Review of Pyrethroid, Fipronil and Toxicity Monitoring Data from California Urban Watersheds



Prepared for the California Stormwater Quality Association (CASQA)

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Preface and Acknowledgements

This investigation and the production of this report were funded by the California Stormwater Quality Association (CASQA) and the County of Sacramento. The work effort was coordinated through and performed with the assistance of the CASQA Pesticides Subcommittee, particularly subcommittee Co-Chairs Dave Tamayo and Jamison Crosby, as well as Kelly Moran of TDC Environmental, who provided the majority of the new data sources and carefully reviewed the draft documents.

This investigation includes literature and data sources (including unpublished data) available from public agencies and other reputable sources with documented quality control, as well as from sources published in the scientific literature. The responsibility for the accuracy and veracity of the various study results rests with the original authors. This compilation is as complete as was feasible as of early 2013, but almost certainly does not include every relevant study.

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Executive Summary

In recent years, numerous studies have documented the presence of pyrethroid pesticides and fipronil, as well as pesticide-caused toxicity, in both surface waters and sediments in California's urban waterways. This report compiles and summarizes chemistry data from monitoring performed in urban areas of California for pyrethroid and fipronil pesticides, as well as related toxicity testing results, covering the ten year period from 2003-2012. Over 9200 pyrethroid sample analysis results and over 3200 fipronil results are evaluated and summarized.

Over the past ten years, pyrethroid pesticides have become the predominant group of chemicals deployed for insect control in urban areas in California (TDC Environmental, 2010b), and are the primary cause of toxicity in urban water bodies in the state (Anderson et al., 2011). The pyrethroids are synthetic versions of the naturally-occurring pyrethrins, but are more toxic and longer-lasting when released into the environment.

As state and federal regulatory actions have begun to address the widespread impacts of urban pyrethroid uses, alternative insecticides, particularly fipronil, are also of increasing concern (TDC Environmental, 2007). Fipronil has four relatively stable degradates that may contribute to aquatic toxicity. For that reason, this report also summarizes the results of recent monitoring for fipronil and its degradates.

Key Findings – Pyrethroids

Bifenthrin, considered to be the leading cause of pyrethroid-related toxicity in urban areas (c.f., Weston et al., 2005; Amweg et al., 2006; Holmes et al., 2008, TDC Environmental, 2006), was detected most frequently of all the pesticides evaluated, in both water and sediment. Bifenthrin was detected in 69% in sediment samples and 64% in water samples.

Detection rates were generally higher for pyrethroids in sediment than in water. Permethrin was the most extreme case of this difference, detected in 50% of sediment samples but only 16% of water samples. Overall, pyrethroids were detected at a rate of 31% in sediments and 24% in water samples.

Pyrethroids were commonly found at concentrations exceeding levels known to cause toxicity to sensitive aquatic organisms in water. The average reported concentrations of bifenthrin, cyfluthrin, cyhalothrin, cypermethrin and permethrin in water samples range from approximately one to more than three orders of magnitude above the non-regulatory chronic criteria values published by UC Davis. Maximum reported concentrations of these five pyrethroids range from two to more than four orders of magnitude higher than the UC Davis acute criteria values.

For the seven pyrethroids for which sediment toxicity (LC50) values are available, the average concentrations reported in this summary would be substantially greater than the published LC50s, following organic carbon normalization. This means that, under average conditions in urban waterways in California, these pesticides are typically present in sediments at levels toxic to sensitive aquatic macroinvertebrates such as *Hyalella azteca*.

These comparisons may understate the actual potential for pyrethroids to cause toxicity to sensitive aquatic organisms, because they do not account for concurrent exposures to multiple pyrethroids. Multiple pyrethroids typically were found in each sample in the summarized chemistry studies, in both water and sediments. Because pyrethroid toxicity is generally understood to be additive (c.f., Trimble et al., 2009), the actual in-situ toxicity estimated from chemistry results should account for the mixtures of pyrethroids found.

Key Findings – Fipronil and Degradates

Fipronil was detected in 39% of water samples tested from studies evaluated for this summary, and 19% of sediment samples. This contrasts with the pattern for most pyrethroids, for which there were typically higher percent detections in sediment. Presumably this reflects fipronil's lower K_{OW}, and/or fipronil's relatively higher solubility in water.

The fipronil degradates as a group were detected analytically in 24% of the water samples tested from studies evaluated for this study, and in 35% of sediment samples. This pattern is similar to that of the pyrethroids.

Published aquatic toxicity values for fipronil are in the sub-ppb (μ g/L) range (c.f., Gunasekara and Troung, 2007 and Mize et al., 2008). Maximum observed levels of fipronil and its degradates in water samples were higher than these LC50 values.

Key Findings – Toxicity

Toxic effects are documented in both water and sediment in urban waterways throughout California. Effects of pyrethroids on aquatic organisms are widespread throughout the aquatic environment, as documented in studies involving water column toxicity testing, sediment toxicity testing, and tissue analysis. Of the 25 toxicity studies that were summarized, all reported some level of toxicity for one or more organisms tested.

Research has for some time now indicated widespread sediment toxicity in urban areas of California (c.f., Amweg et al., 2005, Amweg et al., 2006, Anderson et al., 2011, Holmes et al., 2008, Weston et al. 2005), with pyrethroids often identified as the apparent cause of the toxicity.

Recent research also highlights the toxic effects of pyrethroids in water column samples. For example, Weston and Lydy (2012) found toxicity in a majority of urban creek and river samples tested during 2009-10 rain events. Toxicity Identification Evaluations (TIEs) and water chemistry testing identified pyrethroids as the principal cause of the water column toxicity.

Geographical Summary

Evidence of the presence and effects of pyrethroids and fipronil, and associated toxic effects in urban watercourses, is widely distributed geographically throughout urbanized areas of the state of California. This review identified such data from the north coast, Lake Tahoe region, San Francisco Bay Area, Central Valley, Central Coast, and both coastal and inland areas of southern California. Pyrethroid-related toxicity has been documented in nearly every major urban watershed in the state and in eight of the nine California Water Board regions.

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Background and Introduction

Legal uses of some registered pesticides have been found to result in adverse impacts to water quality and aquatic life in receiving waters within urban areas (see summary and references in TDC Environmental, 2010a). Over the past ten years, pyrethroid pesticides have become the predominant group of chemicals deployed for insect control in urban areas in California (TDC Environmental, 2010b). During this period, observations of pyrethroids and pyrethroid-caused toxicity in urban runoff and receiving waters have multiplied, increasingly resulting in listings of urban waterways on the Clean Water Act Section 303(d) List of Impaired Waters for California (the "303(d) List"; State Water Resources Control Board, 2011).

Urban pyrethroid use increased dramatically beginning in the early 2000's, when most urban uses of the organophosphate pesticides diazinon and chlorpyrifos were curtailed by the United States Environmental Protection Agency (USEPA). In response, other pesticides, principally pyrethroids, were substituted as the active ingredients most commonly used for urban pest management. The pyrethroids are synthetic versions of the naturally-occurring pyrethrins, but are more toxic and longer-lasting when released into the environment. In recent years, numerous studies have documented the presence of pyrethroid pesticides and pesticide-caused toxicity in both surface waters and sediments in California's urban waterways. This report compiles and summarizes those findings.

Within urban areas, pesticides are often applied directly and intentionally to impervious surfaces, and applications to impervious surfaces are considered to be the controlling factor in urban runoff contributions to receiving water toxicity (Moran and TenBrook, 2011). The relatively low aqueous solubility and high octanol-water partition coefficient (K_{OW}) of most pyrethroids indicate that these chemicals are likely to partition to suspended particulates in runoff and accumulate in the sediments of receiving waters. Studies in California waterways have shown that sediments contaminated with pyrethroid pesticides are frequently toxic to sediment-dwelling organisms (c.f., Weston et al., 2005; Amweg et al., 2006; Holmes et al., 2008). However, as documented in this report, pyrethroid pesticides are commonly found in both the waters and sediments of urban watercourses throughout California.

With nearly 700 pyrethroid products available to professional pest control operators and consumers in California, it is common for multiple pyrethroids to be present in the water and sediments of urban receiving waters, as shown by numerous studies summarized in this report. Studies involving urban monitoring data have demonstrated that mixtures of pyrethroids are contributing to pyrethroid-related toxicity in both water and sediments in urban creeks, and pyrethroid toxicity is generally considered to be additive in such mixtures (c.f., Trimble et al. 2009, Anderson et al., 2011).

As state and federal regulatory actions have begun to address the widespread impacts of urban pyrethroid uses, replacement insecticides, particularly fipronil, are also of increasing concern (TDC Environmental, 2007). For that reason, this report also summarizes the results of recent monitoring data for fipronil and its degradates.

Table 1 provides a summary of available water column toxicity information pertaining to pyrethroid pesticides, with references. What is most notable about the information presented in Table 1 is that the pyrethroids are generally toxic to the most sensitive aquatic arthropods at extremely low levels – generally at concentrations in the single-digit (or lower) nanograms per liter (ng/L) (parts per trillion) range. As shown in Table 1, toxicity studies typically identify the LC50, the concentration that is lethal on average to 50% of the test organisms, and/or the EC50, the concentration at which a sub-lethal effect is observed on average to 50% of the test organisms. The Toxicity Values shown in Table 1 illustrate the greater sensitivity of *Hyalella azteca* to pyrethroids compared to *Ceriodaphnia dubia*, the test species most commonly used to identify water toxicity due to organophosphate pesticides.

USEPA has not developed recommended water quality criteria for the protection of aquatic life for pyrethroids (or for many other current-use pesticides), as it has for other common water pollutants. Therefore Table 1 summarizes other, non-regulatory information that can be used as comparison values to evaluate the data compiled for this report. The available comparison values include water quality criteria values developed by UC Davis, as described below, as well as USEPA Aquatic Life Benchmark values.

To address recent pyrethroid-related additions to the 303(d) List within the Sacramento and San Joaquin River watersheds, the Central Valley Regional Water Quality Control Board (RWQCB) is developing a Basin Plan amendment to establish water quality objectives and Total Maximum Daily Loads (TMDLs) for waterbodies that are listed for pyrethroids on the 303(d) list, and a program of implementation for the control of pyrethroid pesticide discharges. This effort is part of a broader program to establish water quality objectives and a program of implementation for the control of pesticides that are impacting or could potentially impact aquatic life uses in surface waters in the Sacramento and San Joaquin River watersheds of the Central Valley, including the Delta. To support the development of pesticide water quality objectives and TMDLs, the Central Valley RWQCB contracted with the Environmental Toxicology Department of the University of California, Davis (UC Davis) to develop and evaluate a methodology for development of aquatic life criteria. Under this contract, to date UC Davis has developed acute and chronic criteria values for five pyrethroid pesticides, as shown in Table 1. The Central Valley RWQCB is still in the process of determining whether or how to make use of the UC Davis criteria values in the development of pyrethroid TMDLs for Central Valley watersheds. The context for the development of these criteria is explained in the "Sacramento and San Joaquin River Watersheds Pesticide Basin Plan Amendment Fact Sheet" (Central Valley RWQCB, 2006).

Table 2 provides the available water column toxicity information for fipronil and its principal degradate compounds, as well as the corresponding USEPA Aquatic Life Benchmarks.

There are limited sediment toxicity values available for pyrethroids and fipronil/degradates, and no corresponding comparison values for sediment (UC Davis criteria or USEPA aquatic life benchmarks). The available published sediment toxicity LC50 values are included for pyrethroids in Table 5 and for fipronil/degradates in Table 7.

Species	Bifenthrin	Cyfluthrin	Cypermethrin	Deltamethrin	Esfenvalerate	Lambda- Cyhalothrin	Permethrin	Tralomethrin
Fresh Water Toxicity V	alues					- Cynarothirm		
Hyalella azteca 96-hr LC50 (lethal)	7.5	2.4	2.5		8		21.1	
Hyalella azteca 96-hr EC50 (sub-lethal effects)	3.3	1.9	1.7			2.3		
Ceriodaphnia dubia 48-hr LC50 (lethal)	70	140			300 (96-h)		550	
Salt Water Toxicity Val	lues	•			•		•	
Americamysis bahia (Mysidopsis bahia) 96-hr EC50 (sub-lethal effects)	4	2.4	5	1.7	38		20	
Comparison Values								
U.C. Davis acute criterion value (1-hr)	4	0.3	1			1	10	
U.C. Davis chronic criterion value (96-hr)	0.6	0.05	0.2			0.5	2	
Lowest USEPA Pesticide Aquatic life benchmark	1.3	7	69	4.1	17	2	1.4	4.4

Table 1. Pyrethroids Water Column Toxicity and Comparison Values (ng/L)

Notes for Table 1:

Compiled by TDC Environmental, 11/30/11; data not verified for this report.

Note: No USEPA water quality criteria exist for any pyrethroid.

No data are available for sensitive aquatic species for these pyrethroids (therefore excluded from table): Allethrins, tau-fluvalinate, tetramethrin.

Pyrethroids excluded because they are not used in urban areas: fenvalerate, fenpropathrin.

Pyrethroid toxicity is usually additive. Toxicity usually correlates with the sum of toxic units (sum of pyrethroid concentrations divided by their toxicity values). Sources for Toxicity Values: Werner and Moran, 2008; Weston and Jackson, 2009; Mokry and Hoagland, 1990; Maund et al., 1998; Anderson et al., 2006. UC Davis criteria development reports (Brander et al., 2010; Fojut et al., 2010; Fojut and Tjeerdema, 2010; Fojut et al., 2011a; Fojut et al., 2011b) are available on the Central Valley Regional Water Quality Control Board website: http://tinyurl.com/2etvyg3

U.S. EPA Aquatic Life Benchmarks website: http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm

Species	Fipronil	Fipronil Sulfone	Fipronil Sulfide	Fipronil Desulfinyl	Fipronil Desulfinyl Amide d
Fresh Water Toxicity	Values				
Lepomis macrochirus 96-hr LC50	25,000 - 83,000 a	25,000 a		20,000 a	
Chironomus tentans 96-hr LC50	410 c	720 c	2,130 c	200,000 c	
Salt Water Toxicity V	alues				
Americamysis bahia 96-hr LC50	140 a			1,500 b	
Comparison Values					
Lowest U.S. EPA Aquatic Life Benchmark	11	37	110	590	

 Table 2. Fipronil and Degradates Water Column Toxicity and Comparison Values (ng/L)

Notes for Table 1:

Compiled by TDC Environmental; data not verified for this report.

Sources for Table 2:

a = Gunasekara and Troung, 2007 (DPR)

b = Konwick et al., 2005

c = U.S. EPA, 2011. Registration Review – Preliminary Problem Formulation for Ecological Risk and Environmental Fate, Endangered Species, and Drinking Water Assessments for Fipronil.

d = no comparison value data available for this compound

U.S. EPA Aquatic Life Benchmarks website:

http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm

Scope of Review and Approach

This report summarizes available chemistry data for pyrethroid pesticides and for fipronil and its degradates, as well as related results of toxicity testing, from monitoring performed in urban areas of California. The current report updates and expands upon the initial Pyrethroids Data Compilation produced for CASQA in 2008 (Ruby, 2008). Data from predominantly agricultural areas were excluded from the summaries. Otherwise, no attempt was made to distinguish the specific land use composition of contributing watersheds for the various study results. In some cases, the monitoring was performed in waterways that include contributions from a variety of land use types, but in all cases the monitored watershed includes an urban component.

Primary information sources include published scientific literature, as well as unpublished data produced under the direction of public agencies. All primary information sources are clearly referenced, including web links where available.

This report provides summaries of the various study results as provided by the study authors. Where the underlying data or statistical summaries of the data were available, this report also separately summarizes the chemistry and toxicity testing data. Distinctions are made for data produced from water vs. sediment matrices, and from urban runoff discharges vs. receiving waters (i.e., named water bodies that receive urban runoff discharges). The investigation was limited to surface waters; results of groundwater monitoring are not included.

The Chemistry Results Summary and Toxicity Results Summary tables contain data only for more recent studies, generally those published during 2008-2012, covering data generated since ca. 2005. This compilation is as complete as was feasible as of mid-calendar year 2012, but may not include every relevant study. Ongoing and planned monitoring undoubtedly will continue to reveal additional evidence of the presence of pyrethroids and other pesticides - and related effects - in California's urban watersheds. This work should be updated periodically to incorporate additional material as it becomes available. This will be particularly important as other insecticides, beyond fipronil, become more commonly used. The underlying spreadsheets upon which this report's tables are based are readily expandable, and can be updated over time.

Notes regarding nomenclature and approach used in this study:

- Chemical names, rather than brand names, are used to designate the pesticides.
- Like pyrethrins, pyrethroids have multiple chiral isomers. Most commercial products are comprised of mixtures of these isomers (e.g., permethrin is generally available as a mixture of *cis*-permethrin and *trans*-permethrin). Only a few pyrethroids appear as single isomers in commercial products (e.g., esfenvalerate, beta-cyfluthrin). Although it is known that chirality can affect toxicity (Gerlach, 2012), not enough information is available to adequately assess this factor in the context of the current report, in part because most laboratories do not report results on an isomer-specific basis. For purposes of this summary, where isomer-specific data are available, these have been totaled by chemical (e.g., "permethrin" includes the sum of available data for *cis*-permethrin and *trans*-permethrin).

• The summary tables generally exclude studies that relied on chemical analysis methods that are incapable of detecting pyrethroids at the ng/L (water) or ng/g (sediment) concentration levels, as non-detect results at higher analytical detection levels do not indicate whether potentially harmful concentrations of pyrethroids are actually present.

Findings

There is an expanding diversity of research focusing on the presence and effects of pesticides in the environment within California. Earlier (pre-2000) research on pesticides effects focused principally on agricultural areas, but that has changed in recent years. Many studies are now available documenting the presence and effects of pyrethroids and other pesticides in urban areas. Over 100 studies were evaluated for this project. After eliminating reports presenting repeat data, purely methods research projects, and studies involving predominantly agricultural watersheds, summaries are provided for over 80 studies. Many more projects and studies are currently being undertaken or planned. Over 9200 pyrethroid sample analysis results and over 3200 results for fipronil and degradates were evaluated and summarized for this report.

Summary of Findings – Pyrethroid Pesticides

Pyrethroids are frequently detected at quantifiable levels in both water and sediment in urban waterways throughout California. For environmental contaminants such as pesticides, the rate of analytical (laboratory) detection is an important metric, as it indicates how frequently the pesticide is observed at a quantifiable level in environmental samples. Due to the very low concentrations at which many of these pesticides can cause toxicity, the rate of detection is a useful indicator of the extent to which these chemicals are migrating from the site of application to the aquatic environment. The rates of analytical detection from the summarized chemistry results are presented in Table 3 for the most commonly-detected pyrethroids. This table generally summarizes chemistry data for the more recent studies evaluated (those published since 2005). Because detection rates are only relevant for studies that employ environmentally relevant detection limits, this summary focuses on studies that reported chemical analysis methods capable of detecting pyrethroids at the ng/L (water) or ng/g (sediment) concentration levels. Results are shown separately for water and sediment samples.

Bifenthrin, considered to be the leading cause of pyrethroid-related toxicity in urban areas (c.f., Weston et al., 2005; Amweg et al., 2006; Holmes et al., 2008, TDC Environmental, 2006), was detected most frequently of all the pesticides evaluated, in both water and sediment. For samples tested in studies evaluated for this summary, the rate of analytical detection for bifenthrin was 69% in sediment samples and 64% in water samples, as indicated in Table 3.

Detection rates were generally higher for pyrethroids in sediment than in water. Permethrin was the most extreme case of this difference, detected in 50% of sediment samples but only 16% of water samples. Overall, pyrethroids were detected at a rate of 31% in sediments and 24% in water samples.

