13151. Any economic poison identified pursuant to Section 13149 which fails to meet any of the conditions of Section 13150 shall be canceled.

13152. (a) The director shall conduct ongoing soil and groundwater monitoring of any economic poison whose continued use is permitted pursuant to paragraph (3) of subdivision (d) of Section 13150.

(b) Any economic poison monitored pursuant to this section that is determined, by review of monitoring data and any other relevant data, to pollute the groundwaters of the state two years after the director takes action pursuant to paragraph (3) of subdivision (d) of Section 13150 shall be canceled unless the director has determined that the adverse health effects of the economic poison are not carcinogenic, mutagenic, teratogenic, or neurotoxic.

(c) The director shall maintain a statewide data base of wells sampled for pesticide active ingredients. All agencies shall submit to the director, in a timely manner, the results of any well sampling for pesticide active ingredients and the results of any well sampling that detect any pesticide active ingredients.

(d) Not later than June 30, 1986, the director, the State Department of Health Services, and the board shall jointly establish minimum requirements for well sampling that will ensure precise and accurate results. The requirements shall be distributed to all agencies that conduct well sampling. All well sampling conducted after December 1, 1986, shall meet the minimum requirements established pursuant to this subdivision.

(e) The director, in consultation with the State Department of Health Services and the board, shall report the following information to the Legislature, the State Department of Health Services, and the board on or before December 1, 1986, and annually thereafter:

(1) The number of wells sampled for pesticide active ingredients, the location of the wells from where the samples were taken, the well numbers, if available, and the agencies responsible for drawing and analyzing the samples.

(2) The number of well samples with detectable levels of pesticide active ingredients, the location of the wells from which the samples were taken, the well numbers, if available, and the agencies responsible for drawing and analyzing the samples.

(3) An analysis of the results of well sampling described in paragraphs (1) and (2), to determine the probable source of the residues. The analysis shall consider factors such as the physical and chemical characteristics of the economic poison, volume of use and method of application of the economic poison, irrigation practices related to use of the economic poison, and types of soil in areas where the economic poison is applied.

(4) Actions taken by the director and the board to prevent economic poisons from migrating to groundwaters of the state.

SEC. 2. Reimbursement to local agencies and school districts for costs mandated by the state pursuant to this act shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code and, if the statewide cost of the claim for reimbursement does not exceed five hundred thousand dollars (\$500,000), shall be made from the State Mandates Claims Fund, except that no reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution for those costs which may be incurred by a local agency or school district because this act creates a new crime or infraction, changes the definition of a crime or infraction, changes the penalty for a crime or infraction, or eliminates a crime or infraction.

SEC. 3. Notwithstanding Section 2231.5 of the Revenue and Taxation Code, this act does not contain a repealer, as required by that section; therefore, the provisions of this act shall remain in effect unless and until they are amended or repealed by a later enacted act.

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**B. GLOSSARY OF TERMS USED IN THE 1992  
WELL INVENTORY REPORT**



AB 1803 - (1983) A law that required the California Department of Health Services (CDHS) to evaluate each public water system to determine its potential for contamination. The systems were required to conduct specified water analyses and to report those results to the CDHS. Monitoring required by AB 1803 was completed in June, 1989. Based on sampling results, the CDHS may require a system to conduct periodic water analyses and to report to the CDHS the results of the analyses on a quarterly basis.

AB 2021 - See "Pesticide Contamination Prevention Act".

acaricide - A pesticide (miticide) used to control mites and ticks.

Action Level (AL) - Published by CDHS's Office of Drinking Water, ALs are based mainly on health affects. ALs are advisory to water suppliers. Although not legally enforceable, the majority of water suppliers have complied with action levels as though they were Maximum Contaminant Levels (MCLs).

active ingredient - The chemical or chemicals in a pesticide formulation that are biologically active and which are capable, in themselves, of preventing, destroying, repelling or mitigating insects, fungi, rodents, weeds, or other pests.

adsorption - In the context of this report, the surface retention of (in this case, pesticide) molecules of a gas, liquid, or dissolved substance to a solid in such a manner that the adsorbed chemical is slowly made available. Clay and soils high in organic content tend to adsorb pesticides in many instances.

Agricultural Commissioner - For each county in California, the person in charge of the County Department of Agriculture. Under supervision of DPR, the Commissioner enforces the laws and regulations pertaining to agricultural and structural pest control and all other pesticide uses.

agricultural use - (See also "legal agricultural use" and "legal agricultural use determination".) The use of any pesticide or method or device for the control of plant or animal pests, or any other pests, or the use of any pesticide for the regulation of plant growth or defoliation of plants. It excludes the sale or use of pesticides in properly labeled packages or containers which are intended only for any of the following: home use, use in structural pest control, industrial or institutional use, the control of an animal pest under the written prescription of a veterinarian, local districts, or other public agencies which have entered into and operate under a cooperative agreement with the Dept. of Public Health pursuant to section 2426 of the Health and Safety Code. (Food and Agr. Code, section 11408)

analysis - The determination of the composition of a substance by laboratory methods. In this case, it includes the separation and measurement of a pesticide or its degradation product from the sample matrix.

aquifer - A geologic formation, group of formations, or part of a formation, that is water bearing and which transmits water in sufficient quantity to supply springs and pumping wells.

basin irrigation - A method of watering by confining irrigation water around the plant stem or trunk by means of a soil dam. Also called flood irrigation.

Birth Defect Prevention Act (BDPA) - (SB 950, 1984) A law requiring DPR to acquire certain toxicological data for registered pesticides in order to make a scientific determination that their uses will not cause significant adverse health effects. The BDPA prohibits the registration of any new pesticide active ingredient if required mandatory health effects studies are missing, incomplete, or invalid. Pesticide active ingredients already registered that are identified as having the potential to cause significant adverse health effects following a thorough review by DPR scientific staff will be canceled.

breakdown product - See "degradation product".

chemigation - The application of pesticides through irrigation water, using irrigation techniques and equipment.

coding - A system whereby specific information concerning the analysis of a well water sample for the presence of pesticides is converted to a code of letters and numbers according to a key (see Appendix D, p. 115) in order to enter the data into the well inventory data base.

confirmed detection (DPR study) - The detection of a compound in two discrete samples taken from a single well during a 30-day time period, and analyzed either by the same laboratory using different analytical methods or by two laboratories using the same method. The verification of the presence of a compound in ground water by this criteria fulfills section 13149(d) (FAC) of the PCPA and may be used for regulatory purposes.

confirmed detection (by an agency other than DPR) - For purposes of the well inventory data base, the detection of a compound in two discrete samples taken from the same well during the time period of a single monitoring survey.

data base record - Each chemical analysis of a well water sample for a pesticide residue or related chemical constitutes one record in the data base. Each record may contain up to 149 columns of data.

defoliant - A compound used to remove foliage from crop plants such as cotton, soybeans, or tomatoes, usually to facilitate harvest.

degradation - The breakdown of a chemical by the action of microbes, water, air, sunlight, or other agents.

degradation product - (See also "metabolite".) A substance resulting from the transformation of a pesticide active ingredient by biological processes (e.g., microbial action) or physical or chemical processes (e.g., hydrolysis, photolysis, photooxidation).

desiccant - A compound that promotes drying or removal of moisture from plant tissues.

direct streaming - A pathway by which agricultural chemicals may reach ground water; the movement of pesticide residue in runoff surface water to subsurface soil and, ultimately, ground water, through dry wells, soil cracks, or other direct pathways.

discrete sample - Samples taken separately from a well; not a single sample split into smaller samples.

dry well - A small-diameter hole or pit dug into the ground and filled with gravel or other material for the disposal of surface water by infiltration into soil.

economic poison - A pesticide or plant growth regulator; in California, any of the following: any spray adjuvant, any substance, or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment. Includes fungicides, herbicides, insecticides, nematocides, rodenticides, desiccants, defoliant, plant growth regulators, etc.

emulsifiable concentrate - A concentrated pesticide formulation containing organic solvent and emulsifier to facilitate suspension of the active ingredient when diluted with water.

established PMZ - A Pesticide Management Zone (PMZ) (see def.) listed in section 6802, Title 3 of the California Code of Regulations (3CCR).

flood irrigation - See "basin irrigation".

formulation - The way in which a pesticide product, containing the active ingredient, the carrier, and other additives, is prepared for practical use. Includes preparation as wettable powder, granular, emulsifiable concentrate, etc.

fumigant - Chemical used in the form of a volatile liquid or a gas. Its vapors kill insects, nematodes, fungi, bacteria, seeds, roots, or entire plants; usually applied in an enclosure of some kind or in the soil.

fungicide - A chemical used to kill or inhibit fungi.

granular - A pesticide chemical mixed with or coating small pellets or sand-like materials, and applied with seeders, spreaders, or special equipment. Granular pesticides are often used to control or destroy soil pests.

ground water - Water and waterways below the earth's surface, in which all interconnected openings in soil and rock are filled (saturated) with water, that supplies wells and springs.

Ground Water Protection Advisories (GWPA) - Written information given by a licensed Pest Control Adviser, who has successfully completed the Ground Water Protection Training Program given by DPR, that must be submitted by permit applicants before the County Agricultural Commissioner can issue a use permit for allowed uses of a regulated pesticide in a Pesticide Management Zone (PMZ). The GWPA contains specific information for applying the regulated pesticide in a sensitive area (PMZ) in order to prevent or minimize the movement of pesticide residues to ground water.

Ground Water Protection List (GWPL) - A list, required by PCPA and established in section 6800 (3CCR), of pesticides having the potential to pollute ground water. The GWPL is divided into two sublists. Sublist (a) is comprised of chemicals that have been detected in ground water as a result of legal agricultural use. Pesticide active ingredients whose physicochemical properties exceed the Specific Numerical Values (see def.) and that are labeled for soil application under certain conditions are placed on sublist (b) of the GWPL. Chemicals placed on the GWPL are subject to certain restrictions and reporting requirements.

Health Advisory Level (HAL) - An advisory number published by U.S. EPA's Office of Drinking Water and Office of Water Regulations and Standards. Short-term (10 days or less), long-term (7 years or less), and lifetime exposure health advisories for non-carcinogens and suspected human carcinogens are included where data sufficient for derivation of the advisories exist. HALs are a guideline which include a margin of safety to protect human health. For lifetime HALs, water containing pesticides at or below the HAL is acceptable for drinking every day over the course of one's lifetime.

half-life - The time required for a given amount of a substance to be reduced by half due to chemical and/or biological processes.

herbicide - A pesticide used to control unwanted vegetation either before or after its emergence from the soil.

historical agricultural use - The documented use of a chemical that has been applied over time in a specific area for the production of an agricultural commodity.

hydrolysis - In the context of this report, alteration of a pesticide by water.

inert ingredient - An ingredient in a formulation which has no pesticidal action.

initial detection sample - For a single study and a particular well, the initial detection sample for a chemical will be the positive sample with the earliest sampling date and/or time. Replicate samples are coded in relation to the initial detection sample.

insecticide - A pesticide used to control an insect which may be present in any environment.

institutional use - Use within the confines of, or on property necessary for the operation of, buildings such as hospitals, factories, schools, libraries, auditoriums and office complexes.

large water system well - A well supplying 200 or more service connections.

law - State laws are the result of action by the California legislature.

leaching - A pathway by which agricultural chemicals may reach ground water; the process by which residues are dissolved in soil water and follow the movement of water through the soil matrix as it recharges a ground water aquifer.

legal agricultural use - The application of a pesticide, according to its labelled directions and in accordance with federal and state laws and regulations, for agricultural use as defined in Food and Agricultural Code, section 11408. (See "agricultural use".)

legal agricultural use determination - A determination required by section 13149 (FAC) and based upon the following criteria: (1) the detection of a pesticide ingredient or its degradation product that has been confirmed according to DPR criteria; (2) a detection of the same pesticide ingredient or its degradation product in ground water, verified at a second site within an one-half mile radius of the original detection (a detection in soil at or below eight feet only needs to be verified at a single site); (3) the detected pesticide ingredient must be formulated in a product which has listed on its label one or more agricultural uses; (4) the application of the agricultural use product(s) in the vicinity of the reported detections should either be documented historically, confirmed by local interviews, or presumed by the identification of a target pest or commodity; (5) the Director may consider a preponderance of evidence as meeting these criteria.

macropore - Space in soil, occupied by air and water, that allows the ready movement of air and percolating water.

Maximum Contaminant Levels (MCLs) - MCLs are part of the drinking water quality standards adopted by CDHS and by USEPA under the Safe Drinking Water Act. MCLs are formally established in regulation and are enforceable by the CDHS on water suppliers.

Maximum Contaminant Level goals (MCL goals) - MCL goals are promulgated by the USEPA as the first step in establishing MCLs. MCL goals are purely health-based values and are set at "zero" for chemicals classified by the USEPA as "known" and "probable" human carcinogens.

metabolite - In the case of a pesticide, a compound derived from the action upon the pesticide within a living organism (plant, insect, higher animal, etc.). The action varies (oxidation, reduction, etc.) and the metabolite may be more toxic or less toxic than the parent compound. The same derivative may, in some cases, develop through exposure of the pesticide in the environment. (See also "degradation product".)

Minimum Detection Limit (MDL) - The lowest concentration of analyte that a method of analysis can quantify reliably. The MDL is established in protocol for a study either as a result of a method validation study or by using accepted proven analytical methods (e.g., EPA methods).

mitigation measure - An activity to substantially reduce any adverse impact of a given condition.

model - Mathematical equations that represent certain processes. These equations can be implemented in a computer program in order to facilitate calculations and test model predictions against measured data.

modified use - See "use requirement".

monitoring study - See "study".

monitoring well - A well used principally for any of the following purposes: (1) observing ground water levels and flow conditions, (2) obtaining samples for determining ground water quality, or (3) evaluating hydraulic properties of water-bearing strata.

negative analysis - A well water sample in which pesticide residues were not detected at or above the minimum detection limit of the instruments used for analysis.

nematicide - A pesticide used to control nematodes.

nematode - Nematodes are generally microscopic, wormlike animals that live saprophytically in water or soil, or as parasites of plants and animals. Plant parasitic nematodes are also known as eelworms.

non-crop areas - These areas include rights-of-way, golf courses, and cemeteries. There may be agricultural use of pesticides in non-crop areas, e.g., for weed control around buildings on a farm.

non-point source - Contamination which cannot be traced to a small, definable location (compare with "point source"), e.g., applications of agricultural chemicals to crops.

organic matter - Plant and animal debris or remains found in the soil in all stages of decay. The major elements in organic matter are oxygen, hydrogen, and carbon.

parts per billion (ppb) - A way to express the concentration of a chemical in a liquid, a solid, or in air. Since one liter of water weighs one billion micrograms, one microgram of a chemical in one liter of water is equal to one ppb.

permit - Permits are issued by county agricultural commissioners for a specific site for the use of chemicals that have been designated as restricted pesticides. Restricted pesticides, for various reasons, are potentially more hazardous than other pesticides.

pest - Any of the following that is, or is liable to become, dangerous or detrimental to the agricultural or nonagricultural environment of the state: any insect, predatory animal, rodent, nematode, or weed; any form of terrestrial, aquatic, or aerial plant or animal, virus, fungus, bacteria, or other microorganisms (except viruses, fungi, or bacteria) on or in living man or other living animals; anything that the Director of the California Department of Food and Agriculture, by regulation, declares to be a pest.

Pest Control Adviser (PCA) - A person licensed by DPR and registered with the County Agricultural Commissioner who makes pest control recommendations. All agricultural use recommendations must be in writing and contain certain information. A PCA must complete continuing education requirements before his/her license may be renewed.

pesticide - See "economic poison".

Pesticide Contamination Prevention Act (PCPA) - (AB 2021) A law, effective January 1, 1986, which added sections 13141 through 13152 to Division 7 of the FAC. The PCPA requires each registrant of an economic poison to submit specified information to the Director of DPR, provides for the establishment of the Ground water Protection List, requires the Director to perform soil and water monitoring, provides for a specific response to the detection of pesticides in soil and ground water, and requires the Director to maintain a specified well sampling data base and to report certain information annually to the Legislature, the CDHS, and the State Water Resources Control Board on well sampling.

Pesticide Detection Response Process (PDRP) - A process, established in sections 13149 through 13151 (FAC) by the PCPA, in which the detection of a pesticide residue in soil (at specific depths) or ground water, is investigated, evaluated, and, when necessary, mitigated. As part of the process, a determination must be made that the detection probably resulted from a legal agricultural-use application of the pesticide. As a result of this process, the use of a pesticide in California may be modified or cancelled.

Pesticide Management Zone (PMZ) - A geographic surveying unit of approximately one square mile which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water as a result of legal, agricultural use is subject to certain ground water protection restrictions and requirements. These include a mandatory Ground Water Protection Advisory which must be obtained before a restricted material's use permit can be issued.

pesticide residue - In this case, the amount of a pesticide active ingredient remaining in a soil or ground water sample at the time of analysis.

physicochemical - The types of behavior that a substance exhibits in chemical reactions are called its chemical properties; other characteristics that are typical of a substance are called its physical properties. Taken together, the chemical and physical properties of a substance are called its physicochemical properties.

plume - The elongated (generally cigar-shaped) pattern of a chemical in ground water arising from contamination originating at a spill or other point source.

point source - A source of contamination, such as a spill or at a waste site, that is initially deposited and concentrated in a small, well-defined area. The contamination can be traced to its point of origin by locating a specifically-shaped pattern of residues in the ground water called a plume.

positive detection - A well water sample in which the presence of a pesticide chemical is detected at or above the minimum detection limit of the analytical instruments used for analysis of the compound under investigation. A positive analysis may be designated as confirmed or unconfirmed.

preemergent treatment - Treatment made after a crop is planted but before it or the weeds emerge.

range - A single series or row of townships, each six miles square, extending parallel to, and numbered east and west from, a survey base meridian line. (See "well numbering system".)

recommended PMZ - A section of land that has been identified as sensitive to ground water pollution by specific pesticides and has been proposed to be adopted into section 6802 (3CCR).

record - See "data base record".

registered pesticide - A pesticide product approved by the USEPA and DPR for use in California.

registrant - A person, or corporation, that has registered an economic poison for use in California and has obtained a certificate of registration from the Department.

regulation - These are adopted by state agencies to implement or clarify statutes enacted by the California Legislature. They can also be adopted in response to federal legislation, court decisions, changing technologies, and concerns for the health and well being of the residents of California.

related compounds - See "degradation products".

replicate sample - A discrete sample taken from a well at the same time as the initial detection sample; not a single sample split into multiple samples.

restricted material - Compounds designated as "Restricted Materials" in section 6400 (3CCR), that for various reasons, are potentially more hazardous to people, animals, or the environment than other pesticides. As a result, the use of these materials is regulated more closely and is permitted only when additional precautionary measures are taken. Certain reporting requirements and dealer responsibilities apply to the use of restricted materials.

right-of-way - The strip of land over which facilities such as highways, railroads, or power lines are built.

sanitary seal - A slurry of cement or clay which fills the annular space between the well casing and the drilled hole, down to a certain depth, to protect the well against contamination or pollution by entrance of surface and/or shallow, subsurface waters.



section - A land unit of 640 acres or one square mile, equal to 1/36 of a township. (See "well numbering system".)

selective pesticide - A pesticide that kills pest individuals, but spares much or most of the other fauna or flora, including beneficial species, through either differential toxic action or through the manner in which the pesticide is used (formulation, dosage, timing, placement, etc.).

slow-release formulation - The incorporation of a pesticide in a permeable covering that permits its release over a period of time at a reduced, but effective rate.

small public water system well - A well serving fewer than 200 connections.

soil adsorption coefficient (K<sub>oc</sub>) - A measure of the tendency of pesticide active ingredients, or their biologically active transformation products, to adhere to the surfaces of soil particles.

Specific Numerical Values (SNV) - Certain numeric threshold values set for the following physical and chemical properties of pesticide active ingredients: water solubility, soil adsorption coefficient, hydrolysis, aerobic and anaerobic soil metabolism, and field dissipation. The PCPA associates these properties with the longevity and mobility of a chemical in the soil and requires the establishment of SNVs in regulation as a means of predicting which pesticides are likely to leach to ground water.

State Well Number - See "well numbering system".

survey - In the context of this report, well monitoring conducted by an agency or private firm for a specified length of time in a designated area.

summary year - The time period, usually July 1st through the following June 30th, during which sampling results for the presence of pesticides in California ground water are collected and processed for inclusion in the well inventory data base. These data are summarized in DPR's annual Well Inventory Report.

township - A public land surveying unit which is a square parcel of land, six miles on each side. The location of a township is established as being so many six-mile units east or west of a north-south line running through an initial point (called the "principal meridian") and so many six-mile units north or south of an east-west line running through another point (called the "baseline"; see also, "well numbering system").

triazines - A chemical compound derived from any of three isomeric compounds, each having three carbon and three nitrogen atoms in a six-membered ring. Triazines are strong inhibitors of photosynthesis. Atrazine and simazine are triazines.

unconfirmed detection - For a particular well, the detection of a pesticide in a single sample during the time period of an individual monitoring study. Confirmation of the initial detection by a second positive sample was not possible because either (1) only a single sample was taken from the well or (2) analyses of all other samples taken from the well during the study were negative.

use requirement - Restrictions established in regulation for the use of certain pesticides. For example, section 6484.1 (3CCR) states that agricultural, outdoor institutional, and outdoor industrial uses of pesticides containing atrazine are prohibited in the Pesticide Management Zones listed in 6802(c) (3CCR).

vapor pressure - A property which indicates the rate of evaporation of a compound. The higher the vapor pressure, the more volatile the compound.

verified - See "confirmed".

volatile - A compound is said to be volatile when it readily evaporates on exposure to air at ordinary temperatures.

water budgeting method - An irrigation plan basing the frequency of irrigations and the amount of water to be applied on a measurement of the amount of water lost by evaporation and plant transpiration (evapotranspiration) and other factors, including the root zone area of the crop and the capacity of the soil to hold water.

water solubility - The ability of a substance to go into solution with water.

well head - The immediate area surrounding the top of a well.

well numbering system - The California well numbering system is based on a rectangular system commonly referred to as the Public Lands Survey. Under this system, all tracts of lands are tied to an initial point and identified as being in a township. A township is a square parcel of land six miles on each side. Its location is established as being so many six-mile units east or west of a north-south line running through the initial point (called the "principal meridian") and so many six-mile units north or south of an east-west line running through the point (called the "baseline"). The meridional lines parallel to, and east or west of, the principal meridian are called range lines. Every township is further divided into 36 parts called sections. A section is also described as a square parcel of land one mile on a side, each containing 640 acres. Each well in California is assigned a unique number (referred to as the State Well Number) by the Department of Water Resources (DWR). For well numbering purposes, each section of land is divided into sixteen 40-acre tracts. Once the well location is established in the 40 acre tract it is assigned a sequence number which is assigned in chronological order by DWR personnel. The DWR maintains an index of state well numbers to prevent duplication.

wettable powder - A solid (powder) formulation which, on addition to water, forms a suspension.

### **C. FORMAT OF DATA BASE RECORDS**

## Format of Records in the Well Inventory Data Base:

Each laboratory analysis of a well water sample for the presence of a pesticide active ingredient or breakdown product comprises one record in the well inventory data base. The maximum record length is 136 characters.

An example of a well inventory coding sheet, showing the data fields and column numbers, is shown in Figure 1-C on the following page. A key to the codes used in the well inventory data base may be obtained from DPR by writing to the address listed on the title page of this report. An explanation of the record format follows.

### Column Number

### Explanation of Data Base Record Fields

- |       |  |
|-------|--|
| 1-2   | County code: a minimum reporting requirement. This code is consistent with DPR Pesticide Use Report format.  |
| 3-14  | State well number (township/range/section/tract/sequence number): a minimum reporting requirement. The state well number is based on the U.S. Geological Survey's Public Lands Survey Coordinate System (Davis and Foote, 1966). The DWR uses this system to numerically identify individual wells in California. Township lines (T, cols. 3-5) are oriented from north to south and are 6 miles long. Range lines (R, cols. 6-8) are oriented east to west and are 6 miles wide. A 6 X 6 mile township is divided into 36, 1 mile by 1 mile sections (S, cols. 9-10), numbered consecutively from 1 to 36. Each section is again divided into 16 individual 40 acre tracts (Tr, col. 11) that are identified by letters (A through R, excluding I and O). Wells in a tract are further identified with a sequential number (cols. 12-14) in the order of identification by the DWR. |
| 15    | Base line and meridian: this minimum reporting requirement is included in the state well number. The base line/meridian divide the state into three areas: Humboldt, Mount Diablo, and San Bernardino, forming the basic structure for the Township/Range/Section numbering system.  |
| 16    | In-house code.   |
| 17-20 | Study number: numbers were assigned consecutively as studies were obtained.  |
| 21-24 | Sampling agency code: a minimum reporting requirement.   |



Column  
Number

Explanation of Data Base Record Fields

- 25-30 Date of sample: a minimum reporting requirement. Day, month, and year of each sampling record is included. The middle month of an indicated period is used when only a season is designated as the sampling date, e.g., "all samples were taken in spring of 1982." However, the precise sampling date is recorded for most studies.
- 31-35 Chemical code: a minimum reporting requirement. Each chemical is assigned a 5-digit numerical code which corresponds to the chemical codes used in the Pesticide Use Reporting System maintained by the Information Services Branch of DPR. Codes for breakdown products of pesticides are distinguished from their parent compound by the letter "B, C, D, N, or X" preceding the last four digits of the parent compound's code, e.g. 00259 = endosulfan, B0259 = endosulfan sulfate. Pesticides sampled for that have not been registered for use in California are assigned sequential numbers preceded by the letter "U", e.g. U0012 = fenuron.
- 36 Sample-type: a minimum reporting requirement. Sample-type codes are used to signify whether an analysis is a positive or negative detection; whether a positive sample is the initial or replicate detection; and to denote whether the same laboratory and analyzing method were used for both the confirmation and initial detection samples.
- 37-42 Chemical concentration: a minimum reporting requirement. Analytical results are recorded in parts per billion (ppb). Trace amounts, non-detected, or less than the minimum detectable limit values are all recorded as non-detected.
- 43-48 Minimum detection limit (MDL): a minimum reporting requirement. The MDL for the chemical assay is recorded in ppb. The MDL for a given compound may vary by laboratory, date, or year, reflecting differences in analytical techniques.
- 49-52 Analyzing laboratory: a minimum reporting requirement.
- 53 Method of analysis: designates the origin of the protocol for the specific, analytical laboratory method.
- 54-59 Date of analysis: a minimum reporting requirement. Month/day/year.
- 60-63 File name: internal file designation.
- 64-65 Summary year: indicates the year of the Well Inventory Update Report for which the record was reported. Usually, a summary year is July 1st to the following June 30th.

Column  
Number

Explanation of Data Base Record Fields

- 66-100 Well location information: a minimum reporting requirement. Designates the street name and number or descriptive address of the well.
- 101 Point or non-point: detections of pesticides in ground water that have been determined to be present due to a point-source (contamination emanating from a specific site, such as a spill or at a waste-site) or non-point source (not traceable to a single definable location) are designated by a "P" or "N" in this field. Detections that have not had a source determination are designated as "-".

Well-construction information (confidential information obtained from well driller reports or well logs)

- 102-105 Well depth (in feet): the completed well depth, as recorded on the well log.
- 106-108 Depth to top of perforation (in feet), as recorded on the well log.
- 109-112 Depth to bottom of perforation (in feet), as recorded on the well log; often corresponds to depth of completed well.
- 113-116 Water depth: the depth of standing water in the well at time of sampling.
- 117-118 Log year: year the well was drilled (information obtained from well log, raw data, or verbally from a well owner).
- 119 Well code: a minimum reporting requirement. This code indicates well use, e.g., private domestic, irrigation, or both.

Latitude/longitude (entered into the data base separately)

- 120-127 Latitude: the latitude is expressed in degrees (DD), minutes (MM) and seconds (SS.S). Seconds may be specified to the nearest tenth of a second. The format is DDMMSS.S. (The decimal point is implied and not included in a column.)
- 128-136 Longitude: the longitude is expressed in degrees (DDD), minutes (MM) and seconds (SS.S). Seconds may be specified to the nearest tenth of a second. The format is DDDMMSS.S. (The decimal point is implied and not included in a column.)

**D. ANALYTICAL METHODS FOR THE VERIFICATION  
OF GROUND WATER CONTAMINATION BY PESTICIDES**



## Verification

All reports of pesticide residues in ground water are considered verified after the following has occurred:

- (1) Two discrete samples from the same site have been taken by the Department, no longer than 30 days apart, and have been analyzed by a method approved by the Department and found to contain the substance under investigation. If only a degradation product of the substance under investigation is subsequently detected, then the degradation product itself must be detected in a second discrete sample. This first step of the verification process provides evidence that the well was contaminated and the residue was not due to contamination during sampling and transport or during lab processing and analysis.
- (2) The residue has been detected by one laboratory using different analytical methods approved by the Department or by two different laboratories using an analytical method approved by the Department. This second step provides evidence that the residue was precisely identified and could not be due to lab contamination or chemist error.

## Definition of Different Analytical Methods

Confirmation of a residue by a second analytical method is intended to increase the confidence in the positive detection of a chemical by the first analytical method. If the measurement procedures of the second method vary only slightly from the first method, it is likely that an erroneous identification in the first determination would also occur in the second. Therefore, the second method should be based on separation and/or detection processes as different from the first method as feasible.

The minimum changes needed in the first method to qualify it for consideration as a second method depend on the specificity of both methods. The following matrix lists the possible combinations where "detection and separation" is defined as a significant change in both detector and separation procedure, "detection" is a significant change in the detector only, and "detection or separation" is a significant change in the detector or separation procedure.

### Minimum requirements for procedural changes in a first method to qualify it as a second method:

	<u>Second Method</u>	
	nonspecific	specific
<u>First Method</u> nonspecific	detection & separation	detection only
specific	detection only	detection or separation

### Specific Methods

A specific method provides positive identification of the measured chemical. This unequivocal identification implies that the detection system can distinguish the target compound from all other compounds in a given mixture, with or without the need for an additional separation procedure. A method is also considered to be specific if all known interferences yield insignificant responses, i.e., the sensitivity for the interfering compound is less than 0.1% of the sensitivity for the target compound.

Examples for specific methods are spectroscopic techniques like mass spectroscopy (MS) and Fourier transform infrared (FTIR) spectroscopy, which are generally used together with separation techniques like gas chromatography (GC) or high performance liquid chromatography (HPLC).

### Nonspecific Methods

All methods that respond to more than one chemical and which use detectors that cannot distinguish between these different chemicals are considered to be nonspecific. Analytical methods that incorporate nonspecific detectors rely completely on separation procedures for identification. The problem with nonspecific detectors is that they can only prove the absence of a chemical when no signal is registered at the proper conditions for the chemical in question. When a signal is measured, however, one can only say that it is likely that the signal is caused by that chemical. But it is not a proven fact, as another component of the unknown mixture might interfere and the detector cannot distinguish between the two.

This definition of nonspecific includes the majority of GC techniques. For example, nitrogen-phosphorus specific detectors used in GC analysis are specific only on the atomic level; they can distinguish nitrogen and phosphorus atoms from other atoms, but they cannot distinguish between one nitrogen-containing chemical and another.

### Significant Change

A significant change in detector means a change in detection principle (for GC, a change from a flame photometric detector [FPD] to a conductivity detector, for example). A significant change in the separation procedure is either a change in separation principle (from GC to HPLC, for example) or a change in the separation condition (i.e., using a different type of column), as long as this change will alter the sequence in which the compounds are registered.

Following are examples for the three types of minimum changes (detection and separation, detection only, and detection or separation), given in the previous matrix, that qualify as significant changes:

#### Case 1

When both the first and the second method are nonspecific, both the detector and the separation procedure have to be changed

significantly. For example, a first method using GC separation and a FPD could use as a second method either a GC with a significantly different column and a nitrogen-phosphorus detector (changing separation conditions and detector) or an HPLC separation with a UV-detector (changing separation principle and detector).

### Case 2

When only one of the methods is specific, just the detection principle has to be changed; the separation procedure may be kept the same (GC/FPD and GC/MS using the same column, for example).

### Case 3

When both methods are specific, either the detector or the separation procedure may be changed. Examples for these cases are GC/MS and HPLC/MS (keeping the same detector) or GC/MS and GC/FTIR (keeping the same separation conditions).

In the cases (2 and 3) where only a change in detector is needed, it is acceptable to use an integrated system where the effluent of the separation step is split and routed to two detectors. An example for this is GC/MS/FTIR, where the effluent of the GC is analyzed by MS and FTIR simultaneously. As this integrated analytical instrument uses two specific detectors, it counts as both first and second method.

## Screening Methods

Special consideration has to be given to qualitative or semi-quantitative methods typically used for screening. Qualitative methods yield only detected/not detected results; semi-quantitative methods indicate the order of magnitude for the concentration of the identified chemical. Samples identified as positive will be forwarded for analysis by a quantitative method.

In this case, the qualitative screen is considered to be the first method. The quantitative method is then selected based on the above criteria for a second method. A second quantitative method (i.e., a third analysis method) is required only when verification is needed not only for the identity of the compound but also for its concentration. Analogously, a qualitative method may be used as a second method if verification of the concentration level is not required. A qualitative method cannot be used as a second method when the first method is qualitative also.

For example: a specific enzyme-linked immunosorbent assay (ELISA) may be used as a first method, even if it is used just as a detected/not detected screen. A nonspecific ELISA qualifies as a second detector for the effluent from an HPLC. Note, however, that any ELISA which shows significant cross-reactivity to other compounds is considered to be nonspecific and would also require a change in the separation procedure.

**E. RESULTS BY COUNTY AND PESTICIDE**

County: ALAMEDA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	29	87	29	87
1,3-dichloropropene (1,3-D)	0	0	30	107	30	107
2,4-D	0	0	17	83	17	83
acephate	0	0	1	2	1	2
alachlor	0	0	4	10	4	10
aldicarb	0	0	7	14	7	14
aldrin	0	0	4	4	4	4
atrazine	0	0	19	77	19	77
azinphos-methyl	0	0	2	2	2	2
benomyl	0	0	22	23	22	23
bentazon, sodium salt	0	0	17	75	17	83
bhc (other than gamma isomer)	0	0	4	8	4	8
bromacil	0	0	4	10	4	10
captan	0	0	20	20	20	20
carbaryl	0	0	22	23	22	23
carbendazim	0	0	19	20	19	20
carbofuran	0	0	4	10	4	10
chlor dane	0	0	20	70	20	70
chloropicrin	0	0	12	13	12	13
chlorothalonil	0	0	4	10	4	10
dbcp	0	0	15	63	15	63
ddd	0	0	4	4	4	4
dde	0	0	4	4	4	4
ddt	0	0	4	4	4	4
demeton	0	0	4	4	4	4
diazinon	0	0	8	14	8	14
dicofol	0	0	22	23	22	23
dieidrin	0	0	4	4	4	4
dimethoate	0	0	17	25	17	25
dinoseb	0	0	14	15	14	15
diphenamid	0	0	14	14	14	14
diuron	0	0	10	10	10	10
endosulfan	0	0	16	34	16	34
endosulfan sulfate	0	0	4	4	4	4
endrin	0	0	21	83	21	83
endrin aldehyde	0	0	4	4	4	4
ethylene dibromide	0	0	15	63	15	63
glyphosate, isopropylamine salt	0	0	4	10	4	10
heptachlor	0	0	20	70	20	70
heptachlor epoxide	0	0	20	70	20	70
hexachlorobenzene	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	21	83	21	83

County: ALAMEDA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
methamidophos	0	0	3	4	3	4
methoxychlor	0	0	26	93	26	93
methyl bromide	0	0	31	94	31	94
molinat	0	0	15	63	15	63
ortho-dichlorobenzene	0	0	10	19	10	19
paraquat bis(methylsulfate)	0	0	7	7	7	7
promethyn	0	0	4	10	4	10
silvex	0	0	17	83	17	83
simazine	0	0	22	78	22	78
thiobencarb	0	0	15	63	15	63
toxaphene	0	0	20	86	20	86
xylene	0	0	10	19	10	19

County: ALPINE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
2,4-D	0	0	1	1	1	1
endrin	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	1	1	1	1
methoxychlor	0	0	1	1	1	1
silvex	0	0	1	1	1	1
toxaphene	0	0	1	1	1	1

County: AMADOR

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	8	8	8	8
1,3-dichloropropene (1,3-D)	0	0	8	8	8	8
2,4-D	0	0	10	14	10	14
aldrin	0	0	3	6	3	6
atrazine	0	0	2	2	2	2
bromacil	0	0	2	2	2	2
carbaryl	0	0	1	1	1	1
chlordane	0	0	3	6	3	6
dibcp	0	0	2	2	2	2
diazinon	0	0	2	2	2	2
dieldrin	0	0	3	6	3	6
endrin	0	0	3	6	3	6
ethylene dibromide	0	0	2	2	2	2
heptachlor	0	0	3	6	3	6
heptachlor epoxide	0	0	1	4	1	4
lindane (gamma-bhc)	0	0	3	6	3	6
methoxychlor	0	0	3	6	3	6
methyl bromide	0	0	8	8	8	8
molinat	0	0	2	2	2	2
paraquat bis(methylsulfate)	0	0	1	1	1	1
prometryn	0	0	2	2	2	2
sivex	0	0	1	4	1	4
simazine	0	0	4	4	4	4
simetryn	0	0	1	1	1	1
thiobencarb	0	0	2	2	2	2
toxaphene	0	0	3	6	3	6

County: BUTTE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	1	4	40	41	41	45
1,2-d; 1,3-d & C-3 compounds	0	0	40	41	40	41
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	85	150	85	150
1,3-dichloropropene (1,3-D)	0	0	83	150	83	150
2,4,5-t	0	0	40	41	40	41
2,4-D	0	0	66	77	67	78
4(2,4-DB), butoxyethanol ester	0	0	40	41	40	41
acenaphthene	0	0	3	3	3	3
acephate	0	0	40	41	40	41
aldicarb	0	0	40	41	40	41

County: BUTTE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
aldrin	0	0	56	63	56	63
ametryne	0	0	48	49	48	49
atrazin	0	0	40	41	40	41
atrazine	2	8	83	114	85	122
azinphos-methyl	0	0	8	8	8	8
barban	0	0	40	41	40	41
benomyl	0	0	14	14	14	14
bentazon, sodium salt	8	16	4	10	12	26
bhc (other than gamma isomer)	0	0	58	115	58	115
bromacil	0	0	28	41	28	41
captan	0	0	16	16	16	16
carbaryl	0	0	58	59	58	59
carbendazim	0	0	5	5	5	5
carbofuran	0	0	53	54	53	54
carbophenothion	0	0	1	1	1	1
chlordane	0	0	56	57	56	57
chloropicrin	0	0	41	42	41	42
chlorothalonil	0	0	40	41	40	41
chlorpropham	0	0	40	41	40	41
chlorpyrifos	0	0	50	51	50	51
chlorthal-dimethyl	0	0	40	41	40	41
coumaphos	0	0	40	41	40	41
cyanazine	0	0	40	41	40	41
dalapon	0	0	40	41	40	41
dibcp	0	0	27	79	28	80
ddd	0	0	55	62	55	62
dde	2	4	55	62	55	66
ddt	0	0	55	62	55	63
ddvp	0	0	40	41	40	41
demeton	0	0	61	62	61	62
diazinon	0	0	75	92	75	94
dicamba	0	0	54	55	54	55
dichlorprop, butoxyethanol ester	0	0	38	39	39	40
dieldrin	0	0	49	50	49	50
dimethoate	0	0	4	16	4	16
dinoseb	0	0	45	46	45	46
disulfoton	0	0	48	49	48	49
diuron	0	0	68	72	68	72
endosulfan	0	0	63	80	63	80
endosulfan sulfate	0	0	57	64	57	64
endothall	0	0	45	52	45	53
endrin	0	0	75	82	75	82
endrin aldehyde	0	0	57	64	57	64

County: BUTTE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
ethion	0	0	14	14	14	14
ethoprop	0	0	40	41	40	41
ethylene dibromide	0	0	57	98	57	98
fensulfothion	0	0	40	41	40	41
fenthion	0	0	40	41	40	41
fenuron	0	0	40	41	40	41
fluometuron	0	0	40	41	40	41
glyphosate, isopropylamine salt	0	0	8	8	8	8
heptachlor	0	0	55	62	55	62
heptachlor epoxide	0	0	55	62	55	62
hexachlorobenzene	0	0	7	7	7	7
lindane (gamma-bhc)	0	0	75	82	75	82
linuron	0	0	40	41	40	41
malathion	0	0	54	55	54	55
maneb	0	0	40	41	40	41
mcpa, dimethylamine salt	0	0	14	14	14	14
mcpp, diethanolamine salt	0	0	40	41	40	41
mcpa	0	0	40	41	40	41
merphos	0	0	40	41	40	41
methiocarb	0	0	40	41	40	41
methomyl	0	0	53	54	53	54
methoxychlor	0	0	59	60	59	60
methyl bromide	0	0	120	179	120	179
methyl isothiocyanate	0	0	8	8	8	8
methyl parathion	0	0	48	49	48	49
mevinphos	0	0	40	41	40	41
molinate	0	0	28	60	28	60
molinate sulfoxide	0	0	12	17	12	17
monuron	0	0	40	41	40	41
monuron-tca	0	0	40	41	40	41
naled	0	0	40	41	40	41
neburon	0	0	40	41	40	41
ortho-dichlorobenzene	0	0	51	96	51	96
ortho-dichlorobenzene, other related	0	0	40	82	40	82
oryzalin	0	0	5	5	5	5
oxamyl	0	0	40	41	40	41
paraquat bis(methylsulfate)	0	0	16	16	16	16
paraquat dichloride	0	0	40	41	40	41
parathion	0	0	59	66	59	66
pcnb	0	0	40	41	40	41
permethrin	0	0	5	10	5	10
phorate	0	0	40	41	40	41
phosalone	0	0	12	12	12	12