Table 3. Analytical Detection Rates – Pyrethroids

	#	%
WATER SAMPLES:	Samples	Detected
Allethrin	235	0.4%
Bifenthrin	748	64%
Cyfluthrin	847	28%
Cyhalothrin	663	22%
Cypermethrin	503	31%
Deltamethrin/Tralomethrin	533	5%
Esfenvalerate/Fenvalerate	704	19%
Fenpropathrin	306	21%
Fluvalinate	224	3%
Permethrin	1,146	16%
Phenothrin	5	0%
Prallethrin	219	2%
Resmethrin	175	0%
Tetramethrin	16	6%
All Pyrethroids	6,511	24%

	#	%
SEDIMENT SAMPLES:	Samples	Detected
Allethrin	64	0%
Bifenthrin	359	69%
Cyfluthrin	324	33%
Cyhalothrin	334	30%
Cypermethrin	284	29%
Deltamethrin/Tralomethrin	252	22%
Esfenvalerate/Fenvalerate	314	12%
Fenpropathrin	147	16%
Fluvalinate	59	3%
Permethrin	367	50%
Phenothrin	8	13%
Prallethrin	46	0%
Resmethrin	117	3%
Tetramethrin	23	0%
All Pyrethroids	2,704	31%

Notes for Table 3:

Table summarizes data for more recent studies evaluated (generally published since 2005). This summary generally includes only data from studies that relied on chemical analysis methods capable of detecting pyrethroids at the ng/L (water) or ng/g (sediment) concentration levels. Fenpropathrin (trade name, Danitol) has no registered urban uses; the levels of detection may reflect results from mixed-use watersheds and/or drift from agricultural areas to urban watersheds.

Pyrethroid Concentrations – Water

Pyrethroids were commonly found at concentrations exceeding levels known to cause toxicity to aquatic organisms in water. The average and maximum concentrations from the summarized water chemistry results are presented in Table 4 for the pyrethroids, along with the relevant acute and chronic aquatic toxicity comparison values from Table 1. This table generally summarizes chemistry data for the more recent studies evaluated (those published since 2005).

For all five pyrethroids for which there are UC Davis chronic toxicity criteria comparison values in Table 1, the average observed environmental concentration is higher than the chronic toxicity comparison value. The average reported concentrations of bifenthrin, cyfluthrin, cyhalothrin, cypermethrin and permethrin in water samples range from approximately one to more than three orders of magnitude above the chronic criteria values published by UC Davis (from Table 1).

Maximum reported concentrations of these five pyrethroids are in the range of two to more than four orders of magnitude higher than the UC Davis acute criteria values (from Table 1). The most prominent examples from Table 4 include:

- The maximum reported concentration of bifenthrin in water was 398 ng/L, compared to the UC Davis acute criterion value of 4 ng/L;
- The maximum reported concentration of cypermethrin in water was 519 ng/L, compared to the UC Davis acute criterion value of 1 ng/L;
- The maximum reported concentration of permethrin in water was 12,652 ng/L, compared to the UC Davis acute criterion value of 10 ng/L.

Pyrethroid Concentrations – Sediment

The average and maximum concentrations from the summarized sediment chemistry results are presented in Table 5 for the pyrethroids. Published LC50 values exist for *Hyalella azteca* exposure in sediments for several pyrethroids (Amweg, et al., 2005; Maund et al., 2002). However, because organic carbon helps mitigate pyrethroid toxicity to invertebrates in sediments, these LC50 values are expressed as $\mu g/g$ organic carbon. Conversion of the statewide sediment data to the organic carbon-normalized format was beyond the scope of this report (and not all sources provide organic carbon data). Nonetheless, for the seven pyrethroids for which sediment LC50 values are available, it is apparent that the average concentrations reported in Table 5 would be substantially greater than the published LC50s following organic carbon normalization, assuming a typical organic carbon level of 1-3 percent for California sediments (c.f., Amweg et al., 2005). This means that, under average conditions in urban waterways in California, these pesticides are typically present at levels toxic to sensitive macroinvertebrates such as *Hyalella azteca* in sediments. As shown in Table 5, the level of exceedance of the average reported concentration over the LC50 value is particularly significant for bifenthrin.

Multiple Pyrethroids Commonly Detected

Multiple pyrethroids typically were found in each sample in the summarized chemistry studies, in both water and sediment samples. Because pyrethroid toxicity is generally considered to be additive (c.f., Trimble et al., 2009), the actual in-situ toxicity estimated from chemistry results must account for the mixtures of pyrethroids and other pesticides found.

WATER SAMPLES: Allethrin	Average Conc. (ppt) 0.203	Maximum Conc. (ppt) 9.50	UC Davis Chronic Criterion Value (ppt)	Ratio of Average Conc.: Chronic Criterion Value	UC Davis Acute Criterion Value (ppt)	Ratio of Maximum Conc.: Acute Criterion Value
Bifenthrin	26	398	0.6	43	4	100
Cyfluthrin	14.9	423	0.05	298	0.3	1409
Cyhalothrin	4.80	243	0.5	10	1	243
Cypermethrin	13.3	519	0.2	66	1	519
Deltamethrin/Tralomethrin	1.40	252				
Esfenvalerate/Fenvalerate	1.43	36.8				
Fenpropathrin	4.80	459.9				
Fluvalinate	0.566	154.8				
Permethrin	51.2	12652	2	26	10	1265
Phenothrin	ND	ND				
Prallethrin	2.13	287				
Resmethrin	ND	ND				
Tetramethrin	0.219	2.80				

Notes for Table 4:

Table summarizes data for more recent studies evaluated (generally published since 2005).

"Average" concentrations = mean values of mean concentrations reported from summarized studies.

"ppt" = parts per trillion

"ND" means all data were reported as non-detect.

Water column toxicity criteria comparison values shown are the UC Davis chronic and acute criteria; see Table 1 for references. Fenpropathrin has no registered urban uses; the reported concentrations may reflect results from mixed-use watersheds and/or drift from agricultural areas to urban watersheds.

Table 5. Average and Maximum Reported Sediment Concentrations – Pyrethroids

	Average Conc.	Max. Conc.	Published LC50 Values (μg/g organic
SEDIMENT SAMPLES:	(ppb)	(ppb)	carbon)
Allethrin	ND	ND	
Bifenthrin	45.8	744	0.52
Cyfluthrin	17.4	187	1.08
Cyhalothrin	4.64	31.9	0.45
Cypermethrin	10.1	987.5	
Deltamethrin/Tralomethrin	5.11	78.0	0.79
Esfenvalerate/Fenvalerate	1.47	20.3	1.54
Fenpropathrin	0.393	8.8	
Fluvalinate	0.080	3.60	
Permethrin	27.8	539	10.83
Phenothrin	0.661	0.750	
Prallethrin	ND	ND	
Resmethrin	2.03	24.0	
Tetramethrin	ND	ND	

Notes for Table 5:

Table summarizes data for more recent studies evaluated (generally published since 2005).

"Average" concentrations = mean values of mean concentrations reported from summarized studies.

"ND" means all data were reported as non-detect.

"ppb" = parts per billion

Published LC50 Values (Amweg et al., 2005; Maund et al., 2002) are reported as organic carbonnormalized values (μ g/g organic carbon), calculated by dividing the measured pyrethroid concentration by the measured percent organic carbon in the sediment sample. The organic carbonnormalized LC50 values therefore cannot be directly compared to the average or maximum observed concentrations for pyrethroids in sediments. The organic carbon-normalized average and maximum pyrethroid concentrations would be higher than those shown by a factor of roughly 33-100, assuming typical sediment organic carbon concentrations of 1-3%.

Fenpropathrin has no registered urban uses; the reported concentrations may reflect results from mixed-use watersheds and/or drift from agricultural areas to urban watersheds.

Summary of Findings – Fipronil and Degradates

The non-pyrethroid pesticide, fipronil, is a leading replacement for pyrethroid pesticides in urban areas (TDC Environmental, 2007). Fipronil has multiple degradates, some of which are more environmentally stable than fipronil itself, and some of which have equal or greater aquatic toxicity than the parent compound. Fipronil and its degradates also are frequently detected in both water and sediment in urban watercourses. Data were identified for Fipronil Amide, Fipronil Desulfinyl, Fipronil Desulfinyl Amide, Fipronil Sulfide, and Fipronil Sulfone. The rates of analytical detection from the summarized chemistry results are presented in Table 6 for fipronil and its degradates. Results are shown for both water and sediment samples.

Fipronil was detected in 39% of water samples tested from studies evaluated for this summary, and 19% of sediment samples. This is in contrast to the pattern for most pyrethroids, for which there were typically higher percent detections in sediment. Presumably this reflects fipronil's lower K_{OW}, and/or fipronil's relatively higher solubility in water.

The fipronil degradates as a group were detected analytically in 24% of the water samples tested from studies evaluated for this study, and 35% of sediment samples. This pattern is similar to that of the pyrethroids.

Table 6. Analytical Detection Rates – Fipronil and Degradates

WATER SAMPLES: Fipronil Fipronil degradates	# Samples 871 2,271	% Detected 39% 24%
SEDIMENT SAMPLES: Fipronil Fipronil degradates	# Samples 16 48	% Detected 19% 35%

Notes for Table 6:

Table summarizes data for more recent studies evaluated (generally published since 2005). "Fipronil degradates" included are: Fipronil Amide, Fipronil Desulfinyl, Fipronil Desulfinyl Amide, Fipronil Sulfide, and Fipronil Sulfone.

The average and maximum concentrations from the summarized chemistry results are presented in Table 7 for fipronil and the group of fipronil degradates. As shown in Table 2, some published aquatic toxicity values and all of the published USEPA benchmarks for fipronil and its principal degradates are in the sub-ppb (μ g/L) range. Average fipronil concentrations in water samples were higher than the USEPA Aquatic Life Benchmark for fipronil, while average concentrations of the fipronil degradates were in the range of the associated USEPA benchmarks, as shown in Table 7. The maximum reported concentrations for fipronil and its degradates in water samples were well above the USEPA benchmarks. Similarly, the maximum reported concentrations of fipronil and its degradates in sediment samples were well above published LC50 values.

WATER SAMPLES: Fipronil Fipronil degradates	Average Conc. (ppt) 89.7 71.2	Max. Conc. (ppt) 10004 1961	US EPA Aquatic Life Benchmark (ppt) 11 37-590
SEDIMENT SAMPLES: Fipronil Fipronil degradates	Average Conc. (ppb) 0.078 0.297	Max. Conc. (ppb) 0.30 2.60	Published LC50 Values (µg/g organic carbon) 0.13 0.12-0.16

Table 7. Average and Maximum Reported Concentrations in Water and Sediment – Fipronil and Degradates

Notes for Table 7:

Table summarizes data for more recent studies evaluated (generally published since 2005). Water sample results are reported as ppt_(parts per trillion), while sediment results are reported as ppb (parts per billion).

"Average" concentrations = mean values of mean concentrations reported from summarized studies. "Fipronil degradates" included are: Fipronil Amide, Fipronil Desulfinyl, Fipronil Desulfinyl Amide, Fipronil Sulfide, and Fipronil Sulfone.

Published sediment LC50 Values (Maul et al., 2008) are reported as organic carbon-normalized values (μ g/g organic carbon), calculated by dividing the measured pyrethroid concentration by the measured percent organic carbon in the sediment sample. The organic carbon-normalized LC50 values therefore cannot be directly compared to the average or maximum observed concentrations for pyrethroids in sediments. The organic carbon-normalized average and maximum fipronil concentrations would be higher than those shown by a factor of roughly 33-100, assuming typical sediment organic carbon concentrations of 1-3%.

Summary of Findings – Toxicity

Toxic effects are documented in both water and sediment in urban waterways throughout California. Effects of pyrethroids on aquatic organisms are widespread throughout the aquatic environment, as documented in studies involving water column toxicity testing, sediment toxicity testing, and tissue analysis. Of the 25 toxicity studies that were summarized, all reported some level of toxicity for one or more organisms tested.

There has been a notable shift in aquatic (water column) toxicity in urban areas since the phaseout of urban uses of diazinon and chlorpyrifos in the early 2000s. Prior to that time, samples of urban runoff and urban creeks were frequently found to be toxic to *Ceriodaphnia*, with the organophosphate pesticides diazinon and chlorpyrifos commonly identified as the likely causes (c.f., San Francisco Bay Regional Quality Control Board, 2005; Anderson et al., 2011). Since the federally mandated restrictions in diazinon and chlorpyrifos took effect, there have been few reports of toxicity to *Ceriodaphnia*, from samples collected in urban (non-agricultural) waters, and few reports of toxicity due to the organophosphate pesticides.

The common amphipod, *Hyalella azteca*, is more sensitive to pyrethroid pesticides than other common test species (Amweg et al., 2005; Anderson et al., 2011). Data reviewed for this report show that urban waters in recent years frequently have exhibited toxicity to *Hyalella azteca*, with pyrethroids as the likely cause, based on TIEs and correlations with pyrethroid chemical concentration data (see also a summary in Anderson et al., 2011).

Early research into the toxic effects of pyrethroids as replacement pesticides for the organophosphate pesticides indicated widespread sediment toxicity in urban areas of California (c.f., Amweg et al., 2005, Amweg et al. 2006, Holmes et al., 2008, Weston et al. 2005). In these studies, pyrethroids were identified as the apparent cause of the sediment toxicity.

While the toxic effects of pyrethroids in sediments have now been thoroughly documented, recent research also highlights the toxic effects of pyrethroids in water column samples. For example, Weston and Lydy (2012) found that water samples from five of seven creeks tested during a 2009 rain event were toxic to *Hyalella*, with acute toxicity (mortality or paralysis) rates in the toxic samples ranging from 74% to 96%. Over half (52%) of water samples from two stations in the lower American River collected during storm events in 2009-2010 were acutely toxic to *Hyalella*. TIEs and water chemistry testing were used to identify pyrethroids as the cause of most of the observed water column toxicity.

The results of a number of the toxicity studies that are summarized in this report were further evaluated in a 2011 SWAMP report entitled, *Toxicity in California Waters* (Anderson et al, 2011). The reader is referred to that report for additional information on state-sponsored toxicity studies conducted during the period 2001-2010. The period of the SWAMP review spans the transition from the phase-out of orthophosphate pesticides to the rise in prominence of pyrethroids as replacement pesticides. The study includes discussions of comparisons of toxicity test results among urban, agricultural, and open space locations, as well as the findings from toxicity identification studies (TIEs) linking specific pesticides to toxicity.

Geographical Summary

Lists of the water bodies for which data were summarized are shown in Table 8a (Northern and Central California) and Table 8b (Southern California), and then alphabetically by water body name within each of those two regions.

Evidence of the presence and effects of pyrethroids and fipronil, and associated toxic effects in urban watercourses, is widely distributed geographically throughout the state of California. The review identified data from the North Coast, Lake Tahoe region, San Francisco Bay Area, Central Valley, Central Coast, and both coastal and inland areas of Southern California. Pyrethroid-related toxicity has been documented in nearly every major urban watershed in the state and eight of the nine California Water Board regions.

Table 8a.Northern/Central California Monitoring Locations with
Reported Chemistry/Toxicity Results

Monitoring Location(s)	Geographic Area	Water Board Region
Alamo Creek	Solano County	5
Alder Creek	Sacramento County	5
Alisal Creek	Monterey County	3
American Canyon Creek American River	Napa County Sacramento County	2 5
Arcade Creek	Sacramento County	5
Blue Rock Springs Bodega Bay	Solano County Sonoma County	2 1
Carpinteria Salt Marsh	Santa Barbara County	3
Castro Valley Creek	Alameda County	2
Chicken Ranch Slough	Sacramento County	5
Corte Madera Creek	Marin County	2
Coyote Creek (fresh)	Santa Clara County	2
Coyote Creek (tidal)	Santa Clara County	2
Curry Creek	Sarasota County	5
Dry Creek	Roseville	5
Ducker Creek	Sonoma County	1
Elder Creek	Sacramento County	5
Elk Grove storm drains	Sacramento County	5
Gabilan Creek	Monterey County	3
Glen Echo Creek Grayson Creek	Alameda County Contra Costa County	2 2
Hinebaugh Creek Hospital Creek	Sonoma County San Joaquin County.	1 5
Ingram Creek	San Joaquin County.	5
Jane's Creek Meadows	Humboldt County	1
Kaseberg Creek	Roseville	5
Kirker Creek Koopman Canyon Creek	Contra Costa County Alameda County	2 2
Laguna Creek	Sacramento County	5
Lauterwasser Creek	Contra Costa County	2
Lion Creek	City of Oakland	2
Mammoth Creek	Tahoe/Lahontan Area	6
Marsh Creek	Contra Costa County	5
Martin Canyon Creek	Alameda County	2
Merced River	Merced County	5
Napa River (fresh)	Napa County	2

Napa River (tidal)	Napa County	2
Natividad Creek	Monterey County	3
Natomas drain	Sacramento County	5
Petaluma River (fresh)	Sonoma County	2
Petaluma River (tidal)	Marin County	2
Pine Creek	Contra Costa County	2
Pleasant Grove Creek	Placer County	5
Quimby Creek	Santa Clara County	2
Rheem Creek	Contra Costa County	2
Roseville storm drains	Placer County	5
Sacramento River	Sacramento County	5
Sacramento-San Joaquin Delta	Sacramento County	5
Salinas urban creeks	Salinas	3
San Francisquito Creek	San Mateo/Santa Clara Counties	2
San Joaquin River	San Joaquin R. Valley	5
San Joaquin River tributaries	San Joaquin R. Valley	5
San Leandro Creek	Alameda County	2
San Lorenzo Creek	San Leandro	2
San Mateo Creek	San Mateo County	2
San Pablo Creek	Contra Costa County	2
South Branch	Roseville	5
Stanislaus Creek	Stanislaus County	5
Stege Marsh	Contra Costa County	2
Stevens Creek	Santa Clara County	2
Stockton Creek	Sacramento County	5
Strong Ranch Slough	Sacramento County	5
Suburban watershed	Bodega Bay	1
Suisun Slough Tributary	Solano County	2
Sump 111	Sacramento County	5
Tahoe Keys	Tahoe/Lahontan Area	6
Truckee River Swale	Tahoe/Lahontan Area	6
Tuolumne Creek	Stanislaus County	5
Ulatis Creek	Solano County	5
Willow Creek	Sacramento County	5

Table 8b.Southern California Monitoring Locations with
Reported Chemistry/Toxicity Results

Monitoring Location(s)	Geographic Area	Water Board Region
Agua Hedionda Creek	San Diego County	9
Arroyo Seco Channel	Los Angeles County	4
Ballona Creek	Los Angeles County	4
Ballona Creek Estuary	Los Angeles County	4
Bouquet Canyon Creek	Los Angeles County	4
Calleguas Creek	Ventura County	4
Cole Creek	Riverside County	8
Chollas Creek	San Diego County	9
Chollas Creek - North Fork	San Diego County	9
Chollas Creek - South Fork	San Diego County	9
Conejo Creek	Calleguas Creek Watershed	4
Cottonwood Creek	San Diego County	9
Huntington Harbor tributaries	Huntington Harbor/Orange County	8
Los Angeles River	Los Angeles County	4
Lindo Lake	San Diego County	9
Long Canyon Channel	Riverside County	8
Los Peñasquitos Creek	San Diego County	9
Mugu Lagoon	Ventura County	4
Murrieta Creek	Riverside County	9
N. Fork Arroyo Conejo	Calleguas Creek Watershed	4
New River at Boundary	Calexico	9
Newport Harbor	Orange County	8 8
Newport Harbor tributaries Peters Canyon Wash	Orange County Orange County	o 8
Revolon Slough	Calleguas Creek Watershed	8 4
Redhawk Channel	Riverside County	8
Salt Creek watershed	Orange County	8
San Diego River	San Diego County	9
San Diego Harbor	San Diego County	9
San Dieguito River	San Diego County	9
San Juan Creek	Orange County	9
San Luis Rey River	San Diego County	9
Santa Gertrudis Channel	Riverside County	8
San Marcos Creek	San Diego County	9
Santa Clara River watershed	Ventura County	4
Santa Margarita River Santa Margarita R.	Riverside County	9
tributaries	Riverside County	9

Sweetwater River	San Diego County	9
Switzer Creek	City of San Diego	9
Tecolote Creek	City of San Diego	9
Temecula Creek	Riverside County	9
Tijuana River	San Diego County	9
Upper Newport Bay	Newport Bay	8
Warm Springs Channel	Riverside County	8
Wood Creek watershed	Orange County	8

Detailed Results

Details of the summarized studies are presented in the tables included in the appendices, as described below. These appendix tables are based on spreadsheets in which information can be easily sorted and from which selected information can be extracted, and there are a number of clickable web links to studies.

The appendices to this memorandum include the following tables:

- Appendix A: The "Study Summaries by Author" table, organized alphabetically by abbreviated citation in (author, date) format. This table contains detailed information on the source documents, including web links where available (in some cases these links lead to just an abstract or perhaps ordering information). The "Citation Abbrev." field can be used as a cross-reference for the various studies across the different tables.
- Appendix B: The "Results Summaries by Geography" table contains at-a-glance summaries of the methods and key results of the compiled studies. The Results Summaries entries are organized geographically (Northern/Central California vs. Southern California and then by local area, nominally ordered from north to south within each of those two regions).
- Appendix C: The "Chemistry Results Summary" table contains detailed results of water and sediment chemistry tests compiled where available from the more recent studies (generally those published 2005-2012) summarized in the preceding tables. The Chemistry Results Summary table summarizes results for more than 12,400 pesticide analyses (including pyrethroid pesticides plus fipronil and its degradates).
- Appendix D: The "Toxicity Results Summary" table contains detailed results of water and sediment toxicity tests compiled where available from the more recent studies (generally those published 2005-2012) summarized in the preceding tables.

Note that the Study Summaries by Author (Appendix A) and Results Summaries by Geography (Appendix B) tables contain all studies investigated and found to be pertinent, including the studies evaluated for the previous (2008) Pyrethroids Data Compilation. The Chemistry Results Summary (Appendix C) and Toxicity Results Summary (Appendix D) tables contain data only for more recent studies evaluated for the current report, generally those published since 2005.

Recommendations

Improvements in Laboratory Analytical Methods Are Needed

Some studies involving chemical analysis of pyrethroids in water and sediment are performed with analytical detection limits that are not sufficiently low to detect these pesticides at environmentally relevant concentrations. This has the effect of understating the extent of the problem, as some samples reported as "non-detect" may in fact contain pyrethroids at potentially harmful concentrations. Personnel responsible for pesticides analysis should ensure that the analytical work can be done so as to detect the target pesticides at environmentally relevant concentrations (i.e., near the "comparison values" shown in Tables 1 and 2). Some commercial laboratories are currently capable of providing appropriate analytical detection limits on a routine basis. However, a systematic means is called for by which analytical protocols are established at the federal level, with analytical detection limits sufficient to detect pesticides at environmentally-relevant concentrations in both waters and sediments.

Cumulative Impacts of Pesticide Mixtures Should Be Addressed

A clear need exists for quantitative assessment of cumulative impacts of pesticide mixtures, as this appears to be a significant factor contributing to the observed toxicity in urban creeks.

Conclusions

Monitoring data compiled for this report indicate significant levels of pyrethroid pesticides found in water and sediment samples from surface waters in California's urban areas. Average reported concentrations of several commonly-used pyrethroids in urban water samples are typically well above published comparison values, including UC Davis chronic toxicity criteria levels and USEPA Aquatic Life Benchmarks. Under average conditions in the sediments of urban waterways in California, pyrethroids also are typically present at levels known to be toxic to sensitive organisms. Bifenthrin, thought to be a principal cause of toxicity in urban waterways, is found in 64% of water samples and 67% of sediment samples in urban areas of California. Detections of pyrethroid pesticides in both water and sediment are widely distributed geographically throughout the state. In most samples, multiple pyrethroids are detected.

Fipronil, a common pyrethroid replacement pesticide, is also found in substantial numbers of water and sediment samples, along with its most common degradate compounds. Average fipronil concentrations in water samples are higher than the USEPA Aquatic Life Benchmark for fipronil, while average concentrations of the fipronil degradates are in the range of the associated USEPA benchmarks. The maximum reported concentrations for fipronil and its degradates in water samples are well above the USEPA benchmarks. Similarly, the maximum reported concentrations of fipronil and its degradates in water samples are well above the USEPA benchmarks. Similarly, the maximum reported concentrations of fipronil and its degradates in sediment samples are well above published toxicity (LC50) values.

Toxicity in urban waterways throughout California is also well-documented in the compiled results, with many studies indicating pyrethroids as the likely cause of the observed toxicity. Because pyrethroid toxicity is generally considered to be additive, the level of toxicity estimated from chemistry results must account for the mixtures of pyrethroids and other pesticides found, including fipronil.

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Citation - Abbrev.	Author(s)/Date	Agency	Report/Study Title	Journal/Publication Reference	Web Link	Water/ Sediment	Chemical Constituents
Alameda County, 2005a	Alameda County Public Works, personal communication,	Alameda County Public Works	Unpublished data. CRG Marine Laboratories report, Nov. 4,			Water	Trace metals, TSS, OP pesticides, Synthetic
Alameda County, 2005b	2005 Alameda County Public Works, personal communication,	Alameda County Public Works	2004 Unpublished data. CRG Marine Laboratories report, Dec.			Water	pyrethroids OP pesticides, Pyrethroids
Alameda County, 2005c	2005 Alameda County Public Works, personal communication,	Alameda County Public Works	21, 2004 Unpublished data. CRG Marine Laboratories report, Jan.			Water	Trace metals, TSS, OP pesticides, Synthetic
Amweg et al., 2005	2005 Amweg, Erin L., Donald P. Weston, and Nicole M. Ureda	Department of Integrative Biology, University of California, 3060 Valley Life	26, 2005 Use and Toxicity of Pyrethroid Pesticides in the Central	Environmental Toxicology and Chemistry, Vol. 24, No. 4,	http://allenpress.com/pdf/entc 24 414 966 972.pdf	Sediment	pyrethroids Pyrethroids: Bifenthrin, Cyfluthrin, Deltamethrin,
Amweg et al., 2006	2005 Amweg, Erin L., Donald P. Weston, Jing You, and Michael	Sciences Building, Berkeley, California 94720-3140, USA Department of Integrative Biology, University of CA, and Fisheries and Illinois	Valley, California, USA. Pyrethroid Insecticides and Sediment Toxicity in Urban	pp. 966–972, 2005 SETAC Environmental Science and Technology 40(5) 1700-1706	http://pubs.acs.org/cgi-	Sediment	Esfenvalerate, Lambda-cyhalothrin, Permethrin Pyrethroids, chlorpyrifos
	J. Lydy. January 31, 2006	Aquaculture Center, Department of Zoology, Southern Illinois University	Creeks from California and Tennessee	(2006)	bin/abstract.cgi/esthag/2006/40/i05/abs/es051407c.html		
Anderson et al., 2005	Anderson, Susan, Gary Cherr, Steven Morgan, Roger Nisb	et UC Davis Bodega Marine Laboratory, UC Davis, UC Santa Barbara.	Year 4 Annual Report, Pacific Estuarine Ecosystem		http://bml.ucdavis.edu/peeir/docs/YR%204%20Annual%2	Sediment	bifenthrin, permethrin, chlorpyrifos
	Co-Investigators: John Allen, William Murdoch, Allan Stewart-Oaten, Ingeborg Werner. 2005		Indicator Research (PEEIR) Consortium: Biogeochemistry and Bioavailability Component, EPA Agreement Number: R		<u>0Report.pdf</u>		
Anderson et al., 2008a	Anderson Brian S. Bryn M. Phillins John W. Hunt Sara I	Dept. Environmental Toxicology, UC Davis, Marine Pollution Studies	82867601 Causes of Sediment Toxicity in San Diego Bay, California,			Sediment	Purethroids
	Clark, Jennifer P. Voorhees, Ron S. Tjeerdema, Jane Casteline, Margaret Stewart, Dave Crane, Abdou Mekebri.	Laboratory, Water Environment Research Foundation, CA Dept. Fish and Game Water Pollution Control Lab	USA				
Anderson et al., 2008b	2008. Anderson, BS, Phillips, BM, Hunt, JW, Vorhees, J, Clark, S	Convright © 2008 American Chemical Society	Recent advances in sediment toxicity identification	In: Gan, J-G, Hendley, P, Spurlock, F, Weston, D. (eds.),	http://www.oup.com/us/catalog/general/subject/Chemistr	Sediment	Pvrethroids
	Tjeerdema, RS. June, 2008	University of California, California Department of Pesticide Regulation, Syngenta Crop Protection, Inc., and the University of California	evaluation methods emphasizing pyrethroid pesticides. In: Gan, J-G, Hendley, P. Spurlock, F, Weston, D. (eds.).	Synthetic Pyrethroids: Occurrence and Behavior in Aquatic Environments, American Chemical Society	v/AgricultureandPesticides/?view=usa&ci=978084127433		
		-,	Synthetic Pyrethroids: Occurrence and Behavior in Aquatic Environments	Books, Washington, DC. Volume 991. Publication Date (Print): August 19, 2008	-		
Anderson et al. 2010	Anderson Brian S. Rom M. Dhilling John W. Hunt Sara J	Dept. Environmental Toxicology, UC Davis, Marine Pollution Studies	Evaluation of methods to determine causes of sediment	Ecotoxicology and Environmental Safety Vol 73 Issue 4	http://www.sciencedirect.com/science/article/pii/S014765	Sortimont	Copper, Pyrethroids, Organochlorines, PAH, PCB, OP
Aldelauli et al., 2010	Clark, Jennifer P. Voorhees, Ron S. Tjeerdema, Jane Casteline, Margaret Stewart, Dave Crane, Abdou Mekebri	Laboratory, Water Environment Research Foundation, CA Dept. Fish and Game Water Pollution Control Lab	toxicity in San Diego Bay, California USA	May 2010	1310000084	Sedment	Copper, Fyretinous, Organocinomies, FALT, FOB, OF
Anderson et al., 2011	2010 Anderson B., Hunt, J., Markiewicz, D., and Larsen, K. 2011		- Teoloitule Cellfornia Watara		http://www.waterboards.ca.gov/water_issues/programs/s	Water and anot	
Anderson et al., 2011	Alderson B., Hunt, J., Markiewicz, D., and Larsen, K. 2011	Surface Water Ambient Monitoring Program, California State Water Resource: Control Board	roxety in california waters		wamp/docs/txcty_rprt.pdf	water, sediment	
Aqua-Science, 2007	Aqua-Science. July 2007	Prepared by Aqua-Science for the Central Valley Regional Water Quality Control Board	Acute Toxicity of Sacramento Area Urban Creeks to Ceriodaphnia Dubia		http://www.waterboards.ca.gov/water_issues/programs/s wamp/docs/reglrpts/rb5_sactotox_dubia_urbancrks.pdf	Water	cyfluthrin, permethrin, chlorpyrifos, diazinon, and malathion
Bacev and Spurlock. 2005							
Bacey and Spuriock, 2005	Bacey, Juanita and Frank Spurlock. June, 2005	California Environmental Protection Agency, Environmental Monitoring Branch. California Department of Pesticide Regulation	the California Central Valley	Environmental Monitoring and Assessment July 2007, Volume 130, Issue 1-3, pp 483-493.	http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh050 1.pdf	vvater, sediment	Water: pyrethroids, selected organophosphate. Sediment: pyrethroids
Bay et al., 2010	Bay, Steven M., Greenstein, Darrin J., Maruaya, Keith A. ar	nd Southern California Coastal Water Research Project	Toxicity Identification Evaluation of Sediment (Sediment	SCCWRP Technical Report 634, December 2010	ftp://sccwrp.org/pub/download/DOCUMENTS/TechnicalF	Sediment	Trace metals, pyrethroids, fipronil, PAH, PCB, legacy
	Lao, Wenjian 2010		TIE) in Ballona Creek Estuary		eports/634_BallonaTIE.pdf		pesticides
Bay et al., 2011	Bay, Steven M., Greenstein Darrin J., Jacobe Matthew, Barton, Carlita, Sakamoto, Ken, Young, Diana, Ritter, Kerr	Southern California Coastal Water Research Project	Southern California Bight 2008 Regional Monitoring Program: Vol. I. Sediment Toxicity		ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/Technic alReports/640_B08SedTox.pdf	Sediment	
	J., and Schiff, Kenneth C. Feb., 2011						
Bondarenko et al, 2007	Bondarenko, Svetlana, Frank Spurlock, Jianying Gan. 200	7 Department of Environmental Sciences, University of California, Riverside; California Department of Pesticide Regulation, Sacramento, California	Analysis of pyrethroids in sediment pore water by solid- phase microextraction.	Environmental Toxicology and Chemistry 26(12): 2587- 2593 (2007)	http://onlinelibrary.wiley.com/doi/10.1897/07- 286.1/abstract	Sediment	Pyrethroids
Brown et al., 2010	Brown, Jeffrey S., Sutula, Martha, Stransky, Chris, Rudolph John and Byron, Earl 2010	n, Southern California Coastal Water Research Project, Nautilus Environmental	Sediment Contaminant and Toxicity of Freshwater Urban Wetlands in Southern California	Journal of the American Water Resources Association Anril 2010	http://onlinelibrary.wiley.com/doi/10.1111/j.1752- 1688 2009 00407 x/abstract	Sediment and Water	Trace metals, PAH, PCB, organochlorine pesticides, organophosphate pesticides and synthetic ovrethroids
Budd et al., 2007	Budd, R., S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007	UC Riverside	Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed	Journal of Environmental Quality 36: 1006-1012 (2007)	https://www.soils.org/publications/jeg/abstracts/36/4/100	Sediment	Pyrethroids
	Budd, R., S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007		Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed	Journal of Environmental Quality 36: 1006-1012 (2007)	https://www.soils.org/publications/jeg/abstracts/36/4/100 6		Pyrethroids
Budd et al., 2007 Budd, 2011	Budd, R., S. Bondarenko, D. Haver, J. Kabashima, and J.	UC Riverside Department of Pesticide Regulation	Occurrence and Bioavailability of Pyrethroids in a Mixed				
	Budd, R., S. Sondarenko, D. Haver, J. Kabashima, and J. Gan. 2007 Budd, Robert 2011 Budd, Robert, O'geen, Anthony, Goh, Kean S., Bondarenk	Department of Pesticide Regulation	Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed Urban Petitiside Monitoring in Southern California During Fiscal Year 2011-2012 Removal Mechanisms and fate of insecticides in	Journal of Environmental Quality 36: 1006-1012 (2007) CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 270 Chemosphere Volume 83 Issue 11 pp. 1581-1587, June	http://www.solis.org/publications/jeg/abstracts/86/4/100 9 http://www.odor.ca.gov/docs/emon/pubs/protocol/study27 0protocol_ew_2011.pdf http://www.sciencedirect.com/ticience/article/pu/S04666	Sediment and Water	Pyrethroids Pyrethroid gesticides, Fipronil, Organophosphorus and other insecticides Pyrethroids, carbamates, fipronil, organophosphates,
Budd, 2011 Budd et al., 2011	Budd, R., S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007 Budd, Robert 2011 Budd, Robert 2011 Budd, Robert Orgeen, Anthony, Goh, Kean S., Bondarenko Svetlana and Gan, Jay 2011	Department of Pesticide Regulation 9. Dept of Pesticide Regulation Sacramento, Department of Land Air and Water Resources UC Davis, Department of Environmental Sciences, UC Riverside	Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed Urban Pesticide Monitoring in Southern California During Facal Year 2011-2012 Removal Mechanism and fate of insecticides in constructed wetlands	Journal of Environmental Quality 36: 1006-1012 (2007) CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 270	https://www.soils.crc/publications/ien/abstracts/36/4/100 9 http://www.cdpr.ca.aow/docs/emon/pubs/protocol/stud/27 0protocol_rev_2011.pdf	Sediment and Water	Pyrethroids Pyrethroid pesilicides, Fipronil, Organophosphorus and other insecticides Pyrethroids, catabamates, fipronil, organophosphates, phenoxy, and triazines
Budd, 2011	Budd, R., S. Sondarenko, D. Haver, J. Kabashima, and J. Gan. 2007 Budd, Robert 2011 Budd, Robert, O'geen, Anthony, Goh, Kean S., Bondarenk	Department of Pesticide Regulation 9. Dept of Pesticide Regulation Sacramento, Department of Land Air and Water Resources UC Davis, Department of Environmental Sciences, UC Riverside	Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed Urban Pesticide Monitoring in Southern California During Facal Vaer 2011-2012 Removal Machanisma and fate of insecticides in constructed wellands Unpublished data. Personal communication: e-mail from Tracy Yourger of Lany Water Associates to Amman Roby	Journal of Environmental Quality 36: 1006-1012 (2007) CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 270 Chemosphere Volume 83 Issue 11 pp. 1581-1587, June	http://www.solis.org/publications/jeg/abstracts/86/4/100 9 http://www.odor.ca.gov/docs/emon/pubs/protocol/study27 0protocol_ew_2011.pdf http://www.sciencedirect.com/ticience/article/pu/S04666	Sediment and Water	Pyrethroids Pyrethroid pesilicides, Fipronil, Organophosphorus and other insecticides Pyrethroids, catabamates, fipronil, organophosphates, phenoxy, and triazines
Budd, 2011 Budd et al., 2011 Calleguas Creek WMP, 2008	Budd, R., S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007 Budd, Robert 2011 Budd, Robert 2011 Budd, Robert. O'geen, Anthony, Goh, Kean S., Bondarenk Svetlama and Gan. Jay 2011 Calleguas Creek Watershed Management Plan, personal communication, June 2008	Department of Pesticide Regulation papt of Pesticide Regulation Saccamento, Department of Land Air and Water Resources UC Davis, Department of Environmental Sciences, UC Riverside Calleguas Municipal Water District	Occurrence and Biaawailability of Pyrethroids in a Mixed Land Use Watershed Urban Pesticide Monitoring in Southern California During Facat Vaer 2011-2012 Removal Machanisms and fate of insecticides in constructed veterional communications of the Communications of the Communication Tracey Krueger of Lany Water Associates to Arman Roby of Armand Ruby Consulting: Subject: pyrethroid monitoring data, June 23, 2008.	Journal of Environmental Quality 36: 1006-1012 (2007) CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 270 Chemosphere Volume 83 Issue 11 pp. 1581-1587, June	http://www.solis.org/publications/jeg/abstracts/86/4/100 9 http://www.odor.ca.gov/docs/emon/pubs/protocol/study27 0protocol_ew_2011.pdf http://www.sciencedirect.com/ticience/article/pu/S04666	Sediment and Water Sediment and Water Surface water, sediment	Pyrethroids Pyrethroid pesticides, Fipronil, Organophosphorus and other inacticides Pyrethroids, carbamates, fipronil, organophosphates, phremov, and trazines Pyrethroids
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Budd, 2011 Budd et al., 2011 Calleguas Creek WMP, 2008	Budd, R. S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007 Budd, Robert 2011 Budd, Robert, O'geen, Anthony, Goh, Kean S., Bondarenko Svetana and Gan, Jay 2011 Calleguas Creek Watershed Management Plan, personal communication, June 2008 Camp Dresser & McKee, Inc., laboratory data Consultants, and Katz & Associates. Sept., 2007 Detable-Moreno, Laura, Lin, Kunde, Veiaa-Nascimento.	Department of Pesticide Regulation b. Dept of Pesticide Regulation Sacramento, Department of Land Air and Water Resources LUC Davie, Department of Environmental Sciences, UC Riverside Calleguas Municipal Water District Sacramento Regional County Sanitation District, Sacramento Stormwater Quality Partnership Department of Environmental Sciences, UC Riverside, and Los Anoeles	Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed Urban Pesticide Monitoring in Southern California During Fiscal Year 2011-2012 Removal Mechanisms and fate of insecticides in constructed vetailands Unpublished data. Personal communication: e-mail from Tracy Knugger of Lany Walker Associates to Armand Ruby dataune 32. Our gray Gabler Dehrold monitoring Sacrameter Regional Courty Santation District Coordinated Monitoring 2006-2007 Annual Report	Journal of Environmental Quality 38: 1006-1012 (2007) CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 270 Chemosphere Volume 83 Issue 11 pp. 1581-1587, June 2011	Entropy of the second sec	Sediment and Water Sediment and Water Surface water, sediment	Pyrethroids Pyrethroid pesticides, Fipronil, Organophosphorus and other inacticides Pyrethroids, carbamates, fipronil, organophosphates, phremov, and trazines Pyrethroids
Budd, 2011 Budd et al., 2011 Calleguas Creek WMP, 2008 CDM et al., 2007 Delgado-Moreno et al., 2011	Budd, R. S. Bondarenko, D. Haver, J. Kabashima, and J. Gan. 2007 Budd, Robert 2011 Budd, Robert, O'geen, Anthony, Goh, Kean S., Bondarenko Svetama and Gan, Jay 2011 Calleguas Creek Watershed Management Plan, personal communication, June 2008 Camp Dresser & McKee, Inc., laboratory data Consultants, and Katz & Associates. Sept., 2007 Delgado-Mono, Lurar, Lin, Kunde, Veiga-Nascimento, Rebecca, and Gan, Jay 2011	Department of Pesticide Regulation b. Dept of Pesticide Regulation Sacramento, Department of Land Air and Water Resources LUC Davie, Department of Environmental Sciences, UC Riverside Calleguas Municipal Water District Sacramento Regional County Sanitation District, Sacramento Stormwater Quality Partnership Department of Environmental Sciences, UC Riverside, and Los Angeles Regional Water Quality Control Board	Occurrence and Bioavailability of Pyrethroids in a Mixed Land Use Watershed Urban Pesticide Monitoring in Southern California During Fiscal Year 2011-2012 Removal Mechanisms and fate of Insecticides in constructed wellands Unpublished data Personal communications: e-mail from Tracy/Knoger of Lany Walker Associates to Armaid Ruby data. June 23. Our Surger Southern District Coordinated Menitoring mu 2006-2007 Annual Sacramento Regional Courty Sanistion District Coordinated Menitoring voltary Orthogen 2007 Annual Watersheds	Journal of Environmental Quality 36: 1006-1012 (2007) CA Dept. of Pesticide Regulation, Environmental Monitoring Branch, Study 270 Chemosphere Volume 83 Issue 11 pp. 1581-1587, June 2011	thtp://www.scie.org/publications/jeg/abstracts/36/4/100 g http://www.scie.org/publications/jeg/abstracts/36/4/100 g http://www.sciencedirect.com/science/article/pub/S04565 3511000142 thtp://pubs.acs.org/doi/abs/10.1021//202049s	Sediment and Water Sediment and Water Surface water, sediment Surface water, sediment Sediment and Water	Pyrethroids Pyrethroids Pyrethroids, carbamates, fipronil, organophospharus and other insecticides Pyrethroids, carbamates, fipronil, organophosphates, phenox, and triazines Pyrethroids Pyrethroids Pyrethroids, fipronil, chlorpyrifos and diazinon
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Toxicity data?	Source Type	Geographic Area	Monitoring Location(s)	Notes/Results	Study Date(s)	Toxicity Testing Species/Approach	Most commonly found current-use pesticide(s)
No	Urban creek			No pyrethroid detects; Diazinon detected	17-Oct-04		
No	Urban creek			No pyrethroid detects; Diazinon and malathion detected	27-Nov-04		
No	Urban creek			No pyrethroid detects; Diazinon detected	27-Dec-04		
Yes	Urban creeks	Central Valley Sacramento and East Bay	South Fork American River, Pacheco Creek, Del Puerto Creek Arcada Creek, Chicken Ranch Stough, Curry Creek, Elder Creek, Laguna Creek, Morrison Creek, Strong Ranch Stough, Willow Creek, Gline Echo, Kritker Creek, Lauferwasser Creek, Lon Creek, Pine Creek, San Leandro, and San Pablo Creek	Biferthrin and lambda-cyholdhrin were the most toxic of all compounds testied Most of the Sacramento area sediment samples caused acute mortality to H. azleca. Pyrethroids likely cause of toxic effects.	October, 2003 31-Jan-06	H. azteca H. azteca	
Yes			Carpinteria Marsh	Bifenthrin, permethrin detected	8-Jul-05		
Yes			Switzer Creek at San Diego Harbor	All samples highly toxic; pyrethroids detected in amounts sufficient to explain toxicity			
Yes							
Yes		San Diego Harbor	Switzer Creek, San Diego Harbor	Pyrethroid pesticides found to be at least partially responsible for sediment toxicity. Bifenthrin, Cylluthrin and Permethrin detected	2004	Amphipod species (Eohaustorius estuarius)	Bifenthrin
Yes	Receiving waters	Statewide - CA		Compilation of state-sponsored toxicity testing performed from 2001-2010; 53% of freshwater sites and 45% of sediment sites reported some toxicity; results are reported separately in other studies.	2001-2010	Water: C. dubia, S. capricomutum, and P. promelas; Sediment: H. azteca	
Yes	Urban creeks			TIE - Elk Grove Creek; 4 pyrethroids detected	2007		
No	Urban and Agricultural streams			1 permethrin detection in sediment from Elk Grove Creek.	2002-04		
Yes		Marina del Rey	Ballona Creek Estuary	Pyrethroid pesticides detected at high levels and likely from multiple sources. Permethrin and bifenthrin present in the highest concentrations; potential concern for fipronil.	2007-2010	Amphipod species (Eohaustorius estuarius) sediment toxicity	Bifenthrin and Permethrin
Yes		Southern California Bight	Ballona Creek, Marina del Rey, Mugu Lagoon	Pyrethroid pesticides are an important factor in sediment toxicity Most of the SCB was non- toxic, pyrethroid pesticides are a cause for concern, however; studies were limited	2008	Amphipod species (Eohaustorius estuarius) sediment toxicity, Sediment Water Interface Tes (Mytilus galloprovincialis)	t
Yes	Ag (nursery) and urban runoff			2 urban runoff sites, Orange County - several pyrethroids detected each site	2007		
Yes	SC Wetlands	Southern California	23 wetland sites	Pyrethroid pesticides are a regional, if not national issue for wetlands Bifenthrin, Permethrin, Cyhaldtririn and cyfluthrin were all found exceeding mean sediment in one or more monitoring sites	2007	H. azteca	Bifenthrin
No	Various land use drainages and tributaries to San Diego Creek			Bifenthrin detected in 95-100% of samples, fenpropathrin in 68% of dry season, 90% of wet season samples. Cyhalothrin, permethrin, cyfluthrin & deltamethrin detected at lower levels. Fenpropathrin detected at several residential sites but likely due to ag/nursery sources.	April-May 2005 and August 2005		
No		Orange County, CA	Slat Creek watershed, and Wood Creek watershed	Ongoing study. In preliminary results, bifenthrin and fipronil detected in most water samples in both watersheds; fipronil degradates and other pyrethroids detected less frequently.	2009 - ongoing		Bifenthrin, Permethrins
No		Orange County, CA	7 sites in Salt Creek Watershed, and 3 sites in the Wood Creek Watershed	Research into treatment effectiveness of constructed wetlands. Possible accumulation of pyrethroids in constructed wetlands needs to be further investigated	2009		Bifenthrin (most stable under testing conditions)
	Urban creeks			Water: 3 detects in Conejo Creek at Howard Rd. Sediment: 3 detects (Revolon Slough, Conejo Creek, and N. Fork Arroyo Conejo). No detects in urban runoff.	2003-04		
	Urban creeks			References PRISM monitoring project on pesticides in sediment and study of urban creek pyrethroid seasonal trends and loading in selected Sacramento area creeks.	Sept., 2007		
Yes		Ventura County	Santa Clara River Watershed and Calleguas Creek Watershed	Pyrethroids were detected in 71% and 100% of water and sediment samples respectively, with bifenthrin detected most frequently.	2009	Ceriodaphnia dubia	Bifenthrin
Yes		Sacramento-San Joaquin Delta	Saacramento- San Joaquin Delta	Low frequency (<1%) of occurrences of toxicity to H. azteca. Pyrethroids detected in 21% of samples.	2008-2010	H. Azteca	Bifenthrin and Fipronil
Yes		San Joaquin River Valley	San Joaquin River and tributaries	Up to 100% mortality (H. Azteca) observed in some locations and in contrast, little or no toxicity because of preponderance of sandy soils and sediments	2007	H. Azteca	Bifenthrin and Cyhalothrin
No	Urban runoff and urban creeks	Angeles and San Diego areas	Canyon Creek, Wood Canyon Creek, Salt Creek, Lindo Lake and San Diego River	Bifenthrin, fipronil and diuron detected in water samples at concentrations that potentially could be toxic to aquate (ife. Half of sediment samples contained 5 or more pyrettrivids. For most detected pesticides concentrations increased following rainfall; fipronil and degradates stayed fairly constant.	2008-2009		Bifenthrin and Fipronil
No	Urban runoff and urban creeks	Sacramento and San Francisco Bay areas	Pleasant Grove Creek, Koopman/Martin Canyon Creek, Dry Creek, Sacramento River, Alder/Willow Creek	Bifenthrin, fipronil and occasionally other pesticides were detected in water samples at concentrations that potentially could be toxic to aquatic life. Half of sediment samples contained 6 or more pyrethroids. Rainfall generally increased frequency of pesticide detection in water samples.	2009-2010		Bifenthrin
No	Urban runoff and urban creeks	Sacramento and San Francisco Bay areas, Orange County	Alder Creek, Pleasant Grove Creek, Grayson Creek, Martin Canyon Creek, Koopman Canyon Creek, Salt Creek, Wood Creek	Samples were analyzed for up to 64 pesticides or degradates. Multiple detections were commor, 50 % of the water samples contained five or more pesticides. Statewide, the most frequently detected insecticides in water were bifenthrin, imidacloprid, fipronil, fipronil sulfone, fipronil desulfinyl,	2008-2011	Pyrethroids, Chlorpyrifos	Bifenthrin, Permethrin, and Fipronil
No	Urban storm drain outfalls	Sacramento County, Orange County	Storm drain outfalls in two residential communities in Sacramento and four residential communities in Orange County	Animot of electricity of the second s	2006-2008		Fipronil and degradates
No	Water, sediments throughout U.S urban and ag		Assessments conducted in 20 Study Unite during 1992-1995, 16 Study Unite during 1996–1998, and 15 Study Units during 1998–2001.	Nationally, water samples for pesticide analysis were collected from 156 stream sites within the 51 Study Units. bed-setiment analysis were collected from 1.52 stream sites, and fish samples were collected from 700 stream sites. Ground-water samples were collected from 5.047 wells. One or more pesticides or depadates were detected in water more than 30 percent of the time during the year in streams draining watersheds with agricultural, urban, and mixed and use. Pesticides were less common in ground water, but were detected in more than 50 percent of wells.	15-Feb-07		<i>cis</i> -Permethrin, <i>trans</i> -Permethrin