County: BUTTE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
prometon	0	0	70	74	70	74
prometryn	0	0	52	65	52	65
propazine	0	0	48	49	48	49
propham	0	0	40	41	40	41
prothiofos	0	0	40	41	40	41
ronnel	0	0	40	41	40	41
secbumeton	0	0	40	41	40	41
siduron	0	0	40	41	40	41
silvex	0	0	58	59	58	59
simazine	0	0	88	120	88	121
simetryn	0	0	40	41	40	41
sulprofos	0	0	40	41	40	41
swep	0	0	40	41	40	41
terbutylazine	0	0	40	41	40	41
terbutryn	0	0	48	49	48	49
tetrachlorvinphos	0	0	40	41	40	41
thiobencarb	0	0	21	54	21	54
thiobencarb sulfoxide	0	0	10	13	10	13
toxaphene	0	0	73	74	73	74
trichloronate	0	0	40	41	40	41
trichlorophenol	0	0	40	41	40	41
xylene	0	0	49	50	49	50
ziram	0	0	55	56	55	56

County: CALAVERAS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	3	3	3	3
1,3-dichloropropene (1,3-D)	0	0	3	3	3	3
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	11	11	11	11
atrazine	0	0	2	2	2	2
diazinon	0	0	1	1	1	1
diquat dibromide	0	0	4	4	4	4
diuron	0	0	10	10	10	10
malathion	0	0	1	1	1	1
methyl bromide	0	0	3	3	3	3
silvex	0	0	3	3	3	3
simazine	0	0	12	12	12	12
simetryn	0	0	1	1	1	1

County: COLUSA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	6	6	6	6
1,3-dichloropropene (1,3-D)	0	0	6	6	6	6
2,4-D	0	0	24	42	24	43
aldicarb	0	0	3	3	3	3
atrazine	0	0	17	23	17	23
azinphos-methyl	0	0	6	6	6	6
benefin	0	0	4	4	4	4
benomyl	0	0	3	3	3	3
bentazon, sodium salt	7	14	21	43	28	57
bromacil	0	0	16	22	16	22
captan	0	0	3	3	3	3
carbaryl	0	0	6	6	6	6
carbendazim	0	0	3	3	3	3
carbofuran	0	0	6	6	6	6
chlorothalonil	0	0	3	3	3	3
dbcp	0	0	10	20	10	20
demeton	0	0	3	3	3	3
diazinon	0	0	4	4	4	4
dicofol	0	0	3	3	3	3
dimethoate	0	0	5	5	5	5
dinoseb	0	0	3	3	3	3
diphenamid	0	0	4	4	4	4
disulfoton	0	0	3	3	3	3
diuron	0	0	6	12	6	12
dnoc, sodium salt	0	0	3	3	3	3
endosulfan	0	0	3	6	3	6
endothall	0	0	2	2	2	2
endrin	0	0	9	19	9	19
ethion	0	0	4	4	4	4
ethylene dibromide	0	0	7	16	7	16
glyphosate, isopropylamine salt	0	0	11	11	11	11
lindane (gamma-bhc)	0	0	9	19	9	19
malathion	0	0	4	4	4	4
mcpa, dimethylamine salt	0	0	5	5	5	5
methamidophos	0	0	2	2	2	2
methidathion	0	0	4	4	4	4
methomyl	0	0	3	3	3	3
methoxychlor	0	0	8	18	8	18
methyl bromide	0	0	6	6	6	6
methyl parathion	0	0	8	8	8	8
methyl trithion	0	0	4	4	4	4
molinate	0	0	53	64	53	64
molinate sulfoxide	0	0	40	50	40	50

County: COLUSA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
paraquat bis(methylsulfate)	0	0	7	7	7	7
parathion	0	0	7	7	7	7
phorate	0	0	7	7	7	7
phosmet	0	0	3	3	3	3
prometon	0	0	20	26	20	26
s,s,s-tributyl phosphorotriothioate	0	0	4	4	4	4
screen (chlorinated hydrocarbon)	0	0	1	1	1	1
screen (organophosphate)	0	0	1	1	1	1
silvex	0	0	9	19	9	19
simazine	0	0	17	23	17	23
thiobencarb	0	0	50	64	50	64
thiobencarb sulfoxide	0	0	30	38	30	38
toxaphene	0	0	9	19	9	19
trifluralin	0	0	4	4	4	4
ziram	0	0	1	1	1	1

County: CONTRA COSTA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	55	59	55	63
1,3-dichloropropene (1,3-D)	0	0	55	62	55	62
2,4-D	0	0	4	33	4	33
acephate	0	0	2	2	2	2
atachlor	0	0	3	36	3	36
aldicarb	0	0	2	2	2	2
aldrin	0	0	5	5	5	5
atrazine	1	2	27	85	28	88
azinphos-methyl	0	0	5	5	5	5
benomyl	0	0	4	4	4	4
bentazon, sodium salt	0	0	3	32	3	32
bhc (other than gamma isomer)	0	0	5	10	5	10
bromacil	0	0	24	77	24	77
captan	0	0	4	4	4	4
carbaryl	0	0	8	8	8	8
carbendazim	0	0	2	2	2	2
carbofuran	0	0	9	9	9	9
chlordane	0	0	10	39	10	39
chloropicrin	0	0	2	2	2	2
chlorpyrifos	0	0	4	4	4	4
chlorthal-dimethyl	0	0	2	2	2	2



County: CONTRA COSTA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dbcp	0	0	7	40	7	40
ddd	0	0	7	7	7	7
dde	0	0	8	8	8	8
ddt	0	0	8	8	8	8
demeton	0	0	2	2	2	2
diazinon	0	0	5	38	5	38
dicofol	0	0	8	8	8	8
dieldrin	0	0	5	5	5	5
dimethoate	0	0	5	38	5	38
disulfoton	0	0	7	7	7	7
diuron	0	0	21	42	21	42
endosulfan	0	0	20	34	20	34
endosulfan sulfate	0	0	8	8	8	8
endrin	0	0	8	41	8	41
endrin aldehyde	0	0	7	7	7	7
ethion	0	0	2	2	2	2
ethylene dibromide	0	0	7	43	7	43
heptachlor	0	0	8	37	8	37
heptachlor epoxide	0	0	8	37	8	37
hexachlorobenzene	0	0	5	5	5	5
lindane (gamma-bhc)	0	0	10	43	10	43
malathion	0	0	2	2	2	2
maneb	0	0	2	2	2	2
methamidophos	0	0	5	5	5	5
methomyl	0	0	8	8	8	8
methoxychlor	0	0	8	41	8	41
methyl bromide	0	0	55	59	55	59
methyl parathion	0	0	3	4	3	4
mevinphos	0	0	2	2	2	2
molinate	0	0	3	36	3	36
ortho-dichlorobenzene	0	0	4	4	4	4
oxamyl	0	0	7	7	7	7
paraquat bis(methylsulfate)	0	0	7	7	7	7
parathion	0	0	2	2	2	2
phorate	0	0	7	7	7	7
prometon	0	0	21	43	21	44
prometryn	0	0	3	36	3	36
silvex	0	0	3	32	3	32
simazine	0	0	28	85	28	86
thiobencarb	0	0	3	36	3	36
toxaphene	0	0	17	51	17	51
trifluralin	0	0	2	2	2	2
xylene	0	0	4	4	4	4
ziram	0	0	2	2	2	2

County: DEL NORTE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	15	15	15	15
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	37	77	60	508
1,3-dichloropropene (1,3-D)	0	0	20	26	20	27
2,4-D	0	0	21	43	21	45
alachlor	0	0	1	4	1	4
aldicarb	0	0	54	171	63	505
aldicarb sulfone	11	53	18	52	24	118
aldicarb sulfoxide	11	70	17	42	23	120
ametryne	0	0	1	1	1	1
atrazine	0	0	1	1	1	1
atrazine	0	0	34	45	34	45
bentazon, sodium salt	0	0	1	4	1	4
bromacil	0	0	18	18	18	18
bromacil, lithium salt	0	0	11	11	11	11
carbofuran	0	0	1	1	1	1
chlordane	0	0	1	4	1	4
chlorothalonil	0	0	3	3	3	3
chloroxuronil	0	0	1	1	1	1
chlorpyrifos	0	0	3	3	3	3
copper	0	0	3	3	3	3
dbcp	0	0	1	4	1	4
demeton	0	0	4	4	4	4
dicamba	0	0	1	1	1	1
diuron	0	0	29	29	29	29
endrin	0	0	12	27	12	27
ethylene dibromide	0	0	18	25	18	25
fenamiphos	0	0	34	106	34	106
fenamiphos sulfone	0	0	20	80	20	80
fenamiphos sulfoxide	0	0	20	81	20	81
glyphosate, isopropylamine salt	0	0	1	4	1	4
heptachlor	0	0	1	4	1	4
heptachlor epoxide	0	0	1	4	1	4
lindane (gamma-bhc)	0	0	13	28	13	28
methoxychlor	0	0	12	26	12	26
methyl bromide	0	0	7	7	7	7
molinate	0	0	1	4	1	4
oryzalin	0	0	12	12	12	12
paraquat bis(methylsulfate)	0	0	1	1	1	1
phorate	0	0	28	94	28	94
phorate sulfone	0	0	23	90	23	90
phorate sulfoxide	0	0	23	86	23	86
phoratoxon	0	0	10	20	10	20
phoratoxon sulfone	0	0	10	19	10	19
phoratoxon sulfoxide	0	0	10	19	10	19

County: DEL NORTE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
phosmet	0	0	2	8	2	8
phosmet-oc	0	0	2	8	2	8
pirimicarb sulfone	0	0	1	1	1	1
prometon	0	0	29	29	29	29
prometryn	0	0	1	1	1	1
propazine	0	0	1	1	1	1
silvex	0	0	12	16	12	16
simazine	0	0	42	56	42	56
simetryn	0	0	1	1	1	1
terbutryn	0	0	1	1	1	1
thiobencarb	0	0	1	4	1	4
toxaphene	0	0	13	27	13	27

County: EL DORADO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
hexachlorobenzene	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	3	3	3	3
methoxychlor	0	0	1	1	1	1
methyl bromide	0	0	12	12	12	12
paraquat bis(methylsulfate)	0	0	13	17	13	17
rotenolone	0	0	2	6	2	6
rotenone	0	0	2	6	2	6
simazine	0	0	45	56	45	56
simetryn	0	0	1	1	1	1
toxaphene	0	0	3	3	3	3
xylene	0	0	2	10	2	10

County: EL DORADO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	2	10	2	10
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	12	12	12	12
1,3-dichloropropene (1,3-D)	0	0	12	12	12	12
2,4-D	0	0	1	1	1	1
alachlor	0	0	1	1	1	1
aldicarb	0	0	1	1	1	1
aldrin	0	0	1	1	1	1
bhc (other than gamma isomer)	0	0	1	2	1	2
carbofuran	0	0	1	1	1	1
chlordane	0	0	2	2	2	2
ddd	0	0	1	1	1	1
dde	0	0	1	1	1	1
dat	0	0	1	1	1	1
demeton	0	0	1	1	1	1
diazinon	0	0	13	17	13	17
dieldrin	0	0	1	1	1	1
diuron	0	0	13	17	13	17
endosulfan	0	0	1	2	1	2
endosulfan sulfate	0	0	1	1	1	1
endrin	0	0	3	3	3	3
endrin aldehyde	0	0	1	1	1	1
glyphosate, isopropylamine salt	0	0	1	1	1	1
heptachlor	0	0	2	2	2	2
heptachlor epoxide	0	0	2	2	2	2

County: FRESNO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	36	86	36	86
1,2,4-trichlorobenzene	0	0	36	86	36	86
1,2-dichloropropane (propylene dichloride, 1,2-D)	5	16	280	469	288	491
1,3-dichloropropene (1,3-D)	0	0	282	615	283	617
2,4,5-t	0	0	25	43	25	43
2,4,6-trichlorophenol	0	0	21	21	21	21
2,4-D	0	0	108	135	108	135
2,4-DP, isooctyl ester	0	0	23	39	24	40
2-(2,4-dichlorophenoxy)propionic acid, dimethyl-	0	0	21	21	21	21
4(2,4-DB), dimethylamine salt	0	0	21	21	21	21
acenaphthene	0	0	1	1	1	1
acephate	0	0	36	36	36	36
acrolein	0	0	3	3	3	3
alachlor	0	0	160	194	160	194
aldicarb	0	0	168	193	168	193
aldicarb sulfone	2	38	74	250	76	188
aldicarb sulfoxide	0	0	71	96	71	96
aldrin	0	0	52	55	52	55
ametryne	0	0	127	164	127	164
aminocarb	0	0	21	21	21	21
atraton	0	0	82	114	82	114
atrazine	2	5	708	1071	712	1079
azinphos-methyl	0	0	68	85	68	85
barban	0	0	21	21	21	21

County: FRESNO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
benefin	0	0	22	22	22	22
benomyl	0	0	52	52	52	52
bentazon, sodium salt	0	0	297	428	297	429
bhc (other than gamma isomer)	0	0	46	68	46	68
bromacil	14	33	264	372	277	408
butylate	0	0	10	11	10	11
captan	0	0	52	52	52	52
carbaryl	0	0	97	115	97	115
carbendazim	0	0	8	8	8	8
carbofuran	0	0	340	384	340	384
carbophenothion	0	0	79	100	79	100
chlordane	0	0	223	240	223	240
chloroallyl alcohol (cis/trans)	0	0	6	40	6	40
chloropicrin	0	0	28	28	28	28
chlorothalonil	0	0	15	15	15	15
chloroxuron	0	0	6	6	6	6
chlorpropham	0	0	40	41	40	41
chlorpyrifos	0	0	71	89	73	91
chlorthal-dimethyl	0	0	37	37	37	37
copper	0	0	1	1	1	1
cyanazine	0	0	117	153	117	153
cypermethrin	0	0	3	3	3	3
cyprazine	0	0	82	114	82	114
dbcp	81	355	1750	2401	3082	5819
ddd	0	0	25	28	25	28
dde	0	0	46	49	46	49
ddt	0	0	48	51	48	51
ddvp	0	0	4	4	4	4
def	0	0	18	35	18	35
demeion	0	0	45	50	45	50
diazinon	0	0	79	99	80	100
diazoxon	0	0	4	4	4	4
dicamba	0	0	47	63	48	64
dicofol	0	0	76	76	76	76
dieldrin	0	0	52	54	52	55
diehtyl-ethyl	0	0	2	2	2	2
dimethoate	0	0	55	56	55	56
dinoseb	0	0	120	121	120	121
dioxathion	0	0	4	5	4	5
diphenamid	0	0	1	1	1	1
disulfoton	0	0	64	82	64	82
diuron	31	74	345	439	371	515
dmpa	0	0	21	21	21	21

County: FRESNO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
endosulfan	0	0	117	221	117	221
endosulfan sulfate	0	0	35	38	35	38
endothall	0	0	35	35	35	35
endrin	1	2	92	102	93	104
endrin aldehyde	0	0	33	36	33	36
eptc	0	0	47	48	47	48
ethion	0	0	58	78	58	78
ethylene dibromide	0	0	501	1396	506	1432
ethylene dichloride	0	0	18	35	18	35
fenac	0	0	4	5	4	5
fenamiphos	0	0	59	63	59	63
fenamiphos sulfone	0	0	32	36	32	36
fenamiphos sulfoxide	0	0	32	36	32	36
fenthion	0	0	1	1	1	1
fenuron	0	0	27	27	27	27
fluchloralin	0	0	1	1	1	1
fluometuron	0	0	10	11	10	11
glyphosate, isopropylamine salt	0	0	188	203	188	203
heptachlor	0	0	223	240	223	240
heptachlor epoxide	0	0	201	218	201	218
hexachlorobenzene	0	0	20	21	20	21
lindane (gamma-bhc)	0	0	94	105	94	105
linuron	0	0	31	32	31	32
malathion	0	0	56	75	56	75
maneb	0	0	27	27	27	27
mcpb,sodium salt	0	0	3	3	3	3
metalaxyl	0	0	3	3	3	3
methamidophos	0	0	37	37	37	37
methiocarb	0	0	27	28	27	28
methomyl	0	0	95	113	95	113
methoxychlor	0	0	109	120	109	120
methyl bromide	0	0	248	377	248	377
methyl parathion	0	0	38	58	38	58
methyl trithion	0	0	20	37	20	37
metolachlor	0	0	3	3	3	3
metribuzin	0	0	29	32	29	32
mevinphos	0	0	8	9	8	9
mexacarbate	0	0	21	21	21	21
molinat	0	0	42	57	42	57
molinat sulfoxide	0	0	4	6	4	6
monuron	0	0	31	32	31	32
mtp (monomethyl 2,3,5,6-tetrachloroterephthalaldehyde)	0	0	15	15	15	15
naled	0	0	6	6	6	6

County: FRESNO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
naphthalene	0	0	37	87	37	87
neburon	0	0	31	32	31	32
nitrofen	0	0	21	21	21	21
ortho-dichlorobenzene	0	0	95	165	95	165
ortho-dichlorobenzene, other related	0	0	39	56	39	56
oryzalin	0	0	1	1	1	1
oxamyl	0	0	85	86	85	86
paraoxon	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	50	50	50	50
parathion	0	0	62	82	62	82
pcnb	0	0	40	40	40	40
permethrin	0	0	1	1	1	1
phorate	0	0	63	81	63	81
phosalone	0	0	5	5	5	5
phosmet	0	0	8	8	8	8
phosmet-oc	0	0	3	3	3	3
picloram	0	0	18	35	18	35
prometon	2	5	367	572	368	584
prometryn	0	0	170	226	170	226
propachlor	0	0	21	21	21	21
propargite	0	0	9	9	9	9
propazine	0	0	139	195	139	195
propham	0	0	78	96	78	97
propoxur	0	0	25	26	25	26
propyzamide	0	0	1	1	1	1
s.s.s-tributyl phosphorotriithioate	0	0	47	65	47	65
siduron	0	0	27	27	27	27
silvex	0	0	91	115	91	115
simazine	90	203	665	924	763	1166
simeton	0	0	68	98	68	98
simetryn	0	0	104	138	104	138
tebuthiuron	0	0	6	6	6	6
terbutylazine	0	0	21	21	21	21
terbutryn	0	0	50	53	50	53
tetrachloroethylene	0	0	17	33	18	34
thanite	0	0	1	1	1	1
thiobencarb	0	0	39	55	39	55
thiobencarb sulfoxide	0	0	4	5	4	5
toxaphene	0	0	114	139	114	139
tpa (2,3,5,6-tetrachloroterephthalic acid)	2	2	13	13	15	15
tricyclazole	0	0	8	26	8	26
trifluralin	0	0	88	120	88	120
xylene	1	2	92	156	93	160
ziram	0	0	29	29	29	29

County: GLENN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	13	19	13	19
1,3-dichloropropane (1,3-D)	0	0	13	24	13	24
2,4-D	0	0	33	40	33	40
acephate	0	0	5	5	5	5
alachlor	0	0	33	33	33	33
aldicarb	0	0	38	39	38	39
aldrin	0	0	4	4	4	4
ametryne	0	0	10	11	10	11
atrazon	0	0	3	3	3	3
atrazine	29	78	220	333	252	422
azinphos-methyl	0	0	5	5	5	5
benomyl	0	0	31	43	31	44
benzazon, sodium salt	29	67	46	66	75	135
bhc (other than gamma isomer)	0	0	1	2	1	2
bromacil	0	0	98	148	98	148
captan	0	0	25	43	25	46
carbaryl	0	0	16	16	16	16
carbendazim	0	0	5	5	5	5
carbofuran	0	0	49	52	49	52
chlordane	0	0	1	1	1	1
chlorpyrifos	0	0	19	20	19	20
cyanazine	0	0	4	5	4	5
cypermethrin	0	0	3	3	3	3
dbcp	0	0	7	9	7	9
ddd	0	0	1	1	1	1
dde	0	0	1	1	1	1
ddf	0	0	1	1	1	1
ddvp	0	0	3	3	3	3
demeton	0	0	7	7	7	7
diazinon	0	0	11	11	11	11
dicamba	0	0	7	7	7	7
dieldrin	0	0	1	1	1	1
dimethoate	0	0	5	5	5	5
disulfoton	0	0	2	2	2	2
diuron	1	6	87	136	88	142
endosulfan	0	0	5	6	5	6
endosulfan sulfate	0	0	1	1	1	1
endrin	0	0	8	8	8	8
endrin aldehyde	0	0	1	1	1	1
ethion	0	0	7	7	7	7
ethylene dibromide	0	0	7	8	7	8
glyphosate, isopropylamine salt	0	0	2	2	2	2
heptachlor	0	0	1	1	1	1
heptachlor epoxide	0	0	1	1	1	1

County: GLENN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
hexachlorobenzene	0	0	2	2	2	2
lindane (gamma-bhc)	0	0	8	8	8	8
malathion	0	0	7	7	7	7
mcpa, dimethylamine salt	0	0	7	7	7	7
mcpa, sodium salt	0	0	15	15	15	15
methidathion	0	0	5	6	5	6
methomyl	0	0	20	21	20	21
methoxychlor	0	0	7	7	7	7
methyl bromide	0	0	11	17	11	17
methyl parathion	0	0	3	3	3	3
metolachlor	0	0	33	33	33	33
metribuzin	0	0	4	5	4	5
molinat	1	2	83	96	84	100
molinat sulfoxide	0	0	23	27	23	27
ortho-dichlorobenzene	0	0	5	5	5	5
oxadiazon	0	0	3	3	3	3
oxamyl	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	25	31	25	31
parathion	0	0	24	32	24	32
permethrin	0	0	2	4	2	4
phosalone	0	0	7	7	7	7
prometon	4	15	202	272	208	292
prometryn	0	0	7	8	7	8
propazine	0	0	10	11	10	11
propyzamide	0	0	3	3	3	3
screen (carbamate)	0	0	33	33	33	33
screen (chlorinated hydrocarbon)	0	0	33	33	33	33
screen (organophosphate)	0	0	33	33	33	33
silvex	0	0	9	10	9	10
simazine	17	37	238	357	253	398
simetryn	0	0	6	6	6	6
terbacil	0	0	3	3	3	3
terbutryn	0	0	10	11	10	11
thiobencarb	0	0	71	80	71	80
thiobencarb sulfoxide	0	0	18	20	18	20
toxaphene	0	0	9	9	9	9
trifluralin	0	0	8	9	8	10
xylene	0	0	5	5	5	5
ziram	0	0	5	5	5	5

County: HUMBOLDT

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	9	9	9	9
1,3-dichloropropene (1,3-D)	0	0	9	9	9	9
2,4-D	0	0	36	44	36	44
aldicarb	3	6	18	37	18	44
aldicarb sulfone	4	13	6	13	6	27
aldicarb sulfoxide	2	6	5	12	6	19
ametryne	0	0	2	2	2	2
amitrole	0	0	5	5	5	5
atraton	0	0	2	2	2	2
atrazine	0	0	28	36	28	36
bromacil	0	0	1	1	1	1
chlorothalonil	1	2	1	2	2	4
demeton	0	0	11	11	11	11
diazinon	0	0	1	1	1	1
dicamba	0	0	1	1	1	1
dinoseb	0	0	1	1	1	1
endrin	0	0	30	39	30	39
fenamiphos	0	0	3	3	3	3
formaldehyde	0	0	1	1	1	1
glyphosate, isopropylamine salt	0	0	5	5	5	5
lindane (gamma-bhc)	0	0	30	39	30	39
methoxychlor	0	0	20	22	20	22
molinat	0	0	1	1	1	1
oryzalin	0	0	2	2	2	2
prometon	0	0	6	12	6	12
prometryn	0	0	3	3	3	3
propazine	0	0	2	2	2	2
silvex	0	0	28	36	28	36
simazine	1	7	61	68	62	75
simetryn	0	0	2	2	2	2
terbutryn	0	0	2	2	2	2
thiobencarb	0	0	1	1	1	1
toxaphene	0	0	29	34	29	34

County: IMPERIAL

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	1	2	15	15	16	19
1,3-dichloropropene (1,3-D)	0	0	16	20	16	20
2,4-D	0	0	3	4	3	4
acephate	0	0	7	7	7	7
alachlor	0	0	1	2	1	2
aldicarb	0	0	1	1	1	1
atrazine	0	0	1	2	1	2
azinphos-methyl	0	0	1	1	1	1
bromacil	0	0	1	2	1	2
captan	0	0	1	1	1	1
carbofuran	0	0	9	9	9	9
chlordane	0	0	1	2	1	2
chlorpyrifos	0	0	7	7	7	7
dbcp	0	0	1	2	1	2
demeton	0	0	1	1	1	1
diazinon	0	0	8	9	8	9
dimethoate	0	0	9	10	9	10
disulfoton	0	0	8	8	8	8
endosulfan	0	0	8	8	8	8
endosulfan sulfate	0	0	1	1	1	1
endrin	0	0	3	4	3	4
ethylene dibromide	0	0	2	3	2	3
glyphosate, isopropylamine salt	0	0	2	3	2	3
heptachlor	0	0	1	2	1	2
heptachlor epoxide	0	0	1	2	1	2
lindane (gamma-bhc)	0	0	3	4	3	4
maneb	0	0	7	7	7	7
methomyl	0	0	1	1	1	1
methoxychlor	0	0	2	3	2	3
methyl bromide	0	0	16	17	16	17
molinate	0	0	1	2	1	2
ortho-dichlorobenzene	0	0	15	18	15	18
oxamyl	0	0	1	1	1	1
parathion	0	0	7	7	7	7
prometryn	0	0	9	10	9	10
silvex	0	0	3	4	3	4
simazine	0	0	1	2	1	2
thiobencarb	0	0	1	2	1	2
toxaphene	0	0	3	4	3	4
xylene	0	0	15	17	15	17

County: INYO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	11	19	11	19
1,3-dichloropropene (1,3-D)	0	0	11	26	11	26
2,4-D	0	0	8	8	8	8
atrazine	0	0	8	15	8	15
carbofuran	0	0	6	6	6	6
dbcp	0	0	8	16	8	16
demeton	0	0	7	7	7	7
diazinon	0	0	2	2	2	2
dimethoate	0	0	4	4	4	4
diuron	0	0	5	5	5	5
endrin	0	0	7	7	7	7
ethylene dibromide	0	0	8	13	8	16
hexazinone	0	0	6	6	6	6
lindane (gamma-bhc)	0	0	7	7	7	7
methomyl	0	0	1	1	1	1
methyl bromide	0	0	11	19	11	19
methyl parathion	0	0	4	4	4	4
molinate	0	0	8	15	8	15
ortho-dichlorobenzene	0	0	6	7	6	7
silvex	0	0	7	7	7	7
simazine	0	0	8	15	8	15
toxaphene	0	0	7	7	7	7
xylene	0	0	6	7	6	7

County: KERN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	40	40	40	40
1,2,4-trichlorobenzene	0	0	42	44	42	44
1,2-dichloropropane (propylene dichloride, 1,2-D)	10	24	504	808	519	868
1,3-dichloropropene (1,3-D)	0	0	471	1021	471	1021
2,4,5-t	0	0	29	35	29	35
2,4,6-trichlorophenol	0	0	70	72	70	72
2,4-D	0	0	102	134	102	134
2,4-dinitrophenol	0	0	70	72	70	72
acenaphthene	0	0	102	104	102	104
acephate	0	0	129	129	129	129
acrolein	0	0	1	1	1	1
alachlor	0	0	79	87	79	87
aldicarb	0	0	122	136	122	136

County: KERN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
aldicarb sulfone	0	0	62	68	62	68
aldicarb sulfoxide	0	0	62	68	62	68
aldrin	0	0	58	67	58	67
ametryne	0	0	40	40	40	40
aminocarb	0	0	29	29	29	29
atraton	0	0	40	40	40	40
atrazine	2	4	315	353	317	359
azinphos-methyl	0	0	164	164	164	164
barban	0	0	29	29	29	29
benefin	0	0	135	135	135	135
benomyl	0	0	133	134	133	134
bentazon, sodium salt	0	0	55	82	55	83
bhc (other than gamma isomer)	0	0	57	95	57	95
bromacil	1	2	252	274	253	276
captafol	0	0	6	6	6	6
captan	0	0	59	66	59	66
carbaryl	0	0	154	156	154	156
carbofuran	0	0	224	228	224	228
carbophenothion	0	0	68	104	68	104
cdec	0	0	6	6	6	6
chlordane	0	0	93	107	93	107
chlordimeform	0	0	104	104	104	104
chloropicrin	0	0	134	135	134	135
chlorothalonil	0	0	15	16	15	16
chloroxuron	0	0	2	2	2	2
chlorpropham	0	0	148	154	148	154
chlorpyrifos	0	0	162	169	162	169
chlorthal-dimethyl	0	0	50	56	50	56
copper	0	0	1	1	1	1
crutamate	0	0	6	6	6	6
cyazazine	0	0	86	88	86	88
cyprazine	0	0	40	40	40	40
dbcp	92	867	682	1664	765	2925
ddd	0	0	56	66	56	66
dde	0	0	56	66	56	66
ddt	0	0	59	67	59	67
demeton	0	0	172	178	172	178
diazinon	0	0	169	204	169	204
dicamba	0	0	29	29	29	29
dicofol	0	0	167	175	167	175
dicrotophos	0	0	6	6	6	6
dieldrin	0	0	57	66	57	66

County: KERN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dimethoate	0	0	196	199	196	199
dinoseb	0	0	163	167	163	167
dioxathion	0	0	6	6	6	6
diphenamid	0	0	135	135	135	135
disulfoton	0	0	163	164	163	164
diuron	2	4	210	223	211	227
dmpa	0	0	29	29	29	29
dnoc, sodium salt	0	0	104	104	104	104
endosulfan	0	0	62	103	62	103
endosulfan sulfate	0	0	59	63	59	63
endothall	0	0	134	135	134	135
endrin	0	0	95	124	95	124
endrin aldehyde	0	0	25	28	25	28
epic	0	0	139	139	139	139
ethion	0	0	175	182	175	182
ethylan	0	0	6	6	6	6
ethylene dibromide	15	74	774	2167	787	2306
ethylene dichloride	0	0	40	40	40	40
fenamiphos	0	0	148	152	148	152
fenamiphos sulfone	0	0	4	8	4	8
fenamiphos sulfoxide	0	0	4	8	4	8
fenthion	0	0	6	6	6	6
fenuron	0	0	31	31	31	31
fluchloralin	0	0	103	103	103	103
fluometuron	0	0	31	31	31	31
glyphosate, isopropylamine salt	0	0	3	6	3	6
heptachlor	0	0	80	90	80	90
heptachlor epoxide	0	0	80	90	80	90
hexachlorobenzene	0	0	122	126	122	126
lindane (gamma-bhc)	0	0	98	127	98	127
linuron	0	0	31	31	31	31
malathion	0	0	175	182	175	182
maneb	0	0	1	2	1	2
mcpa, sodium salt	0	0	29	35	29	35
merphos	0	0	104	104	104	104
methamidophos	0	0	133	134	133	134
methidathion	0	0	115	116	115	116
methiocarb	0	0	68	69	68	69
methomyl	0	0	166	167	166	167
methoxychlor	0	0	89	116	89	116
methyl bromide	0	0	440	810	440	810
methyl parathion	0	0	68	75	68	75

County: KERN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
methyl trithion	0	0	40	40	40	40
mevinphos	0	0	107	107	107	107
mexacarbate	0	0	29	29	29	29
molinate	0	0	151	175	151	175
molinate sulfoxide	0	0	2	3	2	3
monuron	0	0	31	31	31	31
mtp (monomethyl 2,3,5,6-tetrachloroterephthalic acid)	0	0	10	10	10	10
naled	0	0	5	5	5	5
naphthalene	0	0	41	43	41	43
naproamride	0	0	104	105	104	105
neburon	0	0	31	31	31	31
nitrofen	0	0	29	35	29	35
ortho-dichlorobenzene	0	0	341	563	341	563
ortho-dichlorobenzene, other related	0	0	40	40	40	40
oryzalin	0	0	103	103	103	103
oxadiazon	0	0	3	3	3	3
oxamyl	0	0	145	145	145	145
paraquat bis(methylsulfate)	0	0	30	31	30	31
parathion	0	0	180	188	180	188
pcnb	0	0	54	55	54	55
pendimethalin	0	0	2	2	2	2
permethrin	0	0	104	104	104	104
phorate	0	0	166	173	166	173
phosmet	0	0	6	6	6	6
prometon	0	0	214	224	215	225
prometryn	0	0	163	183	164	184
propachlor	0	0	29	29	29	29
propanil	0	0	6	6	6	6
propargite	0	0	104	104	104	104
propazine	0	0	70	71	70	71
propham	0	0	154	154	154	154
propoxur	0	0	29	29	29	29
propyzamide	0	0	70	70	70	70
s,s,s-tributyl phosphorotrithioate	0	0	50	50	50	50
siduron	0	0	31	31	31	31
silvex	0	0	84	113	84	113
simazine	0	0	349	385	349	385
simeton	0	0	40	40	40	40
simetryn	0	0	40	40	40	40
tebuthiuron	0	0	2	2	2	2
tetrachloroethylene	0	0	40	40	40	40
tetradifon	0	0	40	40	40	40

County: KERN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
thiobencarb	0	0	154	172	154	172
thiobencarb sulfoxide	0	0	2	3	2	3
toxaphene	0	0	110	144	110	144
tpa (2,3,5,6-tetrachloroterephthalic acid)	5	5	5	5	10	10
trichlorophon	0	0	107	107	107	107
trifluralin	0	0	71	73	71	73
xylene	0	0	270	390	271	391
ziram	0	0	1	2	1	2

County: KINGS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	12	12	12	12
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	54	66	54	66
1,3-dichloropropane (1,3-D)	0	0	51	75	51	75
2,4,5-t	0	0	3	5	3	5
2,4,6-trichlorophenol	0	0	7	7	7	7
2,4-D	0	0	30	32	30	32
2,4-DP, isooctyl ester	0	0	3	5	3	5
2-(2,4-dichlorophenoxy)propionic acid, dimethyl	0	0	7	7	7	7
4(2,4-DB), dimethylamine salt	0	0	7	7	7	7
acephate	0	0	1	1	1	1
alachlor	0	0	61	65	61	65
aldicarb	0	0	91	100	91	100
aldicarb sulfone	0	0	56	63	56	63
aldicarb sulfoxide	0	0	56	63	56	63
aldrin	0	0	13	13	13	13
ametryne	0	0	41	45	41	45
aminocarb	0	0	7	7	7	7
atraton	0	0	34	38	34	38
atrazine	1	3	80	88	82	92
azinphos-ethyl	0	0	1	1	1	1
azinphos-methyl	0	0	12	14	12	14
barban	0	0	7	7	7	7
benefin	0	0	8	8	8	8
benomyl	0	0	12	12	12	12
bentazon, sodium salt	0	0	6	6	6	6
bhc (other than gamma isomer)	0	0	13	17	13	17
bromacil	0	0	19	24	19	24



County: KINGS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
butylate	0	0	2	2	2	2
captan	0	0	32	32	32	32
carbaryl	0	0	35	37	35	37
carbendazim	0	0	1	1	1	1
carbofuran	0	0	28	30	28	30
carbophenothion	0	0	24	26	24	26
chlordane	0	0	13	13	13	13
chlordimeform	0	0	1	1	1	1
chloropicrin	0	0	22	22	22	22
chlorothalonil	0	0	18	18	18	18
chlorpyrifos	0	0	26	28	26	28
chlorthal-dimethyl	0	0	8	8	8	8
cyanazine	0	0	34	38	34	38
cyproazine	0	0	34	38	34	38
dbcp	0	0	52	54	58	60
ddd	0	0	6	6	6	6
dde	0	0	13	13	13	13
ddt	0	0	13	13	13	13
def	0	0	3	5	3	5
demeton	0	0	6	6	6	6
diazinon	0	0	36	38	37	39
diazoxon	0	0	1	1	1	1
dicamba	0	0	10	12	10	12
dicofol	0	0	32	32	32	32
dieldrin	0	0	13	13	13	13
dimethoate	0	0	21	21	21	21
dinoseb	0	0	32	32	32	32
diphenamid	0	0	1	1	1	1
disulfoton	0	0	28	30	28	30
diuron	2	5	23	25	25	30
dmppa	0	0	7	7	7	7
dnoc, sodium salt	0	0	1	1	1	1
endosulfan	0	0	34	45	34	45
endosulfan sulfate	0	0	22	22	22	22
endothall	0	0	19	19	19	19
endrin	0	0	28	29	28	29
endrin aldehyde	0	0	6	6	6	6
epfc	0	0	6	6	6	6
ethion	0	0	18	20	18	20
ethylene dibromide	0	0	29	29	29	29
ethylene dichloride	0	0	15	17	15	17
fenamiphos	0	0	1	1	1	1

County: KINGS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
fenuron	0	0	7	7	7	7
fluchloralin	0	0	1	1	1	1
heptachlor	0	0	13	13	13	13
heptachlor epoxide	0	0	6	6	6	6
hexachlorobenzene	0	0	6	6	6	6
lindane (gamma-bhc)	0	0	35	37	35	37
linuron	0	0	7	7	7	7
malathion	0	0	20	22	20	22
maneb	0	0	17	17	17	17
mcpb, sodium salt	0	0	1	1	1	1
methamidophos	0	0	25	25	25	25
methidathion	0	0	16	16	16	16
methiocarb	0	0	19	19	19	19
methomyl	0	0	35	37	35	37
methoxychlor	0	0	32	32	32	32
methyl bromide	0	0	42	52	42	52
methyl parathion	0	0	18	20	18	20
methyl trithion	0	0	17	19	17	19
mevinphos	0	0	1	1	1	1
mexacarbate	0	0	7	7	7	7
molinate	0	0	5	5	5	5
molinate sulfoxide	0	0	1	1	1	1
monuron	0	0	7	7	7	7
napropamide	0	0	18	18	18	18
neburon	0	0	7	7	7	7
nitrofen	0	0	7	7	7	7
ortho-dichlorobenzene	0	0	38	40	38	40
ortho-dichlorobenzene, other related	0	0	22	24	22	24
oryzalin	0	0	1	1	1	1
oxamyl	0	0	7	7	7	7
paraquat bis(methylsulfate)	0	0	24	24	24	24
parathion	0	0	33	35	33	35
pcnb	0	0	30	30	30	30
permethrin	0	0	1	1	1	1
phorate	0	0	24	26	24	26
phosalone	0	0	1	1	1	1
phosmet	0	0	1	1	1	1
picloram	0	0	3	5	3	5
prometon	0	0	59	67	61	69
prometryn	0	0	43	47	44	48
propachlor	0	0	7	7	7	7
propargite	0	0	1	1	1	1

County: KINGS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
propazine	0	0	42	46	43	47
propham	0	0	15	17	15	17
propoxur	0	0	7	7	7	7
propyzamide	0	0	1	1	1	1
s,s,s-tributyl phosphorotriothioate	0	0	5	7	5	7
siduron	0	0	7	7	7	7
silvex	0	0	28	30	28	30
simazine	0	0	93	114	93	115
simeton	0	0	34	38	34	38
simetryn	0	0	41	45	41	45
terbutylazine	0	0	7	7	7	7
terbutryn	0	0	7	7	7	7
tetrachloroethylene	0	0	15	17	15	17
thiobencarb	0	0	5	5	5	5
thiobencarb sulfoxide	0	0	1	1	1	1
toxaphene	0	0	36	38	36	38
trichlorophon	0	0	1	1	1	1
trifluralin	0	0	34	38	34	38
xylene	0	0	23	23	23	23
ziram	0	0	5	5	5	5

County: LAKE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
diuron	0	0	1	1	1	1
endosulfan	0	0	3	5	3	5
endrin	0	0	17	22	17	22
ethion	0	0	1	1	1	1
fenbutatin-oxide	0	0	1	1	1	1
fenvalerate	0	0	1	1	1	1
glyphosate, isopropylamine salt	0	0	12	14	12	14
heptachlor	0	0	18	19	18	19
heptachlor epoxide	0	0	14	14	14	14
lindane (gamma-bhc)	0	0	17	22	17	22
methoxychlor	0	0	19	24	19	24
methyl bromide	0	0	4	6	4	6
permethrin	0	0	1	1	1	1
screen (organophosphate)	0	0	4	7	4	7
silvex	0	0	17	22	17	22
simazine	0	0	32	43	32	43
toxaphene	0	0	17	22	17	22