Citation - Abbrev.	Author(s)/Date	Agency	Report/Study Title	Journal/Publication Reference	Web Link	Water/ Sediment	Chemical Constituents
Hladik et al., 2009	Hladik, Michelle L., Domagalski, Joseph L., Kuivila, Kathryn M. 2009	US Geological Survey	Concentrations and loads of suspended sediment- associated pesticides in the San Joaquin River, California and Tributaries during storm events	Science of The Total Environment Volume 408, Issue 2, 20 December 2009	http://www.sciencedirect.com/science/article/pii/S004896 9709009036	Sediment	Anilines, Chloroacetanilide, Organophosphates, Pyrethroids, Triazines, Legacy and miscellaneous
Hladik and Kuivila, 2012	Hladik, Michelle L. and Kuivila, Kathryn M. 2012	USGS National Water Quality Assessment Program and the USGS Toxic Substances Hydrology Program	Pyrethroid insecticides in bed sediments from urban and agricultural streams across the United States	J. Environ. Monit., 2012, 14, 1838	http://pubs.rsc.org/en/Content/ArticleLanding/2012/EWc2 em10946h	Sediment	Pyrethroid Pesticides
Holmes, 2004	Holmes, Robert W. July 2004	Cal EPA Regional Water Quality Control Board Central Valley Region Surface Water Ambient Monitoring Program (SWAMP) Lower Sacramento River Watershed	Monitoring of Sediment-bound Contaminants In the Lower Sacramento River Watershed. Surface Water Ambient Monitoring Program (SWAMP) Lower Sacramento River Watershed FINAL REPORT		http://www.waterboards.ca.gov/water_issues/programs/s wamp/docs/reglrpts/rb5_sedimentchem_rptmain.pdf	Sediment	metals, polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCs), pyrethroid pesticides, and organophosphate pesticides (OPs).
Holmes et al., 2008	Holmes, Robert W., Anderson, Brian S., Phillips, Bryn M., Hunt, John W., Crane, Dave B., Mekebri, Abdou, Connor, Valerie 2008	California Dept. of Fish and Game Water Branch, Marine Pollution Studies Laboratory, California Dept. of Fish and Game, Fish and Wildlife Water Pollution Control Laboratory, State Water Resources Control Board	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban Waterways	Environmental Science & Technology Vol 42 No 18 2008	http://pubs.acs.org/doi/abs/10.1021/es801346g	Sediment	Pyrethroid Pesticides
Kent et al., 2005	Kent, Robert, Kenneth Belitz, Andrea J. Altmann, Michael T Wright, and Gregory O. Mendez. 2005	. US Geological Survey	Occurrence and Distribution of Pesticide Compounds in Surface Water of the Santa Ana Basin, California, 1998–2001	USGS National Water-Quality Assessment Program Scientific Investigations Report 2005-5203	http://pubs.usqs.gov/sir/2005/5203/	Surface water	Various pyrethroids, organochlorines, others
Kuivila and Smalling, 2007	Kuivila, K.M. and K.L. Smalling. 2007	US Geological Survey	Presentation: Occurrence and Bioavailability of Urban-Use Insecticides in Estuarine Environments		http://www.setac.org/milwaukee/pdf/2007 Abstract Book	Crab embryo tissue, water, sediments	OPs, fipronil, pyrethroids
Lao et al., 2010	Lao, Wenjian, Tsukada, David, Greenstein, Darrin J., Bay, Steven M., Maruya, Keith A. 2010	Southern California Coastal Water Research Project	Analysis, Occurrence, and Toxic Potential of Pyrethroids, and Fipronil in Sediments From An Urban Estuary	Environmental Toxicology and Chemistry Vol. 29 No. 4 2010	fp://ftp.sccwrp.org/pub/download/DOCUMENTS/Journal Articles/609_PyrethroidFibronilSedToxPotentialUrbanEst uary.pdf	Sediment	Pyrethroid Pesticides and Fipronil
Larry Walker Associates, 2005	Larry Walker Associates, Dec., 2005	Calleguas Creek Watershed Management Plan	Calleguas Creek Watershed Management Plan Dry Seasor Urban Runoff Characterization (DSURC)	1	http://www.calleguascreek.org/ccwmp/Final_DSURC_12 1505.pdf	Water	chlorpyrifos and diazinon, triazine herbicides, and pyrethroid insecticides
Levine et al., 2005	Levine, Johanna, Dave Kim, Kean S. Goh, Carissa Ganapathy, Jean Hsu, Hsiao Feng, Paul Lee. March 2005	California Environmental Protection Agency, Environmental Monitoring Branch, California Department of Pesticide Regulation	Surface and Ground Water Monitoring of Pesticides Used in the Red Imported Fire ant Control Program	CDPR Publication # EH05-02	www.cdpr.ca.gov/docs/emon/pubs/ehapreps/EH0502.pdf	Water, groundwater	bifenthrin, fenoxycarb, hydramethylnon pyriproxyfn, chlorpyrifos, and diazinon
Lowe et al., 2007	Lowe, S., B. Anderson and B. Phillips. 2007	SFEI; UC Davis Marine Pollution Studies Laboratory; State Water Resources Control Board	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Proposition 13 PRISM Grant # 041355520. SFEI Contribution #523. San Francisco Estuary Institute, Oakland, CA	http://www.waterboards.ca.gov/water_issues/programs/t mdl/records/region_2/2008/ref2415.pdf	Sediment	sediment quality parameters, trace metals, PAHs, PCBs, OP pesticides), pyrethroids, and possibly other diazinon alternatives
Maul et al., 2008	Jonathan D. Maul1, Amanda A. Brennan, Amanda D. Harwood, Michael J. Lydy 2008	Fisheries and Illinois Aquaculture Center, Department of Zoology, Southern Illinois University. The Institute of Environmental and Human Health and Department of Environmental Toxicology, Texas Tech University	Effect of sediment-associated pyrethroids, fipronil, and metabolites on Chironomus tentans growth rate, body mass, condition index, immobilization, and survival	USEPA and Greater Research Graduate Opportunities Program MA-91670201-1	http://openagricola.nal.usda.gov/Record/IND44161618	Sediment	Bifenthrin, Lambda-cyhalothrin, permethrin, fipronil, fipronil-sulfide, fipronil-sulfone
Ng et al., 2008	Ng, C.M., Weston, D.P., You, J., Lydy, M.J. 2008	Department of Integrative Biology, UC Berkeley, Fisheries and Illinois Aquaculture Center, Dept. of Zoology, Southern Illinois University	Patterns of Pyrethroid Contamination and Toxicity in Agricultural and Urban Stream Segments	American Chemical Society Symposium Series Vol 991 August 2008	http://pubs.acs.org/doi/abs/10.1021/bk-2008-0991.ch016	Sediment	Pyrethroid Pesticides
Oki and Haver, 2009	Oki, Loren and Darren Haver	UC Davis and UC Cooperative Extension, Orange and Riverside County	Monitoring Pesticides in Runoff from Northern and Southern California Neighborhoods. Presentation by Loren Oki Ph.D. and Darren Haver Ph.D., June 22, 2009.		http://www.cdpr.ca.gov/docs/emon/surfwtr/pres entations/oki_2009.pdf	Water	Pyrethroids, fipronil, and other constituents incl. OP pesticides
Orange County, 2008	Orange County Dept. Public Works/RDMD, 2008	Orange County Dept. of Public Works/RDMD	Unpublished data. Personal communication: transmitted via e-mail by Bruce Moore to Armand Ruby.			Sediment	Pyrethroids and sediment toxicity
Phillips et al., 2010	Phillips, B.M., Anderson, B.S., Voorhees, J.P., Hunt, J.W., Holmes, R.W., Mekebri, A., Connor, V., Tjeerdema, R.S., 2010	SWAMP, DPR, CASQA, SMC	The contribution of pyrethroid pesticides to sediment toxicity in four urban creeks in California, USA.	/ Journal of Pesticide Science 35, 302-309		water	Pyrethroid-spiked sediments and pyrethroid- contaminated sediments
Riverside County et al., 2007	Riverside County Flood Control and Water Conservation District; County of Riverside, City of Murrieta, and City of Termecula. 2007	Riverside County Flood Control and Water Conservation District Protection Agency, County of Riverside, City of Murrieta, and City of Temecula	2006 – 2007 Watershed Annual Progress Report			Water	Pyrethroids
Riverside County, 2008	Riverside County Flood Control and Water Conservation District, personal communication, 2008	Riverside County Flood Control and Water Conservation District	Unpublished data from laboratory reports dated Nov. 6, 2007, and Jan. 16, Feb. 20, Feb. 22, June 5, and July 3, 2008			Water	Pyrethroids
Riverside County, 2011	Riverside County Flood Control and Water Conservation District 2011	Riverside County Flood Control and Water Conservation District	NPDES Municipal Stormwater Permit (NPDES No. CAS0108766) Fiscal Year 2011-2012 SANTA MARGARITA WATERSHED ANNUAL REPORT For The Riverside County Municipal Copermittees. Appendix G, Monitoring Annual Report. October, 2012.		http://cflaod.org/downloade/NPDE9/Documents/SM_Ann ual/Watershed%20Annual%20Report.pdf	Water	Pyrethroids
Ruby, 2005	Ruby, Armand. December 2005	Armand Ruby Consulting for Clean Estuary Partnership	Technical Memorandum: Analysis of Bay Area Urban Creeks Monitoring, 2004-05		http://www.up3project.org/documents/CEP_2004- 05_Urban_Creeks_Monitoring_Tech_Memo.pdf	Water	Organophosphate pesticides and pyrethroids
Ryberg et al., 2010	Ryberg, Karen R., Vecchia, Aldo V., Martin, Jeffrey D., and Gilliom, Robert J.	US Geological Survey, NATIONAL WATER-QUALITY ASSESSMENT PROGRAM	Trends in Pesticide Concentrations in Urban Streams in the United States 1992-2008.	USGS Scientific Investigations Report 2010-5139	http://pubs.usgs.gow/sir/2010/5139/	Water	Insecticides incl. Fipronil
Sacramento County, 2011	Tamayo, Dave, Personal Communication, 2011.	County of Sacramento	Unpublished data. Personal communication transmitted via email from Dave Tamayo to Armand Ruby			Water/Sediment	Pyrethroid insecticides
SFBRWQCB, 2007	SFBRWQCB [Katznelson, Revital, Nelia White, Matt Cover, Karen Taberski.] June 2007	Surface Water Ambient Monitoring Program, San Francisco Bay Regional Water Quality Control Board, Oakland, CA	Water Quality Monitoring and Bioassessment in Four San Francisco Bay Region Watersheds in 2003-2004: Kirker Creek, Mt. Diablo Creek, Petaluma River, and San Mateo Creek.		http://www.waterboards.ca.gov/water_issues/programs/s wamp/docs/regirpts/rb2_wgmb4sfws2007.pdf	Sediment	Organophosphate Pesticides; Organochlorine Pesticides
Smalling et al., 2010	Smalling, Kelly L., Morgan, Steven, Kuivila, Kathryn K. 2010	US Geological Survey, bodega Marine Laboratory, UC Davis	Accumulation of Current Use and Organochlorine Pesticides in Crab Embryos From Northern California, USA	Environmental Toxicology and Chemistry, Vol 29 No. 11 2010	http://onlinelibrary.wiley.com/doi/10.1002/etc.317/abstrac	Crab embryos	Aniline, Chloroacetanilide, Conazole, Organochlorine, Organophosphate, Pyrethroid, Strobilurin, Thiocarbamate, Misc
Trimble et al., 2009	Trimble, Andrew J., Weston, Donald P., Belden, Jason B., Lydy, Michael J. 2009	Fisheries and Illinois Aquaculture Center and Department of Zoology Southern Illinois University, Department of Integrative Biology, UC Berkeley, Department of Zoology Oklahoma State University	Identification and Evaluation of Pyrethroid Insecticide Mixtures in Urban Sediments	Environmental Toxicology and Chemistry Vol 28 No 8 2009	http://www.ncbi.nlm.nih.gov/pubmed/19245272	Sediment	Pyrethroid Insecticides
Ventura County, 2011	Manwill, Ron, 2011, County of Ventura, Personal Communication	City of Thousand Oaks	Calleguas Creek Watershed TMDL Monitoring Program			Sediment and Water	Pyrethroid pesticides
Wang et al., 2009	Communication Wang, Dongli, Weston, Donald P., Lydy, Michael J. 2009	Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University, Department of Integrative Biology, UC Berkeley	Method Development For The Analysis of Organophosphate and Pyrethroid Insecticides at Low Parts per Trillion Levels in Water	 Talanta. 2009 Jun 15;78(4-5):1345-51. doi: 10.1016/j.talanta.2009.02.012. Epub 2009 Feb 20. 	http://www.ncbi.nlm.nih.gov/pubmed/19362199	Water	Organophosphate and Pyrethroid Insecticides
Wang et al., 2010	Wang, Dongli, Weston, Donald P., Ding, Yuping, Lydy, Michael J. 2010	Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University, Department of Integrative Biology, UC Berkeley	Development of a Sample Preparation Method for the Analysis of Current Use Pesticides in Sediment Using Gas Chromatography	Arch Environ Contam Toxicol. 2010 Feb; 58(2):255-67. doi: 10.1007/s00244-009-9398-4. Epub 2009 Oct 2.	http://www.ncbi.nlm.nih.gov/pubmed/19798461	Sediment	Pesticides
Werner et al., 2006	Werner, Inge, Marie Vasi, Daniel Markiewicz 2006	Aquatic Toxicology Laboratory, UCD for Surface Water Ambient Monitoring Program State Water Resources Control Board	Toxicity Testing and Toxicity Identification Evaluation Final Report April 10, 2006. SWAMP and SWRCB, contract # 03- 197-250-0		http://www.waterboards.ca.gov/water_issues/programs/t mdl/records/region_7/2008/ref2743.pdf	Water	Tox testing, TIEs; some limited chemical analysis (Organics, metals, pesticides, incl. pyrethroids)