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County: LAKE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	4	6	4	6
1,3-dichloropropene (1,3-D)	0	0	4	6	4	6
2,4-D	0	0	17	22	17	22
acephate	0	0	1	1	1	1
amitraz	0	0	1	1	1	1
atrazine	0	0	12	19	12	19
azinphos-methyl	0	0	1	1	1	1
benomyl	0	0	1	1	1	1
carbaryl	0	0	2	2	2	2
carbendazim	0	0	1	1	1	1
carbofuran	0	0	10	11	10	11
chlordane	0	0	18	19	18	19
diazinon	0	0	3	3	3	3
dimethoate	0	0	3	3	3	3
dinoseb	0	0	1	1	1	1

County: LASSEN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	4	8	4	8
1,2-d; 1,3-d & C-3 compounds	0	0	4	8	4	8
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	9	9	9	9
1,3-dichloropropene (1,3-D)	0	0	9	13	9	13
2,4-D	0	0	16	17	16	17
aldicarb	0	0	3	3	3	3
aldrin	0	0	4	4	4	4
ametryne	0	0	3	3	3	3
atraton	0	0	3	3	3	3
atrazine	0	0	7	7	7	7
azinphos-methyl	0	0	2	2	2	2
bhc (other than gamma isomer)	0	0	4	8	4	8
bromacil	0	0	3	3	3	3
carbofuran	0	0	2	2	2	2
chlordane	0	0	4	4	4	4
chloropicrin	0	0	1	1	1	1
ddd	0	0	4	4	4	4
dde	0	0	4	4	4	4

County: LASSEN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
ddt	0	0	4	4	4	4
demeton	0	0	3	3	3	3
diazinon	0	0	1	1	1	1
dieldrin	0	0	4	4	4	4
disulfoton	0	0	1	1	1	1
diuron	0	0	3	3	3	3
endosulfan	0	0	4	8	4	8
endosulfan sulfate	0	0	4	4	4	4
endrin	0	0	13	15	13	15
endrin aldehyde	0	0	4	4	4	4
ethion	0	0	1	1	1	1
ethylene dibromide	0	0	7	13	7	13
heptachlor	0	0	4	4	4	4
heptachlor epoxide	0	0	4	4	4	4
hexachlorobenzene	0	0	4	4	4	4
lindane (gamma-bhc)	0	0	13	15	13	15
malathion	0	0	1	1	1	1
methoxychlor	0	0	9	9	9	9
methyl bromide	0	0	9	13	9	13
methyl parathion	0	0	1	1	1	1
naphthalene	0	0	4	8	4	8
ortho-dichlorobenzene	0	0	4	16	4	16
ortho-dichlorobenzene, other related	0	0	4	8	4	8
paraquat bis(methylsulfate)	0	0	4	5	4	5
parathion	0	0	1	2	1	2
prometon	0	0	3	3	3	3
prometryn	0	0	3	3	3	3
propazine	0	0	3	3	3	3
sivex	0	0	11	11	11	11
simazine	0	0	8	9	8	9
simetryn	0	0	3	3	3	3
terbutryn	0	0	3	3	3	3
toxaphene	0	0	13	15	13	15
xylene	1	4	5	10	6	15

County: LOS ANGELES

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	2	2	2	2
1,2,4-trichlorobenzene	0	0	1	1	1	1
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	651	1245	651	1245
1,3-dichloropropene (1,3-D)	0	0	647	1068	647	1068
2,4,5-t	0	0	37	37	37	37
2,4,6-trichlorophenol	0	0	1	1	1	1
2,4-D	0	0	268	327	270	329
2,4-dinitrophenol	0	0	1	1	1	1
3,5-dichlorobenzoic acid	0	0	3	3	3	3
3-hydroxycarbofuran	0	0	12	12	12	12
3-ketocarbofuran phenol	0	0	3	3	3	3
4(2,4-DB), butoxyethanol ester	0	0	3	3	3	3
5-hydroxy dicamba	0	0	3	3	3	3
acenaphthene	0	0	1	1	1	1
acephate	0	0	115	115	115	115
alachlor	0	0	241	389	241	389
aldicarb	0	0	177	280	177	280
aldicarb sulfone	0	0	17	17	17	17
aldicarb sulfoxide	0	0	12	12	12	12
aldrin	0	0	381	411	381	411
ametryne	0	0	3	3	3	3
atrazine	0	0	3	3	3	3
atrazine dealkylated	47	97	895	2062	906	2189
azinphos-methyl	0	0	135	136	135	136
barban	0	0	3	3	3	3
benefin	0	0	141	141	141	141
benomyl	0	0	83	83	83	83
bentazon, sodium salt	0	0	33	34	33	34
bhc (other than gamma isomer)	0	0	377	833	377	833
bromacil	1	2	344	488	345	490
butachlor	0	0	3	3	3	3
butylate	0	0	2	2	2	2
captan	0	0	190	191	190	191
carbaryl	0	0	198	204	198	204
carbofuran	0	0	190	293	190	293
carbofuran phenol	0	0	3	3	3	3
carboxin	0	0	3	3	3	3
chlordane	0	0	492	671	492	671
chlordimeform	0	0	139	139	139	139
chloroneb	0	0	3	3	3	3
chloropicrin	0	0	380	381	380	381

County: LOS ANGELES

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
chlorothalonil	0	0	278	401	278	401
chlorpropham	0	0	108	110	108	110
chlorpyrifos	0	0	145	146	145	146
chlorthal-dimethyl	0	0	165	170	165	170
cyanazine	0	0	233	281	233	281
cycloate	0	0	2	2	2	2
dalapon	0	0	18	21	18	21
dbcp	0	0	696	1228	702	1325
dcpa acid metabolites	0	0	2	2	3	3
ddd	0	0	377	400	377	400
dde	0	0	376	400	376	400
ddt	0	0	377	402	377	402
ddvp	0	0	3	3	3	3
demeton	0	0	187	188	187	188
diazinon	0	0	120	207	120	207
dicamba	0	0	4	4	4	4
dichlorprop, butoxyethanol ester	0	0	4	4	4	4
dicofol	0	0	242	244	242	244
dieldrin	0	0	380	409	380	409
dimethoate	0	0	222	297	222	297
dinoseb	0	0	146	146	146	146
diphenamid	0	0	261	261	261	261
disulfoton	0	0	97	98	97	98
diuron	0	0	245	294	245	294
dnoc, sodium salt	0	0	142	142	142	142
endosulfan	0	0	378	1076	378	1076
endosulfan sulfate	0	0	378	401	378	401
endothal	0	0	142	142	142	142
endrin	0	0	533	941	535	943
endrin aldehyde	0	0	373	395	373	395
eptc	0	0	92	93	92	93
ethion	0	0	94	95	94	95
ethoprop	0	0	3	3	3	3
ethylene dibromide	0	0	662	1236	665	1247
ethylene thiourea	0	0	3	3	3	3
fenamiphos	0	0	97	98	97	98
fenamiphos sulfone	0	0	3	3	3	3
fenamiphos sulfoxide	0	0	3	3	3	3
fenarimol	0	0	3	3	3	3
fluchloralin	0	0	140	140	140	140
fluometuron	0	0	3	3	3	3
fluridone	0	0	2	2	2	2

County: LOS ANGELES

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
glyphosate, isopropylamine salt	0	0	48	110	48	110
heptachlor	0	0	491	674	491	674
heptachlor epoxide	0	0	487	658	487	658
hexachlorobenzene	0	0	328	333	328	333
hexazinone	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	536	978	538	981
linuron	0	0	3	3	3	3
malathion	0	0	62	62	62	62
maneb	0	0	1	1	1	1
merphos	0	0	137	137	137	137
methamidophos	0	0	100	101	100	101
methidathion	0	0	65	65	65	65
methiocarb	0	0	17	17	17	17
methomyl	0	0	199	205	199	205
methoxychlor	0	0	359	558	361	560
methyl bromide	0	0	649	1293	649	1293
methyl paraoxon	0	0	3	3	3	3
methyl parathion	0	0	49	50	49	50
metolachlor	0	0	3	3	3	3
metribuzin	0	0	3	3	3	3
mevinphos	0	0	99	100	99	100
molinate	0	0	699	1556	699	1556
mtp (monomethyl 2,3,5,6-tetrachloroterephthalate)	0	0	11	14	11	14
naphthalene	0	0	24	26	25	27
napropamide	0	0	143	151	143	151
neburon	0	0	3	3	3	3
norflurazon	0	0	3	3	3	3
octyl bicycloheptenedicarboximide	0	0	3	3	3	3
ortho-dichlorobenzene	0	0	136	179	136	179
oryzalin	0	0	141	149	141	149
oxamyl	0	0	148	151	148	151
paraquat bis(methylsulfate)	0	0	72	72	72	72
parathion	0	0	47	49	47	49
pcnb	0	0	1	1	1	1
pebulate	0	0	2	2	2	2
permethrin	0	0	144	286	144	286
phorate	0	0	96	97	96	97
picloram	0	0	19	22	19	22
prometon	0	0	52	92	52	92
prometryn	0	0	278	418	278	418
propachlor	0	0	3	3	3	3
propanil	0	0	3	3	3	3

County: LOS ANGELES

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
propargite	0	0	141	141	141	141
propazine	0	0	3	3	3	3
propham	0	0	103	104	103	104
propoxur	0	0	17	17	17	17
propyzamide	0	0	140	140	140	140
propyzamide metabolite	0	0	3	3	3	3
s,s-s-tributyl phosphorotrithioate	0	0	137	137	137	137
silvex	0	0	231	286	233	288
simazine	24	51	900	2102	904	2187
simetryn	0	0	3	3	3	3
swep	0	0	3	3	3	3
tebuthiuron	0	0	3	3	3	3
terbacil	0	0	3	3	3	3
terbutryn	0	0	3	3	3	3
terrazole	0	0	3	3	3	3
tetrachlorvinphos	0	0	3	3	3	3
tetradifon	0	0	1	1	1	1
thiobencarb	0	0	421	848	421	849
toxaphene	0	0	536	975	538	977
tpa (2,3,5,6-tetrachloroterephthalic acid)	3	4	7	8	11	14
triadimefon	0	0	3	3	3	3
trichlorophon	0	0	94	95	94	95
tricyclazole	0	0	3	3	3	3
trifluralin	0	0	19	22	19	22
vermolate	0	0	2	2	2	2
xylene	0	0	135	177	136	178
ziram	0	0	1	1	1	1

County: MADERA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	99	113	99	113
1,3-dichloropropene (1,3-D)	0	0	102	180	102	180
2,4,5-t	0	0	13	23	13	23
2,4,6-trichlorophenol	0	0	9	9	9	9
2,4-D	0	0	39	60	39	60
2,4-DP, isooctyl ester	0	0	10	20	10	20
2-(2,4-dichlorophenoxy)propionic acid, dimethyl	0	0	9	9	9	9
4(2,4-DB), dimethylamine salt	0	0	12	12	12	12

County: MADERA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
acenaphthene	0	0	3	3	3	3
acephate	0	0	6	6	6	6
alachlor	0	0	65	82	65	82
aldicarb	0	0	60	79	60	79
aldicarb sulfone	0	0	32	50	32	50
aldicarb sulfoxide	0	0	32	50	32	50
aldrin	0	0	16	16	16	16
ametyne	0	0	19	29	19	29
aminocarb	0	0	9	9	9	9
atraton	0	0	10	20	10	20
atrazine	0	0	122	148	123	149
azinphos-methyl	0	0	18	28	18	28
barban	0	0	9	9	9	9
benefin	0	0	9	9	9	9
benomyl	0	0	47	47	47	47
benzazon, sodium salt	0	0	37	47	37	47
bhc (other than gamma isomer)	0	0	15	24	15	24
bromacil	0	0	76	85	76	85
captan	0	0	33	33	33	33
carbaryl	0	0	57	67	57	67
carbendazim	0	0	5	5	5	5
carbofuran	0	0	65	75	65	75
carbophenothion	0	0	20	30	20	30
chlordane	0	0	16	16	16	16
chloropicrin	0	0	26	26	26	26
chlorothalonil	0	0	35	35	35	35
chloroxuron	0	0	1	1	1	1
chlorpyrifos	0	0	52	62	52	62
chlorthal-dimethyl	0	0	46	46	46	46
cyanazine	0	0	40	50	40	50
cyprazine	0	0	10	20	10	20
dbcp	22	55	145	189	218	308
ddd	0	0	7	7	7	7
dde	0	0	16	16	16	16
ddt	0	0	18	18	18	18
def	0	0	10	20	10	20
demeton	0	0	8	8	8	8
diazinon	0	0	57	75	57	75
dicamba	0	0	25	34	26	35
dichlorprop, butoxyethanol ester	0	0	3	3	3	3
dicofol	0	0	54	54	54	54
dieldrin	0	0	17	17	17	17

County: MADERA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dimethoate	0	0	55	62	55	62
dinoseb	0	0	21	21	21	21
disulfoton	0	0	56	66	56	66
diuron	3	6	74	74	77	80
dmpa	0	0	9	9	9	9
endosulfan	0	0	57	113	57	113
endosulfan sulfate	0	0	7	7	7	7
endothall	0	0	4	4	4	4
endrin	0	0	26	26	26	26
endrin aldehyde	0	0	8	8	8	8
eptc	0	0	13	13	13	13
ethion	0	0	12	22	12	22
ethylene dibromide	0	0	57	69	57	69
ethylene dichloride	0	0	10	20	10	20
fenamiphos	0	0	43	43	43	43
fenuron	0	0	10	10	10	10
fluometuron	0	0	1	1	1	1
heptachlor	0	0	16	16	16	16
heptachlor epoxide	0	0	7	7	7	7
hexachlorobenzene	0	0	6	6	6	6
lindane (gamma-bhc)	0	0	24	24	24	24
linuron	0	0	10	10	10	10
malathion	0	0	13	23	13	23
mcpb sodium salt	0	0	2	2	2	2
merphos	0	0	2	2	2	2
methamidophos	0	0	7	7	7	7
methiocarb	0	0	9	9	9	9
methomyl	0	0	57	67	57	67
methoxychlor	0	0	25	25	25	25
methyl bromide	0	0	99	117	99	117
methyl parathion	0	0	12	22	12	22
methyl trithion	0	0	10	20	10	20
metribuzin	0	0	3	3	3	3
mevinphos	0	0	5	5	5	5
mexacarbate	0	0	9	9	9	9
molinate	0	0	25	32	25	32
molinate sulfoxide	0	0	1	1	1	1
monuron	0	0	10	10	10	10
naled	0	0	3	3	3	3
neburon	0	0	10	10	10	10
nitrofen	0	0	9	9	9	9
ortho-dichlorobenzene	0	0	82	96	82	96

County: MADERA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
ortho-dichlorobenzene, other related	0	0	19	29	19	29
oxamyl	0	0	39	39	39	39
paraquat bis(methylsulfate)	0	0	10	11	10	11
parathion	0	0	51	61	51	61
pcnb	0	0	50	50	50	50
phorate	0	0	55	65	55	65
picloram	0	0	10	20	10	20
prometon	0	0	62	82	62	82
prometryn	0	0	68	93	68	93
propachlor	0	0	9	9	9	9
propargite	0	0	2	2	2	2
propazine	0	0	46	64	46	64
propham	0	0	19	29	19	29
propoxur	0	0	9	9	9	9
s,s,s-tributyl phosphorotriithioate	0	0	52	62	52	62
siduron	0	0	10	10	10	10
silvex	0	0	38	58	38	58
simazine	0	0	112	148	113	149
simeton	0	0	10	20	10	20
simetryn	0	0	22	32	22	32
tebuthiuron	0	0	1	1	1	1
terbutylazine	0	0	9	9	9	9
terbutryn	0	0	12	12	12	12
tetrachloroethylene	0	0	8	16	10	18
tetradifon	0	0	4	4	4	4
thiobencarb	0	0	22	29	22	29
thiobencarb sulfoxide	0	0	1	1	1	1
toxaphene	0	0	24	24	24	24
tricyclazole	0	0	5	13	5	13
trifluralin	0	0	12	22	12	22
xylene	0	0	72	73	72	73

County: MARIN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride,1,2-D)	0	0	12	12	12	12
1,3-dichloropropene (1,3-D)	0	0	12	12	12	12
2,4-D	0	0	9	11	9	11
diazinon	0	0	1	1	1	1
endrin	0	0	8	10	8	10
formaldehyde	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	8	10	8	10
methoxychlor	0	0	8	10	8	10
methyl bromide	0	0	12	12	12	12
silvex	0	0	8	10	8	10
toxaphene	0	0	8	10	8	10

County: MARIPOSA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
simazine	0	0	13	15	13	15

County: MENDOCINO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride,1,2-D)	0	0	45	54	45	54
1,3-dichloropropene (1,3-D)	0	0	45	55	45	55
2,4-D	0	0	24	27	24	27
aldrin	0	0	2	2	2	2
atrazine	0	0	50	65	50	65
azinphos-methyl	0	0	55	56	55	56
bhc (other than gamma isomer)	0	0	2	4	2	4
captan	0	0	60	60	60	60
carbaryl	0	0	5	5	5	5
carbofuran	0	0	10	10	10	10
carbophenothion	0	0	1	1	1	1
chlordane	0	0	77	79	77	79
ddd	0	0	2	2	2	2
dde	0	0	2	2	2	2
ddt	0	0	2	2	2	2
dicofol	0	0	60	61	60	61

County: MENDOCINO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dieldrin	0	0	2	2	2	2
dimethoate	0	0	5	5	5	5
dinoseb	0	0	5	5	5	5
endosulfan	0	0	62	72	62	72
endosulfan sulfate	0	0	57	57	57	57
endrin	0	0	25	29	25	29
endrin aldehyde	0	0	2	2	2	2
ethion	0	0	2	2	2	2
glyphosate, isopropylamine salt	0	0	22	22	22	22
heptachlor	0	0	22	24	22	24
heptachlor epoxide	0	0	13	14	13	14
hexachlorobenzene	0	0	2	2	2	2
lindane (gamma-bhc)	0	0	25	29	25	29
methoxychlor	0	0	26	31	26	31
methyl bromide	0	0	45	59	45	59
ortho-dichlorobenzene	0	0	38	46	38	46
paraquat bis(methylsulfate)	0	0	5	5	5	5
screen (chlorinated hydrocarbon)	0	0	1	1	1	1
screen (organophosphate)	0	0	2	2	2	2
silvex	0	0	24	27	24	27
simazine	0	0	52	71	52	71
toxaphene	0	0	26	30	26	30
xylene	0	0	38	46	38	46

County: MERCED

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	17	17	17	17
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	195	232	199	236
1,3-dichloropropene (1,3-D)	0	0	159	254	159	254
2,4,5-t	0	0	29	39	29	39
2,4,6-trichlorophenol	0	0	17	17	17	17
2,4-D	0	0	87	120	87	120
2,4-DP, isooctyl ester	0	0	10	20	10	20
2,4-dinitrophenol	0	0	17	17	17	17
4(2,4-DB), butoxyethanol ester	0	0	17	17	17	17
4(2,4-DB), dimethylamine salt	0	0	2	2	2	2
acephate	0	0	3	3	3	3
alachlor	0	0	145	256	145	257
aldicarb	0	0	44	62	44	62
aldicarb sulfone	8	106	40	396	51	502
aldicarb sulfoxide	0	0	24	42	24	42
aldrin	0	0	49	49	49	49
ametryne	0	0	62	79	62	79
aminocarb	0	0	18	18	18	18
atrazin	0	0	61	78	61	78
atrazine	1	2	244	374	245	378
azinphos-methyl	0	0	49	60	49	60
azinphos-methyl-ox	0	0	3	3	3	3
barban	0	0	18	18	18	18
benefin	0	0	38	38	38	38
benomyl	0	0	53	54	53	54
bentazon, sodium salt	1	2	75	113	76	115
bhc (other than gamma isomer)	0	0	49	137	49	137
bromacil	0	0	80	118	80	118
bromoxynil octanoate	0	0	2	2	2	2
butylate	0	0	4	4	4	4
captan	0	0	49	50	49	50
carbaryl	0	0	67	78	67	78
carbendazim	0	0	4	4	4	4
carbofuran	0	0	78	88	78	88
carbophenothion	0	0	67	79	67	79
chlordane	0	0	54	56	54	56
chloroallyl alcohol (cis/trans)	0	0	3	3	3	3
chloropicrin	0	0	33	34	33	34
chlorothalonil	0	0	22	23	22	23
chloroxuron	0	0	1	1	1	1
chlorpropham	0	0	21	21	21	21
chlorpyrifos	0	0	45	56	45	56

County: MERCED

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
chlorthal-dimethyl	0	0	21	21	21	21
cyanazine	0	0	49	65	49	65
cycloate	0	0	8	8	8	8
cyprazine	0	0	45	61	45	61
dbcp	17	46	524	678	793	1251
ddd	0	0	50	50	50	50
dde	0	0	50	50	50	50
ddt	0	0	50	50	50	50
def	0	0	10	20	10	20
demeton	0	0	9	9	9	9
diazinon	1	3	100	181	100	186
diazoxon	0	0	3	3	3	3
dicamba	0	0	52	63	52	63
dichlorprop, butoxyethanol ester	0	0	19	19	19	19
dicofol	0	0	32	32	32	32
dieldrin	0	0	49	49	49	49
diethyl-ethyl	0	0	4	4	4	4
dimethoate	0	0	62	102	62	102
dinoseb	0	0	58	59	58	59
diphenamid	0	0	21	21	21	21
disulfoton	0	0	43	53	43	53
diuron	1	2	88	90	89	92
dmpa	0	0	38	38	38	38
endosulfan	0	0	65	148	65	148
endosulfan sulfate	0	0	53	62	53	62
endothall	0	0	2	2	2	2
endrin	0	0	58	60	58	60
endrin aldehyde	0	0	28	28	28	28
eptc	0	0	28	28	28	28
ethion	0	0	53	64	53	64
ethylene dibromide	0	0	135	224	139	234
ethylene dichloride	0	0	9	18	10	19
fenamiphos	0	0	23	23	23	23
fensulfathion	0	0	21	21	21	21
fenuron	0	0	19	19	19	19
fluometuron	0	0	19	19	19	19
glyphosate, isopropylamine salt	0	0	1	1	1	1
heptachlor	0	0	54	56	54	56
heptachlor epoxide	0	0	53	55	53	55
hexachlorobenzene	0	0	11	11	11	11
lindane (gamma-bhc)	0	0	61	63	61	63
linuron	0	0	40	40	40	40



County: MERCED

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
malathion	0	0	42	53	42	53
maneb	0	0	12	13	12	13
mcpa, dimethylamine salt	0	0	21	21	21	21
mcpb, sodium salt	0	0	3	3	3	3
merphos	0	0	21	21	21	21
methamidophos	0	0	24	24	24	24
methidathion	0	0	21	21	21	21
methiocarb	0	0	39	39	39	39
methomyl	0	0	61	71	61	71
methoxychlor	0	0	61	65	61	65
methyl bromide	0	0	126	167	126	167
methyl isothiocyanate	0	0	3	3	3	3
methyl parathion	0	0	52	63	52	63
methyl trithion	0	0	51	62	51	62
metolachlor	0	0	30	102	30	102
metribuzin	0	0	3	3	3	3
mevinphos	0	0	27	27	27	27
mexacarbate	0	0	39	39	39	39
mollinate	0	0	61	105	61	105
molinat sulfoxide	0	0	24	28	24	28
monuron	0	0	40	40	40	40
naled	0	0	26	26	26	26
napropamide	0	0	6	6	6	6
neburon	0	0	19	19	19	19
nitrofen	0	0	38	38	38	38
ortho-dichlorobenzene	0	0	84	97	84	97
ortho-dichlorobenzene, other related	0	0	27	54	27	54
oxamyl	0	0	39	39	39	39
oxydemeton-methyl	0	0	2	2	2	2
paraquat bis(methylsulfate)	0	0	18	19	18	19
parathion	0	0	53	64	53	64
pcnb	0	0	28	28	28	28
phorate	0	0	42	52	42	52
phosalone	0	0	25	26	25	26
phosmet	0	0	28	29	28	29
phosmet-oa	0	0	3	3	3	3
phosphamidon	0	0	21	21	21	21
picloram	0	0	10	20	10	20
prometon	0	0	134	153	134	156
prometryn	0	0	97	148	97	148
propachlor	0	0	22	22	22	22
propanil	0	0	21	21	21	21

County: MERCED

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
propargite	0	0	7	8	7	8
propazine	0	0	62	79	62	79
propham	0	0	51	61	51	61
propoxur	0	0	39	39	39	39
s,s,s-tributyl phosphorotrithioate	0	0	16	26	16	26
siduron	0	0	19	19	19	19
silvex	0	0	84	116	84	116
simazine	2	4	233	299	236	307
simeton	0	0	45	61	45	61
simetryn	0	0	63	80	63	80
tebuthiuron	0	0	1	1	1	1
terbutylazine	0	0	17	17	17	17
terbutryn	0	0	20	20	20	20
tetrachloroethylene	0	0	10	20	10	20
tetradifon	0	0	3	3	3	3
thiobencarb	0	0	59	107	59	107
thiobencarb sulfoxide	0	0	22	25	22	25
toxaphene	0	0	65	76	65	76
trichlorophon	0	0	2	2	2	2
trifluralin	0	0	70	86	70	86
xylene	0	0	78	79	78	79
ziram	0	0	10	11	10	11

County: MODOC

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	4	4	4	4
1,3-dichloropropene (1,3-D)	0	0	3	3	3	3
2,4-D	0	0	12	15	12	16
aldicarb	0	0	3	3	3	3
ametryne	0	0	2	2	2	2
aminocarb	0	0	1	1	1	1
atraton	0	0	2	2	2	2
atrazine	0	0	3	3	3	3
bromacil	0	0	1	1	1	1
carbaryl	0	0	1	1	1	1
carbofuran	0	0	3	3	3	3
demeton	0	0	1	1	1	1
dicamba	0	0	2	3	2	3

County: MODOC

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dinoseb	0	0	1	1	1	1
endrin	0	0	6	6	6	6
ethylene dibromide	0	0	1	1	1	1
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	6	6	6	6
maneb	0	0	1	1	1	1
mcpa, dimethylamine salt	0	0	3	3	3	3
methiocarb	0	0	1	1	1	1
methoxychlor	0	0	4	4	4	4
methyl bromide	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	3	3	3	3
parathion	0	0	1	1	1	1
picloram	0	0	3	3	3	3
prometon	0	0	1	2	1	2
prometryn	0	0	2	2	2	2
propazine	0	0	2	2	2	2
propoxur	0	0	1	1	1	1
silvex	0	0	6	6	6	6
simazine	0	0	6	6	6	6
simetryn	0	0	2	2	2	2
terbutryn	0	0	2	2	2	2
toxaphene	0	0	5	5	5	5

County: MONO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	2	2	2	2
1,3-dichloropropene (1,3-D)	0	0	2	2	2	2
2,4-D	0	0	2	3	2	3
alachlor	0	0	4	4	4	4
aldicarb	0	0	4	4	4	4
atrazine	0	0	10	10	10	10
bromacil	0	0	6	6	6	6
carbofuran	0	0	4	4	4	4
chlordane	0	0	4	4	4	4
dbcp	0	0	4	4	4	4
demeton	0	0	2	3	2	3
diuron	0	0	6	6	6	6
endrin	0	0	6	7	6	7
ethylene dibromide	0	0	4	4	4	4
heptachlor	0	0	4	4	4	4

County: MONO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
heptachlor epoxide	0	0	4	4	4	4
lindane (gamma-bhc)	0	0	6	7	6	7
methoxychlor	0	0	4	4	4	4
methyl bromide	0	0	2	2	2	2
prometon	0	0	6	6	6	6
rotenolone	0	0	3	9	3	9
rotenone	0	0	3	9	3	9
silvex	0	0	2	3	2	3
simazine	0	0	10	10	10	10
toxaphene	0	0	6	7	6	7
xylene	0	0	7	12	8	13

County: MONTEREY

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	9	9	9	9
1,2,4-trichlorobenzene	0	0	3	3	3	3
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	520	830	520	830
1,3-dichloropropene (1,3-D)	0	0	523	1161	523	1161
2,4,5-t	0	0	48	51	48	51
2,4,6-trichlorophenol	0	0	17	18	17	18
2,4-D	0	0	108	121	108	121
2,4-DP, isooctyl ester	0	0	12	12	12	12
2,4-dinitrophenol	0	0	15	15	15	15
4(2,4-DB), butoxyethanol ester	0	0	15	15	15	15
acenaphthene	0	0	9	10	9	10
acephate	0	0	56	57	56	57
acifluorfen, sodium salt	0	0	4	4	4	4
alachlor	0	0	42	46	42	46
aldicarb	0	0	73	85	73	85
aldrin	0	0	32	36	32	36
ametryne	0	0	13	13	13	13
aminocarb	0	0	17	18	17	18
atraton	0	0	13	13	13	13
atrazine	0	0	68	69	68	69
azinphos-methyl	0	0	29	30	29	30
barban	0	0	17	18	17	18
benefin	0	0	3	3	3	3
benomyl	0	0	100	108	100	108
bhc (other than gamma isomer)	0	0	31	57	31	57
bromacil	0	0	41	42	41	42

County: MONTEREY

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
captan	0	0	113	124	113	124
carbaryl	0	0	49	53	49	54
carbendazim	0	0	20	20	20	20
carbofuran	0	0	60	63	60	63
carbophenathion	0	0	14	14	14	14
chlordane	0	0	45	49	45	49
chloropicrin	0	0	77	85	77	85
chlorothalonil	0	0	48	51	48	51
chlorpropham	0	0	18	19	18	19
chlorpyrifos	0	0	52	53	52	53
chlorthal-dimethyl	3	7	45	46	47	55
coumaphos	0	0	5	5	5	5
cyanazine	0	0	4	4	4	4
dalapon	0	0	5	5	5	5
dbcp	1	2	104	109	104	111
dcpa acid metabolites	0	0	3	6	3	6
ddd	0	0	29	36	29	36
dde	0	0	29	38	30	41
ddt	1	2	40	50	42	53
ddvp	0	0	3	3	3	3
demeton	0	0	7	8	7	8
diazinon	0	0	122	146	122	147
dicamba	0	0	18	21	18	21
dichlorprop, butoxyethanol ester	0	0	3	3	3	3
dicofol	0	0	48	52	48	52
dieldrin	0	0	32	37	32	39
dimethoate	0	0	79	86	79	86
dinoseb	0	0	87	104	87	105
diphenamid	0	0	15	15	15	15
disulfoton	0	0	89	93	89	93
diuron	0	0	77	87	77	87
dmpa	0	0	12	12	12	12
dnoc, sodium salt	0	0	1	1	1	1
endosulfan	0	0	141	224	144	229
endosulfan sulfate	0	0	34	42	34	42
endothall	0	0	17	17	17	17
endrin	0	0	44	49	44	49
endrin aldehyde	0	0	34	40	34	40
eptc	0	0	1	1	1	1
ethion	0	0	2	3	2	3
ethoprop	0	0	5	5	5	5
ethylene dibromide	0	0	46	49	46	49
ethylene thiourea	0	0	1	1	1	1
fenamiphos	0	0	11	11	11	11

County: MONTEREY

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
fensulfathion	0	0	5	5	5	5
fenthion	0	0	5	5	5	5
fenuron	0	0	15	15	15	15
fenvaterate	0	0	3	3	3	3
fluometuron	0	0	18	19	18	19
fonofos	0	0	1	1	1	1
glyphosate, isopropylamine salt	0	0	4	4	4	4
heptachlor	0	0	44	48	44	48
heptachlor epoxide	0	0	44	48	44	48
hexachlorobenzene	0	0	9	9	9	9
lindane (gamma-bhc)	0	0	45	51	45	51
linuron	0	0	20	21	20	21
malathion	0	0	2	3	2	3
maneb	0	0	82	84	82	84
mcpa, alkanolamine salt	0	0	2	3	2	3
mcpa, butoxyethanol ester	0	0	2	3	2	3
mcpa, dimethylamine salt	0	0	5	6	5	6
mcpa, isooctyl ester	0	0	2	3	2	3
mcpa, sodium salt	0	0	2	3	2	3
mcpp, diethanolamine salt	0	0	1	1	1	1
mcpp, dimethylamine salt	0	0	4	4	4	4
mcpp, potassium salt	0	0	1	1	1	1
merphos	0	0	5	5	5	5
metolaxyl	0	0	1	1	1	1
methamidophos	0	0	41	42	41	42
methidathion	0	0	5	5	5	5
methiocarb	0	0	18	19	18	19
methiocarb sulfone	0	0	1	1	1	1
methiocarb sulfoxide	0	0	1	1	1	1
methomyl	0	0	137	147	137	147
methoxychlor	0	0	48	54	48	54
methyl bromide	0	0	514	846	514	846
methyl parathion	0	0	14	19	14	19
metribuzin	0	0	1	1	1	1
mevinphos	0	0	71	76	71	76
mexacarbate	0	0	17	18	17	18
molinate	0	0	6	6	6	6
monuron	0	0	17	18	17	18
mtp (monomethyl 2,3,5,6-tetrachloroterephthalic	0	0	17	20	17	22
naled	0	0	5	5	5	5
naphthalene	0	0	3	3	3	3
napropamide	0	0	1	1	1	1
neburon	0	0	17	18	17	18
nitrofen	0	0	14	14	14	14

County: MONTEREY

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
ortho-dichlorobenzene	0	0	455	601	455	601
ortho-dichlorobenzene, other related	0	0	9	9	9	9
oryzalin	0	0	2	2	2	2
oxamyl	0	0	53	54	53	54
paraquat bis(methylsulfate)	0	0	30	31	30	31
parathion	0	0	41	43	41	43
pcnb	0	0	28	29	28	29
phorate	0	0	25	25	25	25
prometon	0	0	34	35	34	35
prometryn	0	0	35	37	35	37
propachlor	0	0	13	13	13	13
propazine	0	0	13	13	13	13
propham	0	0	18	19	18	19
propoxur	0	0	18	19	18	19
propyzamide	0	0	12	12	12	12
prothiofos	0	0	3	3	3	3
ronnel	0	0	4	5	4	5
screen (carbamate)	0	0	7	7	7	7
secbumeton	0	0	1	1	1	1
siduron	0	0	18	19	18	19
silvex	0	0	26	29	26	29
simazine	0	0	93	96	94	97
simetryn	0	0	13	13	13	13
sulprofos	0	0	5	5	5	5
swep	0	0	4	4	4	4
terbutylazine	0	0	13	13	13	13
terbutryn	0	0	13	13	13	13
tetrachlorvinphos	0	0	5	5	5	5
thiobencarb	0	0	6	6	6	6
toxaphene	0	0	68	79	68	79
tpa (2,3,5,6-tetrachloroterephthalic acid)	5	5	12	14	17	22
trichloronate	0	0	3	3	3	3
trichlorophon	0	0	3	3	3	3
xylene	1	2	448	592	450	595
ziram	0	0	2	2	2	2

County: NAPA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	1	2	25	25	26	27
1,3-dichloropropene (1,3-D)	0	0	25	50	25	50
2,4-D	0	0	4	4	4	4

County: NAPA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
acephate	0	0	1	1	1	1
atrazine	0	0	10	14	10	14
barban	0	0	1	1	1	1
benomyl	0	0	4	4	4	4
bromacil	0	0	6	6	6	6
captan	0	0	5	5	5	5
carbaryl	0	0	10	18	10	19
carbendazim	0	0	8	8	8	8
carbofuran	0	0	1	1	1	1
chlordane	0	0	4	4	4	4
chlorpropham	0	0	1	1	1	1
chlorpyrifos	0	0	2	2	2	2
diazinon	0	0	6	6	6	6
dicofol	0	0	3	3	3	3
dimethoate	0	0	13	13	13	13
diquat dibromide	0	0	1	1	1	1
diuron	0	0	25	26	25	26
endrin	0	0	4	4	4	4
ethylene thiourea	0	0	7	7	7	7
fenamiphos	0	0	1	1	1	1
fenthion	0	0	5	5	5	5
glyphosate, isopropylamine salt	0	0	36	36	36	36
heptachlor	0	0	4	4	4	4
heptachlor epoxide	0	0	2	2	2	2
lindane (gamma-bhc)	0	0	4	4	4	4
linuron	0	0	1	1	1	1
maneb	0	0	7	7	7	7
methiocarb	0	0	1	1	1	1
methomyl	0	0	2	2	2	2
methoxychlor	0	0	4	4	4	4
methyl bromide	0	0	25	25	25	25
monuron	0	0	1	1	1	1
naled	0	0	3	3	3	3
neburon	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	25	25	25	25
oryzalin	0	0	12	12	12	12
oxamyl	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	9	9	9	9
pcnb	0	0	2	2	2	2
prometon	0	0	6	6	6	6
propham	0	0	1	1	1	1
silvex	0	0	4	4	4	4
simazine	1	2	45	55	45	57
toxaphene	0	0	4	4	4	4
xylene	0	0	25	25	25	25

County: NEVADA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
2,4-D	0	0	10	10	10	10
aldrin	0	0	4	4	4	4
atrazine	0	0	6	6	6	6
bhc (other than gamma isomer)	0	0	4	4	4	4
chlordane	0	0	4	4	4	4
dbcp	0	0	5	6	5	6
diazinon	0	0	5	5	5	5
dieldrin	0	0	4	4	4	4
endosulfan	0	0	4	4	4	4
endosulfan sulfate	0	0	3	3	3	3
endrin	0	0	8	8	8	8
endrin aldehyde	0	0	3	3	3	3
ethylene dibromide	0	0	5	6	5	6
heptachlor	0	0	4	4	4	4
heptachlor epoxide	0	0	4	4	4	4
lindane (gamma-bhc)	0	0	8	8	8	8
methoxychlor	0	0	4	4	4	4
silvex	0	0	4	4	4	4
simazine	0	0	6	6	6	6
toxaphene	0	0	8	8	8	8

County: ORANGE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride,1,2-D)	0	0	87	149	87	149
1,3-dichloropropene (1,3-D)	0	0	87	182	87	182
2,4,5-t	0	0	1	1	1	1
2,4-D	0	0	59	134	59	134
3,5-dichlorobenzoic acid	0	0	1	1	1	1
3-hydroxycarbofuran	0	0	1	1	1	1
3-ketocarbofuran phenol	0	0	1	1	1	1
4(2,4-DB), butoxyethanol ester	0	0	1	1	1	1
5-hydroxy dicamba	0	0	1	1	1	1
acephate	0	0	1	1	1	1
alachlor	0	0	34	123	34	123
aldicarb	0	0	90	143	90	143
aldicarb sulfone	0	0	1	1	1	1
aldicarb sulfoxide	0	0	1	1	1	1
aldrin	0	0	109	201	109	201
ametryne	0	0	1	1	1	1
atraton	0	0	1	1	1	1

County: ORANGE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
atrazine	2	4	196	495	196	502
atrazine dealkylated	0	0	1	1	1	1
azinphos-methyl	0	0	1	1	1	1
barban	0	0	1	1	1	1
benefin	0	0	1	1	1	1
benomyl	0	0	25	25	25	25
bentazon, sodium salt	0	0	31	85	31	85
bhc (other than gamma isomer)	0	0	81	152	81	152
bromacil	0	0	151	446	151	446
butachlor	0	0	1	1	1	1
butylate	0	0	1	1	1	1
captan	0	0	26	26	26	26
carbaryl	0	0	28	28	28	28
carbendazim	0	0	3	3	3	3
carbofuran	0	0	47	101	47	101
carbofuran phenol	0	0	1	1	1	1
carboxin	0	0	1	1	1	1
chlordane	0	0	109	221	109	221
chlordimeform	0	0	1	1	1	1
chloroneb	0	0	1	1	1	1
chloropicrin	0	0	69	69	69	69
chlorothalonil	0	0	7	7	7	7
chlorpropham	0	0	1	1	1	1
chlorpyrifos	0	0	1	1	1	1
chlorthal-dimethyl	0	0	2	2	2	2
cyanazine	0	0	3	8	3	8
cycloate	0	0	1	1	1	1
dbcp	0	0	90	142	91	144
dcpa acid metabolites	0	0	1	1	1	1
ddd	0	0	39	40	39	40
dde	0	0	39	40	39	40
ddt	0	0	39	40	39	40
ddvp	0	0	1	1	1	1
demeton	0	0	27	27	27	27
diazinon	0	0	144	410	144	410
dicamba	0	0	1	1	1	1
dichlorprop, butoxyethanol ester	0	0	1	1	1	1
dicofol	0	0	27	27	27	27
dieldrin	0	0	109	200	109	200
dimethoate	0	0	2	2	2	2
dinoseb	0	0	45	45	45	45
diphenamid	0	0	7	7	7	7
disulfoton	0	0	1	1	1	1
diuron	1	2	65	82	66	84