	Source Type	Geographic Area	Monitoring Location(s)	Notes/Results	Study Date(s)	Toxicity Testing Species/Approach	Most commonly found
No		Northern California	San Joaquin River and tributaries	The pesticide concentrations in the tributaries were greater than in the main stem San Joaquin River. The set side tributaries had the highest pesticide concentrations which can be attributed to the intense agriculture and erodible soil in the area.	2008		current-use pesticide(s) Bifenthrin and Permethrin
Yes	Urban and agricultural streams 3 ag, 1 urban waterways	National survey, incl. one Sacramento area stream	Arcade Creek near Del Paso Heights	3 pyrethroid detections. Sediment toxicity found. Bifenthrin was the most frequently detected and was found in over half (58%) of the sediment samples. One permethrin detect in Dry Creek (Roseville)	2009 July, 2004	H. azteca	Bifenthrin and Permethrin
Yes	90 Sites on 63 urban Waterways in California			After scope narrowed to 30 creeks in 8 geographical regions, tests showed all 30 samples were toxic tested at 15 Celsius, and 25 of 30 at 23 Celsius.	2006	H. azteca	Bifenthrin and Permethrin
No	Urban streams and rivers			No pyrethroid detects	2005		
No	urbanized estuaries	Sonoma County		Pyrethroids and fipronil detected in crab tissues	2007		
Yes		Southern California	Ballona Creek	Estimated toxic units of bifenthrin and cypermethrin were likely contributors to the mortality observed in tests with the estuarine amphipod Echaustorius estuarius. Although fipronil was not a likely contributor to the observed motality, the concentrations detected may be of concern for more sensitive crustacean species.	2007-2008	Eohaustorius estuarius	Permethrin and Bifenthrin
No	3 Urban storm drains - Camarillo	Ventura County	Calleguas Creek	No pyrethroids detected	2004		
Yes	Residential, ag (nurseries) - Orange County			Few detects at urban sites	Mar. 2005		
Yes	Tributaries to SF estuary	North San Francisco Bay	Petaluma River, Napa River, Suisun Creek, San Mateo Creek, San Lorenzo Creek, Coyote Creek	Several pyrethroid detects in sediment; bifenthrin inmost samples; several sediment tox. hits	Jan. 2007	E. estuarius and H. azteca	Permethrin and Bifenthrin
Yes, only LC50's		N/A	N/A obtained analytes for testing from Chem Service	Paper derives LC50s and EC50s for fipronil and degradates in sediment	2008	C. tentans	N/A
Yes		Central California	Gabilan, Natividad and Alisal Creeks, Salinas	Minimal mortality in background sites, prior to creeks entering agricultural land; significantly more toxic in urban, agricultural and residential areas. Urban sites are downstream of agricultural areas. Two background sites contained no detectable prethinoids. Prehthoid estimate toxiculture sites, were a strong relationship to it, acteca mortality as observed in estimate toxiculture.	2005	H. azleca	Permethrin and Bifenthrin
No	Residential runoff	Sacramento and Orange Counties	Residential storm drain outfalls	Bifenthrin and fipronil detected in almost all residential runoff samples	2006-2009		
Yes - sediment			Sites near Huntington Harbor and Newport Harbor	Extensive toxicity to amphipods, 50% of sites have bifenthrin detects	2005-06 and 2006-07		Bifenthrin, fipronil
yes- interstitial water and sediment	Urban creek stations	Los Angeles County, San Diego County, Orange County, and Contra Costa County	Bouquet Canyon Creek, Cottonwood Creek, Marsh Creek, and Peters Canyon Wash	Investigation of water and sediment TIE methods for samples with measurable concentrations of pyrethroids concluded that use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. 3-5 pyrethroids detected in each sample.	2009	H. azteca	Bifenthrin
Yes	Receiving water (triad) stations	Riverside County	Murrieta and Ternecula Creeks	Pyrethroids delicated in TiEs	31-Oct-07		
No	Receiving water ("triad") stations and "tributary" stations (urban outfalls)	Riverside County	Triad/Receiving Water Stations in Santa Margarita River Region: Murrieta Creek, Temecula Creek, & Adobe Creek (background station); Tributary Stations (IC/ID urban outfall locations)	Pyrethroids detected in several urban outfall samples (Dec. 17, 2007 and Jan. 28-27, 2013) and neoving water (triad) station samples (Jan. 27-28, 2008). No detects in samples from triad stations Oct. 17, 2007 and May 14, 2008. Phase II TE's confirm pyrethroids as likely cause of toxicity.	Oct. 2007 - May 2008		
No	(urban outfalls) Receiving water ("triad") stations and "tributary" stations		Region: Murrieta Creek, Temecula Creek, & Adobe Creek (background station); Tributary Stations (IC/ID	and receiving water (triad) station samples (Jan. 27-28, 2008). No detects in samples from triad stations Oct. 17, 2007 and May 14, 2008. Phase II TIEs confirm pyrethroids as likely	Oct. 2007 - May 2008 2010-2011		Bifenthrin
No	(urban outfails) Receiving water ("triad") stations and "tributary" stations (urban outfails)	Southern California	Region: Murrielia Creek, Emercula Creek, & Adobe Creek (background station); Thotlary Stations (IC/ID urban outfall locations) Santa Margarita Watershed	and neoking water (fuild) station samples (Jan. 27-28, 2008). No detects in samples from triad stations Co. 17, 2007 and May 14, 2008. Phase II TEs confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters.	2010-2011		Bifenthrin
	(urban outfalls) Receiving water ("triad") stations and "tributary" stations		Region: Murriela Creek, Enecula Creek, & Adobe Creek (background station); Tributary Stations (IC/ID urban outfall locations) Santa Margarita Watershed Corte Madera Creek, Blue Rock Springs Creek, Rheem	and neoking water (fuild) station samples (Jan. 27-28, 2008). No detects in samples from triad stations Co. 17, 2007 and May 14, 2008. Phase II TEs confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters.			Bifenthrin
No Yes No	(urban outfalls) Receiving water ("triad") stations and "tributary" stations (urban outfalls) Urban creeks 27 streams throughout the United States	Southern California SF Bay area Northeast, Midwest, South and West	Region: Murriela Creek, Emecula Creek, & Adobe Creek (background station); Tributary Stations (IC/ID urban outfall locations) Santa Margarita Watershed Corte Madora Creek, Blue Rock Springp Creek. Rheam Creek, Castro Valley Creek, Calabazas Greek, San Fransisquito Creek, Blues Rock Springe Creek. Rheam Creek, Castro Valley Creek, Calabazas Greek, San Z'aties are a subset of 201 sites sampled as a part of NAWQA studies. These sites have adequate pesticide data for trend narysis.	and neoving water (ruled) station samples (Jan. 27-28, 2008). No detects in samples from triad stations CJ. 17, 2007 and May 14, 2008. Phase II TEs confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters. No pyrethroid detects, some chronic toxicity hits Results indicate significant upward trends for fipronil and its degradation products. Arcade Creek and Santa Ana River were monitored one event each in 2002. Fipronil and 2 degradate	2010-2011 December, 2005 1992-2008		Bifenthrin N/A
No Yes No No	(urban outfails) Receiving water ("triad") stations and "tributary" stations (urban outfails) Urban creeks	Southern California SF Bay area	Region: Murrielia Creek, E Adobe Creek (background station); Tibudary Stations (IC/D urban outfall locations) Santa Margarta Waterahed Conte Maders Creek, Blue Rock Springs Creek, Rheem Creek, Castro Villey, Creak, Coldman Creek, Castro Villey, Creak, Coldman Pransidguito Creek, Balon Rock Springs Creek, San Fransidguito Creek, Balon Rocks, Coldman 27 alles are a subcet of 201 sites ampide as part of NWOA studies. These sites have adequate pesticio	and neexing water (ruiae) station samples (Jan. 27-28, 2008). No detects in samples from triad stations (C. 17, 2007 and Mey 14, 2008. Phase II TEs confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters. No pyrethroid detects, some chronic toxicity hits. Results indicate significant upward trends for fipronil and its degradation products. Ancade Creak and Sanka River were monitored one event each in 2002. Fipronil and 2 degradate	2010-2011 December, 2005		
No Yes No	(urban outfalls) Receiving water ("triad") stations and "tributary" stations (urban outfalls) Urban creeks 27 streams throughout the United States	Southern California SF Bay area Northeast, Midwest, South and West	Region: Murrielia Creek, Tamecula Creek, & Adobe Creek (background station); Thubary Stations (IC/ID urban outfall locations) Santa Margarita Watershed Corte Madera Creek, Blue Rock Springs Creek, Rheem Creek, Castro Valley Creek, Calabazas Creek, San Fransisquito Creek, Belmont Creek 27 sites are a subset of 201 sites sampled as a part of NAWGA studies, These sites have adequate pesticide NAMCA studies, These sites have adequate pesticide Nationas STAC, Aroda Creek at With Ave., Laguna Creek at Franklin, Willow Creek at Blue Rawine Rd, Storog Ranch Storog, Sum 111, Anol Laguna Creek at	and neoving water (rule) station samples (Jan. 27-28, 2008). No detects in samples from triad stations (CL 7, 2007 and May 14, 2008, Phase II TEE confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters. No pyrethroid detects, some chronic toxicity hits Results indicate standard and the parater bands for foronil and its degradation products. Arcade Creake and Sama River were nonkined one event each in 2002. Fipronil and 2 degradates were tested for but not detected. No pyrethroid data. Pyrethroids were commonly detected in unden under discharges and receiving waters, and	2010-2011 December, 2005 1992-2008		
No Yes No No Yes - water and	(urban outfalls) Receiving water ("triad") stations and "tributary" stations (urban outfalls) Urban creeks 27 streams throughout the United States Urban Creeks	Southern California SF Bay area Northeast, Midwest, South and West	Region: Murrielia Creek, Tamecula Creek, & Adobe Creek (background station); Thubary Stations (IC/ID urban outfall locations) Santa Margarita Watershed Corte Madera Creek, Blue Rock Springs Creek, Rheem Creek, Castro Valley Creek, Calabazas Creek, San Fransisquito Creek, Belmont Creek 27 sites are a subset of 201 sites sampled as a part of NAWGA studies, These sites have adequate pesticide NAMCA studies, These sites have adequate pesticide Nationas STAC, Aroda Creek at With Ave., Laguna Creek at Franklin, Willow Creek at Blue Rawine Rd, Storog Ranch Storog, Sum 111, Anol Laguna Creek at	and neoving water (ritiad) station samples (Jan. 27-28, 2008). No detects in samples form triad stations CO. 17, 2007 and May 14, 2008. Phase II TiEs confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters. No pyrethroid detects, some chronic toxicity hits Results indicate significant upward tends for fipronil and its degradation products. Arrade Creat and Santa Ana River were monitored one event each in 2002. Fipronil and 2 degradate were tested for but of detected. No pyrethroid data. Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.	2010-2011 December, 2005 1992-2008 2008-2011	H. oregonensis and P. Crassipes	
No Yes No No Yes-water and sediment	(urban outfalls) Receiving water ("triad") stations and "tributary" stations (urban outfalls) Urban creeks 27 streams throughout the United States Urban Creeks	Southern California SF Bay area Northeast, Midwest, South and West Central California- Sacramento	Region: Murrielia Creek, Emecula Creek, & Adobe Creek (background station); Thotkary Stations (IC/D urban outfall locations) Santa Margarita Watershed Corte Madera Creek, Blue Rock Springs Creek, Rheem Creek, Castro Valley Creek, Calabazas Creek, San Creek, Castro Valley Creek, Calabazas Creek, San 27 sites are a subset of 201 sites sampled as a part of NWWA shudies. These sites have adequate pesticide data for frend analysis. Natomas STA, Caced Creek at Watt Ave., Laguna Creek at Frankin, Willow Creek at Blue Ravine Rd, Strong Ranch Sicugh, Sump 111, and Laguna Creek at Hwy 59.	and neoving water (rule) station samples (Jan. 27-28, 2008). No detects in samples form triad stations (CJ, 17, 2007 and May 14, 2008, Phase II TE's confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters. No pyrethroid detects, some chronic toxicity hits Results indicate significant upward trends for fipronil and its degradation products. Arcade Creek and Santa Ana River were monitored one event each in 2002. Fipronil and 2 degradate were tested for but of detected. No pyrethroid data. Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sadiments. Sadiment toxicity found in Kirker and Sam Mateo Creeks Preliminary results indicate that embros are an effective sink for organic contaminants in the	2010-2011 December, 2005 1992-2008 2008-2011 Jun-07	H. oregonensis and P. Crassipes H. azteca	NA
No Yes No No Yes - water and sediment	(urban outfalls) Receiving water ("triad") stations and "tributary" stations (urban outfalls) Urban creeks 27 streams throughout the United States Urban Creeks	Southern California SF Bay area Northeast, Midwest, South and West Central California-Sacramento Northern California	Region: Murrielia Creek, Tamocula Creek, & Adobe Creek (background station); Thotkary Stations (IC/ID urban outfall locations) Santa Margarita Watershed Conte Madera Creek, Blue Rock Springs Creek, Rheem Creek, Castro Valley Creek, Calabazas Creek, San Fransiquito Creek, Belmont Creek 27 sites are a subset of 201 sites sampled as a part of NAWGA studies, These sites have adequate pesticide Nationas STAC, Aroda Creek at With Aee, Laguna Creek at Frankin, Willow Creek at Blue Ravine Rd, Strong Ranch Slough, Sump 111, and Laguna Creek at Hwy 99.	and neoving water (rule) station samples (Jan. 27-28, 2008). No detects in samples form triad stations (C. 17, 2007 and Mey 14, 2008. Phase II TEs confirm pretrivoits as likely cause of toxicity. PyreBroids were commonly detected in receiving waters. No pyreBroid detects, some chronic toxicity hits Results indicate significant upward trends for fipronil and its degradation products. Arcade Creat and Samt An River were monitored one event each in 2002. Fipronil and 2 degradate were tested for built not detected. No pyreBroid data. PyreBroids weter commonly detected in urban numf discharges and receiving waters, and very frequently detected in receiving water sediments. Sediment toxicity found in Kirker and Sam Mateo Creeks Preliminary results indicate that embryos are an effective sink for organic contaminants in the environment and have the potentiat to be good indicators of ecosystem health, especially when contaminant body burden analyses are paired with reproductive maniment asays.	2010-2011 December, 2005 1992-2008 2008-2011 Jun-07		N/A Cyfluthrin
No Ves No No Yes - water and sediment No	(urban outfalls) Receiving water ("triad") stations and "tributary" stations (urban outfalls) Urban creeks 27 streams throughout the United States Urban Creeks	Southern California SF Bay area Northeast, Midwest, South and West Central California Northern California Central and Northern California	Region: Murrielia Creek, Emecula Creek, & Adobe Creek (background station); Thotlary Stations (IC/ID unban outfall locations) Santa Margarita Watershed Corte Madera Creek, Blue Rock Springs Creek, Rheem Creek, Castro Valley Creek, Catalazas Creek, San Francisquio Creek, Belmont Creek Z sites are a subset of 201 sites sampled as a part of NAWQA studies. These sites have adequate pesticled data for trend analysis. Natomas 51/22, Accade Creek at Watt Ave., Laguna Storop Ramot Slough, Sump 111, and Laguna Creek at Hwy 99. Bodega Bay and Stege Marsh 94 samples from an existing database Calleguas Creek	and neoving water (rule) station samples (Jan. 22-28, 2008). No detects in samples form triad stations (CL 7, 2007 and May 14, 2008, Phase II TEE confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters. No pyrethroid detects, some chronic toxicity hits Results indicate significant upward tends for fipronil and its degradation products. Arcade Creek and Sama Ana River were monitored one event each in 2002. Fipronil and 2 degradate verythroids were commonly detected in receiving waters. Sediment toxicity found in Kirker and Sam Mateo Creeks Preliminary results indicate that embryos are an effective sink for organic contaminants in the environment and have the potential to be good indicators of ecosystem health, especially when command mechanistic processes leading to deviations from additive models	2010-2011 December, 2005 1992-2008 2008-2011 Jun-07 2005-2006		N/A Cyfluthrin Bifenthrin
No Ves No Vos Ves - water and sediment No	(urban outfalls) Receiving water ("triad") stations and "tributary" stations (urban outfalls) Urban creeks 27 streams throughout the United States Urban Creeks	Southern California SF Bay area Northeast, Midwest, South and West Central California Northern California Central and Northern California	Region: Murriela Creek, Emecula Creek, & Adobe Creek (background station); Thotlary Stations (IC/ID unban outfall locations) Santa Margarita Watershed Corte Madera Creek, Blue Rock Springs Creek, Rheem Creek, Casto Valley Creek, Calabazas Creek, San Francisquio Creek, Belmont Creek Z'istes are a subset of 201 siles sampled as a part of NAWGA studies. These siles have adequate pesticled data for trend analysis. Natomas STA2, Acade Creek at Watt Ave. Laguna Creek at Prankin, Willow Creek at Bue Rahm Ra, Storogian Creek, Belmont Uniter State at Bue Rahm Ra, Storogian Creek, Bue Rock Springs Creek, at Watt Will State Calleguas Creek Campus Lake Southern Illinois University, Sacrametto Regional Courty State St	and neoking water (rule) station samples (Jan. 27-28, 2008). No detects in samples form it dia station Co. 17, 2007 and May 14, 2008. Phase II TEs confirm pyrethroids as likely cause of toxicity. Pyrethroids were commonly detected in receiving waters. No pyrethroid detects, some chronic toxicity hits Results indicate significant upward trends for fipronil and its degradation products. Arcade Creek and Santa Ana River were monitored one event each in 2002. Fipronil and 2 degradate were tested for burn of detected. No pyrethroid data. Pyrethroids were commonly detected in urban runoff discharges and neoking waters, and were tested for burn of detected. No event each in 2002. Fipronil and 2 degradate were tested for burn of detected. No weaker sademets: Sediment toxicity found in Kirker and San Mateo Creeks Preliminary results indicate that embryos are an effective sink for organic contaminants in the environment and have the potential to be good indicators of ecosystem health, especially when contaminants body uber analyses are paired with reproductive impairment asays. Matters of pyrethroids are additive, future studenes and unaling specific mixtures would help to better understand mechanistic processes leading to deviations from additive models Of the 222 samples, Bifenthrin was detected in 131 of them (59%).	2010-2011 December, 2005 1992-2008 2008-2011 Jun-07 2005-2006	H. azteca	N/A Cyfluthrin Bifenthrin

Citation - Abbrev.	Author(s)/Date	Agency	Report/Study Title	Journal/Publication Reference	Web Link	Water/ Sediment	Chemical Constituents
Werner et al., 2010a	Inge Werner, Dan Markiewicz, Linda Deanovic, Richard Connon, Sebastian Beggel, Swee Teh, Marie Stillway, Charissa Reece 2010	Aquatic Toxicology Laboratory School of Veterinary Medicine University of California Davis, California	Pelagic Organism Decline (POD): Acute and Chronic Invertebrate and Fish Toxicity Testing in the Sacramento- San Joaquin Delta 2008-2010. Final Report California Department of Water Resources July 24, 2010		http://www.science.calwater.ca.gov/pdf/workshops/POD/ Werner%20ef%20al 2010 POD2008- 2010 Final%20Report.pdf	Water	Pyrethroids and organophosphates; TiE testing with PBO
Werner et al., 2010b	Werner, Inge, Deanovic, Linda A., Markiewicz, Dan, Khamphanh, Manisay, Reece, Charles K., Stillway, Marie, Reece, Charissa 2010	Aquatic Toxicology Laboratory, Department anatomy, Physiology and Cell Biology, School of Veterinary Medicine, UC Davis	Monitoring Acute and Chronic Water Column Toxicity in the Northern Sacramento-San Joaquin Estuary, California, USA, Using the Euryhaline Amphipod, H. Azteca: 2006 to 2007	Environmental Toxicology and Chemistry, Vol. 29, No. 10, pp. 2190–2199, 2010 DOI: 10.1002/etc.281	http://www.ncbi.nlm.nlh.gov/pubmed/20872681	Water	Pyrethroids and organophosphates; TIE testing
Weston and Jackson, 2009	Weston, Donald P., Jackson, Colin J. 2009	Department of Integrative Biology, UC Berkeley, and CSIRO Entomology, Black Mountain Canberra Australia	and Pyrethroid Related Toxicity in Toxicity Identification	Environmental Science & Technology Vol. 43 No 14 2009	http://pubs.acs.org/doi/abs/10.1021/es900434z	Sediment and Water	Pyrethroid Pesticides and Organophosphates
Weston and Lydy, 2010a	Weston, Donald P., Lydy, Michael J. 2010	Department of Integrative Biology, UC Berkeley, Agriculture Center and Department of Zoology, Southern Illinois University	Evaluations Focused Toxicity Identification Evaluations to Rapidly Identify the Cause of Toxicity in Environmental Samples	Chemosphere Vol. 78, Issue 4, pp. 368-374, January 2010	http://www.ncbi.nlm.nih.gov/pubmed/20018342	Water	Pyrethroid insecticides and Organophosphate insecticides
Weston and Lydy, 2010b	Weston, Donald P., Lydy, Michael J. 2010	Department of Integrative Biology, UC Berkeley, Agriculture Center and Department of Zoology, Southern Illinois University	Urban and Agricultural Sources of Pyrethroid Insecticides to the Sacrament-San Joaquin Delta of California	Environmental Science & Technology Vol. 44 No 5, pp. 1833-1840, 2010	http://pubs.acs.org/doi/abs/10.1021/es9035573	Water	Pyrethroid insecticides
Weston and Lydy, 2012	Weston, Donald P., Lydy, Michael J. 2012	Department of Integrative Biology, UC Berkeley, Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University	Stormwater Input of Pyrethroid Insecticides to an Urban River	Environmental Toxicology and Chemistry Vol 31, Issue 7	http://onlinelibrary.wiley.com/doi/10.1002/etc.1847/abstra ct.;sessionid	Water	Pyrethroid insecticides
Weston et al., 2005	Weston, D.P., R. W. Holmes, J. You, and M. J. Lydy. 2005	Department of Integrative Biology, University of CA, and Central Valley Regional Water Quality Control Board, and Southern Illinois University	Aquatic Toxicity Due to Residential Use of Pyrethroid Pesticides	Environmental Science and Technology 39 (24), 9778 - 9784 (2005)	http://pubs.acs.org/cgi- bin/abstract.cgi/esthag/2005/39/i24/abs/es0506354.html	Sediment	Pyrethroids
Weston et al., 2006	Weston, Donald P., Erin L. Amweg, Abdou Mekebri, R. Scot Ogle, and Michael J. Lydy. July 26, 2006	t Department of Integrative Biology, University of California, Berkeley, Water Pollution Control Laboratory, California Department of Fish and Game, Pacific EcoRiak; Fisheries and Illinois Aquaculture Center & Department of Zoology Southern Illinois University, Carbondale, Illinois	Aquatic Effects of Aerial Spraying for Mosquito Control over an Urban Area	Environ. Sci. Technol., 40 (18), 5817 -5822, 2006.	http://pubs.acs.org/cgi- bin/abstract.cgi/esthag/2006/40/i18/abs/es0601540.html	Sediment	Pyrethrins and the synergist piperonyl butoxide
Weston et al., 2009a	Weston, Donald P., Holmes, Robert W., Lydy, Michael J. 2009	Department of Integrative Biology, UC Berkeley, Water Branch, California Department of Fish and Game., Fisheries and Illinois Agriculture Center and Department of Zoology, Southern Illinois University	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Environmental Pollution Volume 157, Issue 1, January 2009	http://www.sciencedirect.com/science/article/pii/S026974 9108003527	Sediment and Water	Pyrethroid insecticides
Weston et al., 2009b	Weston, Donald P., You, Jing, Harwood, Amanda D., Lydy, Michael J. 2009	Department of Integrative Biology, UC Berkeley, Department of Biochemistry, Chemistry and Physics, University of Central Missouri, Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University	Whole Sediment Toxicity Identification Evaluation Tools For Pyrethroid Insecticides: III. Temperature Manipulation	Environmental Toxicology and Chemistry Vol. 28 No. 1, 2009	http://www.ncbi.nlm.nih.gov/pubmed/18717618	Sediment	Pyrethroid Insecticides
Weston Solutions Inc., 2004	Weston Solutions Inc., January, 2004	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wg_monitoring.ht	Water	Organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2005	Weston Solutions Inc., January, 2005	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2003-2004 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wg_monitoring.ht ml	Water	Organophosphorus pesticides, general chemistry, trace metals. toxicity
Weston Solutions Inc., 2006a	Weston Solutions Inc., January, 2006	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2004-2005 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wg_monitoring_04- 05report.html	Water	Organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2006b	Weston Solutions Inc., August, 2006	County of San Diego and Copermittees	Toxicity Identification Evaluation (TIE) of County of San Diego and Copermittees Chollas Creek Stormwater Sample		www.projectcleanwater.org/pdf/science_mon/05- 06monitoring/appendix_i_tie.pdf	Water, sediment	Pyrethroids, organophosphorus pesticides, general chemistry, trace metals
Weston Solutions Inc., 2007a	Weston Solutions Inc., January, 2007	San Diego County Municipal Copermittees	San Diego County Municipal Copermittees 2005-2006 Urban Runoff Monitoring Report		http://www.projectcleanwater.org/html/wg_monitoring.ht ml	Water	Pyrethroids, organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2007b	Weston Solutions Inc., January 2007	City of San Diego and Chollas Creek Watershed Copermittees	Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277, Proposition 13 PRISM Grant Agreement No. 417-559-0, San Diego Region, Integrated Pest Management (IPM) Education and Outreach Project, 2004-2006 Water and Sediment Quality Monitoring Data Summary for Chollas Creek, Final Report			Water, sediment	Parentraid and OP pesticides, toxicity, general chemistry
		27 - 12 - 27				Water	
Weston Solutions Inc., 2007c	Weston Solutions Inc., August, 2007	City of San Diego	Chollas Creek Jurisdictional Boundary Water Quality Monitoring, Final Report				Organophosphorus pesticides, general chemistry, trace metals, toxicity
Weston Solutions Inc., 2008a Weston Solutions Inc., 2008b	Weston Solutions Inc., January, 2008 Weston Solutions Inc., January, 2008	San Diego County Municipal Copermittees City of San Diego and Chollas Creek Watershed Copermittees	San Diego County Municipal Copermittees 2006-2007 Urban Runoff Monitoring Report Chollas Creek Water Quality Protection and Habitat Enhancement. Grant Agreement Number: 04-015-559-0.		http://www.projectcleanwater.org/html/wg_monitoring.ht ml	Water Water	Pyrethroids, organophosphorus pesticides, general chemistry, trace metals, toxicity Organophosphate, pyrethroid pesticides, general chemistry
Weston Solutions Inc., 2008c	Weston Solutions Inc., January 11, 2008	Prepared for State Water Resources Control Board, in cooperation with Chollas Creek Watershed Municipal Copermittees, cities of Lemon Grove, LaMesa and San Diego, County of San Diego and Port of San Diego	Water Quality Monitoring, Final Report Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277, 2006-2007 Water Quality Monitoring Data Summary for Chollas Creek, Final Report		http://66.147.244.210/~projeec0/images/stories/Docs/Pu eblo/0607 chollas WQmonitoring report.pdf	Sediment and Water	Organophosphorus pesticides and pyrethroids
Woudneh and Oros, 2006a	Woudneh, Million B., Daniel R. Oros, 2006a	San Francisco Estuary Institute	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-Resolution Gas Chromatographyl High-Resolution Mass Spectrometry	J. Agric. Food Chem. 54: 6957–6962 (2006)	http://www.sfei.org/sites/default/files/441_CMR_Woudne h_Oros_Quantitative.pdf	Water	Pyrethroids, Pyrethrins, Piperonyl Butoxide
Woudneh and Oros, 2006b	Woudneh, Million B., Daniel R. Oros, 2006b	San Francisco Estuary Institute	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-resolution mass spectrometry	Journal of Chromatography A, 1135 (2006) 71-77	http://www.sfei.org/sites/default/files/439 CMR Woudne h_Oros_Pyrethroids.pdf	Sediment	Pyrethroids, Pyrethrins, Piperonyl Butoxide
You et al., 2008	You, Jing, Pehkonen, Sari, Weston, Donald P., Lydy, Michael J. 2008	Department of Integrative Biology, UC Berkeley, Department of Biochemistry, Chemistry and Physics, University of Central Missouri, Fisheries and Illinois Aquaculture Center and Department of Zoology, Southern Illinois University	Chemical Availability and Sediment Toxicity of Pyrethroid	Environmental Toxicology and Chemistry Vol 27 No 10 2008	http://onlinelibrary.wiley.com/doi/10.1897/08- 016.1/abstract	Sediment	Pyrethroid insecticides
Zeigler, 2006	Zeigler, Eric, February 10, 2006	Larry Walker Associates	Memorandum: Sacramento/Yolo Mosquito and Vector Control District Pyrethrin Water Quality Monitoring Data Summary		http://www.up3project.org/documents/FinalMemo+att02- 10-06.pdf	Water	Pyrethrins, Piperonyl butoxide
Zhang, 2010	Zhang, Xuyang, December 3, 2010	California Department of Pesticide Regulation, Environmental Monitoring Branch	Detections of Pyrethroid Insecticides in Surface Waters from Urban Areas of California, 1993-2010.		http://www.cdpr.ca.gov/docs/emon/surfwtr/swanalysisme mo/memo_zhang_urban%20py%20report_dec310.pdf	Sediment and Water	Pyrethroid Insecticides

Toxicity data?	Source Type	Geographic Area	Monitoring Location(s)	Notes/Results	Study Date(s)	Toxicity Testing Species/Approach	Most commonly found current-use pesticide(s)
Yes	Surface waters	Sacramento San Joaquin Estuary	Region 5	4 water samples (0.5% of total) were acutely toxic to Hyalella; 2 of these had < 50% survival. Addition of PBO increased acute toxicity in 7 ambient samples (0.9% of total) suggesting the presence of pyerhroid insecticides. Three of these contained detectable concentrations of pyethroids: cypermethrin , bifenthrin, lambda-cyhalothrin, and permethrin.	January 1, 2008 to December 31, 2009	H. azteca, larval delta smelt (Hypomesus transpacificus), and fathead minnows (Pimephales promelas)	Although TIE indicated that pyrethroid insecticides were the dominant toxicants, pyrethroids were mostly below detection limits.
Yes	Surface waters	Sacramento San Joaquin Estuary	15-16 sites located in large channels and main-stem rivers.	Significant amphipod mortality observed in 5.6% of ambient samples. Prethod insecticides were detected at potentially look concentrations. Overall, results of this study identified specific area and contaminants of concern and showed that water in the Northern S3.2 Estuary was at times acutely look to sensitive inventionates. Water quality in the Sacramento San Joaquin Delta and Estuary is characterized by large geographic and seasonal viration. Pyrethoid concentrations detected in this study most likely underestimate those present in the field.	2006-2007	H. azleca	
Yes		Northern California		The enzymes show considerable ability to mitigate the toxicity of pesticides in water, most notably, cyfluthrin.	2008-2009	H. azteca	
Yes		Northern California	Ulatis Creek (Vacaville), White Slough Drain (San Joaquin River), New Hope Tract Drain (Mokelumne	Focused TIE procedure using manipulations specifically designed to identify pyrethroid or chlorpyrifos toxicity was successful in identifying cause of toxicity in a variety of urban and		H. azteca	
Yes		Northern California	river) Ulatis Creek, Alamo Creek, San Joaquin River, American River, Sacramento River	agricultural settings Urban rundf samples exhibited toxicity to Hysfella and contained pyrethroids at concentrations sufficient to cause acute toxicity. Urban inputs repeatedly caused toxicity in Ulatis and Alamo Creeks and along urbanized readers of the American and Sacramento Rivers, with pyrethroids found at sufficient levels to cause the toxicity.	2009	H. azteca	Bifenthrin
Yes	Urban creeks and storm drains, urban river	Central Valley	American River, and urban creeks, sumps and drains in Sacramento discharging to the American River	In the 23 samples collected at stations 3 and 4 during storm events, 35% caused mortality to H. azteca, and 52% were toxic based on the swimming endpoint.	2009-2010	H. azteca	Bifenthrin
Yes	Urban creeks	Placer County	22 sites in Pleasant Grove Creek watershed, Roseville	Pyrethroids implicated in TIEs	19-Oct-05	H. azteca	Bifenthrin, Permethrins
Yes			Urban creeks - Sacramento	Pyrethroids implicated in TIEs	26-Jul-06		
Yes		Northern California	Drains in Roseville, CA and Elk Grove, CA	Stormwater runoff is responsible for greater transport of pyrethroids to urban surface waters than is summer irrigation runoff. Both winter and summer inputs present risks to aquatic life and challenges for mitigation	2006-2007	H. azteca	Bifenthrin
Yes		Northern California and Tennessee	20 creeks in Northern California and 8 urban watercourses in Tennessee	Dependence of pyrethroid toxicity on temperature has important ramifications for predicting environmental effects; the standard lab temperature of 23C dramatically underestimates risk to resident fauna during cooler months. Testing at 15C provides a more realistic assessment of toxic effects.		H. azteca	Bifenthrin
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits	1/1/2004		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits	1/1/2005		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bav)	San Diego County	12 sites - Agua Hedionda Creek	Long Term Program, toxicity trends, adaptation to changing conditions and permits	1/1/2006	C. dubia, H. azteca, and Selenastrum	
Yes; TIEs	Receiving Waters (Urban Creeks, Rivers, Estuary, Lagoon, Bay)	San Diego County	Chollas Creek	Pyrethroids implicated in TIEs	Aug. 2006		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lacoon, Bav)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits			
Yes	Laguon, bay) Receiving Water, Urban Creek	San Diego County			Jan. 2007		
Yes	Receiving Water, Urban Creek	San Diego County			Aug. 2007		
Yes	Receiving Waters (Urban Creeks, Rivers, Estuary, Lacoon, Bav)	San Diego County		Long Term Program, toxicity trends, adaptation to changing conditions and permits			
No	Receiving Water, Urban Creek	San Diego County			Jan. 2008		
Yes	Receiving Waters (Urban Creek, Bay)	San Diego County	Chollas Creek	Synthetic pyrethroids were detected at concentrations above published LC50s for Hyalella azleca during all three monitoring events during the 2006-2007 monitoring season.	2006-2007	H. azteca	Bifenthrin
No		SF Bay Area	Methods development, w/data from SF Bay tributaries	Delta/tralomethrin and permethrin detected in 4/5 tributaries	April, 2005		
No		SF Bay Area	Methods development, w/data from SF Bay tributaries	8 pyrethroids detected, up to 17.6 ng/g; at least 2 pyrethroids detected in 4/5 tributaries; PBO detected in all samples	April, 2005		
Yes		Northern California	American River, Weber Creek near Folsom Lake, CA	Tenax extraction better explained the low toxicity of pyrethroid concentration in sediment in 17 selected samples. Adsorption to sand particles might play a controlling role in pyrethroid bioavailability and, in turn, sediment toxicity to benthic invertebrates.	2004-2008	H. azteca	
Yes	River, urban pond, urban creeks	Central Valley		Pyrethrins detected in 9 of 26 samples, at 5 of 10 sites, following aerial spraying	10-Feb-06		
No		Northern California		Analysis of 8,834 water samples and 2.010 sediment samples from DPR database (1993- 2010) showed Billenthrin was detected in 85.2% of sediment samples and 73.1% of water samples. Further research on toxicity of samples to be investigated.	1993-2010		Bifenthrin