County: ORANGE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dinoc, sodium salt	0	0	1	1	1	1
endosulfan	0	0	80	138	80	138
endosulfan sulfate	0	0	81	98	81	98
endosulfan	0	0	1	1	1	1
endrin	0	0	119	238	119	238
endrin aldehyde	0	0	81	98	81	98
epic	0	0	1	1	1	1
ethion	0	0	1	1	1	1
ethoprop	0	0	1	1	1	1
ethylene dibromide	0	0	111	168	111	168
ethylene thiourea	0	0	1	1	1	1
fenamiphos	0	0	2	2	2	2
fenamiphos sulfone	0	0	1	1	1	1
fenamiphos sulfoxide	0	0	1	1	1	1
fenarimol	0	0	1	1	1	1
fluometuron	0	0	1	1	1	1
glyphosate, isopropylamine salt	0	0	3	5	3	5
heptachlor	0	0	109	219	109	219
heptachlor epoxide	0	0	109	219	109	219
hexachlorobenzene	0	0	26	27	26	27
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	119	246	119	246
linuron	0	0	1	1	1	1
malathion	0	0	83	186	83	186
mcpa, dimethylamine salt	0	0	1	1	1	1
methamidophos	0	0	1	1	1	1
methiocarb	0	0	1	1	1	1
methomyl	0	0	28	28	28	28
methoxychlor	0	0	62	171	62	171
methyl bromide	0	0	86	155	86	155
methyl parathion	0	0	1	1	1	1
metolachlor	0	0	1	1	1	1
metribuzin	0	0	1	1	1	1
metribuzin DA	0	0	1	1	1	1
mevinphos	0	0	2	2	2	2
molinate	0	0	5	8	5	8
napropamide	0	0	1	1	1	1
neburon	0	0	1	1	1	1
norflurazon	0	0	1	1	1	1
octyl bicycloheptenedicarboximide	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	57	93	57	93
oxamyl	0	0	44	44	44	44
paraquat bis(methylsulfate)	0	0	9	9	9	9
pebulate	0	0	1	1	1	1

County: ORANGE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
permethrin	0	0	1	2	1	2
phorate	0	0	1	1	1	1
picloram	0	0	1	1	1	1
prometon	0	0	56	74	56	74
prometryn	0	0	144	422	144	422
propachlor	0	0	1	1	1	1
propanil	0	0	1	1	1	1
propargite	0	0	1	1	1	1
propazine	0	0	1	1	1	1
propham	0	0	1	1	1	1
propoxur	0	0	1	1	1	1
propyzamide metabolite	0	0	1	1	1	1
s,s,s-tributyl phosphorotriithioate	0	0	1	1	1	1
silvex	0	0	59	133	59	133
simazine	9	23	195	487	199	511
simetryn	0	0	1	1	1	1
swep	0	0	1	1	1	1
tebuthiuron	0	0	1	1	1	1
terbacil	0	0	1	1	1	1
terbutryn	0	0	1	1	1	1
terrazole	0	0	1	1	1	1
tetrachlorvinphos	0	0	1	1	1	1
thiobencarb	0	0	3	5	3	5
toxaphene	0	0	113	225	113	225
triadimefon	0	0	1	1	1	1
tricyclazole	0	0	1	1	1	1
trifluralin	0	0	1	1	1	1
vermolate	0	0	1	1	1	1
xylene	0	0	57	93	57	93

County: PLACER

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2,4-trichlorobenzene	0	0	1	1	1	1
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	15	18	15	18
1,3-dichloropropene (1,3-D)	0	0	15	18	15	18
2,4-D	0	0	14	16	14	16
aldrin	0	0	2	2	2	2
atrazine	0	0	17	19	17	19
azinphos-methyl	0	0	4	4	4	4
bentazon, sodium salt	1	2	9	11	10	13

County: PLACER

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
bhc (other than gamma isomer)	0	0	2	4	2	4
bromacil	2	4	14	14	16	18
chlordane	0	0	2	2	2	2
dbcp	0	0	8	9	8	9
ddd	0	0	2	2	2	2
dde	0	0	2	2	2	2
ddt	0	0	2	2	2	2
diazinon	0	0	5	5	5	5
dieldrin	0	0	2	2	2	2
diuron	0	0	20	22	20	22
endosulfan	0	0	6	8	6	8
endosulfan sulfate	0	0	2	2	2	2
endrin	0	0	10	11	10	11
endrin aldehyde	0	0	2	2	2	2
ethylene dibromide	0	0	8	9	8	9
heptachlor	0	0	2	2	2	2
heptachlor epoxide	0	0	2	2	2	2
hexachlorobenzene	0	0	2	2	2	2
lindane (gamma-bhc)	0	0	9	10	9	10
methoxychlor	0	0	7	8	7	8
methyl bromide	0	0	15	18	15	18
molinat	0	0	6	6	6	6
molinat sulfoxide	0	0	4	4	4	4
naphthalene	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	13	13	13	13
paraquat bis(methylsulfate)	0	0	1	1	1	1
prometon	0	0	16	18	16	18
silvex	0	0	8	9	8	9
simazine	0	0	29	34	29	35
thiobencarb	0	0	4	4	4	4
thiobencarb sulfoxide	0	0	4	4	4	4
toxaphene	0	0	9	10	9	10
xylene	1	3	18	23	19	27

County: PLUMAS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	14	14	14	14
1,3-dichloropropene (1,3-D)	0	0	4	4	4	4
2,4-D	0	0	59	59	59	59
aldicarb	0	0	4	4	4	4

County: PLUMAS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
aldrin	0	0	2	2	2	2
ametryne	0	0	4	4	4	4
amitrole	0	0	29	29	29	29
atraton	0	0	4	4	4	4
atrazine	0	0	4	6	4	6
bhc (other than gamma isomer)	0	0	2	4	2	4
carbaryl	0	0	7	7	7	7
carbofuran	0	0	3	3	3	3
chlordane	0	0	2	2	2	2
chlorpyrifos	0	0	35	35	35	35
ddd	0	0	2	2	2	2
dde	0	0	2	2	2	2
ddt	0	0	2	2	2	2
demeton	0	0	9	9	9	9
dicamba	0	0	9	9	9	9
dieldrin	0	0	2	2	2	2
dimethoate	0	0	3	3	3	3
endosulfan	0	0	2	4	2	4
endosulfan sulfate	0	0	2	2	2	2
endrin	0	0	14	15	14	15
endrin aldehyde	0	0	2	2	2	2
fensulfathion	0	0	3	3	3	3
heptachlor	0	0	2	2	2	2
heptachlor epoxide	0	0	2	2	2	2
hexachlorobenzene	0	0	3	3	3	3
hexazinone	0	0	37	37	37	37
lindane (gamma-bhc)	0	0	14	15	14	15
methoxychlor	0	0	4	4	4	4
methyl bromide	0	0	4	4	4	4
paraquat bis(methylsulfate)	0	0	3	3	3	3
prometryn	0	0	3	3	3	3
propazine	0	0	4	4	4	4
silvex	0	0	16	16	16	16
simazine	0	0	31	33	31	33
simetryn	0	0	4	4	4	4
terbutryn	0	0	4	4	4	4
toxaphene	0	0	14	15	14	15

County: RIVERSIDE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2,4-trichlorobenzene			11	11	11	11
1,2-dichloropropane (propylene dichloride, 1,2-D)	5	14	342	582	344	600
1,3-dichloropropene (1,3-D)	0	0	350	684	350	684
2,4,5-t	0	0	6	6	6	6
2,4,6-trichlorophenol	0	0	11	11	11	11
2,4-D	0	0	266	372	266	372
2,4-dinitrophenol	0	0	11	11	11	11
acenaphthene	0	0	18	24	18	24
acephate	0	0	58	62	58	62
alachlor	0	0	284	494	284	494
aldicarb	0	0	127	150	127	150
aldrin	0	0	65	92	65	92
ametryne	0	0	2	2	2	2
atrazine	1	2	317	591	318	596
azinphos-methyl	0	0	67	69	67	69
benefin	0	0	22	22	22	22
benomyl	0	0	28	31	28	31
bentazon, sodium salt	0	0	7	7	7	7
bhc (other than gamma isomer)	0	0	66	186	66	186
bromacil	0	0	233	429	233	429
butylate	0	0	2	2	2	2
captan	0	0	76	81	76	81
carbaryl	0	0	96	100	96	100
carbofuran	0	0	273	308	274	309
chlordane	0	0	314	436	314	436
chlordimeform	0	0	20	20	20	20
chloroallyl alcohol (cis/trans)	0	0	4	8	4	8
chlorobenzilate	0	0	2	2	2	2
chloroneb	0	0	2	2	2	2
chloropicrin	0	0	106	113	106	113
chlorothalonil	0	0	99	104	99	104
chlorpropham	0	0	33	33	33	33
chlorpyrifos	0	0	59	62	59	62
chlorthal-dimethyl	0	0	73	77	73	77
cyanazine	0	0	46	51	46	51
cycloate	0	0	2	2	2	2
dalapon	0	0	12	12	12	12
dbcp	13	41	339	618	404	943
ddd	0	0	73	76	73	76
dde	0	0	73	76	73	76
ddt	0	0	73	76	73	76
ddvp	0	0	2	2	2	2
demeton	0	0	135	140	135	140
diazinon	0	0	237	412	237	412

County: RIVERSIDE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dicofol	0	0	97	102	97	102
dicrotophos	0	0	2	2	2	2
dieldrin	0	0	65	90	65	90
dimethoate	0	0	255	448	255	449
dinoseb	0	0	85	106	85	106
dioxathion	0	0	2	2	2	2
diphenamid	0	0	41	44	41	44
disulfoton	0	0	65	68	65	68
diuron	2	8	132	159	134	167
dnoc, sodium salt	0	0	42	45	42	45
endosulfan	0	0	127	303	127	303
endosulfan sulfate	0	0	108	155	108	155
endothall	0	0	39	41	39	41
endrin	0	0	341	534	341	534
endrin aldehyde	0	0	71	97	71	97
epn	0	0	2	2	2	2
eptc	0	0	29	29	29	29
ethion	0	0	40	40	40	40
ethylan	0	0	2	2	2	2
ethylene dibromide	0	0	344	699	345	702
ethylene thiourea	0	0	19	21	19	21
fenamiphos	0	0	56	58	56	58
fensulfothion	0	0	5	5	5	5
fenvalerate	0	0	5	5	5	5
fluchloralin	0	0	21	21	21	21
glyphosate, isopropylamine salt	0	0	186	202	186	202
heptachlor	0	0	316	446	316	446
heptachlor epoxide	0	0	295	413	295	413
hexachlorobenzene	0	0	51	58	51	58
lindane (gamma-bhc)	0	0	356	548	356	548
malathion	0	0	19	19	19	19
maneb	0	0	52	57	52	57
mcpa, dimethylamine salt	0	0	26	27	26	27
mcpa, sodium salt	0	0	1	1	1	1
merphos	0	0	3	3	3	3
methamidophos	0	0	73	76	73	76
methidathion	0	0	26	26	26	26
methiocarb	0	0	3	3	3	3
methiocarb sulfone	0	0	3	3	3	3
methiocarb sulfoxide	0	0	3	3	3	3
methomyl	0	0	100	103	100	103
methoxychlor	0	0	264	363	264	363
methyl bromide	0	0	339	543	339	543
methyl parathion	0	0	39	39	39	39



County: RIVERSIDE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
metribuzin	0	0	5	5	5	5
mevinphos	0	0	45	45	45	45
mirex	0	0	2	2	2	2
molinat	0	0	249	479	249	479
monocrotophos	0	0	2	2	2	2
naphthalene	0	0	11	11	11	11
napropamide	0	0	21	21	21	21
nitrofen	0	0	2	2	2	2
ortho-dichlorobenzene	0	0	204	317	204	317
oryzalin	0	0	40	42	40	42
ovex	0	0	2	2	2	2
oxamyl	0	0	95	115	95	115
paraquat bis(methylsulfate)	0	0	44	46	44	46
parathion	0	0	21	24	21	24
pcnb	0	0	21	23	21	23
pendimethalin	0	0	2	2	2	2
permethrin	0	0	1	1	1	1
phorate	0	0	59	61	59	61
phosalone	0	0	2	2	2	2
phosmet	0	0	2	2	2	2
picloram	0	0	12	12	12	12
profluralin	0	0	2	2	2	2
prometon	0	0	17	25	17	25
prometryn	0	0	223	393	223	393
propargite	0	0	20	20	20	20
propazine	0	0	3	3	3	3
propham	0	0	29	29	29	29
propoxur	0	0	2	2	2	2
propyzamide	0	0	20	20	20	20
pyrethrins	0	0	2	2	2	2
ronnel	0	0	2	2	2	2
s,s-s-tributyl phosphorotriothioate	0	0	21	21	21	21
screen (carbamate)	0	0	5	5	5	5
screen (chlorinated hydrocarbon)	0	0	5	5	5	5
screen (organophosphate)	0	0	5	5	5	5
silvex	0	0	267	373	267	373
simazine	8	16	327	604	333	632
simetryn	0	0	2	2	2	2
terbutryn	0	0	2	2	2	2
tetrachlorvinphos	0	0	2	2	2	2
tetradifon	0	0	17	17	17	17
thiobencarb	1	2	246	460	246	464
thiophanate-methyl	0	0	5	5	5	5
toxaphene	0	0	353	546	353	546

County: RIVERSIDE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
triadimefon	0	0	2	2	2	2
trichlorophon	0	0	34	34	34	34
trifluralin	0	0	14	14	14	14
vermolate	0	0	2	2	2	2
xylene	0	0	205	291	205	291
ziram	0	0	20	22	20	22

County: SACRAMENTO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	2	3	2	3
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	179	349	179	349
1,3-dichloropropene (1,3-D)	0	0	176	420	176	420
2,4,6-trichlorophenol	0	0	3	3	3	3
2,4-D	0	0	94	145	94	145
2,4-dinitrophenol	0	0	3	3	3	3
acenaphthene	0	0	6	6	6	6
alachlor	0	0	35	50	35	50
aldicarb	0	0	59	59	59	59
aldrin	0	0	28	31	28	31
atrazine	1	2	150	214	151	216
azinphos-methyl	0	0	2	2	2	2
bentazon, sodium salt	1	2	11	21	11	23
bhc (other than gamma isomer)	0	0	28	54	28	54
bromacil	0	0	53	77	53	77
carbaryl	0	0	7	8	7	8
carbofuran	0	0	4	4	4	4
chlordane	0	0	21	25	21	25
chlorothalonil	0	0	3	3	3	3
chlorpropham	0	0	3	3	3	3
chlorpyrifos	0	0	12	12	12	12
dbcp	0	0	8	8	8	8
ddd	0	0	28	31	28	31
dde	0	0	28	31	28	31
ddt	0	0	28	31	28	31
demeton	0	0	36	39	36	39
diazinon	0	0	35	50	35	50
dicofol	0	0	5	5	5	5
dieldrin	0	0	28	31	28	31
dimethoate	0	0	35	48	35	48
dinoseb	0	0	3	3	3	3

County: SACRAMENTO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
disulfoton	0	0	3	3	3	3
diuron	0	0	80	113	80	113
endosulfan	0	0	18	49	18	49
endosulfan sulfate	0	0	28	37	28	37
endrin	0	0	110	165	110	165
endrin aldehyde	0	0	18	27	18	27
ethylene dibromide	0	0	66	67	66	67
fenamiphos	0	0	60	72	60	72
heptachlor	0	0	29	32	29	32
heptachlor epoxide	0	0	28	31	28	31
hexachlorobenzene	0	0	17	20	17	20
lindane (gamma-bhc)	0	0	110	171	110	171
methiocarb	0	0	3	3	3	3
methomyl	0	0	5	5	5	5
methoxychlor	0	0	71	109	71	109
methyl bromide	0	0	150	304	150	304
molinate	0	0	56	75	56	75
molinate sulfoxide	0	0	21	23	21	23
naphthalene	0	0	3	3	3	3
ortho-dichlorobenzene	0	0	137	241	137	241
ortho-dichlorobenzene, other related	0	0	130	138	130	138
oxamyl	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	1	1	1	1
parathion	0	0	60	61	60	61
pendimethalin	0	0	3	3	3	3
phorate	0	0	59	69	59	69
prometon	0	0	34	45	34	45
prometryn	0	0	36	50	36	50
propham	0	0	3	3	3	3
propoxur	0	0	3	3	3	3
silvex	0	0	94	145	94	145
simazine	0	0	145	192	145	192
thiobencarb	0	0	55	76	55	76
thiobencarb sulfoxide	0	0	18	20	18	20
toxaphene	0	0	110	171	110	171
trichlorobenzene	0	0	3	3	3	3
xylene	0	0	138	234	138	235

County: SAN BENITO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	9	9	9	9
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	21	24	21	24
1,3-dichloropropene (1,3-D)	0	0	23	32	23	32
2,4,5-t	0	0	10	10	10	10
2,4,6-trichlorophenol	0	0	10	10	10	10
2,4-D	0	0	11	11	11	11
2,4-DP, isooctyl ester	0	0	10	10	10	10
2,4-dinitrophenol	0	0	10	10	10	10
4(2,4-DB), butoxyethanol ester	0	0	10	10	10	10
acephate	0	0	3	3	3	3
alachlor	0	0	10	10	10	10
aldicarb	0	0	10	10	10	10
aldrin	0	0	11	12	11	12
ametryne	0	0	10	10	10	10
aminocarb	0	0	10	10	10	10
atraton	0	0	10	10	10	10
atrazine	0	0	10	10	10	10
azinphos-methyl	0	0	5	5	5	5
barban	0	0	10	10	10	10
benomyl	0	0	14	15	14	15
bhc (other than gamma isomer)	0	0	11	23	11	23
bromacil	0	0	10	10	10	10
captan	0	0	15	15	15	15
carbaryl	0	0	18	19	18	19
carbendazim	0	0	2	2	2	2
carbofuran	0	0	24	24	24	24
carbophenothion	0	0	10	10	10	10
chlordane	0	0	24	25	24	25
chloropicrin	0	0	2	2	2	2
chlorothalonil	0	0	2	2	2	2
chlorpropham	0	0	10	10	10	10
dbcp	0	0	2	2	2	2
ddd	0	0	11	12	11	12
dde	0	0	11	12	11	12
ddf	0	0	11	12	11	12
diazinon	0	0	5	5	5	5
dicamba	0	0	10	10	10	10
dieldrin	0	0	11	12	11	12
dimethoate	0	0	4	4	4	4
dinoseb	0	0	10	10	10	10
diphenamid	0	0	3	3	3	3
disulfoton	0	0	5	5	5	5
diuron	0	0	10	10	10	10
dmpa	0	0	10	10	10	10

County: SAN BENITO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
endosulfan	0	0	16	19	16	19
endosulfan sulfate	0	0	11	12	11	12
endrin	0	0	11	12	11	12
endrin aldehyde	0	0	11	12	11	12
fenamiphos	0	0	1	1	1	1
fenuron	0	0	10	10	10	10
fluometuron	0	0	10	10	10	10
glyphosate, isopropylamine salt	0	0	14	14	14	14
heptachlor	0	0	24	26	24	26
heptachlor epoxide	0	0	24	26	24	26
hexachlorobenzene	0	0	1	2	1	2
lindane (gamma-bhc)	0	0	11	11	11	11
linuron	0	0	10	10	10	10
maneb	0	0	5	5	5	5
methamidophos	0	0	1	1	1	1
methiocarb	0	0	10	10	10	10
methomyl	0	0	15	15	15	15
methoxychlor	0	0	12	12	12	12
methyl bromide	0	0	14	17	14	17
mevinphos	0	0	1	1	1	1
mexacarbate	0	0	10	10	10	10
monuron	0	0	10	10	10	10
neburon	0	0	10	10	10	10
nitrofen	0	0	10	10	10	10
ortho-dichlorobenzene	0	0	9	9	9	9
ortho-dichlorobenzene, other related	0	0	9	9	9	9
oxamyl	0	0	10	10	10	10
paraquat bis(methylsulfate)	0	0	11	11	11	11
parathion	0	0	1	1	1	1
pcnb	0	0	10	10	10	10
prometon	0	0	10	10	10	10
prometyn	0	0	10	10	10	10
propachlor	0	0	10	10	10	10
propazine	0	0	10	10	10	10
propham	0	0	10	10	10	10
propoxur	0	0	10	10	10	10
siduron	0	0	10	10	10	10
silvex	0	0	10	10	10	10
simazine	0	0	42	49	42	49
simetyn	0	0	10	10	10	10
terbutylazine	0	0	10	10	10	10
terbutyn	0	0	10	10	10	10
toxaphene	0	0	14	14	14	14
ziram	0	0	1	1	1	1

County: SAN BERNARDINO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	1	1	1	1
1,2-dichloropropane (propylene dichloride, 1,2-D)	1	7	664	964	664	972
1,3-dichloropropene (1,3-D)	0	0	666	1339	666	1339
2,4,5-t	0	0	9	9	9	9
2,4-D	0	0	400	579	400	579
3-hydroxycarbofuran	0	0	4	4	4	4
acenaphthene	0	0	3	3	3	3
acephate	0	0	33	37	33	37
alachlor	0	0	88	131	89	132
aldicarb	0	0	62	88	62	88
aldicarb sulfone	0	0	4	4	4	4
aldicarb sulfoxide	0	0	4	4	4	4
aldrin	0	0	124	127	124	127
ametryne	0	0	14	14	14	14
atraton	0	0	7	7	7	7
atrazine	0	0	412	703	412	703
azinphos-methyl	0	0	79	81	79	81
benefin	0	0	28	28	28	28
benomyl	0	0	16	16	16	16
benzazon, sodium salt	0	0	35	39	35	39
bhc (other than gamma isomer)	0	0	124	256	124	256
bromacil	0	0	153	200	153	200
butylate	0	0	7	7	7	7
captan	0	0	30	30	30	30
carbaryl	0	0	43	43	43	43
carbofuran	0	0	396	617	396	617
chlordane	0	0	419	718	419	718
chlordecone	0	0	1	1	1	1
chlordimeform	0	0	19	19	19	19
chlorobenzilate	0	0	7	7	7	7
chloroneb	0	0	7	7	7	7
chloropicrin	0	0	57	58	57	58
chlorothalonil	0	0	48	69	48	69
chlorpropham	0	0	46	46	46	46
chlorpyrifos	0	0	48	48	48	48
chlorthal-dimethyl	0	0	60	63	60	63
cyanazine	0	0	13	13	13	13
cycloate	0	0	7	7	7	7
dalapon	0	0	17	20	17	20
dbcp	46	283	386	972	473	1920
ddd	0	0	124	127	124	127
dde	0	0	124	127	124	127
ddt	0	0	124	129	124	129
ddvp	0	0	7	7	7	7

County: SAN BERNARDINO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
demeton	0	0	202	212	202	212
diazinon	0	0	90	120	90	120
dicofol	0	0	33	33	33	33
dicrotophos	0	0	7	7	7	7
dieldrin	0	0	124	127	124	127
dimethoate	0	0	118	157	118	157
dinoseb	0	0	54	56	54	56
dioxathion	0	0	7	7	7	7
diphenamid	0	0	34	34	34	34
disulfoton	0	0	69	70	69	70
diuron	0	0	156	161	156	161
dnoc, sodium salt	0	0	28	28	28	28
endosulfan	0	0	138	270	138	270
endosulfan sulfate	0	0	140	145	140	145
endothall	0	0	19	19	19	19
endrin	0	0	442	716	442	716
endrin aldehyde	0	0	121	123	121	123
epn	0	0	7	7	7	7
epic	0	0	43	43	43	43
ethion	0	0	43	43	43	43
ethylene dibromide	0	0	365	1246	369	1255
fenamiphos	0	0	36	36	36	36
fluometuron	0	0	3	3	3	3
glyphosate, isopropylamine salt	0	0	245	319	245	319
heptachlor	0	0	418	714	419	718
heptachlor epoxide	0	0	419	718	419	719
hexachlorobenzene	0	0	112	115	112	115
lindane (gamma-bhc)	0	0	442	708	442	708
linuron	0	0	3	3	3	3
malathion	0	0	16	16	16	16
mcpa, dimethylamine salt	0	0	6	6	6	6
merphos	0	0	1	1	1	1
methamidophos	0	0	40	40	40	40
methiocarb	0	0	6	6	6	6
methomyl	0	0	46	46	46	46
methoxychlor	0	0	379	561	379	561
methyl bromide	0	0	669	1000	669	1000
methyl parathion	0	0	45	45	45	45
mevinphos	0	0	43	43	43	43
mirex	0	0	9	9	9	9
molinate	0	0	303	492	303	492
monocrotophos	0	0	7	7	7	7
monuron	0	0	3	3	3	3
naphthalene	1	3	3	3	4	6

County: SAN BERNARDINO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
neburon	0	0	3	3	3	3
nitrofen	0	0	9	9	9	9
ortho-dichlorobenzene	0	0	392	508	392	508
oxamyl	0	0	44	44	44	44
paraquat bis(methylsulfate)	0	0	49	53	49	53
pcnb	0	0	9	9	9	9
permethrin	0	0	1	1	1	1
phorate	0	0	42	42	42	42
phosalone	0	0	7	7	7	7
picloram	0	0	3	6	3	6
profuralin	0	0	9	9	9	9
prometon	0	0	7	7	7	7
prometryn	0	0	96	126	96	126
propargite	0	0	19	19	19	19
propazine	0	0	15	15	15	15
propham	0	0	42	42	42	42
propoxur	0	0	7	7	7	7
propyzamide	0	0	1	1	1	1
pyrethrins	0	0	7	7	7	7
ronnel	0	0	7	7	7	7
s,s,s-tributyl phosphorotrithioate	0	0	25	26	25	26
secdumeton	0	0	7	7	7	7
siduron	0	0	3	3	3	3
silvex	0	0	398	577	398	577
simazine	0	0	429	734	429	735
simetryn	0	0	15	15	15	15
terbutylazine	0	0	7	7	7	7
terbutryn	0	0	14	21	14	21
thiobencarb	0	0	294	471	294	471
toxaphene	0	0	448	714	449	715
triacdifeton	0	0	7	14	7	14
trichloronate	0	0	1	1	1	1
trifluralin	0	0	12	15	12	15
xylene	0	0	384	482	386	485

County: SAN DIEGO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride,1,2-D)	1	8	27	32	29	42
1,3-dichloropropene (1,3-D)	0	0	26	30	26	30
2,4,5-t	0	0	2	2	2	2
2,4-D	0	0	28	34	29	35
acephate	0	0	5	6	5	6
alachlor	0	0	11	24	11	24
aldicarb	0	0	10	10	10	10
aldrin	0	0	16	16	17	17
atrazine	0	0	18	36	18	36
azinphos-methyl	0	0	6	7	6	7
benefin	0	0	1	1	1	1
benomyl	0	0	1	1	1	1
bentazon, sodium salt	0	0	2	2	2	2
bhc (other than gamma isomer)	0	0	10	12	10	12
bromacil	0	0	7	18	7	18
captan	0	0	11	11	11	11
carbaryl	0	0	19	19	19	19
carbofuran	0	0	15	15	15	15
chlordan	0	0	18	21	19	22
chlordanmeform	0	0	1	1	1	1
chloropicrin	0	0	5	6	5	6
chlorothalonil	0	0	4	4	4	4
chlorpropham	0	0	1	1	1	1
chlorpyrifos	0	0	8	9	8	9
chlorthal-dimethyl	0	0	1	1	1	1
cyanazine	0	0	1	1	1	1
dalapon	0	0	1	1	1	1
dbcp	0	0	34	55	34	59
ddd	0	0	2	2	2	2
dde	0	0	2	2	2	2
ddt	0	0	2	2	2	2
demeton	0	0	16	16	16	16
diazinon	0	0	23	36	23	36
dicamba	0	0	1	1	1	1
dicofol	0	0	1	1	1	1
dieldrin	0	0	16	16	17	17
dimethoate	0	0	15	27	15	27
dinoseb	0	0	2	2	2	2
diphenamid	0	0	1	1	1	1
disulfoton	0	0	7	8	7	8
diuron	0	0	4	4	4	4
dnoc, sodium salt	0	0	1	1	1	1
endosulfan	0	0	10	13	10	13
endosulfan sulfate	0	0	10	11	10	11

County: SAN DIEGO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
endosulfan	0	0	1	1	1	1
endrin	0	0	38	51	38	51
endrin aldehyde	0	0	10	10	10	10
eptc	0	0	1	1	1	1
ethion	0	0	6	7	6	7
ethylene dibromide	0	0	33	56	33	56
fenamiphos	0	0	5	6	5	6
glyphosate, isopropylamine salt	0	0	4	4	4	4
heptachlor	0	0	24	27	24	27
heptachlor epoxide	0	0	24	27	24	27
hexachlorobenzene	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	38	51	39	52
malathion	0	0	4	5	4	5
maneb	0	0	1	1	1	1
mcpa, dimethylamine salt	0	0	1	1	1	1
mcppa	0	0	1	1	1	1
methamidophos	0	0	5	6	5	6
methidathion	0	0	3	4	3	4
methiocarb	0	0	3	3	3	3
methomyl	0	0	13	14	13	14
methoxychlor	0	0	27	35	27	35
methyl bromide	0	0	26	31	26	31
methyl parathion	0	0	6	7	6	7
mevinphos	0	0	5	6	5	6
molinate	0	0	17	35	17	35
ortho-dichlorobenzene	0	0	3	3	3	3
oxamyl	0	0	7	7	7	7
paraquat bis(methylsulfate)	0	0	18	18	18	18
parathion	0	0	1	1	1	1
phorate	0	0	5	6	5	6
picloram	0	0	1	1	1	1
prometryn	0	0	6	17	6	17
propargite	0	0	1	1	1	1
propham	0	0	1	1	1	1
propoxur	0	0	3	3	3	3
s.s.s-tributyl phosphotriothioate	0	0	1	1	1	1
silvex	0	0	29	35	30	36
simazine	0	0	27	46	27	46
tebuthiuron	1	2	6	14	6	16
thiobencarb	0	0	8	20	8	20
toxaphene	0	0	29	40	29	40
trichlorophon	0	0	5	6	5	6
trifluralin	0	0	1	1	1	1

County: SAN FRANCISCO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	3	3	3	3
1,3-dichloropropene (1,3-D)	0	0	3	3	3	3
2,4-D	0	0	3	3	3	3
carbaryl	0	0	3	3	3	3
dieldrin	0	0	3	3	3	3
glyphosate, isopropylamine salt	0	0	3	3	3	3
methoxychlor	0	0	3	3	3	3
methyl bromide	0	0	3	3	3	3
pcnb	0	0	3	3	3	3

County: SAN JOAQUIN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	5	17	316	393	330	429
1,3-dichloropropene (1,3-D)	0	0	297	518	297	518
2,4,5-t	0	0	1	1	1	1
2,4-D	1	2	94	123	94	125
3,5-dichlorobenzoic acid	0	0	1	1	1	1
3-hydroxycarbofuran	0	0	1	1	1	1
3-ketocarbofuran phenol	0	0	8	13	8	13
4(2,4-DB), butoxyethanol ester	0	0	1	1	1	1
5-hydroxy dicamba	0	0	1	1	1	1
acephate	0	0	52	59	52	59
alachlor	0	0	54	81	54	81
aldicarb	0	0	19	26	19	26
aldicarb sulfone	0	0	8	14	8	14
aldicarb sulfoxide	0	0	8	14	8	14
aldrin	0	0	51	61	51	61
ametryne	0	0	6	7	6	7
atraton	0	0	5	5	5	5
atrazine	0	0	210	302	210	303
atrazine dealkylated	0	0	1	1	1	1
azinphos-methyl	0	0	24	24	24	24
barban	0	0	1	1	1	1
benomyl	0	0	9	9	9	9
bentazon, sodium salt	0	0	50	68	50	69
bhc (other than gamma isomer)	0	0	27	51	27	51
bromacil	0	0	143	187	143	188
butachlor	0	0	1	1	1	1
butylate	0	0	6	6	6	6
captan	0	0	28	28	28	28

County: SAN JOAQUIN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
carbaryl	0	0	75	77	75	77
carbendazim	0	0	1	1	1	1
carbofuran	0	0	63	69	63	69
carbofuran phenol	0	0	1	1	1	1
carbophenothion	0	0	4	4	4	4
carboxin	0	0	1	1	1	1
chlordane	0	0	79	103	79	103
chloroallyl alcohol (cis/trans)	0	0	2	2	2	2
chloroneb	0	0	1	1	1	1
chloropicrin	0	0	53	62	55	64
chlorothalonil	0	0	31	31	31	31
chlorpropham	0	0	1	1	1	1
chlorpyrifos	0	0	7	7	7	7
chlorthal-dimethyl	0	0	7	7	7	7
cyanazine	0	0	18	19	18	19
cycloate	0	0	23	23	23	23
cyprazine	0	0	4	4	4	4
dbcp	21	63	319	711	392	1214
dcpa acid metabolites	0	0	1	1	1	1
ddd	0	0	27	28	27	28
dde	0	0	27	28	27	28
ddt	0	0	28	29	28	29
ddvp	0	0	1	1	1	1
demeton	0	0	15	17	15	17
diazinon	0	0	117	160	117	160
dicamba	0	0	1	1	1	1
dichlorprop, butoxyethanol ester	0	0	1	1	1	1
dicofol	0	0	34	34	34	34
dieldrin	0	0	51	61	51	61
dimethoate	0	0	85	125	85	125
dinoseb	0	0	42	42	42	42
diphenamid	0	0	19	19	19	19
disulfoton	0	0	11	11	11	11
diuron	0	0	93	95	93	95
dnoc, sodium salt	0	0	1	1	1	1
endosulfan	0	0	31	58	31	58
endosulfan sulfate	0	0	27	27	27	27
endothall	0	0	8	8	8	8
endrin	0	0	85	114	85	114
endrin aldehyde	0	0	27	27	27	27
eptc	0	0	10	10	10	10
ethion	0	0	4	4	4	4
ethoprop	0	0	1	1	1	1
ethyl alcohol	0	0	1	1	1	1

County: SAN JOAQUIN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
ethylene dibromide	0	0	282	465	284	480
ethylene thiourea	0	0	32	50	32	51
fenamiphos	0	0	18	22	18	22
fenamiphos sulfone	0	0	13	17	13	17
fenamiphos sulfoxide	0	0	13	17	13	17
fenarimol	0	0	1	1	1	1
fenvalerate	0	0	3	3	3	3
flumeturon	0	0	1	1	1	1
fluridone	0	0	1	1	1	1
fonofos	0	0	3	3	3	3
glyphosate, isopropylamine salt	0	0	4	6	4	6
heptachlor	0	0	79	103	79	103
heptachlor epoxide	0	0	59	72	59	72
hexachlorobenzene	0	0	26	30	26	30
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	85	114	85	114
linuron	0	0	4	4	4	4
maneb	0	0	33	33	33	33
metolaryl	0	0	2	2	2	2
methamidophos	0	0	40	43	40	43
methiocarb	0	0	1	1	1	1
methomyl	0	0	47	47	47	47
methoxychlor	0	0	65	86	65	86
methyl bromide	0	0	283	370	284	371
methyl isothiocyanate	0	0	4	4	4	4
methyl paraoxon	0	0	1	1	1	1
methyl parathion	0	0	4	4	4	4
methyl trithion	0	0	4	4	4	4
metolachlor	0	0	1	1	1	1
metribuzin	0	0	5	6	5	6
mevinphos	0	0	1	1	1	1
molinate	0	0	115	175	115	175
molinate sulfoxide	0	0	3	6	3	6
napropamide	0	0	1	1	1	1
neburon	0	0	1	1	1	1
norfurazon	0	0	1	1	1	1
octyl bicycloheptenedicarboximide	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	144	164	144	164
ortho-dichlorobenzene, other related	0	0	10	17	10	17
oryzalin	0	0	5	6	5	6
oxamyl	0	0	7	7	7	7
oxydemeton-methyl	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	35	35	35	35
parathion	0	0	9	9	9	9

County: SAN JOAQUIN

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
pcnb	0	0	3	3	3	3
pebulate	0	0	1	1	1	1
permethrin	0	0	1	2	1	2
phorate	0	0	29	29	29	29
picloram	0	0	1	1	1	1
prometon	0	0	65	69	65	69
prometryn	0	0	98	141	98	141
propachlor	0	0	1	1	1	1
propanil	0	0	1	1	1	1
propazine	0	0	6	7	6	7
propham	0	0	1	1	1	1
propoxur	0	0	1	1	1	1
propyzamide metabolite	0	0	1	1	1	1
silvex	0	0	80	101	80	102
simazine	0	0	217	298	217	298
simeton	0	0	4	4	4	4
simetryn	0	0	5	5	5	5
sweep	0	0	1	1	1	1
tebuthiuron	0	0	1	1	1	1
terbacil	0	0	1	1	1	1
terbutryn	0	0	2	3	2	3
terrazole	0	0	1	1	1	1
tetrachlorvinphos	0	0	1	1	1	1
thiobencarb	0	0	73	116	73	116
thiobencarb sulfoxide	0	0	3	4	3	4
toxaphene	0	0	102	136	102	136
triadimefon	0	0	1	1	1	1
tricyclazole	0	0	1	1	1	1
trifluralin	0	0	5	5	5	5
verolate	0	0	1	1	1	1
xylene	0	0	134	147	134	147
ziram	0	0	29	29	29	29

County: SAN LUIS OBISPO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2,4-trichlorobenzene	0	0	2	2	2	2
1,2-d; 1,3-d & C-3 compounds	0	0	3	3	3	3
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	51	58	51	58
1,3-dichloropropene (1,3-D)	0	0	57	68	57	68
2,4,5-t	0	0	12	13	12	14

County: SAN LUIS OBISPO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
2,4-D	0	0	65	107	65	107
3-hydroxycarbofuran	0	0	6	9	6	9
acenaphthene	0	0	1	1	1	1
acephate	0	0	15	15	15	15
alachlor	0	0	26	40	26	40
aldicarb	0	0	9	18	9	18
aldicarb sulfone	0	0	6	9	6	9
aldicarb sulfoxide	0	0	6	9	6	9
aldrin	0	0	15	18	15	18
ametryne	0	0	6	6	6	6
aminocarb	0	0	14	14	14	14
atrazin	0	0	6	6	6	6
atrazine	0	0	122	158	122	158
azinphos-methyl	0	0	24	24	24	24
barban	0	0	14	14	14	14
benomyl	0	0	1	1	1	1
bentazon, sodium salt	0	0	27	28	27	28
bhc (other than gamma isomer)	0	0	11	16	11	16
bromacil	0	0	32	44	32	44
captan	0	0	8	8	8	8
carbaryl	0	0	27	30	27	30
carbofuran	0	0	60	100	60	100
carbon disulfide	0	0			2	2
chlordane	0	0	50	107	50	107
chloropicrin	0	0	12	12	12	12
chlorothalonil	0	0	20	31	20	31
chlorpropham	0	0	14	14	14	14
chlorpyrifos	0	0	6	6	6	6
chlorsulfuron	0	0	2	2	2	2
chlorthal-dimethyl	0	0	15	15	16	16
cyanazine	0	0	1	1	1	1
dalapon	0	0	8	19	8	19
dbcp	0	0	112	156	112	156
ddd	0	0	5	5	5	5
dde	0	0	6	6	6	6
dat	0	0	5	5	5	5
demeton	0	0	23	23	23	23
diazinon	0	0	37	49	37	49
dicofol	0	0	6	6	6	6
dieldrin	0	0	17	20	17	20
dimethoate	0	0	26	36	26	36
dinoseb	0	0	2	2	2	2
disulfoton	0	0	24	24	24	24
diuron	0	0	23	23	23	23

County: SAN LUIS OBISPO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
endosulfan	0	0	26	36	26	36
endosulfan sulfate	0	0	18	18	18	18
endothall	0	0	1	1	1	1
endrin	0	0	58	99	59	100
endrin aldehyde	0	0	11	11	11	11
ethion	0	0	14	14	14	14
ethylene dibromide	0	0	103	141	103	141
fenamiphos	0	0	15	15	15	15
fenuron	0	0	14	14	14	14
fluometuron	0	0	14	14	14	14
glyphosate, isopropylamine salt	0	0	7	16	7	16
heptachlor	0	0	54	112	54	112
heptachlor epoxide	0	0	49	106	49	106
hexachlorobenzene	0	0	6	6	6	6
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	79	130	79	130
linuron	0	0	14	14	14	14
malathion	0	0	14	14	14	14
maneb	0	0	10	10	10	10
methamidophos	0	0	7	7	7	7
methiocarb	0	0	20	23	20	23
methomyl	0	0	34	37	34	37
methoxychlor	0	0	63	104	63	104
methyl bromide	0	0	57	68	57	68
methyl parathion	0	0	14	14	14	14
mevinphos	0	0	2	2	2	2
mexacarbate	0	0	13	13	14	14
molinate	0	0	55	72	55	72
monuron	0	0	14	14	14	14
mtp (monomethyl 2,3,5,6-tetrachloroterephthalate)	0	0	3	3	3	3
naphthalene	0	0	6	9	6	9
neburon	0	0	14	14	14	14
ortho-dichlorobenzene	0	0	20	23	21	24
oxamyl	0	0	21	24	21	24
paraquat bis(methylsulfate)	0	0	22	23	22	23
parathion	0	0	12	12	12	12
permethrin	0	0	3	3	3	3
phorate	0	0	11	12	11	12
picloram	0	0	7	18	7	18
prometon	0	0	15	15	15	15
prometryn	0	0	30	42	30	42
propazine	0	0	6	6	6	6
propham	0	0	14	14	14	14
propoxur	0	0	20	23	20	23



County: SAN LUIS OBISPO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
secbumeton	0	0	6	6	6	6
siduron	0	0	14	14	14	14
silvex	0	0	52	91	52	91
simazine	0	0	129	173	129	173
swep	0	0	14	14	14	14
terbutylazine	0	0	6	6	6	6
terbutryn	0	0	6	6	6	6
thiobencarb	0	0	54	71	54	71
toxaphene	0	0	57	99	57	99
tpa (2,3,5,6-tetrachloroterephthalic acid)	1	1	2	2	3	3
trichlorophon	0	0	2	2	2	2
trifluralin	0	0	7	18	7	18
xylene	0	0	26	34	26	35
xiram	0	0	7	7	7	7

County: SAN MATEO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
carbophenothion	0	0	8	8	8	8
chlordane	0	0	45	68	45	68
chloropicrin	0	0	2	2	2	2
chlorothalonil	0	0	6	6	6	6
chlorpropham	0	0	7	7	7	7
dbcp	0	0	24	38	24	38
ddd	0	0	20	28	20	28
dde	0	0	20	28	20	28
ddt	0	0	20	28	20	28
demeton	0	0	7	7	7	7
diazinon	0	0	33	54	33	54
dicofol	0	0	5	5	5	5
dieldrin	0	0	23	23	23	23
dinoseb	0	0	2	2	2	2
dioxacarb	0	0	8	8	8	8
dioxathion	0	0	8	8	8	8
disulfoton	0	0	15	15	15	15
diuron	0	0	7	7	7	7
endosulfan	0	0	27	51	27	51
endosulfan sulfate	0	0	15	15	15	15
endrin	0	0	45	64	45	64
endrin aldehyde	0	0	15	15	15	15
epn	0	0	1	1	1	1
ethion	0	0	14	14	14	14
ethylan	0	0	8	8	8	8
ethylene dibromide	0	0	24	38	24	38
fenamiphos	0	0	4	4	4	4
fenuron	0	0	7	7	7	7
fluometuron	0	0	7	7	7	7
heptachlor	0	0	44	59	44	59
heptachlor epoxide	0	0	34	39	34	39
hexachlorobenzene	0	0	12	12	12	12
lindane (gamma-bhc)	0	0	45	64	45	64
linuron	0	0	7	7	7	7
malathion	0	0	15	15	15	15
maneb	0	0	8	8	8	8
methamidophos	0	0	4	4	4	4
methiocarb	0	0	15	15	15	15
methomyl	0	0	23	23	23	23
methoxychlor	0	0	40	65	40	65
methyl bromide	0	0	41	88	41	88
methyl parathion	0	0	15	15	15	15
mexacarbate	0	0	7	7	7	7
mirex	0	0	8	8	8	8

County: SAN MATEO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	41	82	42	84
1,3-dichloropropene (1,3-D)	0	0	41	114	41	114
2,4-D	0	0	36	76	36	78
acephate	0	0	10	10	10	10
alachlor	0	0	24	39	24	39
aldicarb	0	0	13	13	13	13
aldrin	0	0	23	23	23	23
ametryne	0	0	7	7	7	7
aminocarb	0	0	15	15	15	15
atraton	0	0	7	7	7	7
atrazine	0	0	32	55	32	55
azinphos-methyl	0	0	18	18	18	18
barban	0	0	7	7	7	7
bendiocarb	0	0	8	8	8	8
benomyl	0	0	13	13	13	13
bentazon, sodium salt	0	0	32	74	32	74
bhc (other than gamma isomer)	0	0	23	51	23	51
bromacil	0	0	25	46	25	46
bufenicarb	0	0	8	8	8	8
captan	0	0	9	9	9	9
carbaryl	0	0	31	31	31	31
carbendazim	0	0	13	13	13	13
carbofuran	0	0	15	15	15	15

County: SAN MATEO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
molinate	0	0	25	46	25	46
monuron	0	0	7	7	7	7
neburon	0	0	7	7	7	7
ortho-dichlorobenzene	0	0	29	30	29	30
oxamyl	0	0	12	12	12	12
paraquat bis(methylsulfate)	0	0	2	2	2	2
parathion	0	0	8	8	8	8
pcnb	0	0	16	16	16	16
phorate	0	0	10	10	10	10
promecarb	0	0	8	8	8	8
prometon	0	0	7	7	7	7
prometryn	0	0	25	46	25	46
propazine	0	0	7	7	7	7
propham	0	0	7	7	7	7
propoxur	0	0	15	15	15	15
s,s,s-tributyl phosphorotrithioate	0	0	8	8	8	8
sebumeton	0	0	7	7	7	7
siduron	0	0	7	7	7	7
silvex	0	0	34	73	34	73
simazine	0	0	32	53	32	53
simetryn	0	0	7	7	7	7
swep	0	0	7	7	7	7
terbutylazine	0	0	7	7	7	7
terbutryn	0	0	7	7	7	7
tetradifon	0	0	8	8	8	8
thiobencarb	0	0	25	46	25	46
toxaphene	0	0	46	66	46	66
xylene	0	0	29	29	29	30
ziram	0	0	5	5	5	5

County: SANTA BARBARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-d; 1,3-d & C-3 compounds	0	0	1	1	1	1
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	41	53	41	53
1,3-dichloropropene (1,3-D)	0	0	47	60	47	60
2,4,5-t	0	0	4	4	4	4
2,4-D	0	0	79	87	79	87
2,4-dinitrophenol	0	0	4	4	4	4
acenaphthene	0	0	4	4	4	4
acephate	0	0	26	26	26	26

County: SANTA BARBARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
alachlor	0	0	29	31	29	31
aldicarb	0	0	25	25	25	25
aldrin	0	0	22	22	22	22
amethyne	0	0	11	11	11	11
aminocarb	0	0	18	18	18	18
atraton	0	0	11	11	11	11
atrazine	0	0	148	198	148	198
azinphos-methyl	0	0	17	17	17	17
barban	0	0	22	22	22	22
benefin	0	0	6	6	6	6
benomyl	0	0	30	32	30	32
bentazon, sodium salt	0	0	18	18	18	18
bhc (other than gamma isomer)	0	0	22	36	22	36
bromacil	0	0	43	46	43	46
captan	0	0	29	29	29	29
carbaryl	0	0	58	58	58	58
carbendazim	0	0	15	17	15	17
carbofuran	0	0	77	88	77	88
carbon disulfide	1	2	4	11	5	15
chlordane	0	0	56	75	56	75
chlordimeform	0	0	6	6	6	6
chloropicrin	0	0	30	30	30	30
chlorothalonil	0	0	17	17	17	17
chlorpropham	0	0	28	28	28	28
chlorpyrifos	0	0	20	20	20	20
chlorthal-dimethyl	0	0	25	25	25	25
cyanazine	0	0	15	15	15	15
dalapon	0	0	4	4	4	4
dbcp	0	0	137	208	137	208
ddd	0	0	20	20	20	20
dde	0	0	20	20	20	20
ddt	0	0	20	20	20	20
demeton	0	0	40	40	40	40
diazinon	0	0	29	31	29	31
dicamba	0	0	4	4	4	4
dicofol	0	0	22	22	22	22
dieldrin	0	0	22	25	22	25
dimethoate	0	0	32	32	32	32
dinoseb	0	0	23	24	23	24
diphenamid	0	0	15	15	15	15
disulfoton	0	0	25	25	25	25
diuron	0	0	64	65	64	65
dnoc, sodium salt	0	0	16	16	16	16
endosulfan	0	0	42	65	42	65

County: SANTA BARBARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
endosulfan sulfate	0	0	27	30	27	30
endothall	0	0	12	12	12	12
endrin	0	0	53	78	53	78
endrin aldehyde	0	0	22	22	22	22
eptc	0	0	6	6	6	6
ethion	0	0	11	11	11	11
ethylene dibromide	0	0	108	149	108	150
fenamiphos	0	0	15	15	15	15
fenuron	0	0	18	18	18	18
fiuchloralin	0	0	6	6	6	6
fluometuron	0	0	17	17	17	17
glyphosate, isopropylamine salt	0	0	8	8	8	8
heptachlor	0	0	63	85	63	87
heptachlor epoxide	0	0	54	72	54	72
hexachlorobenzene	0	0	18	20	18	20
lindane (gamma-bhc)	0	0	61	82	61	82
linuron	0	0	22	22	22	22
malathion	0	0	12	12	12	12
maneb	0	0	18	28	18	28
mcpa, dimethylamine salt	0	0	5	5	5	5
mcppa	0	0	4	4	4	4
merphos	0	0	6	6	6	6
methamidophos	0	0	20	20	20	20
methidathion	0	0	6	6	6	6
methiocarb	0	0	24	24	24	24
methiocarb sulfone	0	0	2	2	2	2
methiocarb sulfoxide	0	0	2	2	2	2
methomyl	0	0	48	48	48	48
methoxychlor	0	0	66	85	66	85
methyl bromide	0	0	50	71	50	71
methyl parathion	0	0	5	5	5	5
mevinphos	0	0	7	7	7	7
mexacarbate	0	0	17	17	17	17
molinat	0	0	87	109	87	109
monuron	0	0	22	22	22	22
mtp (monomethyl 2,3,5,6-tetrachloroterephthalic acid)	0	0	7	7	7	7
naphthalene	0	0	7	7	7	7
napropamide	0	0	6	6	6	6
neburon	0	0	22	22	22	22
ortho-dichlorobenzene	0	0	6	12	6	12
oryzalin	0	0	6	6	6	6
oxamyl	0	0	42	42	42	42
paraquat bis(methylsulfate)	0	0	39	39	39	39
parathion	0	0	15	15	15	15

County: SANTA BARBARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
pcnb	0	0	10	10	10	10
permethrin	0	0	6	6	6	6
phorate	0	0	13	13	13	13
prometon	0	0	22	23	22	23
prometryn	0	0	39	41	39	41
propargite	0	0	7	7	7	7
propazine	0	0	11	11	11	11
propham	0	0	28	28	28	28
propoxur	0	0	18	18	18	18
propyzamide	0	0	1	1	1	1
secbumeton	0	0	11	11	11	11
siduron	0	0	18	18	18	18
silvex	0	0	45	51	45	52
simazine	0	0	171	220	171	220
simetryn	0	0	4	4	4	4
swep	0	0	18	18	18	18
terbutylazine	0	0	11	11	11	11
terbutryn	0	0	11	11	11	11
tetradifon	0	0	6	6	6	6
thiobencarb	0	0	65	85	65	85
toxaphene	0	0	62	90	62	90
tpa (2,3,5,6-tetrachloroterephthalic acid)	4	4	3	3	7	7
trichlorobenzene	0	0	4	4	4	4
trichlorophenol	0	0	4	4	4	4
trichlorophon	0	0	7	7	7	7
xylene	0	0	5	6	5	6

County: SANTA CLARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	715	785	715	785
1,2,4-trichlorobenzene	0	0	44	51	44	51
1,2-d; 1,3-d & C-3 compounds	0	0	41	42	41	42
1,2-dichloropropane (propylene dichloride, 1,2-D)	1	2	1112	1750	1113	1754
1,3-dichloropropene (1,3-D)	0	0	1124	2334	1124	2337
2,4,5-t	0	0	1	1	1	1
2,4,6-trichlorophenol	0	0	45	52	45	52
2,4-D	0	0	69	86	69	86
2,4-dinitrophenol	0	0	45	52	45	52
3,5-dichlorobenzoic acid	0	0	1	1	1	1
3-hydroxycarbofuran	0	0	2	2	2	2

County: SANTA CLARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
3-ketocarbifuran phenol	0	0	1	1	1	1
4(2,4-DB), butoxyethanol ester	0	0	1	1	1	1
5-hydroxy dicamba	0	0	1	1	1	1
acenaphthene	0	0	29	43	29	43
acephate	0	0	75	76	75	76
alachlor	0	0	155	161	155	161
aldicarb	0	0	131	142	131	142
aldicarb sulfone	0	0	2	2	2	2
aldicarb sulfoxide	0	0	2	2	2	2
aldrin	0	0	160	169	160	169
ametryne	0	0	84	85	84	85
aminocarb	0	0	101	102	101	102
atraton	0	0	84	85	84	85
atrazine	0	0	134	137	134	137
atrazine dealkylated	0	0	1	1	1	1
azinphos-methyl	0	0	124	125	125	126
barban	0	0	80	81	80	81
benefin	0	0	16	16	16	16
benomyl	0	0	40	40	40	40
bentazon, sodium salt	0	0	29	31	29	31
bhc (other than gamma isomer)	0	0	160	256	160	256
bromacil	0	0	144	147	144	147
butachlor	0	0	1	1	1	1
butylate	0	0	1	1	1	1
captafol	0	0	96	97	96	97
captan	0	0	166	167	166	167
carbaryl	0	0	118	119	118	119
carbendazim	0	0	40	40	40	40
carbofuran	0	0	153	163	153	163
carbofuran phenol	0	0	1	1	1	1
carbophenothion	0	0	125	126	125	126
carboxin	0	0	1	1	1	1
chloramben	0	0	125	126	125	126
chlordane	0	0	221	243	221	243
chloroneb	0	0	1	1	1	1
chloropicrin	0	0	132	133	132	133
chlorothalonil	0	0	6	6	6	6
chlorpropham	0	0	101	102	101	102
chlorpyrifos	0	0	84	85	84	85
chlorthal-dimethyl	0	0	133	137	133	137
cyanazine	0	0	2	2	2	2
cycloate	0	0	1	1	1	1
dbcp	0	0	162	201	163	202

County: SANTA CLARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
ddd	0	0	160	169	160	169
dde	0	0	160	169	160	169
ddt	0	0	160	169	160	169
ddvp	0	0	1	1	1	1
demeton	0	0	108	109	109	110
diazinon	0	0	132	135	133	136
dicamba	0	0	1	1	1	1
dichlobenil	0	0	98	99	98	99
dichlorprop, butoxyethanol ester	0	0	1	1	1	1
dicofol	0	0	129	130	129	130
dieldrin	0	0	160	169	160	169
dimethoate	0	0	72	73	72	73
dinoseb	0	0	72	73	72	73
diphenamid	0	0	69	70	69	70
diquat dibromide	0	0	9	9	9	9
disulfoton	0	0	106	107	107	108
diuron	0	0	121	122	121	122
dnoc, sodium salt	0	0	11	11	11	11
endosulfan	0	0	167	228	167	228
endosulfan sulfate	0	0	160	169	160	169
endothall	0	0	74	75	74	75
endrin	0	0	246	286	246	287
endrin aldehyde	0	0	37	42	37	42
eptc	0	0	75	76	75	76
ethion	0	0	103	104	104	105
ethofumesate	0	0	1	1	1	1
ethoprop	0	0	1	1	1	1
ethylene dibromide	0	0	75	114	75	114
ethylene thiourea	0	0	3	3	3	3
fenamiphos	0	0	6	6	6	6
fenamiphos sulfone	0	0	1	1	1	1
fenamiphos sulfoxide	0	0	1	1	1	1
fenarimol	0	0	1	1	1	1
fensulfathion	0	0	103	104	104	105
fenuron	0	0	101	102	101	102
fluometuron	0	0	101	102	101	102
fluridone	0	0	1	1	1	1
fonofos	0	0	82	83	82	83
glyphosate, isopropylamine salt	0	0	15	20	15	20
heptachlor	0	0	221	244	221	244
heptachlor epoxide	0	0	221	242	221	242
hexachlorobenzene	0	0	122	196	122	196
hexazinone	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	242	276	242	276

County: SANTA CLARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
linuron	0	0	102	103	102	103
malathion	0	0	103	104	104	105
maneb	0	0	109	110	109	110
methamidophos	0	0	75	76	75	76
methiocarb	0	0	103	104	103	104
methomyl	0	0	114	115	114	115
methoxychlor	0	0	230	247	230	247
methyl bromide	0	0	1111	1793	1111	1793
methyl paraoxon	0	0	1	1	1	1
methyl parathion	0	0	104	105	104	105
metolachlor	0	0	18	18	18	18
metribuzin	0	0	75	76	75	76
mevinphos	0	0	1	1	1	1
mexacarbate	0	0	101	102	101	102
mirex	0	0	125	126	125	126
molinate	0	0	29	31	29	31
monuron	0	0	101	102	101	102
mtp (monomethyl 2,3,5,6-tetrachloroterephthalate)	0	0	8	10	8	10
naphthalene	0	0	81	103	81	103
napropamide	0	0	75	76	75	76
neburon	0	0	102	103	102	103
norflurazon	0	0	1	1	1	1
octyl bicycloheptenedicarboximide	0	0	1	1	1	1
ortho-dichlorobenzene	1	2	1016	1406	1016	1408
ortho-dichlorobenzene, other related	0	0	716	811	716	811
oryzalin	0	0	74	75	74	75
oxadiazon	0	0	2	2	2	2
oxamyl	0	0	109	110	109	110
paraquat bis(methylsulfate)	0	0	27	27	27	27
parathion	0	0	104	105	105	106
pcnb	0	0	14	14	14	14
pebulate	0	0	1	1	1	1
permethrin	0	0	1	2	1	2
phorate	0	0	66	67	66	67
phosmet	0	0	1	1	1	1
picloram	0	0	1	1	1	1
prometon	0	0	102	104	102	104
prometryn	0	0	112	116	112	116
propachlor	0	0	1	1	1	1
propanil	0	0	1	1	1	1
propazine	0	0	84	87	84	87
propham	0	0	101	102	101	102
propoxur	0	0	102	103	102	103
propyzamide metabolite	0	0	1	1	1	1

County: SANTA CLARA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
pyrazon	0	0	2	2	2	2
secbumeton	0	0	83	85	83	85
siduron	0	0	11	11	11	11
silvex	0	0	55	63	57	65
simazine	0	0	130	134	130	134
simetryn	0	0	12	12	12	12
swep	0	0	12	12	12	12
tebuthiuron	0	0	4	4	4	4
terbacil	0	0	1	1	1	1
terbutylazine	0	0	83	85	83	85
terbutryn	0	0	84	86	84	86
terrazole	0	0	1	1	1	1
tetrachlorvinphos	0	0	1	1	1	1
thiobencarb	0	0	28	30	28	30
toxaphene	1	2	250	287	251	290
tpa (2,3,5,6-tetrachloroterephthalic acid)	6	8	2	2	8	10
triadimefon	0	0	1	1	1	1
tricyclazole	0	0	1	1	1	1
trifluralin	0	0	126	127	126	127
vermolate	0	0	1	1	1	1
xylene	0	0	1002	1245	1002	1245
ziram	0	0	89	90	89	90

County: SANTA CRUZ

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	6	8	6	8
1,2,4-trichlorobenzene	1	4			1	4
1,2-dichloropropane (propylene dichloride, 1,2-D)	1	2	126	171	131	178
1,3-dichloropropene (1,3-D)	0	0	131	208	131	208
2,4,5-t	0	0	7	7	7	7
2,4,6-trichlorophenol	0	0	5	5	5	5
2,4-D	0	0	22	22	22	22
2,4-DP, isooctyl ester	0	0	5	5	5	5
2,4-dinitrophenol	0	0	5	5	5	5
4(2,4-DB), butoxyethanol ester	0	0	7	7	7	7
acenaphthene	0	0	3	6	3	6
acephate	0	0	19	20	19	20
alachlor	0	0	58	63	58	63
aldicarb	0	0	27	27	27	27
aldicarb sulfone	0	0	2	2	2	2

County: SANTA CRUZ

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
aldicarb sulfoxide	0	0	2	2	2	2
aldrin	0	0	18	22	18	22
ametryne	0	0	5	5	5	5
aminocarb	0	0	5	5	5	5
atraton	0	0	5	5	5	5
atrazine	0	0	42	44	42	44
azinphos-methyl	0	0	5	7	5	7
barban	0	0	5	5	5	5
benefin	0	0	2	2	2	2
benomyl	0	0	39	40	39	40
benfazon, sodium salt	0	0	1	1	1	1
bhc (other than gamma isomer)	0	0	18	46	18	46
bromacil	0	0	49	52	49	52
captan	0	0	28	29	28	29
carbaryl	0	0	38	39	38	39
carbendazim	0	0	3	3	3	3
carbofuran	0	0	61	62	61	62
carbophenothion	0	0	5	5	5	5
chlordane	0	0	69	76	69	76
chlordimeform	0	0	2	2	2	2
chloropicrin	0	0	20	21	20	21
chlorothalonil	0	0	34	35	34	35
chlorpropham	0	0	33	34	33	34
chlorpyrifos	0	0	32	35	32	35
chlorthal-dimethyl	0	0	4	4	4	4
coumaphos	0	0	2	2	2	2
cyanazine	0	0	2	2	2	2
dalapon	0	0	2	2	2	2
dbcp	0	0	42	43	42	43
ddd	0	0	44	49	45	50
dde	0	0	44	49	45	50
ddf	0	0	44	49	45	50
davp	0	0	2	2	2	2
demeton	0	0	6	6	6	6
diazinon	0	0	15	19	15	19
dicamba	0	0	7	7	7	7
dichlorprop, butoxyethanol ester	0	0	2	2	2	2
dicofol	0	0	32	33	32	33
dieldrin	0	0	18	22	18	22
dimethoate	0	0	23	25	23	25
dinoseb	0	0	25	25	25	25
diphenamid	0	0	29	30	29	30
disulfoton	0	0	32	35	32	35
diuron	0	0	41	42	41	42

County: SANTA CRUZ

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dmpa	0	0	5	5	5	5
dinoc, sodium salt	0	0	17	17	17	17
endosulfan	0	0	68	98	68	99
endosulfan sulfate	0	0	20	26	20	26
endothall	0	0	8	9	8	9
endrin	0	0	44	51	44	51
endrin aldehyde	0	0	20	26	20	26
eptc	0	0	1	1	1	1
ethion	0	0	3	5	3	5
ethoprop	0	0	2	2	2	2
ethylene dibromide	0	0	10	10	10	10
ethylene thiourea	0	0	1	1	1	1
fenamiphos	0	0	30	33	30	33
fensulfothion	0	0	2	2	2	2
fenthion	0	0	2	2	2	2
fenuron	0	0	5	5	5	5
fluometuron	0	0	5	5	5	5
glyphosate, isopropylamine salt	0	0	15	15	15	15
heptachlor	0	0	42	48	42	48
heptachlor epoxide	0	0	34	38	34	38
hexachlorobenzene	0	0	10	13	10	13
lindane (gamma-bhc)	0	0	44	54	44	54
linuron	0	0	5	5	5	5
maneb	0	0	30	31	30	31
mcpa, sodium salt	0	0	2	2	2	2
mcppa	0	0	2	2	2	2
merphos	0	0	2	2	2	2
methamidophos	0	0	18	21	18	21
methiocarb	0	0	7	7	7	7
methomyl	0	0	38	39	38	39
methoxychlor	0	0	64	69	64	69
methyl bromide	0	0	127	175	127	175
methyl parathion	0	0	5	7	5	7
mevinphos	0	0	5	7	5	7
mexacarbate	0	0	5	5	5	5
molinate	0	0	12	12	12	12
monuron	0	0	5	5	5	5
naled	0	0	2	2	2	2
naphthalene	1	6	1	1	2	7
neburon	0	0	5	5	5	5
nitrofen	0	0	5	5	5	5
ortho-dichlorobenzene	1	6	41	51	42	57
ortho-dichlorobenzene, other related	0	0	10	12	10	12
oxamyl	0	0	38	39	38	39

County: SANTA CRUZ

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
paraquat bis(methylsulfate)	0	0	24	25	24	25
parathion	0	0	28	29	28	29
pcnb	0	0	35	36	35	36
permethrin	0	0	2	4	2	4
phorate	0	0	25	27	25	27
prometon	0	0	10	10	10	10
promethyn	0	0	37	39	37	39
propachlor	0	0	5	5	5	5
propargite	0	0	2	2	2	2
propazine	0	0	5	5	5	5
propham	0	0	6	6	6	6
propoxur	0	0	7	7	7	7
propyzamide	0	0	2	2	2	2
prothiofos	0	0	2	2	2	2
ronnel	0	0	2	2	2	2
s,s,s-tributyl phosphorotriothioate	0	0	2	2	2	2
siduron	0	0	5	5	5	5
silvex	0	0	19	19	19	19
simazine	0	0	48	50	48	50
simetryn	0	0	6	6	6	6
terbutylazine	0	0	5	5	5	5
terbutryn	0	0	5	5	5	5
tetrachlorvinphos	0	0	2	2	2	2
thiobencarb	0	0	12	12	12	12
toxaphene	0	0	46	58	46	58
trichloronate	0	0	2	2	2	2
trichlorophon	0	0	3	5	3	5
xylene	4	31	38	46	43	80
ziram	0	0	29	30	29	30

County: SHASTA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride,1,2-D)	0	0	18	18	18	18
1,3-dichloropropene (1,3-D)	0	0	12	12	12	12
2,4-D	0	0	34	55	34	55
3-hydroxycarbofuran	0	0	1	1	1	1
acrolein	0	0	3	3	3	3
alachlor	0	0	4	5	4	5
aldicarb	0	0	11	12	11	12
aldicarb sulfone	0	0	1	1	1	1

County: SHASTA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
aldicarb sulfoxide	0	0	1	1	1	1
aldrin	0	0	22	22	22	22
ametryne	0	0	19	19	19	19
aminocarb	0	0	1	1	1	1
amitrole	0	0	3	3	3	3
atraton	0	0	19	20	19	20
atrazine	0	0	40	55	40	55
azinphos-methyl	0	0	8	8	8	8
benomyl	0	0	8	8	8	8
bentazon, sodium salt	0	0	15	26	15	26
bhc (other than gamma isomer)	0	0	23	27	23	27
bromacil	0	0	4	4	4	4
bromide	0	0	18	27	18	27
captan	0	0	8	8	8	8
carbaryl	0	0	25	26	25	26
carbofuran	0	0	24	25	24	25
carbophenothion	0	0	1	1	1	1
chlordane	0	0	26	27	26	27
chloropicrin	0	0	11	12	11	12
chlorpropham	0	0	22	22	22	22
dbcp	0	0	18	21	18	21
ddd	0	0	4	4	4	4
dde	0	0	4	4	4	4
ddt	0	0	4	4	4	4
demeton	0	0	16	16	16	16
diazinon	0	0	16	16	16	16
dichlobenil	0	0	1	1	1	1
dieldrin	0	0	23	23	23	23
disulfoton	0	0	12	12	12	12
diuron	0	0	26	26	26	26
endosulfan	0	0	23	27	23	27
endosulfan sulfate	0	0	23	23	23	23
endothall	0	0	1	2	1	2
enrin	0	0	54	79	54	79
enrin aldehyde	0	0	23	23	23	23
ethion	0	0	12	12	12	12
ethylene dibromide	0	0	19	31	19	31
fluometuron	0	0	22	22	22	22
formaldehyde	0	0	3	3	3	3
glyphosate, isopropylamine salt	0	0	4	4	4	4
heptachlor	0	0	24	25	24	25
heptachlor epoxide	0	0	22	23	22	23
hexachlorobenzene	0	0	4	4	4	4
lindane (gamma-bhc)	0	0	54	79	54	79

County: SHASTA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
linuron	0	0	22	22	22	22
malathion	0	0	12	12	12	12
methidathion	0	0	1	1	1	1
methiocarb	0	0	23	24	23	24
methomyl	0	0	24	24	24	24
methoxychlor	0	0	34	51	34	51
methyl bromide	0	0	4	4	4	4
methyl parathion	0	0	9	9	9	9
molinate	0	0	17	28	17	28
monuron	0	0	22	22	22	22
neburon	0	0	22	22	22	22
oxamyl	0	0	23	23	23	23
paraquat bis(methylsulfate)	0	0	10	10	10	10
parathion	0	0	4	7	4	7
phosalone	0	0	1	1	1	1
phosmet	0	0	2	2	2	2
picloram	0	0	2	2	2	2
prometon	0	0	8	8	8	8
prometryn	0	0	21	23	21	23
propazine	0	0	19	19	19	19
propham	0	0	22	22	22	22
propoxur	0	0	23	24	23	24
silvex	0	0	33	54	33	54
simazine	0	0	40	55	40	55
simetryn	0	0	19	19	19	19
terbutryn	0	0	19	19	19	19
thiobencarb	0	0	17	26	17	26
toxaphene	0	0	54	78	54	78
ziram	0	0	3	3	3	3

County: SIERRA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	2	2	2	2
2,4-D	0	0	12	23	12	23
aldicarb	0	0	1	1	1	1
aldrin	0	0	1	1	1	1
ametryne	0	0	1	1	1	1
atraton	0	0	1	1	1	1
atrazine	0	0	1	1	1	1
bhc (other than gamma isomer)	0	0	1	2	1	2

County: SIERRA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
chlordan	0	0	1	1	1	1
ddd	0	0	1	1	1	1
dde	0	0	1	1	1	1
ddf	0	0	1	1	1	1
dieldrin	0	0	1	1	1	1
endosulfan	0	0	1	2	1	2
endosulfan sulfate	0	0	1	1	1	1
endrin	0	0	1	1	1	1
endrin aldehyde	0	0	1	1	1	1
heptachlor	0	0	1	1	1	1
heptachlor epoxide	0	0	1	1	1	1
hexachlorobenzene	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	1	1	1	1
prometryn	0	0	1	1	1	1
propazine	0	0	1	1	1	1
silvex	0	0	11	11	11	11
simazine	0	0	1	1	1	1
simetryn	0	0	1	1	1	1
terbutryn	0	0	1	1	1	1
toxaphene	0	0	2	3	2	3

County: SISKIYOU

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	1	1	1	1
1,2-d; 1,3-d & C-3 compounds	0	0	1	1	1	1
1,2-dichloropropane (propylene dichloride, 1,2-D)	3	6	16	16	19	22
1,3-dichloropropene (1,3-D)	0	0	15	16	15	16
2,4-D	0	0	17	20	17	20
aldicarb	0	0	18	19	18	19
ametryne	0	0	8	9	8	9
aminocarb	0	0	4	4	4	4
atraton	0	0	8	9	8	9
atrazine	1	2	32	38	32	40
bromacil	0	0	10	10	10	10
carbaryl	0	0	11	11	11	11
carbofuran	0	0	19	19	19	19
chloropicrin	0	0	2	2	2	2
chlorpyrifos	0	0	10	10	10	10
dbcp	0	0	5	7	5	7
demeton	0	0	8	8	8	8



County: SISKIYOU

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
diazinon	0	0	2	2	2	2
dicamba	0	0	14	14	14	14
disulfoton	0	0	1	1	1	1
diuron	0	0	9	9	9	9
endrin	0	0	12	16	12	16
ethion	0	0	7	7	7	7
ethoprop	0	0	6	6	6	6
ethylene dibromide	0	0	5	7	5	7
hexazinone	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	12	16	12	16
malathion	0	0	1	1	1	1
methamidophos	0	0	9	9	9	9
methiocarb	0	0	4	4	4	4
methoxychlor	0	0	7	8	7	8
methyl bromide	0	0	9	10	9	10
metribuzin	0	0	9	9	9	9
molinate	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	1	1	1	1
ortho-dichlorobenzene, other related	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	22	22	22	22
parathion	0	0	5	6	5	6
phosmet	0	0	2	2	2	2
picloram	0	0	11	11	11	11
prometryn	0	0	8	10	8	10
propazine	0	0	8	9	8	9
propoxur	0	0	4	4	4	4
sivex	0	0	11	14	11	14
simazine	1	2	32	38	32	40
simetryn	0	0	8	9	8	9
terbutryn	0	0	8	9	8	9
toxaphene	0	0	11	15	11	15
xylene	0	0	1	1	1	1
ziram	0	0	4	4	4	4

County: SOLANO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride,1,2-D)	0	0	67	111	67	111
1,3-dichloropropane (1,3-D)	0	0	68	168	68	168
2,4-D	0	0	25	43	25	43
acephate	0	0	13	13	13	13

County: SOLANO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
alachlor	0	0	30	31	30	31
aldicarb	0	0	12	16	12	16
aldicarb sulfone	0	0	4	8	4	8
aldicarb sulfoxide	0	0	4	8	4	8
ametryne	0	0	1	2	1	2
atrazine	2	11	19	21	21	32
azinphos-methyl	0	0	15	15	15	15
benomyl	0	0	24	24	24	24
bentazon, sodium salt	0	0	9	9	9	9
bromacil	0	0	21	25	21	25
captan	0	0	33	39	33	40
carbaryl	0	0	30	30	30	30
carbendazim	0	0	10	10	10	10
carbofuran	0	0	24	26	24	26
chlordane	0	0	11	11	11	11
chloropicrin	0	0	1	1	1	1
chlorothalonil	0	0	16	16	16	16
chlorpyrifos	0	0	19	19	19	19
chlorthal-dimethyl	0	0	2	2	2	2
cyanazine	0	0	16	17	16	17
dbcp	0	0	28	54	28	54
demeton	0	0	5	5	5	5
diazinon	0	0	15	17	15	17
dicofol	0	0	20	20	20	20
dimethoate	0	0	18	18	18	18
dinoseb	0	0	17	17	17	17
disulfoton	0	0	23	23	23	23
diuron	0	0	18	21	18	21
dnoc, sodium salt	0	0	16	16	16	16
endosulfan	0	0	23	40	23	40
endothall	0	0	8	8	8	8
endrin	0	0	22	40	22	40
ethylene dibromide	0	0	28	52	28	52
heptachlor	0	0	12	12	12	12
heptachlor epoxide	0	0	11	11	11	11
lindane (gamma-bhc)	0	0	21	39	21	39
maneb	0	0	18	18	18	18
methamidophos	0	0	13	13	13	13
methomyl	0	0	25	25	25	25
methoxychlor	0	0	32	56	32	56
methyl bromide	0	0	65	107	65	107
metolachlor	0	0	8	8	8	8
metribuzin	0	0	1	2	1	2
molinate	0	0	1	1	1	1

County: SOLANO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
ortho-dichlorobenzene	0	0	61	76	61	76
oryzalin	0	0	9	9	9	9
paraquat bis(methylsulfate)	0	0	19	19	19	19
parathion	0	0	16	16	16	16
pcnb	0	0	2	2	2	2
phorate	0	0	16	16	16	16
prometon	0	0	13	18	13	18
prometryn	0	0	1	2	1	2
propazine	0	0	1	2	1	2
silvex	0	0	25	43	25	43
simazine	0	0	45	58	45	59
terbutryn	0	0	1	2	1	2
thiobencarb	0	0	1	1	1	1
toxaphene	0	0	22	44	22	44
xylene	0	0	61	76	61	76
ziram	0	0	15	15	15	15

County: SONOMA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	2	2	2	2
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	222	235	222	235
1,3-dichloropropene (1,3-D)	0	0	222	314	222	314
2,4-D	0	0	41	47	41	47
acenaphthene	0	0	7	7	7	7
acephate	0	0	1	1	1	1
alachlor	0	0	6	10	6	10
aldrin	0	0	13	13	13	13
atrazine	0	0	58	93	58	93
azinphos-methyl	0	0	14	14	14	14
benomyl	0	0	20	20	20	20
bhc (other than gamma isomer)	0	0	13	35	13	35
bromacil	0	0	6	12	6	12
captan	0	0	25	26	25	26
carbaryl	0	0	33	33	33	33
carbofuran	0	0	8	9	8	9
carbon disulfide	0	0	1	2	3	5
chlordane	0	0	45	46	45	46
chloropicrin	0	0	14	14	14	14
chlorpyrifos	0	0	13	13	13	13
ddd	0	0	13	13	13	13

County: SONOMA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
acle	0	0	13	13	13	13
adit	0	0	13	13	13	13
demeton	0	0	11	12	11	12
diazinon	0	0	18	24	18	24
dicofol	0	0	5	5	5	5
dieldrin	0	0	10	10	10	10
dimethoate	0	0	28	36	28	36
dinoseb	0	0	14	14	14	14
diuron	0	0	12	12	12	12
dnoc, sodium salt	0	0	8	8	8	8
endosulfan	0	0	19	37	19	37
endosulfan sulfate	0	0	13	13	13	13
endrin	0	0	56	66	56	66
endrin aldehyde	0	0	13	13	13	13
ethion	0	0	14	14	14	14
glyphosate, isopropylamine salt	0	0	51	62	51	62
heptachlor	0	0	49	50	49	50
heptachlor epoxide	0	0	35	36	35	36
hexachlorobenzene	0	0	10	10	10	10
lindane (gamma-bhc)	0	0	56	61	56	61
malathion	0	0	2	2	2	2
maneb	0	0	10	10	10	10
methoxychlor	0	0	43	47	43	47
methyl bromide	0	0	222	235	222	235
molinate	0	0	6	12	6	12
naled	0	0	5	5	5	5
naphthalene	0	0	6	6	6	6
ortho-dichlorobenzene	0	0	175	188	175	188
oryzalin	0	0	1	1	1	1
paraquat bis(methylsulfate)	0	0	9	9	9	9
phosmet	0	0	11	11	11	11
prometryn	0	0	6	12	6	12
silvex	0	0	40	45	40	45
simazine	0	0	66	101	66	101
thiobencarb	0	0	6	12	6	12
toxaphene	0	0	56	66	56	66
xylene	0	0	180	183	180	184

County: STANISLAUS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,1,2,2-tetrachloroethane	0	0	10	10	11	11
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	358	397	359	401
1,3-dichloropropane (1,3-D)	0	0	321	576	321	576
2,4,5-t	0	0	23	37	23	37
2,4,6-trichlorophenol	0	0	10	10	10	10
2,4-D	0	0	118	156	118	156
2,4-DP, isooctyl ester	0	0	20	24	20	26
2,4-dinitrophenol	0	0	10	10	10	10
4(2,4-DB), butoxyethanol ester	0	0	10	10	10	10
acenaphthene	0	0	55	55	55	55
acephate	0	0	10	10	10	10
atachlor	0	0	85	126	85	126
aldicarb	0	0	20	24	20	24
aldicarb sulfone	8	88	23	173	31	275
aldicarb sulfoxide	0	0	10	14	10	14
aldrin	0	0	135	185	135	185
ametryne	0	0	38	44	38	44
aminocarb	0	0	10	10	10	10
atraton	0	0	38	44	38	44
atrazine	3	6	273	453	277	461
azinphos-methyl	0	0	27	32	27	32
barban	0	0	10	10	10	10
benefin	0	0	12	12	12	12
benomyl	0	0	29	29	29	29
bentazon, sodium salt	3	6	22	41	25	47
bhc (other than gamma isomer)	0	0	77	219	77	219
bromacil	0	0	117	178	117	178
butylate	0	0	4	4	4	4
captan	0	0	35	35	35	35
carbaryl	0	0	52	56	52	56
carbendazim	0	0	8	8	8	8
carbofuran	0	0	34	38	34	38
carbophenothion	0	0	36	42	36	42
chlordane	0	0	171	244	171	244
chlordecone	0	0	1	1	1	1
chloropicrin	0	0	193	196	193	196
chlorothalonil	0	0	12	12	12	12
chlorpropham	0	0	10	10	10	10
chlorpyrifos	0	0	18	23	18	23
copper	0	0	1	1	1	1
cyanazine	0	0	28	34	28	34
cyprazine	0	0	28	34	28	34
dbcp	38	145	430	926	549	1693
ddd	0	0	102	104	102	104

County: STANISLAUS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dde	0	0	102	102	102	102
ddt	0	0	102	104	102	104
def	0	0	10	14	10	14
demeton	0	0	31	44	31	44
diazinon	0	0	66	91	66	91
dicamba	0	0	23	37	23	37
dichlorprop, butoxyethanol ester	0	0	10	10	10	10
dicofol	0	0	36	37	36	37
dieldrin	0	0	135	185	135	185
dimethoate	0	0	45	62	45	62
dinoseb	0	0	42	51	42	51
disulfoton	0	0	15	29	15	29
diuron	5	12	89	117	92	129
dmpa	0	0	12	12	12	12
endosulfan	0	0	103	209	103	209
endosulfan sulfate	0	0	99	99	99	99
endrin	0	0	186	264	186	264
endrin aldehyde	0	0	77	77	77	77
ethion	0	0	24	30	24	30
ethylene dibromide	0	0	246	581	249	604
ethylene dichloride	0	0	10	14	10	14
fenuron	0	0	10	10	10	10
fluometuron	0	0	10	10	10	10
fonofos	0	0	3	3	3	3
glyphosate, isopropylamine salt	0	0	1	1	1	1
heptachlor	0	0	171	244	171	244
heptachlor epoxide	0	0	135	156	135	156
hexachlorobenzene	0	0	65	65	65	65
lindane (gamma-bhc)	0	0	211	289	211	289
linuron	0	0	10	10	10	10
malathion	0	0	10	15	10	15
maneb	0	0	9	9	9	9
methiocarb	0	0	10	10	10	10
methomyl	0	0	21	26	21	26
methoxychlor	0	0	137	219	137	219
methyl bromide	0	0	321	375	321	375
methyl isothiocyanate	0	0	14	14	14	14
methyl parathion	0	0	24	30	24	30
methyl trithion	0	0	24	30	24	30
metribuzin	0	0	6	15	6	15
mevinphos	0	0	3	12	3	12
mexacarbate	0	0	10	10	10	10
molinat	0	0	92	135	92	135
molinat sulfoxide	0	0	8	8	8	8