Appendix B: "Results Summaries by Geography" Table

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
Northern/Central Cali	ifornia					
Central and Northern California	94 samples from central and northern CA		Trimble et al., 2009	2008	Sediment chemistry; H. azteca, sediment toxicity	Bifenthrin and permethrin occurred in over 90% of the samples
Northern California	17 sites incl. creeks and sloughs: Gilsier Slough, Elk Bayou, Owens Creek, Del Puerto Creek, Spring Creek, Chicken Ranch Slough, Lauterwasser Creek, Morrison Creek, Kirker Creek, Strong Ranch Slough, Arcade Creek, Reclamation Ditch, Glen Echo Creek		You et al., 2008	2004-2008	Sediment chemistry; H. azteca, sediment toxicity	8 of 17 samples had mortality rates greater than 50% (2 were at 100%)
Humboldt County	Jane's Creek Meadows	1	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Toxic at 15° and 23°C
Sonoma County	Bodega Bay/Suburban watershed	1	Kuivila and Smalling, 2007	2006-2007	Tissue analysis (crab embryos)	Bifenthrin and cyfluthrin detected in shore crab embryos (tissue analysis)
Sonoma County	Bodega Bay	1	Smalling et al., 2010	2005-2006	Crab tissue analysis	Cyfluthrin was measured at 50x the level of any other insecticide
Sonoma County	Hinebaugh Creek	1	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C
Sonoma County	Ducker Creek	1	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C
Tahoe/Lahontan Area	Truckee River Swale	6	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C
Tahoe/Lahontan Area	Tahoe Keys	6	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C
Fahoe/Lahontan Area	Mammoth Creek	6	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Toxic at 15° and 23°C
Placer County	Roseville Drain	5	Weston et al., 2009a	2006-2007	Sediment & water chemistry; H. azteca, sediment toxicity	Estimated 85 mg of bifenthrin discharged from a drain in dry season - could contaminate 8.5 tons of sediment to the H. azteca LC50
Placer County	Pleasant Grove Creek	5	Weston et al., 2009a	2006-2007	Sediment & water chemistry; H. azteca, sediment toxicity	Estimated 85 mg of bifenthrin discharged from a drain in dry season - could contaminate 8.5 tons of sediment to the H. azteca LC50
Roseville	Dry Creek	5	Holmes, 2004	April, 2003	Sediment chemistry	Permethrin detected at 8.1 ng/g (sediment)
Roseville	Pleasant Grove Creek	5	Weston et al., 2005	2004	<i>H. azteca</i> , sediment toxicity and bioassessment (field abundance)	Most sites toxic; 9 of 21 had >90% mortality
Roseville	Kaseberg Creek	5	Weston et al., 2005	2004	<i>H. azteca</i> , sediment toxicity and bioassessment (field abundance)	Most sites toxic
Roseville	South Branch	5	Weston et al., 2005	2004	<i>H. azteca</i> , sediment toxicity and bioassessment (field abundance)	All sites toxic
Placer County	Pleasant Grove Creek, Dry Creek	5	Ensminger and Kelley, 2011b	2009-2010	Water and sediment chemistry	95% of water samples in this study contained at least one pesticide; multiple detections were common. Bifenthrin, malathion, carbaryl, and fipronil were common detected. 75% of the samples had 2 detected pesticides.
Sacramento County	Sacramento River, Alder/Willow Creek	5	Ensminger and Kelley, 2011b	2009-2010	Water and sediment chemistry	95% of water samples in this study contained at least one pesticide; multiple detections were common. Bifenthrin, malathion, carbaryl, and fipronil were commor detected. 75% of the samples had 2 detected pesticides.
Sacramento	Arcade Creek (1)	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	1/1 sample not toxic
Sacramento	Arcade Creek (2)	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	4/4 samples toxic (1 at >95% mortality)
Sacramento	Chicken Ranch Slough	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	2/4 samples toxic
Sacramento	Curry Creek	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	3/3 samples acutely toxic (>90% mortality)
Sacramento	Elder Creek	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	3/3 samples toxic
Sacramento	Laguna Creek (1)	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	4/4 samples not toxic
Sacramento	Laguna Creek (2)	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	2/2 samples acutely toxic (>90% mortality)
Sacramento	Laguna Creek (3)	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	1/1 sample toxic
Sacramento	Strong Ranch Slough	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	4/4 samples toxic (3 at >70% mortality)
Sacramento	Willow Creek	5	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	1/1 sample not toxic
Sacramento	Urban creeks	5	Weston et al., 2006	August, 2005	H. azteca, sediment toxicity	Most sites toxic; toxicity enhanced by PBO delivered from aerial spraying for mosquito control.
Sacramento	Elder Creek	5	Bacey and Spurlock, 2005	2002-2004	Water and sediment chemistry	Bifenthrin in water at 27.5 ppt + 1 "trace" detect; numerous OPs, herbicides det. in water.
	Elk Grove Creek	5	Bacey and Spurlock, 2005	2002-2004	Water and sediment chemistry	1 "trace" bifenthrin detwater; 1 "trace" permethrin detsediment; numerous OPs,
Sacramento						herbicides-water.
	Elk Grove Creek	5	Aqua-Science, 2007	Feb., 2007	C. dubia, water toxicity	Highly toxic
Sacramento Sacramento Sacramento		5 5	Aqua-Science, 2007 Aqua-Science, 2007	Feb., 2007 Feb., 2007 2006-2007	<i>C. dubia</i> , water toxicity Water chemistry	

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
Sacramento	American River, Arcade Creek, Chicken Ranch Slough, Cripple Creek, Elder Creek, Laguna Creek, Land Park Pond, Morrison Creek	5	Zeigler, 2006	August, 2005	Water chemistry	Pyrethrins detected in 9 of 26 samples (water) immediately after aerial spraying for mosquito control
Sacramento County	San Joaquin River and tributaries	5	Hladik et al., 2009	2008	Sediment chemistry	Bifenthrin found in 100% of samples (maximum of 51 ng/g)
Sacramento County	Arcade Creek near Del Paso Heights	5	Hladik and Kuivila, 2012	2009	Sediment chemistry; H. azteca, sediment toxicity	Bifenthrin was the most frequently detected and was found in over half (58%) of the sediment samples.
Sacramento County	15-16 sites located in Sacramento San Joaquin Estuary	5	Werner et al., 2010b	2006-2007	Water chemistry; H. azteca, water toxicity; TIEs	5.6% of 623 samples showed significant mortality
Sacramento County	Northern Sacramento-San Joaquin Estuary	5	Werner et al., 2010a	2008-2009	Water chemistry; water toxicity testing with H. azteca, delta smelt (H. transpacificus), and fathead minnows (Pimephales promelas); partial TIEs	Pyrethroids detected in 21% of samples; less than 1% of samples were toxic. Pyrethroid concentrations in this study most likely underestimate those present in the field.
Sacramento County	Natomas STA2	5	Sacramento County, 2011	2008-2010	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Arcade Creek at Watt Avenue	5	Sacramento County, 2011	2008-2011	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Laguna Creek at Franklin	5	Sacramento County, 2011	2008	Sediment chemistry	Bifenthrin was detected in urban in receiving water sediments.
Sacramento County	Willow Creek at Blue Ravine Road	5	Sacramento County, 2011	2008-2011	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Strong Ranch Slough	5	Sacramento County, 2011	2009-2010	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Sump 111	5	Sacramento County, 2011	2009-2010	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Laguna Creek at Hwy 99	5	Sacramento County, 2011	2009-2011	Water and sediment chemistry	Pyrethroids were commonly detected in urban runoff discharges and receiving waters, and very frequently detected in receiving water sediments.
Sacramento County	Storm Drain Site SA-28 (Sacramento)	5	Weston and Jackson, 2009	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	Pyrethroid concentrations exceeded their respective LC50s in the urban runoff sample; various treatments were evaluated for use in TIEs
San Joaquin County	Storm Drain Site "WR" (Stockton)	5	Weston and Jackson, 2009	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	Pyrethroid concentrations exceeded their respective LC50s in the urban runoff sample; various treatments were evaluated for use in TIEs
Sacramento County	American River	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	6 of 7 urban area wet weather receiving water samples were toxic to H. azteca
Sacramento County	Sacramento River	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	5 of 6 urban area wet weather receiving water samples were toxic to H. azteca
Sacramento County	Elk Grove Drain	5	Weston et al., 2009a	2006-2007	Sediment & water chemistry; H. azteca, sediment toxicity	Bifenthrin presents the greatest risk to H. azteca, and presumably other sensitive aquatic life.
Sacramento County	American River	5	Weston and Lydy, 2012	2009-2010	Water chemistry; H. azteca, water toxicity; TIEs	In the 23 samples collected at stations 3 and 4 during storm events, 35% caused mortality to H. azteca, and 52% were toxic based on the swimming endpoint.
Solano County	Alamo Creek	5	Weston and Jackson, 2009	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	Pyrethroid concentrations exceeded their respective LC50s in the urban runoff sample; various treatments were evaluated for use in TIEs
Solano County	Alamo Creek	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	2 of 2 urban area wet weather receiving water samples were toxic to H. azteca with 100% mortality
Solano County	Ulatis Creek	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	2 of 2 urban area wet weather receiving water samples were toxic to H. azteca
Contra Costa County	Marsh Creek	5	Phillips et al., 2010	2008-2010	TIE analysis using pyrethroid-contaminated sediments; chemical testing for pyrethroids	Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
Contra Costa County	Kirker Creek	2	Hall et al., 2007	Spring, 2006	Bioassessment, chemical analysis	Benthic biotic metrics correlate to pyrethroids and physical habitat
Contra Costa County	Stege Marsh	2	Smalling et al., 2010	2005-2006	Crab tissue	Only bifenthrin and permethrin were detected, and at a relatively low-level
Contra Costa County	Stege Marsh	2	Kuivila and Smalling, 2007	2006-2007	Tissue analysis (crab embryos)	Bifenthrin and permethrin detected in shore crab embryos (tissue analysis)
Contra Costa County	Grayson Creek	2	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	50% of the sampled waters in this study had three or more detected pesticides, and 25% had 6 or more. Bifenthrin, fipronil, and diuron were detected in water at concentrations that could potentially be toxic to aquatic life.
Alameda County	Martin Canyon/Koopman Canyon Creek	2	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	50% of the sampled waters in this study had three or more detected pesticides, and 25% had 6 or more. Bifenthrin, fipronil, and diuron were detected in water at concentrations that could potentially be toxic to aquatic life.
Alameda County	Glen Echo Creek	2	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	2/2 samples toxic
Contra Costa County	Kirker Creek	2	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	3/3 samples toxic (2 at >95% mortality)
Contra Costa County	Lauterwasser Creek	2	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	1/3 samples toxic
contraction and a county		-		200 - 2000		· · · · · · · · · · · · · · · · · · ·

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
City of Oakland	Lion Creek	2	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	1/2 samples toxic
Contra Costa County	Pine Creek	2	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	1/1 sample toxic (>95% mortality)
Alameda County	San Leandro Creek	2	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	2/2 samples not toxic
Contra Costa County	San Pablo Creek	2	Amweg et al., 2006	2004-2005	H. azteca, sediment toxicity	2/2 samples not toxic
Contra Costa County	Kirker Creek	2	SFBRWQCB, 2007	2003	H. azteca, sediment toxicity	Highly toxic; 100% mortality
San Mateo	San Mateo Creek	2	SFBRWQCB, 2007	2003	H. azteca, sediment toxicity	Highly toxic; 82% mortality compared to control
Alameda County	Castro Valley Creek	2	Ruby, 2005	2005	USEPA 3 spp., water toxicity	Toxicity: fathead minnow & C. dubia chronic in Feb., C. dubia acute in April; no pyrethroids detected in water
Contra Costa County	Rheem Creek	2	Ruby, 2005	2005	USEPA 3 spp., water toxicity	Toxicity: C. dubia chronic in March; no pyrethroids detected in water
Palo Alto	San Francisquito Creek	2	Ruby, 2005	2005	USEPA 3 spp., water toxicity	Toxicity: C. dubia chronic in Feb.; no pyrethroids detected in water
Santa Clara County	Coyote Creek (fresh)	2	Lowe et al., 2007	11/04; 04/05	H. azteca, sediment toxicity	Toxic in April; bifenthrin detected April and November
Santa Clara County	Coyote Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	E. estuarius, sediment toxicity	Not toxic; bifenthrin detected in April
Napa County	Napa River (fresh)	2	Lowe et al., 2007	11/04; 04/05	H. azteca, sediment toxicity	Not toxic; bifenthrin detected in November
Napa County	Napa River (tidal)	2	Lowe et al., 2007	11/04; 04/05	E. estuarius, sediment toxicity	Not toxic; bifenthrin detected in April
Petaluma County	Petaluma River (fresh)	2	Lowe et al., 2007	11/04; 04/05	H. azteca, sediment toxicity	Not toxic; bifenthrin detected in November
Marin County	Petaluma River (tidal)	2	Lowe et al., 2007	11/04; 04/05	E. estuarius, sediment toxicity	Not toxic; no pyrethroid detects
San Leandro	San Lorenzo Creek (fresh)	2	Lowe et al., 2007	11/04; 04/05	H. azteca, sediment toxicity	Toxic in November; bifenthrin & permethrin det. November, bifenthrin det. April
San Leandro	San Lorenzo Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	E. estuarius, sediment toxicity	Not toxic; no pyrethroid detects
San Mateo	San Mateo Creek (fresh)	2	Lowe et al., 2007	11/04; 04/05	H. azteca, sediment toxicity	Highly toxic in Nov. and April; 4 pyrethroids detected November
San Mateo	San Mateo Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	E. estuarius, sediment toxicity	Highly toxic in Nov. and April; bifenthrin & permethrin det. Nov., bifenthrin det. April
Solano County	Suisun Creek (fresh)	2	Lowe et al., 2007	11/04: 04/05	H. azteca, sediment toxicity	Not toxic; bifenthrin & permethrin detected in November
Solano County	Suisun Creek (tidal)	2	Lowe et al., 2007	11/04; 04/05	E. estuarius, sediment toxicity	Not toxic; no pyrethroid detects
Santa Clara County	Coyote Creek	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Bifenthrin, delta/tralomethrin and permethrin detected
Petaluma County	Petaluma River	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Delta/tralomethrin and permethrin detected
San Mateo	San Mateo Creek	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Delta/tralomethrin and permethrin detected
San Leandro	San Lorenzo Creek	2	Woudneh and Oros, 2006a	April, 2005	Water chemistry	Delta/tralomethrin and permethrin detected
Santa Clara County	Coyote Creek	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Bifenthrin, delta/tralomethrin, flucythrinate, L-cyhalothrin and permethrin detected
Petaluma County	Petaluma River	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Delta/tralomethrin and permethrin detected
San Mateo	San Mateo Creek	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Bifenthrin, cyfluthrin, cypermethrin, delta/tralomethrin, L-cyhalothrin and permethrin detected
San Leandro	San Lorenzo Creek	2	Woudneh and Oros, 2006b	April, 2005	Sediment chemistry	Bifenthrin, delta/tralomethrin, L-cyhalothrin, phenothrin and permethrin detected
SF Bay Area	Coyote Creek	2	Holmes et al.,. 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C
SF Bay Area	Blue Rock Springs	2	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
SF Bay Area	Corte Madera Creek	2	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Toxic at 15° and 23°C
SF Bay Area	American Canyon Creek	2	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C
SF Bay Area	Rheem Creek	2	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
SF Bay Area	Stevens Creek	2	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C
SF Bay Area	Suisun Slough Tributary	2	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
SF Bay Area	Quimby Creek	2	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
Monterey County	Gabilan Creek	3	Ng et al., 2008	2005	Sediment chemistry; H. azteca, sediment toxicity	1 of 3 samples toxic (83% mortality)
Monterey County	Natividad Creek	3	Ng et al., 2008	2005	Sediment chemistry; H. azteca, sediment toxicity	3 of 3 samples toxic (2 at 90% and 96% mortality)
Monterey County	Alisal Creek	3	Ng et al., 2008	2005	Sediment chemistry; H. azteca, sediment toxicity	4 of 7 samples toxic (1 at 84% and 1 at 100% mortality)
San Joaquin River Valley	San Joaquin River	5	Weston and Lydy, 2010b	2008-2009	Water chemistry; H. azteca, water toxicity; TIEs	1 of 5 urban area wet weather receiving water samples was toxic to H. azteca
San Joaquin River Valley	San Joaquin River	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 90%)
San Joaquin County	Hospital Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	5 of 6 samples had mortality rates from 94-100%
San Joaquin County	Ingram Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	5 of 6 samples had mortality rates from 90-100%
Stanislaus County	Stanislaus Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 91%)
Stanislaus County	Tuolumne Creek	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 93%)

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
Merced County	Merced River	5	Domagalski et al., 2010	2007	Sediment & water chemistry; H. azteca, sediment toxicity	100% of samples were non-toxic (lowest survival rate was 85%)
Southern California						
Southern California	Southern California Bight		Bay et al., 2011	2008	E. estuarius and M. galloprovincialis, sediment toxicity; TIEs	36% of samples (80 of 222) were toxic to E. estuarius at some level; 23% of samples (42 of 180) were toxic to Mytilus galloprovincialis at some level;
Carpinteria	Carpinteria Salt Marsh	4	Anderson et al., 2005	2004-2005	Sediment chemistry	Bifenthrin and permethrin detected in sediment (2-3 ug/kg dry weight)
Calleguas Creek Watershed	Conejo Creek/Howard Rd.	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	Cyfluthrin, cypermethrin, deltamethrin detects in surface water (4/21/04)
Calleguas Creek Watershed	Revolon Slough/Wood Rd.	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	1 permethrin detection in sediment
Calleguas Creek Watershed	Conejo Creek/Adolfo Rd.	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	1 permethrin detection in sediment
Calleguas Creek Watershed	N. Fork Arroyo Conejo u/s of Hill Canyon Treatment Plant	4	Calleguas Creek WMP, 2008	2003-2004	Water and sediment chemistry	1 bifenthrin detection in sediment
Ventura County	Santa Clara River watershed	4	Delgado-Moreno et al., 2011	2009	H. azteca/sediment toxicity	94% of samples showed toxic values for bifenthrin
Ventura County	Calleguas Creek watershed	4	Delgado-Moreno et al., 2011	2009	C. dubia/water toxicity	17 of 34 samples were highly toxic (15 showed 100% mortality)
Ventura County	Santa Clara River watershed	4	Delgado-Moreno et al., 2011	2009	H. azteca/sediment toxicity	50% of samples showed toxic values for bifenthrin
Ventura County	Calleguas Creek watershed	4	Delgado-Moreno et al., 2011	2009	C. dubia/water toxicity	7 of 19 samples showed mortality ranging from 10-100%
Ventura County	Calleguas Creek	4	Ventura County, 2011	2008-2010	Water and sediment chemistry	Bifenthrin was detected in 131 of 222 samples (59%).
Los Angeles	LA River site 412LAR024	4	Werner et al., 2006	July, 2005	USEPA 3 spp., water toxicity	Acute toxicity to C. dubia in Region 4, New River sites were acutely toxic to H. Azteca, in region 9 half of the water samples were solely toxic to C. dubia.
Los Angeles County	Arroyo Seco Channel, Ballona Freshwater Marsh, Big Canyon Marsh, Brayley Wetlands, Camino Real, Crown Valley, Dairy Mart Ponds, IRWD Carlson Marsh, IRWD Pond A, IRWD Pond 6, Lewis Center Marsh, Madrona Marsh, Mojave River Marsh, Old Mission Creek, San Elijo Marsh, Sespe Creek, Sims Pond, UCI Pond 11, UCI Pond 3, Waleta Street Marsh, Wet CAT East, Wet CAT North		Brown et al., 2010	2007	Sediment chemistry; H. azteca, sediment toxicity	10 of 23 sites were toxic
Los Angeles County	Ballona Creek	4	Lao et al., 2010	2007-2008	toxicity; TIEs	61% of samples were toxic to Eohaustorius estuarius
Los Angeles County	Ballona Creek Estuary	4	Bay et al., 2010	2007-2010	Sediment chemistry; E. estuarius, sediment toxicity; TIEs	100% of samples included at least one pyrethroid that could cause 100% mortality
Los Angeles County	Bouquet Canyon Creek	4	Phillips et al., 2010	2008-2010		Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2005-2006	Amphipod (Eohaustorius), sediment toxicity	4 of 6 samples mod. toxic; 1 of 6 samples highly toxic
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2005-2006	Sediment Chemistry	Bifenthrin detected 1/6 samples
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2005-2006		1 of 14 samples mod. toxic; 10 of 14 samples highly toxic
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2005-2006	Sediment Chemistry	Bifenthrin detected 9 of 14 samples; Permethrin detected 1 of 14 samples
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2006-2007		2 of 9 samples mod. toxic; 2 of 9 samples highly toxic
Huntington Harbor	Huntington Harbor tributary sites	8	Orange County, 2008	2006-2007	Sediment Chemistry	Bifenthrin detected 6 of 9 samples
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2006-2007		6 of 25 samples mod. toxic; 13 of 25 samples highly toxic
Newport Harbor	Newport Harbor tributary sites	8	Orange County, 2008	2006-07	Sediment Chemistry	Bifenthrin detected 16 of 27 samples; Permethrin detected 3 of 27 samples
San Diego Creek/ Newport Bay	6 residential drainages, 7 commercial/residential tributaries	8	Budd et al., 2007	April/May and August, 2005	Sediment chemistry	Pyrethroids detected at all sites; bifenthrin det. 95% of dry weather, 100% of wet weather samples.
Orange County	6 urban runoff sites	8	Levine et al., 2005	1999-2002	Water chemistry	Bifenthrin detected in several samples (water), part of Red Imported Fire Ant pesticide study
Orange County	2 Urban runoff sites	8	Bondarenko et al, 2007	2006-2007	Sediment chemistry	7 pyrethroids detected (sediment), both sites (bifenthrin up to 279.7, cyfluthrin up to 66.7 ng/g)
Orange County	Salt Creek	8	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	Bifenthrin was detected in 56% of all samples; 20% of samples were above 50% survival benchmark (includes Orange County and San Diego County stations)