County: STANISLAUS

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
monuron	0	0	10	10	10	10
neburon	0	0	10	10	10	10
nitrofen	0	0	12	12	12	12
ortho-dichlorobenzene	0	0	257	339	257	339
ortho-dichlorobenzene, other related	0	0	20	34	20	34
oxamyl	0	0	10	10	10	10
paraquat bis(methylsulfate)	0	0	15	15	15	15
parathion	0	0	24	30	24	30
pctb	0	0	12	12	12	12
phorate	0	0	11	16	11	16
picloram	0	0	10	15	10	15
prometon	0	0	110	161	111	162
prometryn	0	0	83	117	83	117
propazine	0	0	38	44	38	44
propham	0	0	20	25	20	25
propoxur	0	0	10	10	10	10
s,s-s-tributyl phosphorotriithioate	0	0	10	15	10	15
siduron	0	0	10	10	10	10
silvex	0	0	117	154	117	154
simazine	10	23	277	437	289	465
simeton	0	0	28	34	28	34
simetryn	0	0	41	56	41	56
terbutylazine	0	0	10	10	10	10
terbutryn	0	0	13	22	13	22
tetrachloroethylene	0	0	10	14	10	14
tetradifon	0	0	25	25	25	25
thiobencarb	0	0	84	117	84	117
thiobencarb sulfoxide	0	0	7	7	7	7
toxaphene	0	0	211	295	211	295
trifluralin	0	0	28	34	28	34
xylene	0	0	235	304	235	304
ziram	0	0	31	31	31	31

County: SUTTER

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	2	2	3	3
1,3-dichloropropene (1,3-D)	0	0	2	2	2	2
2,4-D	0	0	7	7	7	7
aldicarb	0	0	6	6	6	6
atrazine	0	0	27	27	27	27

County: SUTTER

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
azinphos-methyl	0	0	3	3	3	3
benomyl	0	0	10	10	10	10
bentazon, sodium salt	7	16	5	8	12	24
bhc (other than gamma isomer)	0	0	1	1	1	1
bromacil	1	1	8	9	9	14
captan	0	0	3	3	3	3
carbaryl	0	0	1	1	1	1
carbofuran	0	0	7	7	7	7
chlordan	0	0	4	4	4	4
chloropicrin	0	0	4	4	4	4
dbcp	0	0	48	65	56	101
demeton	0	0	1	1	1	1
diazinon	0	0	4	4	4	4
dimethoate	0	0	5	5	5	5
dinoseb	0	0	14	14	14	14
disulfoton	0	0	8	8	8	8
diuron	0	0	5	5	5	5
endosulfan	0	0	4	4	4	4
endosulfan sulfate	0	0	4	4	4	4
endothall	0	0	1	1	1	1
endrin	0	0	1	1	1	1
ethylene dibromide	0	0	6	6	6	6
glyphosate, isopropylamine salt	0	0	1	1	1	1
heptachlor	0	0	1	1	1	1
heptachlor epoxide	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	2	2	2	2
mcpa, dimethylamine salt	0	0	3	3	3	3
mcpa, sodium salt	0	0	9	9	9	9
methidathion	0	0	1	1	1	1
methomyl	0	0	1	1	1	1
methoxychlor	0	0	1	1	1	1
methyl bromide	0	0	1	1	1	1
methyl parathion	0	0	10	10	10	10
molinate	0	0	23	31	23	31
molinate sulfoxide	0	0	17	23	17	23
oxamyl	0	0	2	2	2	2
parathion	0	0	1	1	1	1
phosalone	0	0	1	1	1	1
propanil	0	0	1	1	1	1
screen (chlorinated hydrocarbon)	0	0	1	1	1	1
screen (organophosphate)	0	0	1	1	1	1
silvex	0	0	2	2	2	2
simazine	0	0	28	28	28	28
thiobencarb	0	0	20	32	20	32

County: SUTTER

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
thiobencarb sulfoxide	0	0	16	21	16	21
toxaphene	0	0	1	1	1	1
ziram	0	0	1	1	1	1

County: TEHAMA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2,4-trichlorobenzene	0	0	4	4	4	4
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	42	42	42	42
1,3-dichloropropene (1,3-D)	0	0	42	42	42	42
2,4,5-t	0	0	1	1	1	1
2,4,6-trichlorophenol	0	0	4	4	4	4
2,4-D	0	0	16	17	16	17
2,4-dinitrophenol	0	0	4	4	4	4
acenaphthene	0	0	4	4	4	4
aldicarb	0	0	4	4	4	4
aldrin	0	0	30	31	30	31
ametryne	0	0	10	10	10	10
atraton	0	0	4	4	4	4
atrazine	7	18	55	59	62	77
benomyl	0	0	42	43	42	43
bentazon, sodium salt	0	0	8	16	8	16
bhc (other than gamma isomer)	0	0	31	33	31	33
bromacil	1	4	27	33	29	38
bromide	0	0	7	14	7	14
captan	0	0	3	3	3	3
carbaryl	0	0	3	3	3	3
carbofuran	0	0	3	3	3	3
carbophenothion	0	0	1	2	1	2
chlordane	0	0	31	32	31	32
chlorpyrifos	0	0	2	2	2	2
cyanazine	0	0	6	6	6	6
dbcp	0	0	2	3	2	3
ddd	0	0	1	1	1	1
dde	0	0	1	1	1	1
ddt	0	0	1	1	1	1
demeton	0	0	8	9	8	9
diazinon	0	0	57	58	57	58
dicamba	0	0	6	6	6	6
dieldrin	0	0	31	32	31	32
dinoseb	0	0	54	56	54	56

County: TEHAMA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
disulfoton	0	0	5	5	5	5
diuron	0	0	28	36	28	36
endosulfan	0	0	32	34	32	34
endosulfan sulfate	0	0	31	32	31	32
endrin	0	0	41	42	41	42
endrin aldehyde	0	0	31	32	31	32
ethion	0	0	3	3	3	3
ethylene dibromide	0	0	1	2	1	2
glyphosate, isopropylamine salt	0	0	1	1	1	1
heptachlor	0	0	31	32	31	32
heptachlor epoxide	0	0	31	32	31	32
hexachlorobenzene	0	0	5	5	5	5
lindane (gamma-bhc)	0	0	41	42	41	42
malathion	0	0	3	4	3	4
mcpa, dimethylamine salt	0	0	6	6	6	6
methomyl	0	0	6	6	6	6
methoxychlor	0	0	5	5	5	5
methyl bromide	0	0	29	34	29	34
metribuzin	0	0	6	6	6	6
molinate	1	11	28	62	28	73
molinate sulfoxide	1	2	23	56	23	58
naphthalene	0	0	4	4	4	4
napropamide	0	0	1	1	1	1
ortho-dichlorobenzene	0	0	29	33	29	33
paraquat bis(methylsulfate)	0	0	18	18	18	18
parathion	0	0	47	51	47	51
phosalone	0	0	16	16	16	16
prometon	0	0	24	38	24	38
prometryn	0	0	10	10	10	10
propazine	0	0	10	10	10	10
screen (chlorinated hydrocarbon)	0	0	1	2	1	2
screen (organophosphate)	0	0	1	2	1	2
silvex	0	0	9	9	9	9
simazine	2	6	80	91	82	97
simetryn	0	0	4	4	4	4
terbutryn	0	0	10	10	10	10
thiobencarb	0	0	5	5	5	5
thiobencarb sulfoxide	0	0	4	4	4	4
toxaphene	0	0	44	48	44	48
xylene	0	0	29	29	29	29
ziram	0	0	2	2	2	2

County: TRINITY

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
2,4-D	0	0	10	10	10	10
alachlor	0	0	1	1	1	1
atrazine	0	0	1	1	1	1
bentazon, sodium salt	0	0	1	1	1	1
bromacil	0	0	1	1	1	1
chlordane	0	0	1	1	1	1
dbcp	0	0	1	1	1	1
diazinon	0	0	1	1	1	1
endrin	0	0	10	10	10	10
ethylene dibromide	0	0	1	1	1	1
heptachlor	0	0	1	1	1	1
heptachlor epoxide	0	0	1	1	1	1
lindane (gamma-bhc)	0	0	10	10	10	10
methoxychlor	0	0	10	10	10	10
molinate	0	0	1	1	1	1
phosmet	0	0	1	5	1	5
phosmet-oa	0	0	1	5	1	5
prometryn	0	0	1	1	1	1
sivex	0	0	10	10	10	10
simazine	0	0	1	1	1	1
thiobencarb	0	0	1	1	1	1
toxaphene	0	0	9	9	9	9

County: TULARE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2,4-trichlorobenzene	0	0	3	3	4	4
1,2-d; 1,3-d & C-3 compounds	0	0	2	2	2	2
1,2-dichloropropane (propylene dichloride, 1,2-D)	3	11	371	525	373	541
1,3-dichloropropene (1,3-D)	0	0	380	708	380	708
2,4,5-t	0	0	14	26	14	26
2,4,6-trichlorophenol	0	0	24	24	24	24
2,4-D	0	0	136	151	136	151
2,4-DP, isooctyl ester	0	0	12	24	12	24
2,4-dinitrophenol	0	0	3	3	3	3
2-(2,4-dichlorophenoxy)propionic acid, dimethyl	0	0	21	21	21	21
4(2,4-DB), dimethylamine salt	0	0	21	21	21	21
acenaphthene	0	0	4	4	4	4
acephate	0	0	86	86	86	86
alachlor	0	0	66	79	66	79
aldicarb	0	0	139	158	139	158

County: TULARE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
aldicarb sulfone	0	0	47	65	47	65
aldicarb sulfoxide	0	0	47	65	47	65
aldrin	0	0	33	33	33	33
ametryne	0	0	86	100	86	100
aminocarb	0	0	21	21	21	21
atraton	0	0	25	37	25	37
atrazine	8	18	643	1092	657	1128
azinphos-ethyl	0	0	5	5	5	5
azinphos-methyl	0	0	48	60	48	60
azinphos-methyl-oa	0	0	3	3	3	3
barban	0	0	21	21	21	21
benefin	0	0	63	63	63	63
benomyl	0	0	84	84	84	84
bensulfide	0	0	3	3	3	3
bentazon, sodium salt	0	0	114	183	114	186
bhc (other than gamma isomer)	0	0	31	39	31	39
bromacil	75	170	457	662	530	849
bromoxynil octanoate	0	0	1	1	1	1
captan	0	0	76	76	76	76
carbaryl	0	0	129	141	129	141
carbendazim	0	0	12	12	12	12
carbofuran	0	0	138	150	138	150
carbophenothion	0	0	45	58	45	58
chlordane	0	0	34	34	34	34
chlordimeform	0	0	2	2	2	2
chloropicrin	0	0	53	53	53	53
chlorothalonil	0	0	20	20	20	20
chloroxuron	0	0	11	11	11	11
chlorpropham	0	0	57	57	57	57
chlorpyrifos	0	0	98	110	98	110
chlorthal-dimethyl	0	0	89	89	89	89
cyanazine	0	0	86	99	86	99
cyprazine	0	0	25	37	25	37
dbcp	15	37	349	594	440	1082
dde	0	0	9	9	9	9
dde	0	0	30	30	30	30
ddf	0	0	30	30	30	30
ddvp	0	0	3	3	3	3
def	0	0	12	24	12	24
demeton	0	0	21	21	21	21
diazinon	0	0	110	125	111	126
diazoxon	0	0	1	1	1	1
dicamba	0	0	51	61	51	63
dicofol	0	0	122	123	122	123

County: TULARE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dieldrin	0	0	32	32	32	32
dimethoate	0	0	112	113	112	113
dinoseb	0	0	115	115	115	115
diphenamid	0	0	2	2	2	2
disulfoton	0	0	91	103	91	103
diuron	128	398	425	581	563	1010
dmpa	0	0	21	21	21	21
dnoc, sodium salt	0	0	2	2	2	2
endosulfan	0	0	116	197	116	197
endosulfan sulfate	0	0	11	11	11	11
endothall	0	0	73	73	73	73
endrin	0	0	53	56	53	56
endrin aldehyde	0	0	10	10	10	10
eptc	0	0	59	59	59	59
ethion	0	0	94	106	94	106
ethylene dibromide	0	0	293	554	294	558
ethylene dichloride	0	0	25	37	25	37
fenamiphos	0	0	35	35	35	35
fenamiphos sulfone	0	0	3	3	3	3
fenamiphos sulfoxide	0	0	3	3	3	3
fenuron	0	0	24	24	24	24
fiuchloralin	0	0	4	4	4	4
fluometuron	0	0	11	11	11	11
glyphosate, isopropylamine salt	0	0	32	32	32	32
heptachlor	0	0	35	35	35	35
heptachlor epoxide	0	0	14	14	14	14
hexachlorobenzene	0	0	10	10	10	10
lindane (gamma-bhc)	0	0	55	57	55	57
linuron	0	0	32	45	32	45
malathion	0	0	108	121	108	121
maneb	0	0	24	24	24	24
mcpb,sodium salt	0	0	1	1	1	1
methamidophos	0	0	78	81	78	81
methiocarb	0	0	33	34	33	34
methomyl	0	0	131	143	131	143
methoxychlor	0	0	128	131	128	131
methyl bromide	0	0	366	539	367	540
methyl parathion	0	0	83	95	83	95
methyl trithion	0	0	24	35	25	36
metolachlor	0	0	3	3	3	3
metribuzin	0	0	41	42	41	42
mevinphos	0	0	5	5	5	5
mexacarbate	0	0	21	21	21	21
mollinate	0	0	75	80	75	80

County: TULARE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
mollinate sulfoxide	0	0	2	2	2	2
monuron	4	11	36	47	37	59
mtp (monomethyl 2,3,5,6-tetrachloroterephthalaldehyde)	0	0	6	6	6	6
naled	0	0	39	39	39	39
naphthalene	0	0	12	24	14	26
napropamide	0	0	4	4	4	4
neburon	0	0	32	32	32	32
nitrofen	0	0	21	21	21	21
ortho-dichlorobenzene	0	0	319	400	319	400
ortho-dichlorobenzene, other related	0	0	54	79	54	79
oryzalin	0	0	71	71	71	71
oxamyl	0	0	77	77	77	77
oxydemeton-methyl	0	0	3	3	3	3
paraoxon	0	0	3	3	3	3
paraquat bis(methylsulfate)	0	0	97	97	97	97
parathion	0	0	87	99	87	99
pcnb	0	0	93	93	93	93
permethrin	0	0	4	5	4	5
phorate	0	0	91	103	91	103
phosalone	0	0	8	8	8	8
phosmet	0	0	5	5	5	5
phosphamidon	0	0	2	2	2	2
picloram	0	0	12	24	12	24
prometon	6	21	474	836	477	858
prometryn	0	0	170	184	170	184
propachlor	0	0	21	21	21	21
propargite	0	0	17	17	17	17
propazine	0	0	87	101	87	101
propham	0	0	90	104	90	104
propoxur	0	0	21	21	21	21
propyzamide	0	0	4	4	4	4
rotenone	0	0	9	33	9	33
rotenone, other related	0	0	9	33	9	33
s,s,s-tributyl phosphorotrithioate	0	0	81	93	81	93
screen (carbamate)	0	0	10	10	10	10
screen (chlorinated hydrocarbon)	0	0	11	12	11	12
screen (organophosphate)	0	0	11	11	11	11
siduron	0	0	32	32	32	32
silvex	0	0	93	106	93	106
simazine	144	381	556	834	722	1274
simeton	0	0	25	37	25	37
simetryn	0	0	45	58	45	58
tebuthiuron	0	0	11	11	11	11
terbuthylazine	0	0	21	21	21	21

County: TULARE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
terbutryn	0	0	62	63	62	63
tetrachloroethylene	0	0	25	37	25	37
tetradifon	0	0	2	2	2	2
thiobencarb	0	0	72	76	72	76
thiobencarb sulfoxide	0	0	2	2	2	2
toxaphene	0	0	117	123	117	123
tpa (2,3,5,6-tetrachloroterephthalic acid)	0	0	6	6	6	6
trichlorophon	0	0	20	20	20	20
trifluralin	0	0	25	37	25	37
xylene	0	0	287	329	288	330
zineb	0	0	10	10	10	10
ziram	0	0	28	28	28	28

County: TUOLUMNE

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	1	1	1	1
1,3-dichloropropene (1,3-D)	0	0	1	1	1	1
atrazine	0	0	23	24	23	24
bromacil	0	0	26	27	26	27
carbaryl	0	0	19	20	19	20
chlorpyrifos	0	0	7	8	7	8
dbcp	0	0	5	5	5	5
diazinon	0	0	7	8	7	8
diuron	0	0	26	26	26	26
ethylene dibromide	0	0	5	5	5	5
methyl bromide	0	0	6	12	6	14
ortho-dichlorobenzene	1	3	0	0	1	3
prometon	0	0	7	7	7	7
simazine	0	0	23	23	23	23
simetryn	0	0	1	1	1	1
xylene	0	0	2	4	3	5

County: VENTURA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2,4-trichlorobenzene	0	0	2	2	2	2
1,2-d; 1,3-d & C-3 compounds	0	0	1	1	1	1

County: VENTURA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride, 1,2-D)	0	0	132	153	132	153
1,3-dichloropropene (1,3-D)	0	0	139	168	139	168
2,4,6-trichlorophenol	0	0	2	2	2	2
2,4-D	0	0	56	62	56	62
2,4-dinitrophenol	0	0	2	2	2	2
3-hydroxycarbofuran	0	0	9	18	9	18
acenaphthene	0	0	2	2	2	2
acephate	0	0	101	101	101	101
acrolein	0	0	3	5	3	5
alachlor	0	0	105	108	105	108
aldicarb	0	0	96	108	96	108
aldicarb sulfone	0	0	9	18	9	18
aldicarb sulfoxide	0	0	9	18	9	18
aldrin	0	0	43	59	43	59
atrazine	0	0	170	236	171	237
azinphos-methyl	0	0	28	28	28	28
benefin	0	0	2	2	2	2
benomyl	0	0	25	25	25	25
bentazon, sodium salt	0	0	6	7	6	7
bhc (other than gamma isomer)	0	0	30	81	30	81
bromacil	0	0	57	66	57	66
captan	0	0	95	95	95	95
carbaryl	0	0	43	55	43	55
carbendazim	0	0	15	15	15	15
carbofuran	0	0	32	46	32	46
chlordane	0	0	46	62	46	62
chloropicrin	0	0	91	91	91	91
chlorothalonil	0	0	32	35	32	35
chlorpropham	0	0	6	6	6	6
chlorpyrifos	0	0	110	110	110	110
chlorthal-dimethyl	0	0	80	80	80	80
cyanazine	0	0	7	7	7	7
dbcp	0	0	183	271	184	282
ddd	0	0	30	34	30	34
dde	0	0	30	34	30	34
ddt	0	0	30	34	30	34
demeton	0	0	14	14	14	14
diazinon	0	0	18	31	18	31
dicofol	0	0	106	106	106	106
dieldrin	0	0	43	59	43	59
dimethoate	0	0	41	44	41	44
dinoseb	0	0	30	30	30	30
diphenamid	0	0	21	21	21	21
disulfoton	0	0	36	36	36	36
diuron	0	0	48	52	48	52



County: VENTURA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dnoc, sodium salt	0	0	31	31	31	31
endosulfan	0	0	115	176	115	176
endosulfan sulfate	0	0	41	55	41	55
endothall	0	0	13	13	13	13
endrin	0	0	59	76	59	76
endrin aldehyde	0	0	30	34	30	34
eptc	0	0	6	6	6	6
ethion	0	0	8	8	8	8
ethylene dibromide	0	0	157	216	158	223
fenamiphos	0	0	98	98	98	98
glyphosate, isopropylamine salt	0	0	4	5	4	5
heptachlor	0	0	49	65	49	65
heptachlor epoxide	0	0	49	63	49	63
hexachlorobenzene	0	0	22	22	22	22
lindane (gamma-bhc)	0	0	61	85	61	85
malathion	0	0	8	8	8	8
maneb	0	0	25	25	25	25
mcpa, dimethylamine salt	0	0	5	5	5	5
methamidophos	0	0	94	94	94	94
methiocarb	0	0	9	18	9	18
methomyl	0	0	37	49	37	49
methoxychlor	0	0	60	70	60	70
methyl bromide	0	0	138	172	138	173
methyl parathion	0	0	8	8	8	8
mevinphos	0	0	8	8	8	8
molinate	0	0	77	113	77	113
naphthalene	0	0	4	4	4	4
ortho-dichlorobenzene	0	0	94	115	94	115
oxamyl	0	0	30	42	30	42
paraquat bis(methylsulfate)	0	0	30	30	30	30
parathion	0	0	3	3	3	3
pcnb	0	0	72	72	72	72
phorate	0	0	25	25	25	25
prometryn	0	0	118	127	118	127
propargite	0	0	72	72	72	72
propham	0	0	6	6	6	6
propoxur	0	0	9	18	9	18
propyzamide	0	0	8	8	8	8
s,s-s-tributyl phosphorotrithioate	0	0	2	2	2	2
silvex	0	0	29	32	29	32
simazine	0	0	181	246	181	246
tetradifon	0	0	69	69	69	69
thiobencarb	0	0	75	111	75	111
toxaphene	0	0	133	158	133	158
trichlorophon	0	0	8	8	8	8

County: VENTURA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
xylene	0	0	94	112	94	112
ziram	0	0	25	25	25	25

County: YOLO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2,4-trichlorobenzene			2	2	2	2
1,2-dichloropropane (propylene dichloride, 1,2-D)	1	8	90	104	91	112
1,3-dichloropropene (1,3-D)	0	0	93	115	93	115
2,4,5-t	1	2	2	3	2	5
2,4,6-trichlorophenol	0	0	2	2	2	2
2,4-D	0	0	39	42	39	42
2,4-dinitrophenol	0	0	2	2	2	2
4-cloc	0	0	1	1	1	1
acenaphthene	0	0	2	2	2	2
alachlor	1	2	62	63	63	66
aldicarb	0	0	49	54	49	54
aldicarb sulfone	0	0	3	6	3	6
aldicarb sulfoxide	0	0	3	6	3	6
aldrin	0	0	10	10	10	10
atrazine	1	2	61	68	61	70
azinphos-methyl	0	0	9	9	9	9
benomyl	0	0	20	20	20	20
bentazon, sodium salt	3	7	7	9	10	16
bhc (other than gamma isomer)	0	0	10	17	10	17
bromacil	0	0	22	22	22	22
bromoxynil octanoate	0	0	3	3	3	3
captan	0	0	20	20	20	20
carbaryl	0	0	19	22	19	22
carbendazim	0	0	17	17	17	17
carbofuran	0	0	57	60	57	60
chlordane	0	0	10	10	10	10
chloropicrin	0	0	17	17	17	17
chlorothalonil	0	0	18	18	18	18
chlorpropham	0	0	1	4	1	4
chlorpyrifos	0	0	2	3	2	4
cyanazine	0	0	20	23	20	23
dbcp	0	0	83	92	83	92
ddd	0	0	8	8	8	8
dde	0	0	8	8	8	8
ddt	0	0	8	8	8	8
demeton	0	0	30	30	30	30
dicofol	0	0	18	18	18	18

County: YOLO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
dieldrin	0	0	10	10	10	10
dimethoate	0	0	14	14	14	15
dinoseb	0	0	66	66	66	66
diphenamid	0	0	1	1	1	1
disulfoton	0	0	47	47	47	47
diuron	0	0	28	31	28	31
endosulfan	0	0	24	53	24	53
endosulfan sulfate	0	0	10	10	10	10
endrin	0	0	42	46	42	46
endrin aldehyde	0	0	9	9	9	9
ethylene dibromide	3	10	103	117	105	127
fluometuron	0	0	1	4	1	4
glyphosate, isopropylamine salt	0	0	1	2	1	2
heptachlor	0	0	10	10	10	10
heptachlor epoxide	0	0	10	10	10	10
hexachlorobenzene	0	0	9	9	9	9
lindane (gamma-bhc)	0	0	42	46	42	46
linuron	0	0	1	4	1	4
malaoxon	0	0	1	1	1	1
malathion	0	0	1	1	1	2
mcpa, dimethylamine salt	0	0	1	1	1	1
methiocarb	0	0	1	4	1	4
methomyl	0	0	20	23	20	23
methoxychlor	0	0	24	24	24	24
methyl bromide	0	0	78	92	78	92
metolachlor	0	0	7	7	7	7
molinate	1	4	18	26	19	31
molinate sulfoxide	0	0	19	27	19	27
monuron	0	0	1	4	1	4
naphthalene	0	0	2	2	2	2
neburon	0	0	1	4	1	4
ortho-dichlorobenzene	0	0	55	62	55	62
oxamyl	0	0	1	4	1	4
paraquat bis(methylsulfate)	0	0	20	20	20	20
phorate	0	0	19	19	19	19
prometon	1	2	6	13	6	15
prometryn	0	0	1	4	1	4
propazine	0	0	1	4	1	4
propham	0	0	1	4	1	4
propoxur	0	0	1	4	1	4
screen (carbamate)	0	0	28	28	28	28
screen (chlorinated hydrocarbon)	0	0	31	32	31	32
screen (organophosphate)	0	0	28	29	28	29
screen (triazine)	0	0	1	1	1	1
silvex	0	0	38	40	38	40

County: YOLO

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
simazine	0	0	69	72	69	72
thiobencarb	0	0	14	20	14	20
thiobencarb sulfoxide	0	0	14	17	14	17
toxaphene	0	0	42	47	42	47
trifluralin	1	3	9	9	9	12
xylene	1	5	55	61	55	67
ziram	0	0	2	2	2	2

County: YUBA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
1,2-dichloropropane (propylene dichloride,1,2-D)	0	0	20	25	20	25
1,3-dichloropropene (1,3-D) 2,4-D	0	0	11	11	11	11
acephate	0	0	5	5	5	5
aldrin	0	0	21	31	23	33
atrazine	0	0	15	18	15	18
azinphos-methyl	0	0	8	8	8	8
benomyl	0	0	8	8	8	8
bentazon, sodium salt	5	16	18	24	25	43
bhc (other than gamma isomer)	0	0	5	13	5	13
bromacil	0	0	5	5	5	5
captan	0	0	13	13	13	13
carbaryl	0	0	40	40	40	40
carbofuran	0	0	10	10	10	10
chlordan	0	0	5	5	5	5
dbcp	0	0	15	18	15	18
ddd	0	0	5	5	5	5
dde	0	0	5	5	5	5
ddt	0	0	5	5	5	5
demeton	0	0	10	10	10	10
diazinon	0	0	31	31	31	31
dieldrin	0	0	5	5	5	5
diuron	0	0	1	1	1	1
endosulfan	0	0	2	4	2	4
endosulfan sulfate	0	0	2	2	2	2
endrin	0	0	22	26	22	26
endrin aldehyde	0	0	2	2	2	2
ethylene dibromide	0	0	19	23	19	23
fenamiphos	0	0	1	1	1	1
heptachlor	0	0	5	5	5	5
heptachlor epoxide	0	0	5	5	5	5
hexachlorobenzene	0	0	3	3	3	3
lindane (gamma-bhc)	0	0	22	26	22	26
mcpa, dimethylamine salt	0	0	4	4	4	4
mcpa, sodium salt	0	0	10	10	10	10
methoxychlor	0	0	13	14	13	14
methyl bromide	0	0	20	23	20	23
molinate	0	0	19	22	19	22
molinate sulfoxide	0	0	6	6	6	6
ortho-dichlorobenzene	0	0	5	6	5	6
paraquat bis(methylsulfate)	0	0	2	4	2	4
parathion	0	0	25	25	25	25
prometryn	0	0	5	5	5	5
silvex	0	0	24	35	24	35
simazine	0	0	14	17	14	17

County: YUBA

PESTICIDE	CONFIRMED		NEGATIVE		TOTAL	
	num of wells	num of analyses	num of wells	num of analyses	num of wells	num of analyses
thiobencarb	0	0	12	14	12	14
thiobencarb sulfoxide	0	0	5	5	5	5
toxaphene	0	0	22	26	22	26
xylene	0	0	5	6	5	6
ziram	0	0	7	7	7	7

**F. LETTER FROM CALIFORNIA DEPARTMENT OF HEALTH SERVICES  
SUBSTANTIATING THAT A DETECTION OF 1,3-DICHLOROPROPENE REPORTED  
FOR RIVERSIDE COUNTY WAS IN ERROR**

## M E M O R A N D U M

DATE: 1 April 1992

TO: David Storm, Ph.D.  
Office of Drinking Water  
601 North Seventh Street  
Sacramento, CA 95814

FROM: Sanitation and Radiation Laboratory  
2151 Berkeley Way, Room 465  
Berkeley, CA 94704-1011  
(510) 540-2201 CALNET 571-2201

SUBJECT: Correction to AB1803 Report

It has been brought to our attention that the reporting of 1,3-dichloropropene in a sample of water from Riverside County during small water system sampling has not been corrected and, as a result, appears in the report SAMPLING FOR PESTICIDE RESIDUES IN CALIFORNIA WELL WATER: 1987 UPDATE, WELL INVENTORY DATA BASE prepared by the Department of Health Services (CDHS), the State Department of Food and Agriculture (CDFA) and the State Water Resources Control Board (SWRCB) as required by the Pesticide Contamination Prevention Act (PCPA), Assembly Bill 2021. This alleged finding had been investigated by the Sanitation and Radiation Laboratory staff, who had concluded that the analysis was equivocal at best, and therefore had recommended rejection of that data point in any report arising from monitoring of small water systems as required by Assembly Bill 1803. The AB 1803 information was used by the authors of the PCPA Report for 1987 and should have been corrected before providing it to CDFA and SWRCB.

A followup sample, analyzed by our Southern California Laboratory (SCL) using Environmental Protection Agency (EPA) method 624, clearly indicated the presence of the compound 1,2-dichloropropane and showed no evidence of the presence of either *cis*- or *trans*-1,3-dichloropropene. In reporting, however, SCL made a transcription error, indicating that 1,3-dichloropropene had been identified. This reporting error was rectified on the Volatile Organic Chemical Report form submitted by SCL. Followup samples also were analyzed by CDFA. They, too, were unable to duplicate the findings of the commercial laboratory, and therefore reported that neither 1,3-dichloropropene nor its breakdown product 3-chloroallyl alcohol was detected.

Unfortunately, since the report already has been issued there appears little that can be done to correct the mistaken impression that 1,3-dichloropropene was found

David Storm, Ph.D.

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in a well water sample in California other than to inform the entities involved that an error was made, and that, in fact, the compound was not found in any of the many hundreds of samples taken in response to AB 1803 (large or small system monitoring).

I shall send a copy of this memorandum to Ms. Candace Miller, Department of Pesticide Regulation Cal-EPA, and to the Environmental Health Division of Riverside County Health Department, as well as to Ms. Tasha Buttler of DowElanco. Anyone having questions regarding this conclusion may pose them to me by telephone at (510) 540-2201.

*Benjamin R. Tamplin*

Benjamin R. Tamplin, Ph.D., Chief

cc: Environmental Health Services Division  
County of Riverside Department of Health  
P.O. Box 1370  
Riverside, CA 92502

Ms. Candace Miller  
Department of Pesticide Regulation  
Cal-EPA  
1220 N Street  
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Michael G. Volz, Ph.D., Chief  
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Technical Programs Branch  
Office of Drinking Water  
California Department of Health Services

Frank J. Baumann, P.E., Chief  
Southern California Laboratory  
Division of Laboratories  
California Department of Health Services

**G. TABLES ONE THROUGH ELEVEN**

Table 1. Numerical Summary of Records Contained in the Well Inventory Data Base, by Year of Report.

CATEGORY	REPORT YEAR							TOTAL
	1986	1987	1988	1989	1990	1991	1992	
Total Analyses	71,093	5,163	39,972	8,157	30,058	24,881	81,369	260,693
Positive Analyses (a)	5,091	1,133	527	674	837	700	3,497	12,459
Confirmed Analyses (b)	498	983	336	627	715	580	876	4,615
Wells Sampled	8,987	574	3,074	752	2,784	1,557	4,741	17,713 (c)
Wells Reported with Detections	2,404	257	283	209	234	206	756	3,697 (c)
Wells with Confirmed Detections	166	180	115	181	163	146	143	957 (c)
Counties Sampled	53	20	41	33	53	30	52	58 (c)
Counties with Wells	23	14	17	22	26	19	28	44 (c)
Reported with Detections								
Counties with Wells Having Confirmed Detections	18	12	14	20	15	16	17	36 (c)
Pesticides and Related Compounds Sampled For	160	79	167	96	191	186	125	273 (c)
Pesticides and Related Compounds Reported Detected	16	15	25	15	27	20	40	68 (c)
Pesticides and Related Compounds with Confirmed Detections	10	14	10	14	14	12	15	35 (c)
Pesticides and Related Compounds Detected in Ground Water as the Result of Legal, Agricultural Use(d)	9	8	1	7	6	7	5	12 (c)

(a) Confirmed and unconfirmed detections are included in the positive analyses.

(b) Positive sampling results are designated as confirmed if a specific compound was detected in at least two discrete samples taken from the same well during a single monitoring survey.

(c) The total is not additive. It is a total of the unique items existing in a category (e.g., a single well that had sampling data reported in the 1986, 1988, and 1990 reports is counted one time only).

(d) Legal, agricultural use is the application of a pesticide, according to its labelled directions and in accordance with federal and state laws and regulations, for agricultural use as defined in Food and Agricultural Code Section 11408.



Table 2. Agencies reporting ground water sampling results, including number of surveys, number of wells sampled, and number of analyses reported, per agency. Results are for data reported during the period November 1, 1983 through June 30, 1992.

Agency	Number of Analyses	Number of Surveys	Number of Wells(a)
American Environmental Consulting Firm	3	1	1
California Department of Health Services (Sanitary Engineering Branch)	188,503	13	10,622
California Department of Pesticide Regulation (Environmental Hazards Assessment Program)	18,891	151	2,948
California Regional Water Quality Control Board (WQCB) No. 1, North Coast Region	1,949	16	75
California Regional WQCB No. 3, Central Coast Region	798	4	27
California Regional WQCB No. 4, Los Angeles Region	865	1	47
California Regional WQCB No. 5, Central Valley Region	271	8	50
California Regional WQCB No. 8, Santa Ana Region	18	1	18
California Regional WQCB No. 9, San Diego Region	5	1	2
California Department of Water Resources (DWR)	14,711	9	218
California State Water Resources Control Board	570	5	182
California Water Service Company	72	1	7
City of Davis	6	1	1
City of Oceanside	1	1	1
Fresno County	2,080	2	2,023
Glenn County	37	2	4
Imperial County	11	1	1
Kern County	3,558	1	479
Lake County	9	1	4
Madera County	151	1	115
Marin County	60	5	8
Modoc County	13	1	4
Rhone-Poulenc Agricultural Company	1,116	2	152
Riverside County	50	1	5
Sacramento County	1,720	2	130
San Diego County	16	3	8
San Luis Obispo County, Health Department Lab	2	1	2
San Mateo County	368	1	8
Santa Barbara County	248	1	4
Santa Clara County	12,804	1	1,197
Solano Irrigation District	162	1	10
Stockton-E. San Joaquin Water Conservation District	581	1	41
Sutter County	4	1	1
United States Bureau of Land Management	12	1	2
United States Forest Service	286	2	43
United States Geological Survey	10,100	2	288
United States Environmental Protection Agency	623	1	6
Yolo County	19	3	5
Totals	260,693	251	18,224

(a) Some wells were sampled by more than one agency.

Table 3. Comparison of confirmed versus total number of counties and wells sampled and analyses made all pesticide active ingredients and breakdown products with analytical results included in the well invent data base. Results are for data reported during the period November 1, 1983 through June 30, 1992.

Chemical Name	Number of Counties Sampled	Number of Wells Sampled	Number of Analyses	Number of Wells with Confirmed Detections	Number of Analyses with Confirmed Detections
1,1,2,2-tetrachloroethane	19	938	1077	1	4
1,2,4-trichlorobenzene	13	153	215	1	4
1,2-d, 1,3-d & C-3 compounds	8	93	99		
1,2-dichloroethane	7	128	182		
1,2-dichloropropane (propylene dichloride, 1,2-D)	54	7152	11256	38	119
1,3-dichloropropene	53	6964	13144		
2,4,5-t	23	318	399	1	2
2,4,6-trichlorophenol	17	258	268		
2,4-D	56	2908	3971	1	2
2,4-DP, Isooctyl ester	9	106	162		
2,4-dinitrophenol	15	202	211		
2-(2,4-dichlorophenoxy) propionic acid, dimethyl salt	4	58	58		
3,5-dichlorobenzoic acid	4	6	6		
3-hydroxycarbofuran	8	36	48		
3-ketocarbofuran phenol	4	13	18		
4(2,4-DB), butoxyethanol ester	10	105	106		
4(2,4-DB), dimethylamine salt	5	63	63		
4-cloc	1	1	1		
5-hydroxy dicamba	4	6	6		
acenaphthene	19	257	283		
acephate	31	922	943		
acifluorfen, sodium salt	1	4	4		
acrolein	4	10	12		
alachlor	34	2009	2884	1	2
aldicarb	42	1860	2712	3	6
aldicarb sulfone	20	442	1438	36	298
aldicarb sulfoxide	20	383	614	13	76
aldrin	39	1623	1898		
ametryne	31	684	778		
aminocarb	17	301	303		
amitraz	1	1	1		
amitrole	3	37	37		
atraton	29	529	614		
atrazine	53	6286	10520	111	264
atrazine dealkylated	4	5	5		
azinphos-ethyl	2	6	6		
azinphos-methyl	38	1097	1165		
azinphos-methyl-oa	2	6	6		
barban	19	316	319		
bendlocarb	1	8	8		
benefin	18	513	513		
benomyl	35	1045	1077		
bensulide	1	3	3		
bentazon, sodium salt	34	1118	1816	65	148

Table 3 continued.

2

Chemical Name	Number of Counties Sampled	Number of Wells Sampled	Number of Analyses	Number of Wells with Confirmed Detections	Number of Analyses with Confirmed Detections
bhc (other than gamma isomer)	39	1474	2998		
bromacil	46	3194	4752	95	216
bromacil, lithium salt	1	11	11		
bromide	2	25	41		
bromoxynil octanoate	3	6	6		
bufencarb	1	8	8		
butachlor	4	6	6		
butylate	10	39	40		
captafol	2	102	103		
captan	36	1399	1455		
carbaryl	43	1759	1870		
carbendazim	24	220	223		
carbofuran	46	2701	3303		
carbofuran phenol	4	6	6		
carbon disulfide	3	10	22	1	2
carbophenothion	17	509	611		
carboxin	4	6	6		
cdec	1	6	6		
chloramben	1	125	126		
chlordan	47	2956	4047		
chlordecone	2	2	2		
chlordimeform	10	295	295		
chloroallyl alcohol (cis/trans)	4	15	53		
chlorobenzilate	2	9	9		
chloroneb	6	15	15		
chloropicrin	31	1632	1669		
chlorothalonil	29	858	1036	1	2
chloroxuron	6	22	22		
chlorpropham	24	750	766		
chlorpyrifos	33	1231	1311		
chlorsulfuron	1	2	2		
chlorthal-dimethyl	21	908	939	3	7
copper	4	6	6		
coumaphos	3	47	48		
crutamate	1	6	6		
cyanazine	24	871	1023		
cycloate	7	44	44		
cypermethrin	2	6	6		
cyprazine	8	268	348		
dalaapon	9	107	125		
dbcp	43	9086	20350	346	1894
dcpa acid metabolites	5	9	12		
ddd	37	1355	1445		
dde	37	1415	1512	2	4
ddf	37	1435	1532	1	2
ddvp	12	70	71		
def	6	63	118		

Table 3 continued.

3

Chemical Name	Number of Counties Sampled	Number of Wells Sampled	Number of Analyses	Number of Wells with Confirmed Detections	Number of Analyses with Confirmed Detections
demeton	43	1321	1372		
diazinon	48	2080	3063	1	3
diazoxon	4	9	9		
dicamba	24	380	449		
dichlobenil	2	99	100		
dichlorprop, butoxyethanol ester	10	83	84		
dicofol	29	1445	1470		
dicrotophos	3	15	15		
dieldrin	40	1615	1886		
diethyl-ethyl	2	6	6		
dimethoate	36	1693	2221		
dinoseb	34	1414	1476		
dioxacarb	1	8	8		
dioxathion	5	27	28		
diphenamid	20	694	699		
diquat dibromide	3	14	14		
disulfoton	34	1211	1293		
diuron	45	3054	3973	176	517
dmpa	10	164	164		
dnoc, sodium salt	17	425	428		
endosulfan	43	2266	4318		
endosulfan sulfate	40	1608	1775		
endothall	23	659	673		
endrin	54	3322	4915	1	2
endrin aldehyde	38	1230	1342		
epr	3	10	10		
eptc	17	557	560		
ethion	31	845	919		
ethofumesate	1	1	1		
ethoprop	8	59	60		
ethyl alcohol	1	1	1		
ethylan	3	16	16		
ethylene dibromide	44	4795	10493	18	84
ethylene thiourea	8	67	88		
fenac	1	4	5		
fenamiphos	25	802	905		
fenamiphos sulfone	8	77	149		
fenamiphos sulfoxide	8	77	150		
fenarimol	4	6	6		
fenbutatin-oxide	1	1	1		
fensulfathion	7	180	182		
fenthion	6	59	60		
fenuron	15	338	340		
fenvalerate	4	12	12		
fluchloralin	7	276	276		
fluometuron	20	325	332		
fluridone	3	4	4		

Table 3 continued.

4

Chemical Name	Number of Counties Sampled	Number of Wells Sampled	Number of Analyses	Number of Wells with Confirmed Detections	Number of Analyses with Confirmed Detections
fonofos	4	89	90		
formaldehyde	3	7	7		
glyphosate, isopropylamine salt	35	947	1160		
heptachlor	47	2885	3986		
heptachlor epoxide	47	2677	3667		
hexachlorobenzene	37	1062	1170		
hexazhnone	9	54	54		
lindane (gamma-bha)	54	3409	5046		
linuron	22	416	436		
malaaxon	1	1	1		
malathion	29	851	1027		
maneb	25	549	571		
mcpa, alkanolamine salt	1	2	3		
mcpa, butoxyethanol ester	1	2	3		
mcpa, dimethylamine salt	16	113	115		
mcpa, isooctyl ester	1	2	3		
mcpa, sodlum salt	7	68	75		
mcpb, sodlum salt	5	10	10		
mcpp, diethanolamine salt	2	41	42		
mcpp, dimethylamine salt	1	4	4		
mcpp, potasslum salt	1	1	1		
mcppa	4	47	48		
merphos	10	321	322		
metalaxyl	3	6	6		
methamidophos	25	855	873		
methidathion	12	268	271		
methlocarb	28	515	537		
methlocarb sulfone	3	6	6		
methlocarb sulfoxide	3	6	6		
methomyl	34	1614	1714		
methoxychlor	53	2801	3898		
methyl bromide	52	6734	10452		
methyl isothiocyanate	4	29	29		
methyl paraoxon	3	5	5		
methyl parathion	28	690	770		
methyl trithion	9	195	252		
metolachlor	10	107	179		
metribuzin	15	192	209		
metribuzin DA	1	1	1		
mevinphos	22	488	508		
mexacarbate	14	307	309		
mlrex	4	144	145		
molinate	41	2503	4351	3	17
molinate sulfoxide	17	210	290	1	2
monocrotophos	2	9	9		
monuron	19	409	438	4	11
monuron-tea	1	40	41		

Table 3 continued.

5

Chemical Name	Number of Counties Sampled	Number of Wells Sampled	Number of Analyses	Number of Wells with Confirmed Detections	Number of Analyses with Confirmed Detections
mtp (monomethyl 2,3,5,6-tetrachloroterephthalate)	8	77	87		
naled	10	134	135		
naphthalene	18	255	357	2	9
napropamide	12	381	391		
neburon	22	389	396		
nitrofen	12	177	183		
norflurazon	4	6	6		
octyl bicycloheptenedicarboximide	4	6	6		
ortho-dichlorobenzene	39	4459	6079	3	11
ortho-dichlorobenzene, other related	16	1150	1403		
oryzalin	16	485	497		
ovex	1	2	2		
oxadiazon	3	8	8		
oxamyl	30	1143	1189		
oxydemeton-methyl	3	8	8		
paraoxon	2	6	6		
paraquat bis (methylsulfate)	43	859	884		
paraquate dichloride	1	40	41		
parathion	33	1040	1143		
pcnb	22	573	579		
pebulate	4	5	5		
pendimethalin	3	7	7		
permethrin	16	278	433		
phorate	27	1035	1184		
phorate sulfone	1	23	90		
phorate sulfoxide	1	23	86		
phoratoxon	1	10	20		
phoratoxon sulfone	1	10	19		
phoratoxon sulfoxide	1	10	19		
phosalone	11	85	86		
phosmet	13	72	83		
phosmet-oa	4	9	19		
phosphamidon	2	23	23		
picloram	17	124	197		
pirimicarb sulfone	1	1	1		
profluralin	2	11	11		
promecarb	1	8	8		
prometon	36	2302	3250	13	43
prometryn	42	2226	3236		
propachlor	13	143	143		
propanil	7	34	34		
propargite	14	403	404		
propazine	32	759	886		
propham	26	861	928		
propoxur	26	402	421		
propyzamide	12	263	263		
propyzamide metabolite	4	6	6		

Table 3 continued.

6

Chemical Name	Number of Counties Sampled	Number of Wells Sampled	Number of Analyses	Number of Wells with Confirmed Defections	Number of Analyses with Confirmed Defections
prothlofos	3	45	46		
pyrazon	1	2	2		
pyrethrins	2	9	9		
ronnol	5	55	57		
rotenolone	2	5	15		
rotenone	3	14	48		
rotenone, other related	1	9	33		
s.s.s-tributyl phosphorotrithioate	16	462	520		
screen (carbamate)	5	83	83		
screen (chlorinated hydrocarbon)	8	84	87		
screen (organophosphate)	9	86	91		
screen (triazine)	1	1	1		
secbumeton	7	155	158		
siduron	16	262	264		
silvex	54	2422	3366		
simazine	55	6860	11189	308	755
simeton	8	254	332		
simetryn	33	528	623		
sulprofos	2	45	46		
swep	9	100	101		
tebuthiuron	10	36	46	1	2
terbacil	5	9	9		
terbutylazine	15	267	270		
terbutryn	30	431	458		
terrazole	4	6	6		
tetrachloroethylene	7	128	180		
tetrachlorvinphos	8	55	56		
tetradifon	10	175	175		
thanite	1	1	1		
thiobencarb	39	2045	3344	1	2
thiobencarb sulfoxide	17	161	190		
thiophanate-methyl	1	5	5		
toxaphene	54	3608	5287	1	2
tpa (2,3,5,6-tetrachloroterephthalic acid)	8	77	87	26	29
triadimefon	6	15	22		
trichlorobenzene	2	7	7		
trichloronate	4	46	47		
trichlorophenol	2	44	45		
trichlorophon	12	286	290		
tricyclazole	6	19	45		
trifluralin	19	536	641	1	3
vernolate	5	7	7		
xylene	40	4289	5501	9	47
zineb	1	10	10		
ziram	28	423	440		

Table 4. Status, as of June 30, 1992, of all pesticide active ingredients and breakdown products contained in the Department of Pesticide Regulation well inventory data base that have been reported with one or more detections in ground water. Results are for data reported during the period November 1, 1983 through June 30, 1992.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
alachlor active registration (AR) herbicide	34 counties 2009 wells	Merced, 1 San Bernardino, 1 Yolo, 1	0.1 to 9.0	USEPA MCL 2.0	Alachlor was not detected (ND) in follow-up samples taken from the Merced County well. The detection in San Bernardino County is currently under investigation (CUI) by the Department of Pesticide Regulation (DPR). In Yolo County, residues were found only in an unsealed, improperly constructed well.
aldicarb AR acaricide, nematicide	42 counties 1842 wells	Del Norte, 29 Humboldt, 4	0.13 to 49.0	USEPA HAL 1.0 lifetime	Source of residues is agricultural applications to lily bulb fields. Use not allowed in Del Norte County since 1983 and in Humboldt County since 1986. Aldicarb products were reviewed through the Pesticide Detection Response Process (PDRP) pursuant to Food and Agricultural Code (FAC) sections 13149 through 13152. Regulations have been adopted by DPR to modify the use of aldicarb for ground water protection purposes.
aldicarb sulfone breakdown product of aldicarb	20 counties 371 wells	Del Norte, 15 Fresno, 2 Humboldt, 4 Merced, 12 Stanislaus, 11	0.05 to 1281	USEPA HAL 2.0 lifetime	Source of residues in Del Norte and Humboldt Counties is legal, agricultural use. Detections in Fresno, Merced, and Stanislaus Counties were due to legal experimental use at agricultural test plots.
aldicarb sulfoxide breakdown product of aldicarb	20 counties 365 wells	Del Norte, 16 Humboldt, 3	0.06 to 13.2	USEPA HAL 1.0 lifetime	Source of residues in Del Norte and Humboldt Counties is legal, agricultural use.

USEPA MCL: Maximum Contaminant Level (MCL) adopted by the U.S. Environmental Protection Agency (USEPA) under the Safe Drinking Water Act. MCLs are enforceable by the California Department of Health Services (DHS) on water suppliers.

USEPA HAL: An advisory number, Health Advisory Levels (HAL) are published by USEPA's Office of Drinking Water and Office of Water Regulations and Standards. Short-term, long-term, and lifetime exposure health advisories for noncarcinogens and suspected human carcinogens are included where data sufficient for derivation of advisories exist. HALs are a guideline which include a margin of safety to protect human health. For lifetime HALs, water containing pesticides at or below the HAL is acceptable for drinking every day over the course of one's lifetime.



Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
aldrin not registered (NR) since 6/4/87 insecticide	39 counties 1623 wells	San Diego, 1	21.0	CAL 0.05	Detection was due to point-source contamination.
atrazine AR herbicide	53 counties 6286 wells	Butte, 2 Contra Costa, 2 Fresno, 5 Glenn, 40 Kern, 4 Kings, 2 Los Angeles, 70 Madera, 1 Merced, 3 Orange, 4 Riverside, 4 Sacramento, 1 San Bernardino, 1 San Joaquin, 1 Siskiyou, 1 Solano, 2 Stanislaus, 5 Tehama, 7 Tulare, 24 Ventura, 1 Yolo, 1	0.02 to 8.5	DHS MCL 3.0	Source of residues in certain wells in Contra Costa, Glenn, Kern, Los Angeles, Orange, Riverside, Solano, Stanislaus, Tehama, and Tulare Counties was determined by DPR to be due to non-point source, legal agricultural use. Detections in Fresno, Kings, Madera, Merced, San Bernardino, San Joaquin, and Ventura Counties are CUI. Source of residues in Sacramento and Siskiyou Counties is unknown. Detections in Butte and Yolo Counties were due to point-source. Atrazine was reviewed through the PDRP, and regulations were adapted to establish Pesticide Management Zones (PMZs) for atrazine. PMZs are one square mile areas that are sensitive to ground water pollution. Agricultural, outdoor industrial, and outdoor institutional use of atrazine within atrazine PMZs is prohibited.
benomyl AR fungicide	35 counties 1045 wells	Glenn, 1	500.0	none established	ND in follow-up sampling.

CAL: California State Action Levels (CALs) are published by DHS's Office of Drinking Water and are based mainly on health affects. CALs are advisory to water suppliers. Although not legally enforceable, the majority of water suppliers have complied with CALs as though they were MCLs.

DHS MCL: MCL adopted by DHS under the Safe Drinking Water Act. MCLs are formally established in regulation and are enforceable by DHS on water suppliers.

Table 4 continued.

3

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
bentazon AR herbicide	34 counties 1118 wells	Alameda, 1 Butte, 8 Colusa, 7 Fresno, 1 Glenn, 31 Kern, 1 Merced, 1 Placer, 1 Sacramento, 1 San Joaquin, 1 Stanislaus, 3 Sutter, 7 Tulare, 3 Yolo, 3 Yuba, 8	0.07 to 20.0	DHS MCL 18.0	Source of residues in Butte, Colusa, Glenn, Merced, Placer, Sacramento, Stanislaus, Sutter, Yolo, and Yuba Counties was determined to be agricultural applications of bentazon to rice paddies. Detections in Alameda, Fresno, San Joaquin, Tulare and Yuba counties are CUI. Bentazon was reviewed through the PDRP, and regulations were adopted to prohibit the use of bentazon on rice. The regulations also modify the use of bentazon on other crops for ground water protection purposes. Detection in Kern ND in follow-up sampling.
bromacil AR herbicide	46 counties 3194 wells	Fresno, 17 Kern, 1 Los Angeles, 1 Placer, 2 San Joaquin, 1 Sutter, 1 Tehama, 2 Tulare, 91	0.03 to 20.0	USEPA HAL 90.0 lifetime	Source of residues in Fresno, Placer, Tehama, and Tulare Counties was determined by DPR to be due to non-point source, legal agricultural use. Detections in Kern and Los Angeles Counties are CUI. Detection in Sutter County was due to point-source. ND in follow-up sampling of well in San Joaquin County. Bromacil was reviewed through the PDRP, and regulations were adopted to establish PMZs for bromacil. Agricultural, outdoor industrial, and outdoor institutional use of bromacil in non-crop areas or on rights-of-way in bromacil PMZs is prohibited.
captan AR fungicide	36 counties 1399 wells	Glenn, 2 Solano, 1	0.1 to 0.5	CAL 350.0	ND in follow-up sampling of all three wells.
carbaryl AR insecticide	43 counties 1759 wells	Monterey, 1 Napa, 1	2.0 to 2.3	CAL 60.0	Detection in Monterey County was due to point-source. ND in follow-up sampling of well in Napa County.

Table 4 continued.

4

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
carbofuran AR insecticide, miticide nematicide	46 counties 2701 wells	Riverside, 1	0.5	DHS MCL 18.0	ND in follow-up sampling.
carbon disulfide breakdown product	3 counties 10 wells	San Luis Obispo, 2 Santa Barbara, 3 Sonoma, 3	0.6 to 5.0	none established	ND in follow-up sampling of wells in Santa Barbara County. Detections in Sonoma and San Luis Obispo Counties are CUI. Carbon disulfide is the primary breakdown product of the nematicide and fungicide, sodium tetrathlocarbonate, which is currently registered in California for experimental use only.
chlordane NR since 3/30/89 insecticide	47 counties 2956 wells	San Diego, 1	20.0	DHS MCL 0.1	Detection was due to point-source.
chlorothalonil AR fungicide	29 counties 858 wells	Humboldt, 1	0.8 to 1.1	USEPA HAL 200.0 10-day	Detection was made in an unsealed well.
chlorpyrifos AR insecticide	33 counties 1231 wells	Fresno, 2 Yolo, 1	0.02 to 0.06	USEPA HAL 20.0 lifetime	Detections in Fresno County are CUI. ND in follow-up sampling of well in Yolo County.
chlorthal-dimethyl  AR herbicide	21 counties  908 wells	Monterey, 4  San Luis Obispo, 1	0.03 to 300.0	USEAP HAL  4000.0 lifetime	Detections in 3 Monterey County wells were due to point-source. Detections in a fourth Monterey County well were ND in follow-up sampling. Detection in San Luis Obispo County is CUI. The USEPA HAL given is for combined total of chlorthal-dimethyl and its metabolites.
1,2-D (propylene dichloride, 1,2-dichloropropane) NR fumigant	54 counties 7027 wells	Contra Costa, 1 Del Norte, 41 Fresno, 11 Imperial, 1 Kern, 27 Merced, 4 Napa, 1 Riverside, 7 San Bernardino, 2	0.1 to 160.0	DHS MCL 5.0	Source of residues in specified wells considered by DPR to be from non-point source, agricultural use. Detections in three Santa Clara and six Santa Cruz wells were due to point-source. Regulations were adopted in 1985 that prohibit the use or sale of pesticides in California in which 1,2-D exceeds 0.5% of the total formulation.

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
1,2-D (cont.)		San Diego, 2 San Joaquin, 17 San Mateo, 1 Santa Clara, 3 Santa Cruz, 6 Siskiyou, 3 Stanislaus, 3 Sutter, 1 Tulare, 4 Yolo, 1			
1,3-D (1,3-dichloropropene) AR nematicide, soil fumigant	53 counties 6964 wells	Del Norte, 1 Fresno, 2 Santa Clara, 3	0.84 to 31.0	DHS MCL 0.5	ND in follow-up sampling of wells in Del Norte and Santa Clara Counties and one well in Fresno County. Detection in one well in Fresno County is CUI.
2,4-D (2,4-dichlorophenoxy acetic acid) AR herbicide	56 counties 2908 wells	Butte, 1 Colusa, 1 Del Norte, 2 Los Angeles, 2 Modoc, 1 San Diego, 1 San Joaquin, 1 San Mateo, 2 Yuba, 2	0.38 to 46.0	USEPA MCL 70.0	Detections in Los Angeles, San Joaquin, San Mateo, and Yuba Counties are CUI. Detection in San Diego County was due to point-source. ND in follow-up sampling of wells in Butte, Colusa, Del Norte, and Modoc Counties.
2,4-DP (2-(2,4-dichlorophen- oxy) propionic acid) AR herbicide	9 counties 106 wells	Fresno, 1 Stanislaus, 2	0.01 to 0.06	none established	Detections are CUI.

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
DBCP (dibromochloro- propane) NR soil fumigant	43 counties 9086 wells	Butte, 1 Fresno, 1461 Kern, 193 Kings, 6 Los Angeles, 15 Madera, 80 Merced, 297 Monterey, 1 Orange, 1 Riverside, 69 S. Bernardino, 130 San Diego, 2 San Joaquin, 118 Santa Clara, 1 Stanislaus, 192 Sutter, 11 Tulare, 140 Ventura, 3	0.002 to 8000.0	DHS MCL 0.2	Use suspended in 1979. Source of residues considered by DPR to be from non- point source, agricultural use. Detections in one Fresno well due to point-source.
DCPA acid metabolites breakdown products of chlordane-dimethyl (see also TPA)	5 counties 9 wells	Los Angeles, 1 Santa Clara, 1	0.223 to 0.308	USEPA HAL 4000.0 lifetime	Detections made during USEPA National Pesticide Survey. The analytical method used in the NPS did not identify which chlordane-dimethyl metabolite was detected. A follow-up study conducted by DPR identified the metabo- lite as TPA. The USEPA HAL given is for combined total of chlordane- dimethyl and its metabolites.
DDD (1,1-dichloro-2,2-bis- (p-chlorophenyl) ethane) NR insecticide	37 counties 1355 wells	Santa Cruz, 1	1.04	PROP 65 1.0	Detection was due to point-source. The Prop 65 level given is for DDD, DDE & DDT combined.

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
DDE (dichlorodiphenyl- dichloroethylene) NR breakdown product of DDT	37 counties 1415 wells	Butte, 2 Monterey, 3 Santa Cruz, 1	0.01 to 0.09	PROP 65 1.0	Detections were due to point-source. The Prop 65 level given is for DDD, DDE & DDT combined.
DDT (dichlorodiphenyl- trichloroethane) NR since 1973 insecticide	37 counties 1435 wells	Butte, 1 Monterey, 2 Santa Cruz, 1	0.02 to 0.12	PROP 65 1.0	Detections were due to point-source. The Prop 65 level given is for DDD, DDE & DDT combined.
diazinon AR insecticide, nematicide	48 counties 2080 wells	Butte, 2 Fresno, 1 Kings, 1 Merced, 1 Monterey, 1 Tulare, 1	0.01 to 3.2	USEPA HAL 0.6 lifetime	Detections in Butte County were due to point-source. ND in follow-up sampling of wells in Fresno, Merced, and Monterey Counties. Detections in Kings and Tulare Counties are CUI.
dicamba AR herbicide	24 counties 380 wells	Fresno, 1 Madera, 1 Tulare, 2	0.01	USEPA HAL 200.0	Detections are CUI.
dichlorprop NR since 5/14/90 herbicide	10 counties 83 wells	Butte, 1	6.8	none established	ND in follow-up sampling.
dieldrin NR since 1/14/86 insecticide	40 counties 1615 wells	Fresno, 1 Monterey, 1 San Diego, 1	0.05 to 2.6	CAL 0.05	Detections were due to point-source.
dimethoate AR insecticide, acaricide	36 counties 1693 wells	Riverside, 1 Yolo, 1	0.38 to 10.0	CAL 140.0	ND in follow-up sampling of both wells.

PROP 65: Proposition 65 Lawful Levels. Proposition 65 criteria are established by the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment under the California Safe Drinking Water and Toxic Enforcement Act of 1986 for known human carcinogens and reproductive toxins and are established in regulation.

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
dinoseb NR since 2/8/89 herbicide	34 counties 1414 wells	Monterey, 1	30.0	USEPA MCL 7.0	Detection was due to point-source.
diuron AR herbicide	45 counties 3054 wells	Fresno, 33 Glenn, 1 Kern, 2 Kings, 2 Madera, 3 Merced, 1 Orange, 1 Riverside, 2 Stanislaus, 5 Tulare, 157	0.05 to 3.95	USPEA HAL 10.0	Source of residues in Fresno, Glenn, Kern, Orange, Riverside, Stanislaus, and Tulare Counties was determined by DPR to be due to non-point source, legal agricultural use. Detections in Kings, Madera, and Merced Counties are CUI. Diuron was reviewed through the PDRP, and regulations were adopted to establish PMZs for diuron. Agricultural, outdoor industrial, and outdoor institutional use of diuron in non-crop areas or on rights-of-way within diuron PMZs is prohibited.
endosulfan AR insecticide, acaricide	43 counties 2266 wells	Monterey, 4 Santa Cruz, 1	0.01 to 4.5	none established	Detections were due to point-source.
endothall NR since 12/13/83 herbicide, growth regulator	23 counties 659 wells	Butte, 1	160.0	USEPA HAL 100.0	ND in follow-up sampling.
endrin NR since 1/10/90 insecticide	54 counties 3322 wells	Fresno, 1 Los Angeles, 2 San Luis Obispo, 1	0.03 to 0.21	DHS MCL 0.2	Detection in Fresno County was due to point-source. Endrin NR when detections in Los Angeles and San Luis Obispo Counties were reported to DPR. Therefore, these detections were not investigated by DPR but were referred to the State Water Resources Control Board (SWRCB).
EDB (ethylene dibromide) NR since 1/13/87 fumigant, insecticide, nematicide	44 counties 4795 wells	Fresno, 16 Inyo, 1 Kern, 49 Los Angeles, 6 Merced, 6 Riverside, 1 San Bernardino, 8	0.006 to 4.7	DHS MCL 0.02	Source of residues considered by DPR to be due to non-point source, legal agricultural use.

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
EDB (cont.)		San Joaquin, 8 Santa Barbara, 1 Stanislaus, 13 Tulare, 1 Ventura, 2 Yolo, 3			
ethylene dichloride (1,2-dichloroethane) NR since 1/14/88 fumigant	7 counties 128 wells	Merced, 1	2.9	DHS MCL 0.5	Ethylene dichloride NR when detections reported to DPR. Referred to SWRCB.
ethylene thiourea breakdown product	8 counties 2677 wells	San Joaquin, 1	0.725	USEPA HAL 7 year 100.0 child 400.0 adult	ND in follow-up sampling. Ethylene thiourea is a breakdown product of fungicides in the dithiocarbamate group.
heptachlor NR since 2/2/88 insecticide	47 counties 2885 wells	San Bernardino, 4 Santa Barbara, 2	0.01 to 0.25	DHS MCL 0.01	Heptachlor NR when detections reported to DPR. Referred to SWRCB.
heptachlor epoxide breakdown product of heptachlor	47 counties 2677 wells	San Bernardino, 1	0.01	DHS MCL 0.01	Heptachlor NR when detections reported to DPR. Referred to SWRCB.
lindane AR insecticide	54 counties 3409 wells	Los Angeles, 3 San Diego, 1	0.05 to 180.0	USEPA MCL 0.2	Detections in Los Angeles County are CUI. Detection in San Diego County was due to point-source.
malathion AR insecticide	29 counties 851 wells	Yolo, 1	0.32	CAL 160.0	ND in follow-up sampling.
methoxychlor AR insecticide	53 counties 2801 wells	Los Angeles, 2	0.5	USEPA MCL 40.0	Detections are CUI.
methyl bromide AR fumigant	52 counties 6734 wells	San Joaquin, 1 Tulare, 1 Tuolumne, 2 Ventura, 1	0.7 to 6.4	USEPA HAL 10.0	Detections in Tulare and Ventura Counties are CUI. ND in follow-up sampling of wells in San Joaquin and Tuolumne Counties.



Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
methyl trithion NR insecticide	8 counties 170 wells	Tulare, 1	0.9	none established	Methyl trithion NR when detection reported to DPR. Referred to SWRCB.
mexacarbate NR since 3/30/89 insecticide, acaricide, molluscicide	14 counties 307 wells	San Luis Obispo, 1	22.0	none established	Mexacarbate NR when detection reported to DPR. Referred to SWRCB.
molinate AR herbicide	41 counties 2503 wells	Glenn, 2 Tehama, 1 Yolo, 1	0.56 to 29.0	DHS MCL 20.0	All four wells with detections were found to be unsealed against surface water run-off.
molinate sulfoxide breakdown product of molinate	17 counties 210 wells	Tehama, 1	0.8	none established	Well was not sealed against surface water run-off.
monuron NR since 12/31/91 herbicide	19 counties 409 wells	Tulare, 4	0.04 to 2.0	none established	Monuron NR for agricultural use when detection reported to DPR. Referred to SWRCB.
MTP (monomethyl- 2,3,5,6-tetrachloro- terephthalate) breakdown product of chlorthal-dimethyl	8 counties 77 wells	Monterey, 1	2.41 to 2.55	USEPA HAL 4000.0 lifetime	ND in follow-up sampling. The USEPA HAL given is for combined total of chlorthal-dimethyl and its metabolites.
naphthalene AR insecticidal fumigant	18 counties 255 wells	Los Angeles, 1 San Bernardino, 1 Santa Cruz, 1 Tulare, 2	0.6 to 25.0	USEPA HAL 20.0	Naphthalene NR for agricultural use when detection reported to DPR. Referred to SWRCB.
ortho-dichlorobenzene (1,2-dichlorobenzene) NR herbicide, insecticide, soil fumigant	39 counties 4459 wells	San Luis Obispo, 1 Santa Clara, 1 Santa Cruz, 1 Tuolumne, 1	0.56 to 7.2	CAL 130.0	Ortho-dichlorobenzene NR when detection reported to DPR. Referred to SWRCB. The CAL given is for combined toxicity of 1,2- and 1,3-dichlorobenzenes.

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
prometon AR herbicide	36 counties 2190 wells	Contra Costa, 1 Fresno, 8 Glenn, 9 Kern, 1 Kings, 2 Merced, 3 Stanislaus, 1 Tehama, 1 Tulare, 7 Yolo, 1	0.05 to 80.0	USEPA HAL 100.0	Source of residues in Fresno, Glenn and Tulare Counties was determined by DPR to be due to non-point source, legal agricultural use. Detections in Kern, Kings, Merced, and Stanislaus Counties are CUI. ND in follow-up sampling of wells in Contra Costa and Tehama Counties. Detection in Yolo County was due to point-source. Prometon was reviewed through the PDRP, and regulations were adopted to establish PMZs for prometon. Agricultural, outdoor industrial, and outdoor institutional use of prometon within prometon PMZs is prohibited.
prometryn AR herbicide	42 counties 2105 wells	Kern, 1 Kings, 1	0.2 to 0.5	none established	Detections are CUI.
propazine NR since 2/2/88 herbicide	32 counties 638 wells	Kings, 1	0.2	USEPA HAL 10.0	Propazine NR when detection reported to DPR. Referred to SWRCB.
propham NR since 6/2/89 herbicide	26 counties 861 wells	Fresno, 1	6.0	USEPA HAL 100.0	Propham NR when detection reported to DPR. Referred to SWRCB.
silvex (2-(2,4,5-trichlorophen- oxy) propionic acid) NR since 1/28/86 herbicide	54 counties 2422 wells	Los Angeles, 2 San Diego, 1 San Joaquin, 1 Santa Clara, 2	0.03 to 1.4	DHS MCL 10.0	Detection in San Diego County was due to point-source. Silvex NR when detections for Los Angeles, San Joaquin, and Santa Clara Counties were reported to DPR. Referred to SWRCB.
simazine AR herbicide	55 counties 6752 wells	Butte, 1 Contra Costa, 1 Fresno, 117 Glenn, 21 Humboldt, 1 Kern, 1 Kings, 1 Los Angeles, 49 Madera, 1	0.02 to 49.2	DHS MCL 10.0	Source of residues in certain wells in Fresno, Glenn, Los Angeles, Merced, Orange, Riverside, Stanislaus, Tehama, and Tulare Counties was determined by DPR to be due to non-point source, legal agricultural use. Additional wells in Fresno, Kern, Los Angeles, Madera, Merced, Monterey, Orange, Riverside, San Bernardino, Stanislaus, and Tulare Counties are CUI. ND in follow-up sampling of wells in Butte, Contra Costa, Kings, Monterey, Napa, Siskiyou, and Solano Counties. Detection in Humboldt

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
simazine (cont.)		Merced, 5 Monterey, 1 Napa, 1 Orange, 9 Riverside, 17 San Bernardino, 1 Siskiyou, 1 Solano, 1 Stanislaus, 15 Tehama, 2 Tulare, 195			County was in an unsealed well. Residue in one well in Stanislaus County was due to point-source. Simazine was reviewed through the PDRP, and regulations were adopted to establish PMZs for simazine. Agricultural, outdoor industrial, and outdoor institutional use of simazine in non-crop areas or on rights-of-way within simazine PMZs is prohibited.
2,4,5-T (2,4,5-trichloro-phenoxy acetic acid) NR herbicide	23 counties 318 wells	San Luis Obispo, 1 Yolo, 1	0.02 to 0.21	USEPA HAL 70.0 lifetime	Detection in Yolo County was due to point-source. 2,4,5-T NR when detection for San Luis Obispo County was reported to DPR. Referred to SWRCB.
tebuthiuron AR herbicide	10 counties 36 wells	San Diego, 1	20.7 to 22.1	USEPA HAL 500.0 lifetime	ND in follow-up sampling.
1,1,2,2-tetrachloroethane NR insecticide	19 counties 938 wells	Butte, 1 Stanislaus, 1	0.84 to 1.8	DHS MCL 1.0	1,1,2,2-tetrachloroethane NR when detections reported to DPR. Referred to SWRCB.
tetrachloroethylene NR since 6/7/90 insecticide	7 counties 128 wells	Fresno, 1 Madera, 1	0.2 to 0.3	DHS MCL 5.0	Tetrachloroethylene NR when detections reported to DPR. Referred to SWRCB.
thiobencarb AR herbicide	39 counties 2045 wells	Los Angeles, 1 Riverside, 3	0.6 to 8.7	DHS MCL 70.0	Detections are CUI.
toxaphene NR since 12/17/87 insecticide	54 counties 3608 wells	Los Angeles, 2 San Bernardino, 1 Santa Clara, 2	1.0 to 18.0	DHS MCL 5.0	Detections in Santa Clara County were due to point-source. Toxaphene NR when detections for Los Angeles and San Bernardino Counties were reported to DPR. Referred to SWRCB.

Table 4 continued.

Compound Detected, Registration Status, Type of Pesticide	Total Number of Counties and Wells Sampled	Counties and Number of Wells with Detections	Range of Concentrations Detected (ppb)	Water Quality Criteria (ppb)	Comments
TPA (2,3,5,6-tetrachloro- terephthalic acid) breakdown product of chlorthal-dimethyl	8 counties 77 wells	Fresno, 2 Kern, 5 Los Angeles, 4 Monterey, 6 San Luis Obispo, 1 Santa Barbara, 4 Santa Clara, 6	0.1 to 15.0	USEPA HAL 4000.0 lifetime	DPR's investigation suggests that TPA can occur in ground water as a result of non-point, legal agricultural use. Pursuant to FAC section 13149, DPR concluded that, at the levels detected in ground water, TPA does not pose a threat to public health, and, therefore, will not be regulated under the provisions of the Pesticide Contamination Prevention Act. The USEPA HAL given is for combined total of chlorthal-dimethyl and its metabolites.
1,2,4-trichlorobenzene NR herbicide	13 counties 153 wells	Santa Cruz, 1 Tulare, 1	1.3 to 21.0	USEPA HAL 70.0	1,2,4-trichlorobenzene NR when detections reported to DPR. Referred to SWRCB.
trifluralin AR herbicide	19 counties 536 wells	Glenn, 1 Yolo, 1	0.01 to 0.9	USEPA HAL 5.0	ND in follow-up sampling of both wells.
xylene AR solvent	40 counties 4289 wells	Fresno, 3 Kern, 1 Lassen, 1 Los Angeles, 1 Mono, 1 Monterey, 2 Placer, 1 Sacramento, 1 San Bernardino, 2 San Luis Obispo, 1 San Mateo, 1 Santa Cruz, 7 Sonoma, 1 Tulare, 1 Tuolumne, 1 Yolo, 1	0.3 to 1100.0	DHS MCL 1750.0	ND in follow-up sampling of wells in Mono, Sacramento, San Luis Obispo, Santa Cruz, Tulare, and Tuolumne Counties. Detections in Fresno, Monterey, Placer, and Yolo Counties were due to point-source. Other components of gasoline were detected in the analyzed samples for Lassen and Placer Counties. Detections in Kern, Los Angeles, San Bernardino, San Mateo, and Sonoma Counties are CUI.

Table 5. Summary of wells with confirmed detections of residues by county and pesticide. Results are for data reported during the period November 1, 1983 through June 30, 1992.

	alachlor	aldicarb	aldicarb sulfone	aldicarb sulfoxide	atrazine	bentazone	bromacil	carbon disulfide	chlorothalonil	chlorothal-dimethyl 1,2-D	2,4-D	DBCP	DDE	DDT	diclazon	diuron	EDB	endrin	molinate	monuron	molinate sulfoxide	naphthalene	ortho-dichlorobenzene	prometon	silmazine	2,4,5-T	tebuthiuron	1,1,2,2-tetrachloroethane	thiobencarb	toxaphene	TPA	1,2,4-trichlorobenzene	trifluralin	xylene	Total discrete wells by county	
Butte				2	8								2																						11	
Colusa						7																													7	
Contra Costa					1																														1	
Del Norte			11	11																															1	
Fresno			2		2		14			5*	81*				31									2	89						2			184		
Glenn				29	29										1				1					4	17									67		
Humboldt	3	4	2						1															1										9		
Imperial									1																										1	
Kern				2		1				10	92				2	15														5				109		
Kings					1										2																			3		
Lassen																																		1	1	
Los Angeles					47		1																			24					3				50	
Madera												22				3																			25	
Merced			11		1	1						17			1	1									2										34	
Monterey									3			1		1																5				1	11	
Napa										1															1										2	
Orange					2											1										9									9	
Placer						1	2																												3	
Riverside					1					5	13					2										8				1					24	
Sacramento					1	1																													2	
San Bernardino										1	46												1													48
San Diego										1																			1						2	
San Joaquin										5	1	21																							27	
San Luis Obispo																																	1		1	
Santa Barbara								1																									4		5	
Santa Clara									1															1							6				8	
Santa Cruz									1														1	1						1			4*		5	
Siskiyou					1					3																1									4	
Solano					2																														2	
Stanislaus			8		3	3						38				5										10									65	
Sutter						7																													8	
Tehama					7		1												1	1					2										8	
Tulare					8		75			3	15					128								6	144										195	
Tuolumne																								1												1
Yolo	1					3				1						3			1															1	9	
Yuba							5																													5
Total discrete wells by chemical	1	3	36	13	111	65	95	1	1	3	38	1	346	2	1	1	176	18	1	3	1	4	2	3	13	308	1	1	1	1	1	26	1	1	5	

\* - Point source  
 \* - Detections of xylene in three Santa Cruz wells were due to point-source contamination. Detections of 1,2-D and DBCP in one Fresno well were due to point-source contamination.

Table 6. Comparison, by county, of confirmed and total number of wells sampled and pesticide active ingredients and breakdown products analyzed for, including total analyses reported. Results are for data reported during the period November 1, 1983 through June 30, 1992.

County	Total Analyses Reported	Total Number of Pesticides Analyzed For	Total Number of Wells Sampled	Number of Wells with Confirmed Detections	Number of Pesticides with Confirmed Detections
Alameda	1,901	54	33	0	0
Alpine	6	6	1	0	0
Amador	117	26	12	0	0
Butte	5,913	119	200	11	4
Calaveras	55	13	16	0	0
Colusa	723	58	97	7	1
Contra Costa	1,428	65	81	1	1
Del Norte	2,365	56	102	11	2
El Dorado	210	35	61	0	0
Fresno	21,655	155	3,612	185	11
Glenn	2,620	83	333	67	6
Humboldt	495	33	94	9	5
Imperial	229	40	19	1	1
Inyo	226	23	20	0	0
Kern	20,884	148	1,183	109	8
Kings	2,768	131	173	3	2
Lake	322	32	47	0	0
Lassen	319	52	27	1	1
Los Angeles	34,191	154	1,080	50	5
Madera	4,404	123	314	25	2
Marin	101	11	21	0	0
Mariposa	15	1	13	0	0
Mendocino	1,068	39	105	0	0
Merced	9,611	149	1,103	34	7
Modoc	105	35	15	0	0
Mono	141	26	17	0	0
Monterey	8,355	150	633	11	6
Napa	450	48	64	2	2
Nevada	105	20	12	0	0
Orange	7,366	134	235	9	3
Placer	365	41	76	3	3
Plumas	381	41	77	0	0
Riverside	17,179	138	664	24	6
Sacramento	4,541	68	290	2	2
San Benito	970	88	61	0	0
San Bernardino	21,275	122	895	48	3
San Diego	1,158	88	95	2	2
San Francisco	27	9	3	0	0

Table 6 continued.

County	Total Analyses Reported	Total Number of Pesticides Analyzed For	Total Number of Wells Sampled	Number of Wells with Confirmed Detections	Number of Pesticides with Confirmed Detections
San Joaquin	7642	148	717	27	3
San Luis Obispo	3303	108	185	1	2
San Mateo	2292	96	63	0	0
Santa Barbara	3819	124	220	5	3
Santa Clara	21676	166	1157	8	5
Santa Cruz	3060	132	168	5	5
Shasta	1547	81	105	0	0
Sierra	65	28	13	0	0
Siskiyou	489	50	43	4	3
Solano	1700	64	111	2	1
Sonoma	2417	58	275	0	0
Stanislaus	11901	120	796	65	6
Sutter	447	52	95	8	2
Tehama	1489	75	140	8	5
Trinity	83	22	11	0	0
Tulare	16263	161	1168	195	8
Tuolumne	178	16	37	1	1
Ventura	5468	94	239	0	0
Yolo	2166	89	197	9	10
Yuba	58	50	91	5	1

Table 7. Pesticide active ingredients, previously detected in other areas of California, reported to the Department of Pesticide Regulation during the period of September 1, 1991 through June 30, 1992, with detections in new counties.

	Alameda	Butte	Contra Costa	Fresno	Inyo	Keim	Kings	Los Angeles	Madera	Merced	Orange	Riverside	San Bernardino	San Diego	San Joaquin	San Luis Obispo	Santa Barbara	Santa Cruz	Sonoma	Stanislaus	Tulare	Ventura	Yuba	Total discrete wells by chemical
<i>alachlor</i>													1											1
<i>atrazine</i>						4	2		1													1		8
<i>bentazon</i>	1			1										1							3			6
<i>bromacil</i>						1								1										2
<i>carbon disulfide</i>																2			3					5
<i>chlorpyrifos</i>				2																				2
<i>chlorthal-dimethyl</i>																1								1
<i>1,2-D</i>			1	7									2				1				3			14
<i>2,4-D</i>								2						1			2						2	7
<i>DBCP</i>		1						15			1			2										19
<i>diazinon</i>							1														1			2
<i>diuron</i>							2																	2
<i>EDB</i>					1			6				1	8				1				1	2		20
<i>endrin</i>								2								1								3
<i>lindane</i>								3																3
<i>methyl bromide</i>																					1	1		2
<i>ortho-dichlorobenzene</i>																1		1						2
<i>prometon</i>						1	2			3						1		1						2
<i>silvex</i>								2							1					1				7
<i>simazine</i>							1		1				1											3
<i>toxaphene</i>								2					1											3
<i>xylene</i>						1		1					2				1		1		1			7
Total discrete wells by county	1	1	1	10	1	7	5	24	1	3	1	1	15	2	4	5	3	1	1	4	4	7	3	2



Table 8. Comparison, by year of sampling, of confirmed and total number of wells sampled and analyses reported. Results are for data reported during the period November 1, 1983 through June 30, 1992.

Year of Sampling	Total Number of Wells Sampled	Total Number of Analyses	Number of Wells with Confirmed Detections	Number of Confirmed Analyses	Number of Pesticides with Confirmed Analyses
1971	1	3	0	0	0
1975	2	17	0	0	0
1976	8	27	0	0	0
1977	1	6	0	0	0
1978	7	37	0	0	0
1979	1058	2117	28	64	1
1980	954	1360	37	65	1
1981	1271	1758	31	52	2
1982	2076	4106	22	74	1
1983	1232	1888	17	120	1
1984	1760	19269	61	187	8
1985	2422	42055	158	466	6
1986	3246	40026	274	747	12
1987	2900	43725	151	357	16
1988	1141	12958	94	338	15
1989	3974	42249	282	1029	17
1990	2614	30250	103	338	19
1991	2088	17801	172	721	14
1992	179	1120	15	59	3

Table 9. Number of years well samples were taken and number of years pesticide residues were confirmed in wells, by county. Results are for data reported during the period November 1, 1983 through June 30, 1992.

County	Total Number of Years Sampled	Number of Years with Detections	County	Total Number of Years Sampled	Number of Years with Detections
Alameda	6	0	Orange	6	3
Alpine	1	0	Placer	6	3
Amador	3	0	Plumas	6	0
Butte	11	4	Riverside	13	6
Calaveras	2	0	Sacramento	9	2
Colusa	7	1	San Benito	5	0
Contra Costa	6	1	San Bernardino	14	10
Del Norte	9	4	San Diego	11	4
El Dorado	5	0	San Francisco	1	0
Fresno	17	9	San Joaquin	14	8
Glenn	9	5	San Luis Obispo	11	1
Humboldt	9	3	San Mateo	7	0
Imperial	8	2	Santa Barbara	12	2
Inyo	6	0	Santa Clara	11	3
Kern	13	13	Santa Cruz	9	5
Kings	14	2	Shasta	7	0
Lake	8	0	Sierra	3	0
Lassen	6	1	Siskiyou	7	2
Los Angeles	9	6	Solano	10	2
Madera	14	8	Sonoma	7	0
Marin	5	0	Stanislaus	14	8
Mariposa	2	0	Sutter	11	2
Mendocino	11	0	Tehama	7	2
Merced	14	7	Trinity	5	0
Modoc	4	0	Tulare	16	8
Mono	3	0	Tuolumne	3	1
Monterey	12	4	Ventura	11	0
Napa	4	1	Yolo	9	5
Nevada	2	0	Yuba	8	3

Table 10. The number of wells with detections of pesticide residues determined to be present as a result of legal, agricultural use pursuant to Food and Agricultural Code section 13149. Results are for active ingredients and breakdown products of pesticides registered for use as of June 30, 1992, and for data reported during the period November 1, 1983 through June 30, 1992.

	Butte	Colusa	Contra Costa	Fresno	Glenn	Humboldt	Kern	Los Angeles	Merced	Orange	Placer	Riverside	Sacramento	Solano	Stanislaus	Sutter	Tehama	Tulare	Yolo	Yuba	Total discrete wells, by chemical	
aldicarb sulfone						4																4
aldicarb sulfoxide						2																2
atrazine			1		32		2	52		4		1		1	3		7	16				119
bentazon	8	7			29				1		1		1		3	7			3	4		64
bromacil				6							2						2	89				99
diuron				14	1		2			1		2			3			143				166
prometon				1	8													5				14
simazine				53	16			29	2	9		10			6		2	169				296
Total discrete wells, by county	8	7	1	56	73	4	4	55	3	9	3	10	1	1	13	7	7	206	3	4		

Table 11. Detections of active ingredients and breakdown products of pesticides registered for use as of June 30, 1992 that were determined to be present in ground water as the result of legal, agricultural use, pursuant to Food and Agricultural Code section 13149. Results are for data reported during the period November 1, 1983 through June 30, 1992

	aldicarb sulfone	aldicarb sulfoxide	atrazine	bentazon	bromacil	diuron	prometon	simazine
1992					Tulare	Tulare		Tulare
1991			Kern Solano Tulare		Fresno Placer Tulare	Fresno Kern Stanislaus Tulare	Tulare	Fresno Tulare
1990			Glenn			Orange		Fresno Orange
1989			Glenn Los Angeles Riverside Stanislaus Tehama	Butte Colusa Glenn Merced Placer Sacramento Stanislaus Sutter Yolo Yuba	Fresno Tehama Tulare	Fresno Riverside Tulare	Fresno	Fresno Glenn Los Angeles Orange Riverside Stanislaus Tehama Tulare
1988	Humboldt	Humboldt	Glenn Los Angeles	Glenn	Tulare	Tulare		Fresno Glenn Merced Tulare
1987			Los Angeles					
1982-1986			Contra Costa Glenn Los Angeles Tulare		Tulare	Tulare	Glenn	Fresno Glenn Los Angeles Orange Riverside Tulare

**H. COUNTIES WITH PESTICIDE MANAGEMENT ZONES**

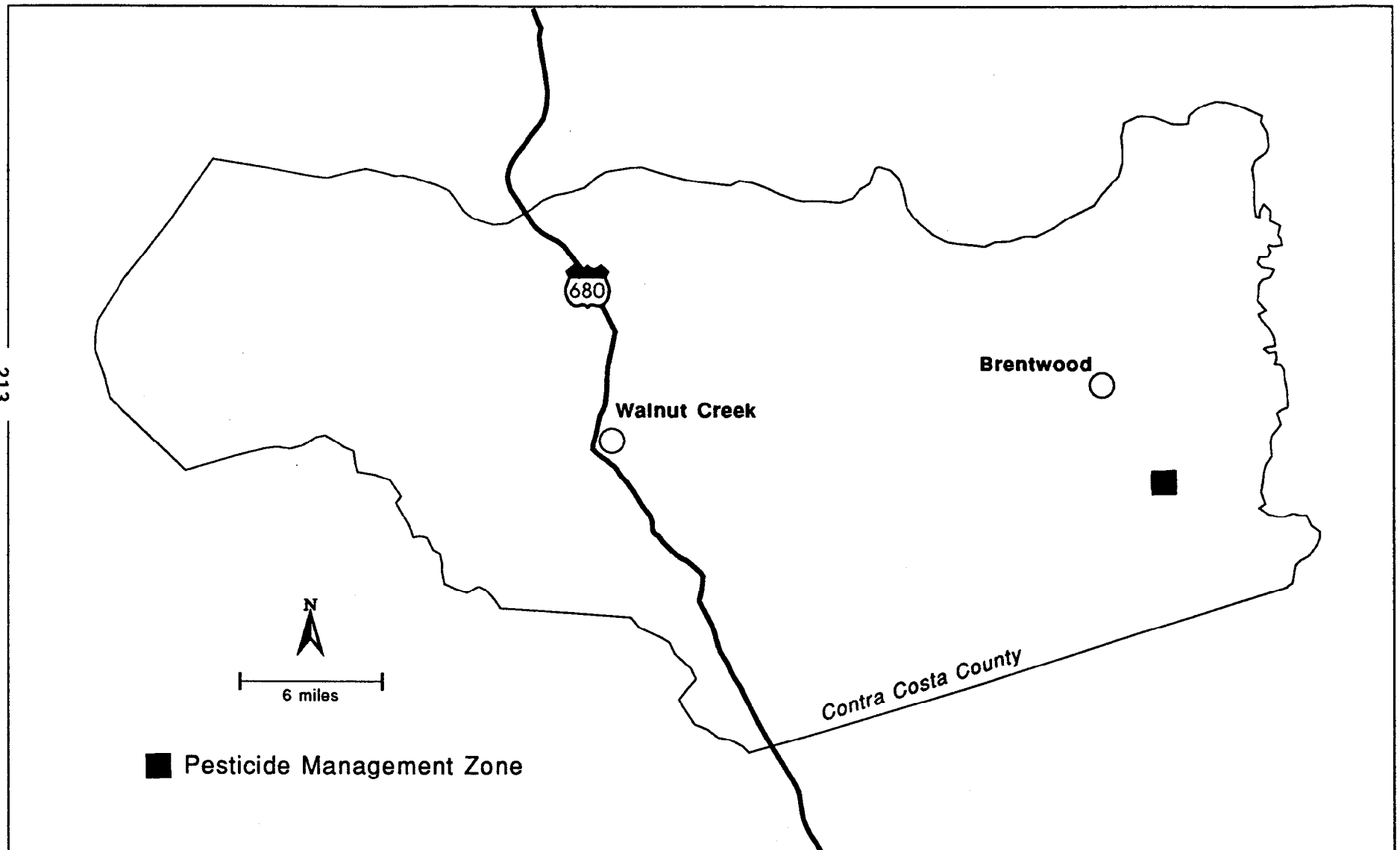


Figure 1. Section of land established in regulation as of December 1, 1992 as a Pesticide Management Zone (PMZ) in Contra Costa County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

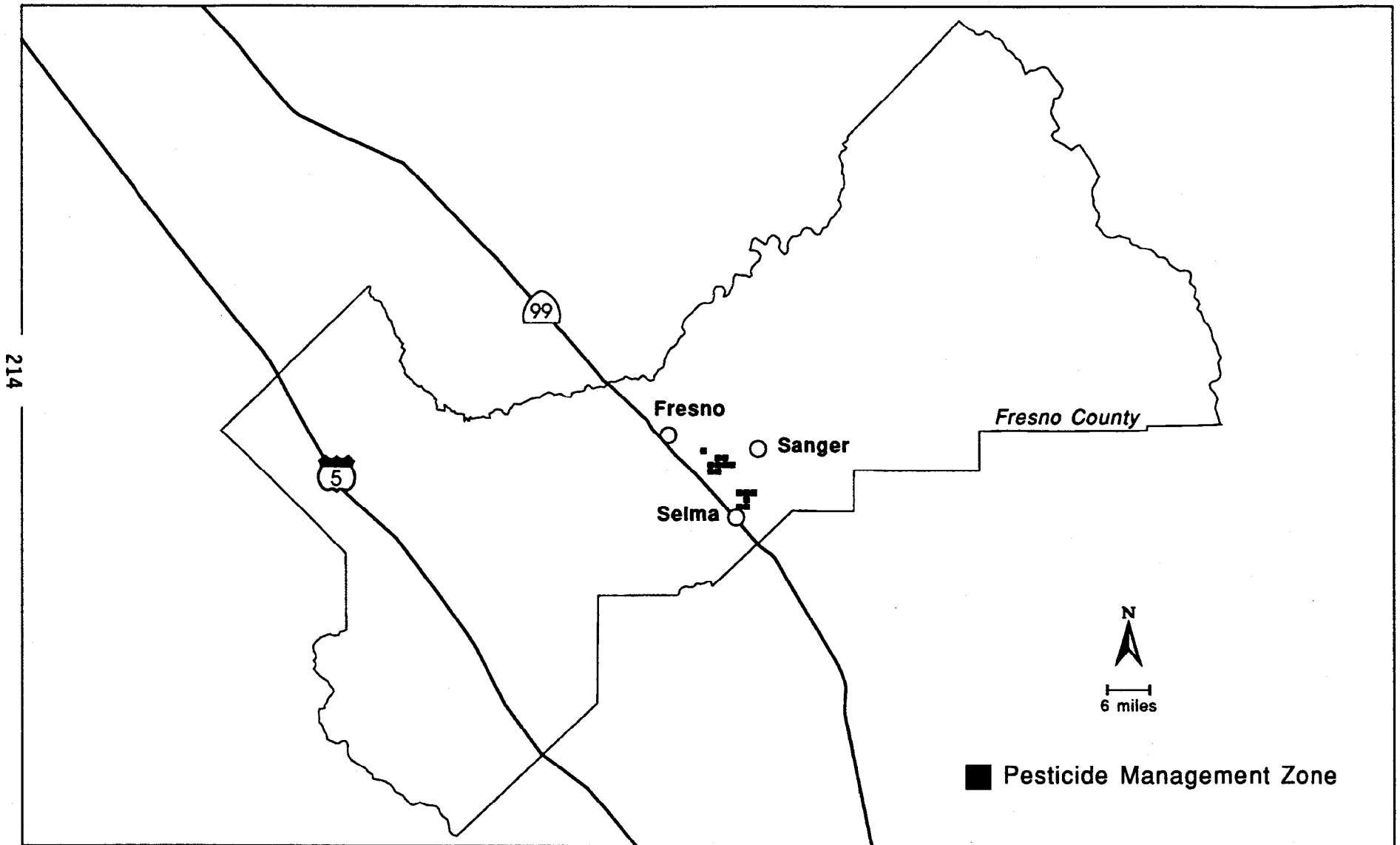


Figure 2. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zones (PMZs) in Fresno County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

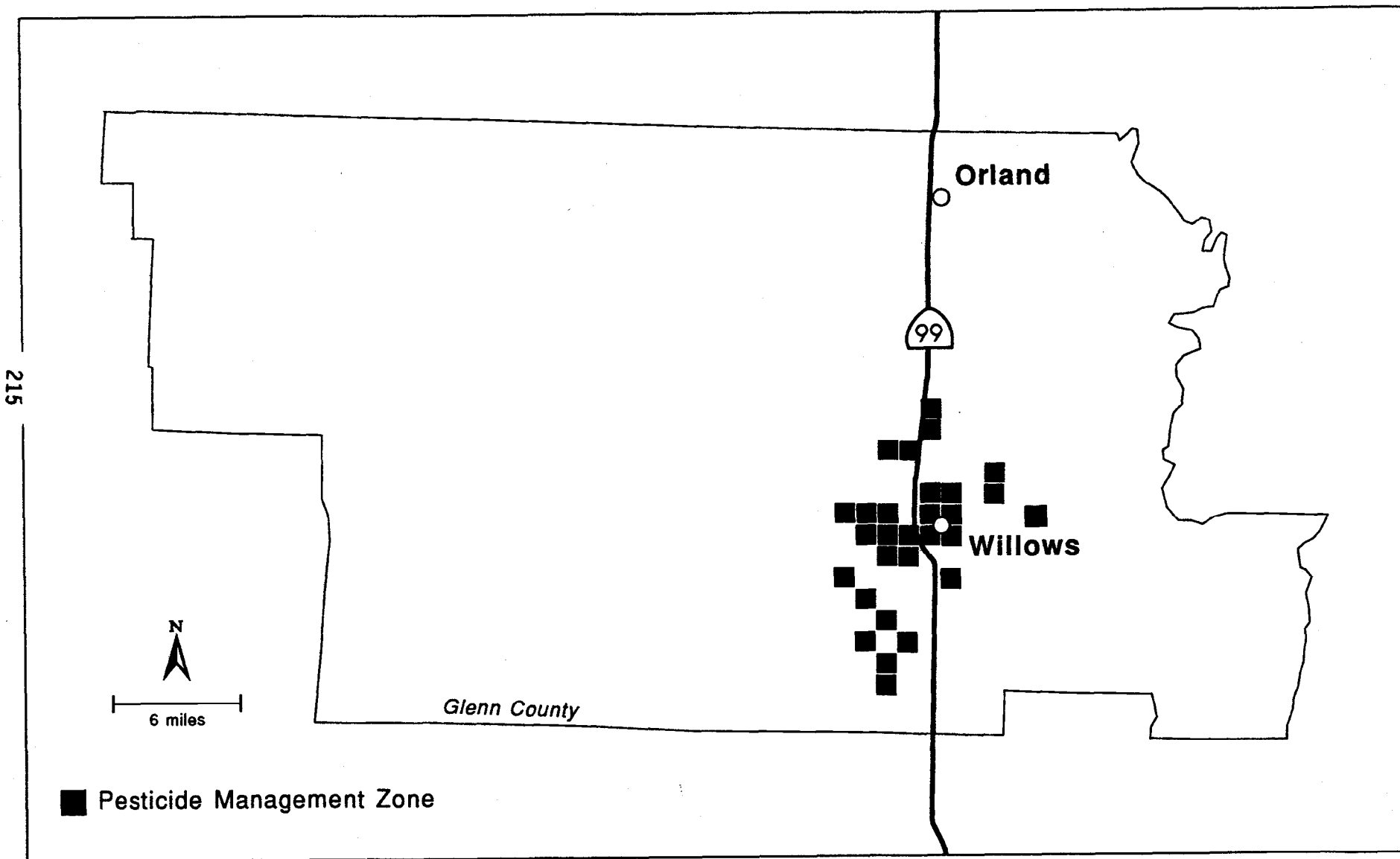


Figure 3. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zones (PMZs) in Glenn County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.



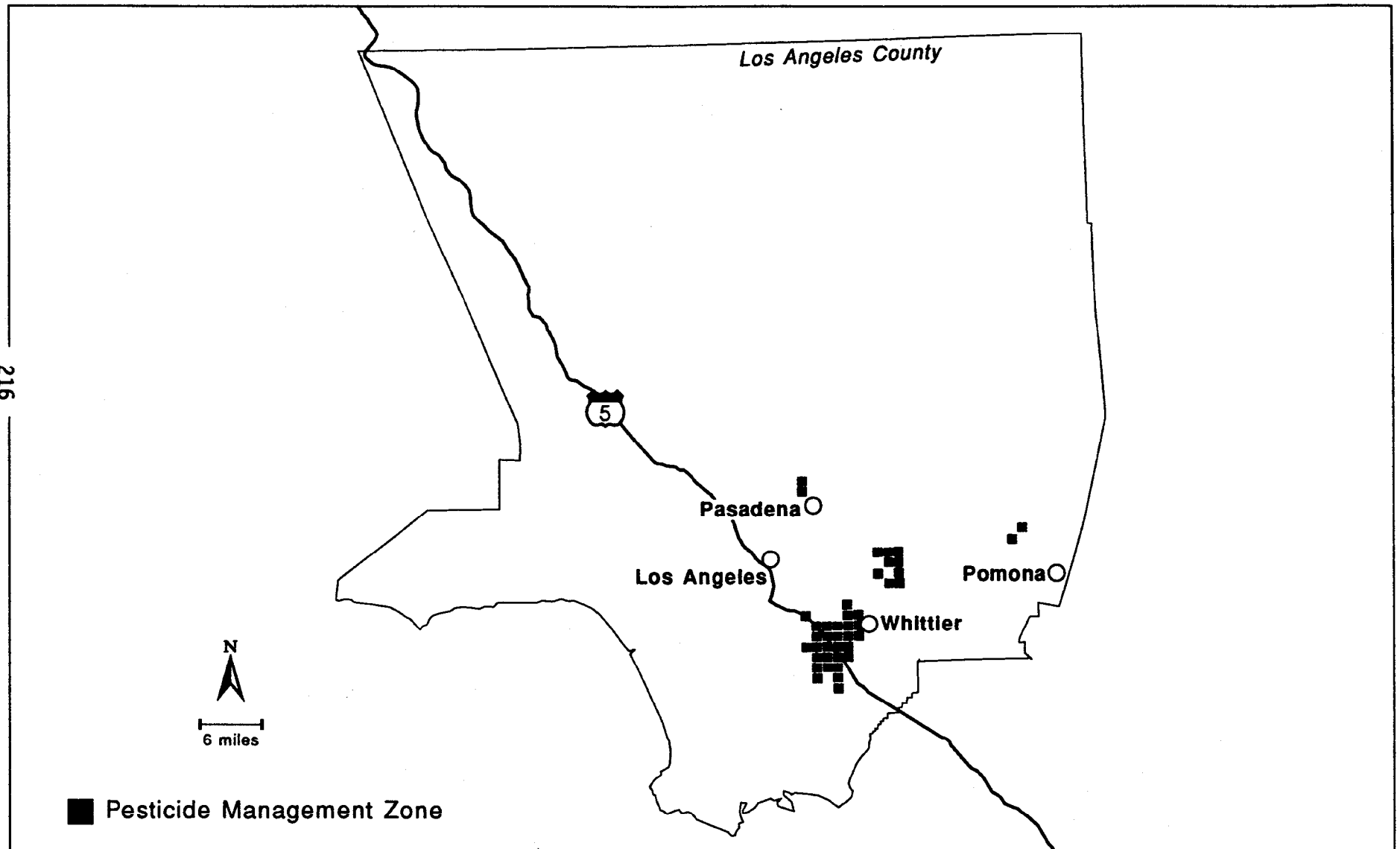


Figure 4. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zones (PMZs) in Los Angeles County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

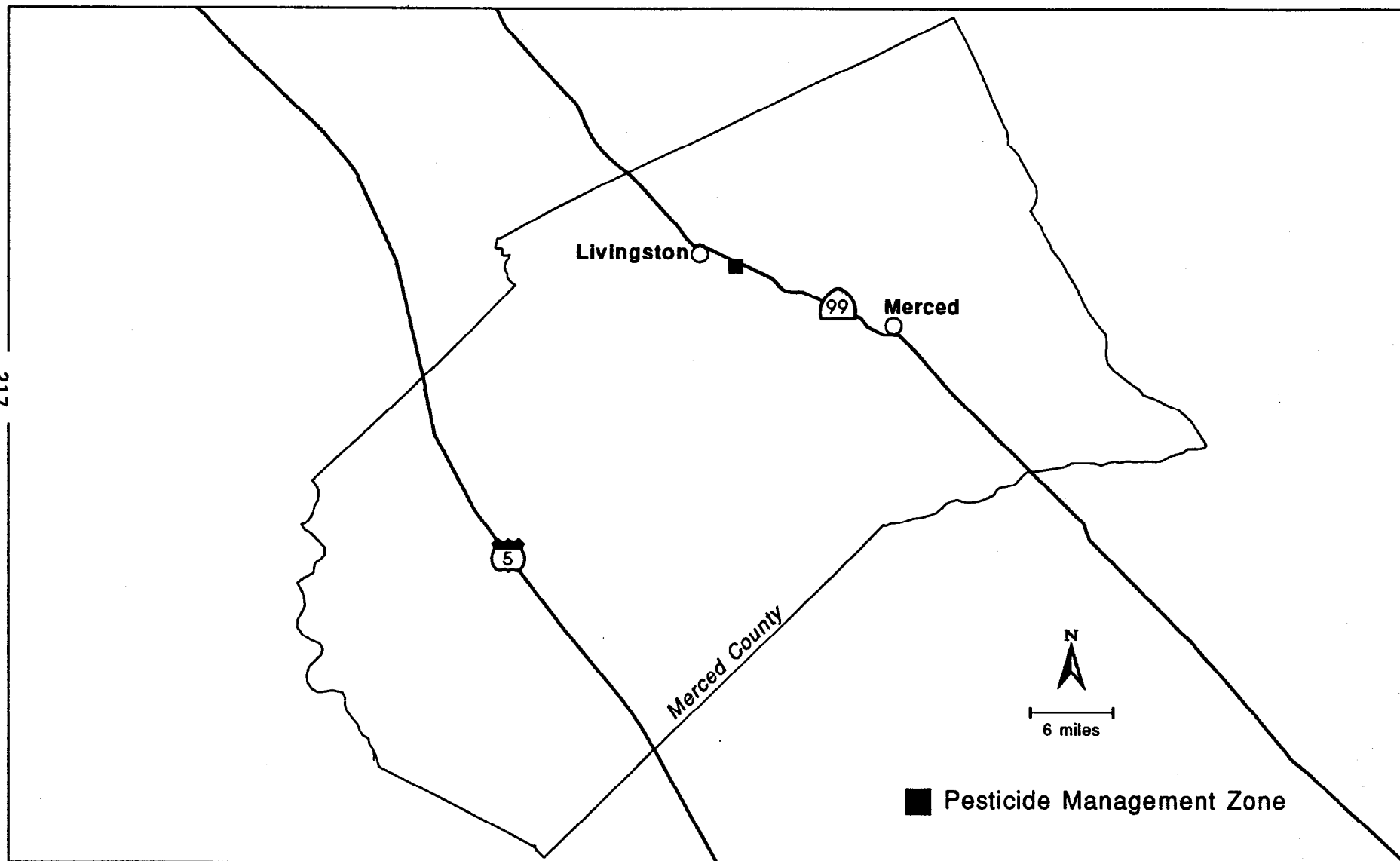


Figure 5. Section of land established in regulation as of December 1, 1992 as a Pesticide Management Zone (PMZ) in Merced County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

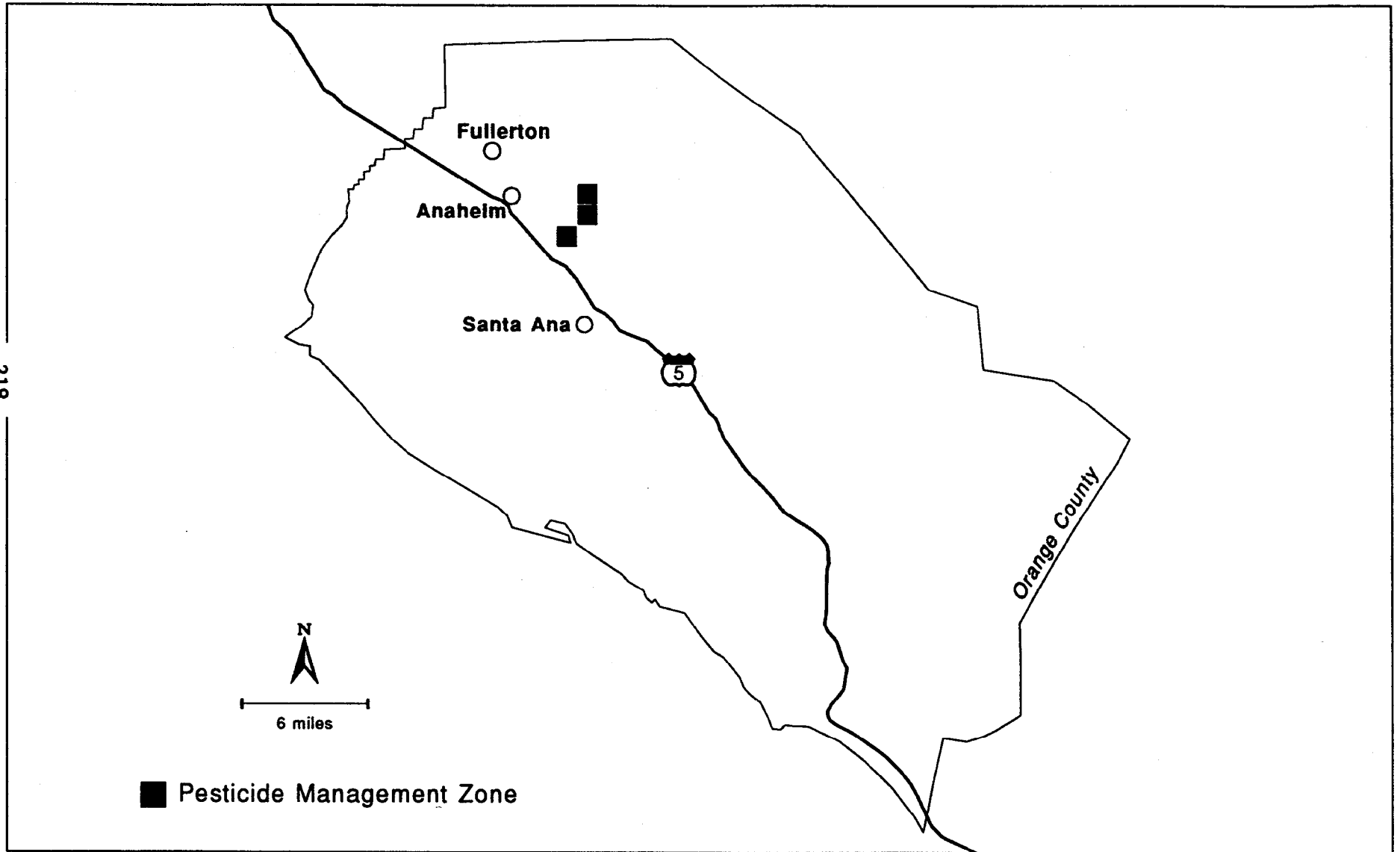


Figure 6. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zone(s) (PMZs) in Orange County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

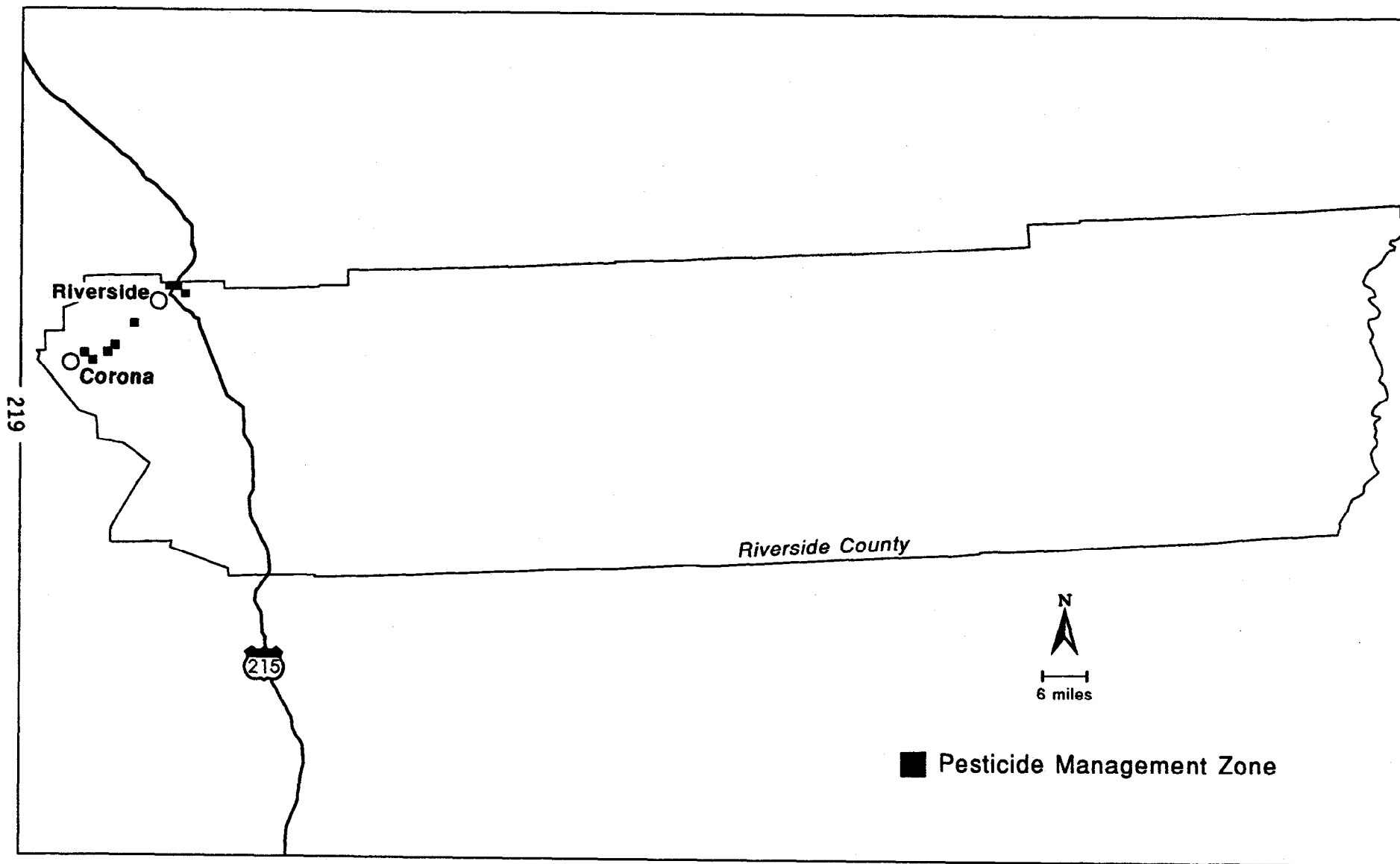


Figure 7. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zone(s) (PMZs) in Riverside County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

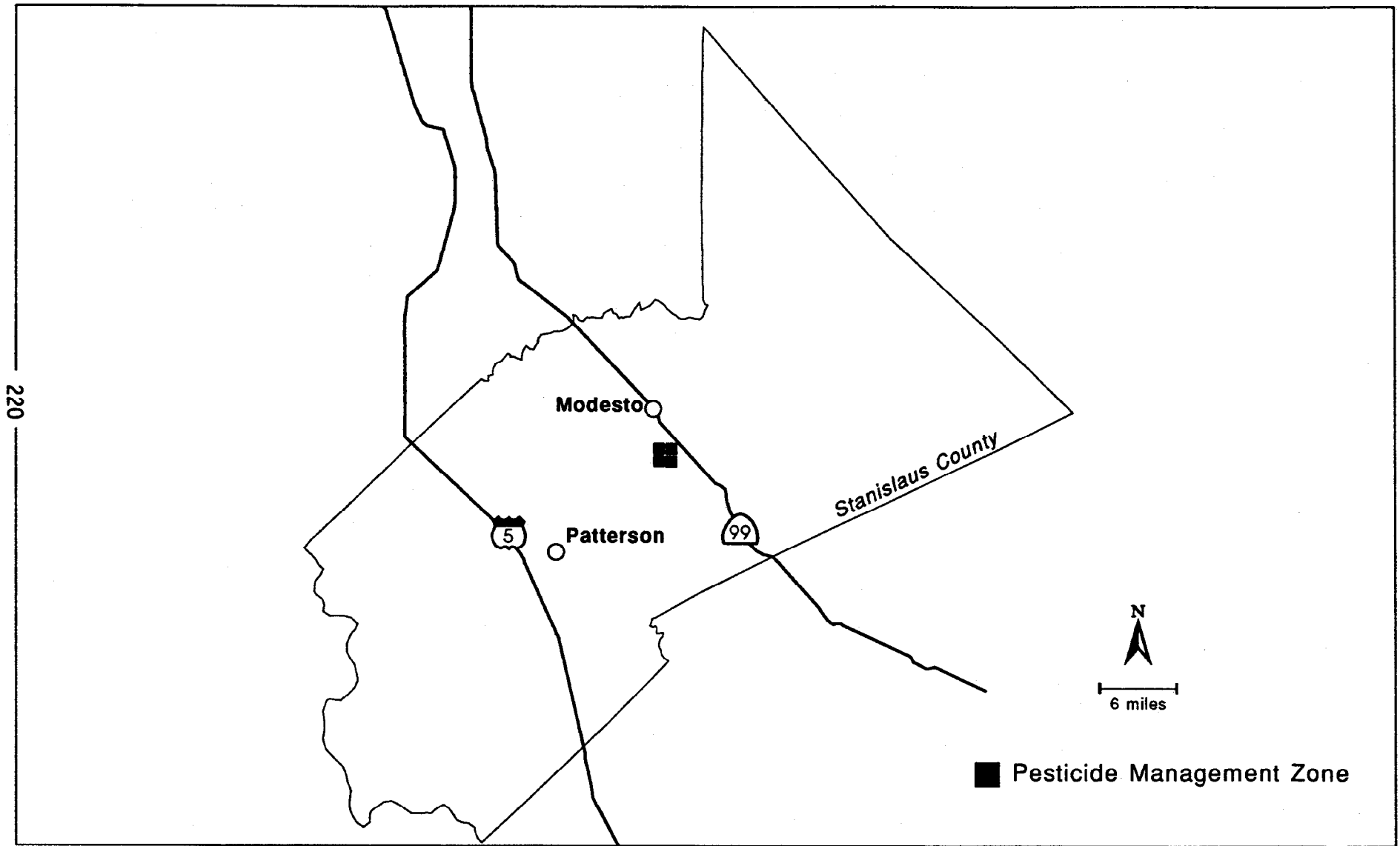


Figure 8. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zone(s) (PMZs) in Stanislaus County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

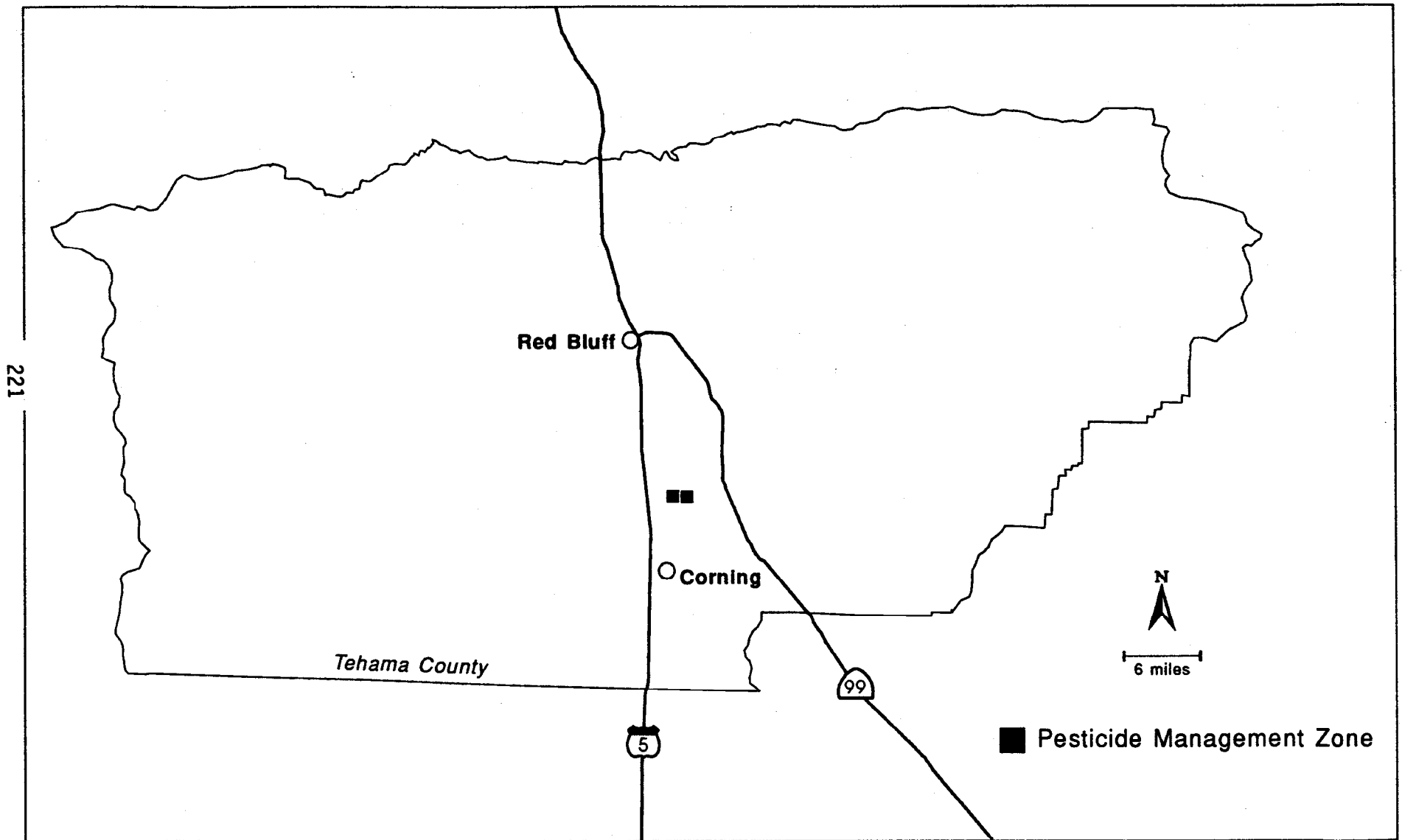


Figure 9. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zone(s) (PMZs) in Tehama County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.

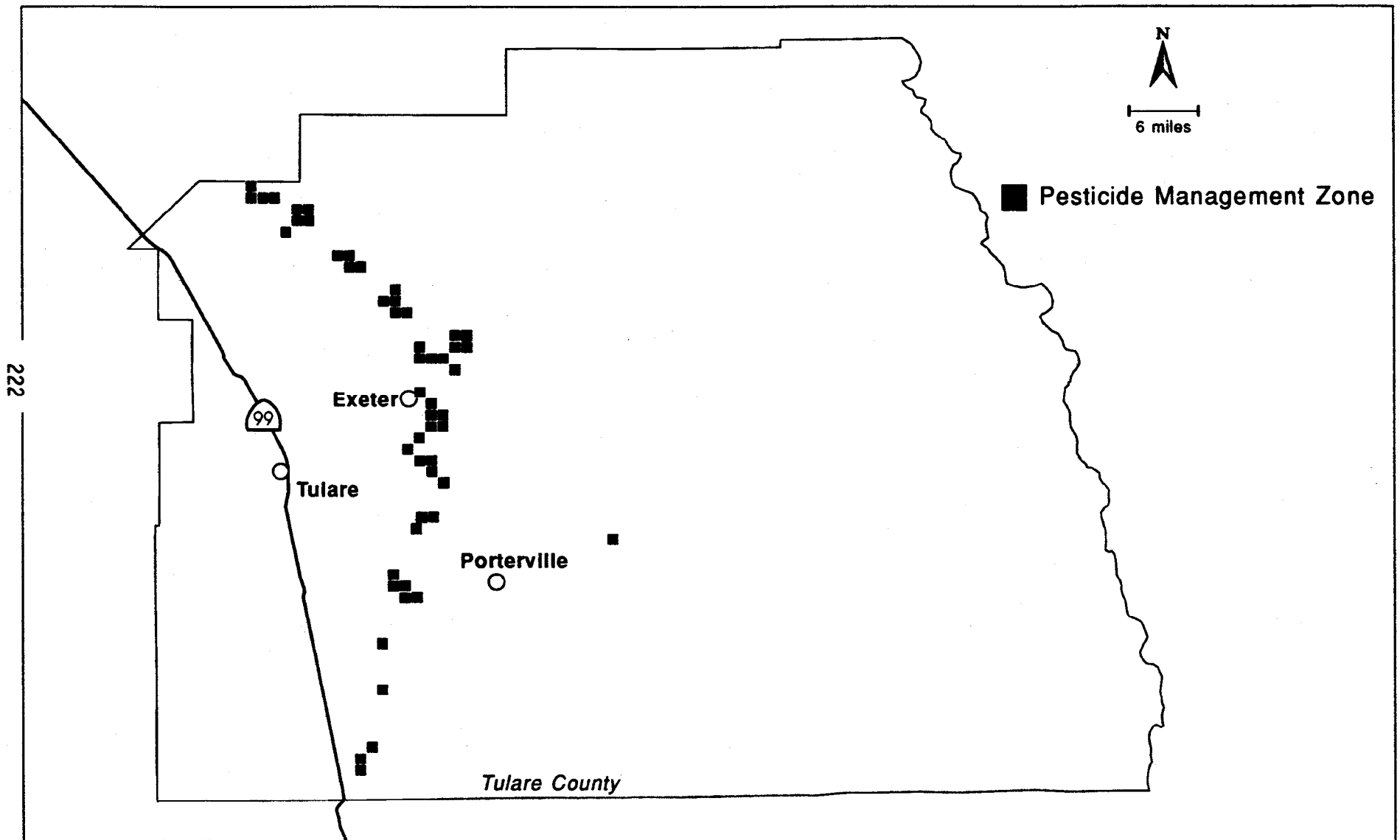


Figure 10. Sections of land established in regulation as of December 1, 1992 as Pesticide Management Zone(s) (PMZs) in Tulare County. A PMZ is a section of land, approximately one square mile, which is sensitive to ground water pollution. The use of a pesticide inside a PMZ where it has been detected in ground water due to legal, agricultural use is subject to certain ground water protection restrictions and requirements.