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
Orange County	Wood Canyon Creek	8	Ensminger and Kelley, 2011a	2008-2009	Water and sediment chemistry	Bifenthrin was detected in 56% of all samples; 20% of samples were above 50% survival benchmark (includes Orange County and San Diego County stations)
Orange County	Peters Canyon Wash	8	Phillips et al., 2010	2008-2010	TIE analysis using pyrethroid-contaminated sediments; chemical testing for pyrethroids	Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
Orange County	Salt Creek and Wood Creek watersheds	8	Budd, 2011	2009-2011	Water and sediment chemistry	In preliminary results, bifenthrin and fipronil detected in most water samples in both watersheds; fipronil degradates and other pyrethroids detected less frequently.
Riverside County	Murrieta Creek	9	Riverside County et al., 2007	2004-2007	H. azteca, water toxicity	5 of 8 samples toxic
Riverside County	Temecula Creek	9	Riverside County et al., 2007	2004-2007	H. azteca, water toxicity	5 of 8 samples toxic
Riverside County	Tributary Stations, Santa Margarita Region. IC/ID urban outfall stations	9	Riverside County, 2008	12/7/2007	Pyrethroids in water	Detects: Permethrin 2 of 4 samples
Riverside County	Tributary Stations, Santa Margarita Region. IC/ID urban outfall stations	9	Riverside County, 2008	Jan 26-27, 2008	Pyrethroids in water	Detects: Bifenthrin 3 of 4 samples, Permethrin 1 of 4
Riverside County	Triad Stations, Santa Margarita Region (receiving water stations in Temecula and Murrieta)	9	Riverside County, 2008	1/27/2008	Pyrethroids in water	Detects: Bifenthrin 4 of 4 samples, Permethrin 3 of 4
Riverside County	Santa Margarita Region	9	Riverside County, 2008		H. azteca, water toxicity	Phase II TIE confirms pyrethroids likely cause of toxicity
Riverside County	Cole Creek	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Long Canyon Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Murrieta Creek	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Santa Gertrudis Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Temecula Creek	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Warm Springs Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Riverside County	Redhawk Channel	9	Riverside County, 2011	2010-2011	Water chemistry	Pyrethroids were commonly detected in receiving waters.
Orange County	San Juan Creek	9	Holmes et al.,. 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
San Diego County	San Marcos Creek	9	Holmes et al.,. 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
San Diego County	Cottonwood Creek	9	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
San Diego County	Penasquitos Creek	9	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
City of San Diego	Switzer Creek	9	Holmes et al., 2008	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C and 23°C
San Diego County	Chollas Creek Switzer Creek	9	Holmes et al., 2008 Anderson et al., 2008a	2006-2007	H. azteca, sediment toxicity	Highly toxic at 15°C; toxic at 23°C Highly toxic (toxic at 10% dilution)
City of San Diego City of San Diego	Switzer Creek	9	Anderson et al., 2008a	2004-2005 2004-2005	<i>E. estuarius</i> , sediment toxicity Sediment chemistry	Bifenthrin, cyfluthrin, permethrin detected in sediment at >4 TUs (sum, OC normalized)
San Diego County	Cottonwood Creek	9	Phillips et al., 2010	2008-2010	TIE analysis using pyrethroid-contaminated sediments; chemical testing for pyrethroids	Use of whole sediment and interstitial water TIEs and chemical analysis provided multiple lines of evidence that pyrethroids contributed to toxicity. Pyrethroids detected in each sample.
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2006b	2005-2006	H. azteca, water toxicity	67% of samples were acutely toxic
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2006a	2004-2005	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella acute toxicity, 1st event
San Diego County	San Dieguito River	9	Weston Solutions Inc., 2006a	2004-2005	C. dubia, H. azteca, Selenastrum, water toxicity	Ceriodaphnia chronic toxicity, 1st event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2006a	2004-2005	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella: acute toxicity, 1st event. Ceriodaphnia: chronic tox., 1st event.
San Diego County	Tijuana River	9	Weston Solutions Inc., 2006a	2004-2005	C. dubia, H. azteca, Selenastrum, water toxicity	Ceriodaphnia: acute & chronic toxicity, all 3 events.
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2007a	2005-2006	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella acute toxicity, 2 events
San Diego County	San Dieguito River	9	Weston Solutions Inc., 2007a	2005-2006	C. dubia, H. azteca, Selenastrum, water toxicity	Ceriodaphnia: chronic tox., 2 events; Selenastrum toxicity, 2 events
City of San Diego	Tecolote Creek	9	Weston Solutions Inc., 2007a	2005-2006	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella: acute toxicity, 1 event. Ceriodaphnia: chronic tox., 1st event.
San Diego County	San Diego River	9	Weston Solutions Inc., 2007a	2005-2006	C. dubia, H. azteca, Selenastrum, water toxicity	Ceriodaphnia chronic toxicity, 1st event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2007a	2005-2006	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: chronic tox., 1st event.
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2007a	2005-2006	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin, cyfluthrin, & L- cyhalothrin all 3 events; Cypermethrin, danitol, permethrin, & piperonyl butoxide (PBO) 1-2 events. Bifenthrin & permethrin exceed 96-hr LC50 for H. Azteca.
San Diego County	Sweetwater River	9	Weston Solutions Inc., 2007a	2005-2006	C. dubia, H. azteca, Selenastrum, water toxicity	Selenastrum toxicity, 1st event

Geographic Area	Monitoring Location(s)	Water Board Region	Citation - Abbrev.	Study Date(s)	Principal Testing Approach	Test Results Summary
San Diego County	Tijuana River	9	Weston Solutions Inc., 2007a	2005-2006	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella: acute toxicity, 1st 2 events. Ceriodaphnia: acute & chronic, all 3 events.
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: acute & chronic tox., 1st event.
San Diego County	Agua Hedionda Creek	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin all 3 events; cyfluthrin & cypermethrin 2 events; L-cyhalothrin 1 event; diazinon, malathion all 3 events.
San Diego County	San Dieguito River	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Ceriodaphnia chronic tox., 2 events; Selenastrum tox. 1 event
San Diego County	Los Peñasquitos Creek	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Ceriodaphnia chronic toxicity, 1 event
San Diego County	Tecolote Creek	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin, all 3 events (0.013-0.210 µg/L); cyfluthrin & cypermethrin, 2 events; prallethrin, 1 event (0.183 µg/L)
San Diego County	San Diego River	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella toxicity, 1 event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: chronic tox., 1st event.
San Diego County	Chollas Creek - South Fork	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, water toxicity	Ceriodaphnia toxicity was 92% Chronic, 100% Acute, Hyalella toxicity was 90% Acute
San Diego County	Chollas Creek - North Fork	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, water toxicity	Ceriodaphnia toxicity was 94% Chronic, Hyalella toxicity was 49% Chronic, 90% Acute
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Bifenthrin, cyfluthrin, & cypermethrin: all 3 events (bifenthrin & cypermethrin > 96-hr LC50 for <i>H. azteca</i>). Esfenvalerate, fenvalerate, L-cyhalothrin, & prallethrin: 1-2 events. Diazinon & malathion: 1st event.
San Diego County	Tijuana River	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella: acute toxicity, all 3 events. Ceriodaphnia: acute & chronic, all 3 events.
San Diego County	Tijuana River	9	Weston Solutions Inc., 2008a	2006-2007	Stormwater chemistry: OP Pesticides & Pyrethroids	Detects: Diazinon > 0.27 μ g/L, all 3 events; Malathion > 0.43 μ g/L, 2 events.
Riverside County	Santa Margarita River	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella acute toxicity, 1 event
San Diego County	San Luis Rey River	9	Weston Solutions Inc., 2008a	2006-2007	C. dubia, H. azteca, Selenastrum, water toxicity	Hyalella toxicity, 1st event
San Diego County	Chollas Creek	9	Weston Solutions Inc., 2008c	2006-2007	H. azteca and C. dubia, water toxicity	66% of samples toxic to H. Azteca, 33% of samples toxic to C. Dubia
San Diego County	San Diego River and Lindo Lake	9	Ensminger and Kelley, 2011a	2008-2009	Sediment and water chemistry	Bifenthrin was detected in 56% of all samples; 20% of samples were above 50% survival benchmark (includes Placer County and Orange County stations)
San Diego County	Switzer Creek, San Diego Harbor	9	Anderson et al, 2010	2004	Sediment chemistry; E. estuarius, sediment toxicity	Pyrethroid pesticides at least partially responsible for sediment toxicity Bifenthrin, Cyfluthrin and Permethrin detected
Calexico	New River at Boundary	9	Werner et al., 2006	2005	H. azteca, water toxicity	Acute toxicity to H. azteca in May and October
Statewide California a	and Other Areas					
State of California	Sacramento to Orange County		Zhang, 2010	1993-2010	Summary of 18 years testing of 8,834 water samples and 2,010 sediment samples throughout the state of California	Bifenthrin detection rates of 85.2% and 73.1% detected in sediment and water respectively. Concentrations of 1,211 PPB in sediment and 6,121 PPT in water were the maximum concentrations detected.
Sacramento and SF Bay areas and Orange County	Alder Creek, Pleasant Grove Creek, Grayson Creek, Martin Canyon Creek, Koopman Canyon Creek, Salt Creek, Wood Creek	2, 5, & 8	Ensminger et al., 2012	2008-2011	Water and sediment chemistry analysis	32 different pesticides or degradates were detected above their analytical reporting limit. More than 90% of the water samples contained at least one pesticide. 50% of water samples contained 5 or more pesticides. Detection frequency, number of pesticides and concentration all increased during rain storms.
Sacramento and Orange County	Sacramento and Orange County residential storm drainages	2 & 8	Gan et al., 2012	2006-2008	Water chemistry	69 to 98 water samples were collected from each site spanning over 26 months. Fipronil was detected at 85% (N1) and 66% (N2) at the two northern California sites. In comparison, fipronil was found in nearly all samples that were taken from the four southern California neighborhoods.
U.S. Nationwide: Northeast, Midwest, South and West	 27 sites are a subset of 201 sites sampled as a part of NAWQA studies. These sites have adequate pesticide data for trend analysis. 		Ryberg et al., 2010	1992-2008	Water chemistry analysis for pesticides including pyrethroids and fipronil and its degradates.	Results indicate a widespread significant upward trends for fipronil and its degradation products, but no detections for pyrethroids. Fipronil found in higher levels during 2000-2008 may be the result of it replacing chlorpyrifos and diazinon

Appendix C: "Chemistry Results Summary" Table

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe Pesticide	e (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# Sites S	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean Median	Min	Max Notes
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Arcade Creek site 1	2004-2005 Bifenthrin		Dry	Sediment	Receiving	1	1	1	100%	s ng/g	Dry	4.6	4.6	4.6 Only one sample, no median calculated
			Arcade Creek site 1	2004-2005 Cyfluthrin		Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry			
			Arcade Creek site 1	2004-2005 Cypermethrin		Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry			
			Arcade Creek site 1	2004-2005 Deltamethrin		Dry	Sediment	Receiving	1	1	0	0%	b ng/g	Dry			
			Arcade Creek site 1	2004-2005 Esfenvalerate		Dry	Sediment	Receiving	1	1	0	0%	b ng/g	Dry			
			Arcade Creek site 1	2004-2005 L-Cyhalothrin		Dry	Sediment	Receiving	1	1	1	100%	b ng/g	Dry	1.4	1.4	1.4 Only one sample, no median calculated
			Arcade Creek site 1	2004-2005 Permethrin		Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry			
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Arcade Creek site 2	2004-2005 Bifenthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	15.0 Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005 Cyfluthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		1.1	5.9 Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005 Cypermethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.1 Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005 Deltamethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	2.8 Unable to determine number of detects or % detected, only range provided.
			Arcade Creek site 2	2004-2005 Esfenvalerate		Dry	Sediment	Receiving	1	4			ng/g	Dry			
			Arcade Creek site 2	2004-2005 L-Cyhalothrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.5 Unable to determine number of detects or % detected, only range provided.
	Pyrethroid insecticides and sediment toxicity in urban		Arcade Creek site 2	2004-2005 Permethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		5.6	16.9 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	creeks from California and Tennessee	Sacramento	Chicken Ranch Slough	2004-2005 Bifenthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		2.9	45.1 Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005 Cyfluthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	6.6 Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005 Cypermethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	4.1 Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005 Deltamethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	6.3 Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005 Esfenvalerate		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	3.6 Unable to determine number of detects or % detected, only range provided.
			Chicken Ranch Slough	2004-2005 L-Cyhalothrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.4 Unable to determine number of detects or % detected, only range provided.
	Pyrethroid insecticides and sediment toxicity in urban		Chicken Ranch Slough	2004-2005 Permethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	33.2 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	creeks from California and Tennessee	Sacramento	Curry Creek	2004-2005 Bifenthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		40.3	429.5 Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005 Cyfluthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		12.2	60.4 Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005 Cypermethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		17.9	30.6 Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005 Deltamethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		7.0	23.9 Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005 Esfenvalerate		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	4.4 Unable to determine number of detects or % detected, only range provided.
			Curry Creek	2004-2005 L-Cyhalothrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	7.0 Unable to determine number of detects or % detected, only range provided.
	Pyrethroid insecticides and sediment toxicity in urban		Curry Creek	2004-2005 Permethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		37.2	171.6 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	creeks from California and Tennessee	Sacramento	Elder Creek	2004-2005 Bifenthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		21.7	43.9 Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005 Cyfluthrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		14.0	35.3 Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005 Cypermethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		7.5	18.9 Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005 Deltamethrin		Dry	Sediment	Receiving	1	4			ng/g	Dry		4.0	5.1 Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005 Esfenvalerate		Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.3 Unable to determine number of detects or % detected, only range provided.

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe Pesticide (Analyte	Wet/Dr Weathe		Discharge/ t Receiving Water	# Sites S	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean Median	Min	Max Notes
			Elder Creek	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		1.4	3.1 Unable to determine number of detects or % detected, only range provided.
			Elder Creek	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		37.8	115.3 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Laguna Creek Site 1	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	4.1 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 1	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	4	0	0%	b ng/g	Dry			
			Laguna Creek Site 1	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	4	0	0%	b ng/g	Dry			
			Laguna Creek Site 1	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	4	0	0%	b ng/g	Dry			
			Laguna Creek Site 1	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	4	0	0%	b ng/g	Dry			
			Laguna Creek Site 1	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.5 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 1	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	5.6 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Laguna Creek Site 2	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		62.8	84.6 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		23.8	30.5 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		8.76	13.3 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		9.4	11.1 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry		1.0	3.6 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	3.8 Unable to determine number of detects or % detected, only range provided.
			Laguna Creek Site 2	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		31.5	69.1 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Laguna Creek Site 3	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	b ng/g	Dry	13.8	13.8	13.8 Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	b ng/g	Dry	3.9	3.9	3.9 Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	s ng/g	Dry	7.2	7.2	7.2 Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	1	1	100%	b ng/g	Dry	2.7	2.7	2.7 Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	1	1	100%	b ng/g	Dry	1.8	1.8	1.8 Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	b ng/g	Dry	2.2	2.2	2.2 Only one sample, no median calculated
			Laguna Creek Site 3	2004-2005 Permethrin	Dry	Sediment	Receiving	1	1	1	100%	s ng/g	Dry	30.0	30.0	30.0 Only one sample, no median calculated
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Morrison Creek	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		13.4	25.9 Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	19.2 Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		4.3	9.5 Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		3.4	5.4 Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.4 Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	3.2 Unable to determine number of detects or % detected, only range provided.
			Morrison Creek	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		26.1	73.0 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Strong Ranch Slough	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		8.0	89.8 Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		2.0	26.3 Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.63	15.0 Unable to determine number of detects or % detected, only range provided.

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe Pesticide (Analy	Wet/D te) Weath		Discharge/ t Receiving Water	# # Sites Sam			% etected		Sed. Unit Weight	Mean Median	Min	Max Notes
			Strong Ranch Slough	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	6.5 Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	3.9 Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	6.6 Unable to determine number of detects or % detected, only range provided.
			Strong Ranch Slough	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		9.5	93.9 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	Sacramento	Willow Creek	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	3.0	3.0	3.0 Only one sample, no median calculated
			Willow Creek	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	0			ng/g	Dry			
			Willow Creek	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.0	1.0	1.0 Only one sample, no median calculated
			Willow Creek	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	0			ng/g	Dry			
			Willow Creek	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	0			ng/g	Dry			
			Willow Creek	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	1.6	1.6	1.6 Only one sample, no median calculated
			Willow Creek	2004-2005 Permethrin	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	8.2	8.2	8.2 Only one sample, no median calculated
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	Glen Echo Creek	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		3.9	5.4 Unable to determine number of detects or % detected, only range provided.
			Glen Echo Creek	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	Unable to determine number of detects or % detected, only range provided. U= 3.5 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Glen Echo Creek	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	Unable to determine number of detects or % detected, only range provided. U= 1.1 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Glen Echo Creek	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			
			Glen Echo Creek	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			Unable to determine number of detects or % detected, only rance provided. U=
			Glen Echo Creek	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.9 undetected at 1 rugs. Substituted as 1/2 the detection imit (0.5 ng/g) Unable to determine number of detects or % detected, only range provided. U=
	Pyrethroid insecticides and sediment toxicity in urban		Glen Echo Creek	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	56.0 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
Amweg et al., 2006	creeks from California and Tennessee	East Bay, CA	Kirker Creek	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		11.5	19.9 Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		11.5	49.9 Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		7.3	9.8 Unable to determine number of detects or % detected, only range provided.
			Kirker Creek	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		13.4	57.0 Unable to determine number of detects or $%$ detected, only range provided.
			Kirker Creek	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			
			Kirker Creek	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		3.3	10.7 Unable to determine number of detects or % detected, only range provided.
	Pyrethroid insecticides and sediment toxicity in urban		Kirker Creek	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		18.4	39.7 Unable to determine number of detects or % detected, only range provided. Unable to determine number of detects or % detected, only range provided. U=
Amweg et al., 2006	creeks from California and Tennessee	East Bay, CA	Lauterwasser Creek	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	8.6 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g) Unable to determine number of detects or % detected, only range provided. U=
			Lauterwasser Creek	2004-2005 Cyfluthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	2.2 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Lauterwasser Creek	2004-2005 Cypermethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry			
			Lauterwasser Creek	2004-2005 Deltamethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		2.4	5.6 Unable to determine number of detects or % detected, only range provided.
			Lauterwasser Creek	2004-2005 Esfenvalerate	Dry	Sediment	Receiving	1	4			ng/g	Dry			Unable to determine number of detects or % detected, only range provided. U=
			Lauterwasser Creek	2004-2005 L-Cyhalothrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	1.5 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
	Pyrethroid insecticides and sediment toxicity in urban		Lauterwasser Creek	2004-2005 Permethrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		2.5	12.0 Unable to determine number of detects or % detected, only range provided. Unable to determine number of detects or % detected, only range provided. U=
Amweg et al., 2006	creeks from California and Tennessee	East Bay, CA	Lion Creek	2004-2005 Bifenthrin	Dry	Sediment	Receiving	1	4			ng/g	Dry		0.5	12.8 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	e Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# Sites	# Sample:	# s Detected	% I Detec			d. Unit 'eight	Mean	Median	Min	Max Notes
			Lion Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			1.9	16.9 Unable to determine number of detects or % detected, only range provided.
			Lion Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			2.8	11.7 Unable to determine number of detects or % detected, only range provided.
			Lion Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			1.1	1.9 Unable to determine number of detects or % detected, only range provided.
			Lion Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1		4			ng/g	Dry				
			Lion Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			0.5	Unable to determine number of detects or % detected, only range provided. U= 1.6 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			Lion Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			5.4	23.7 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	Pine Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1		1	1 1	100% 1	ng/g	Dry	11.1		11.1	11.1 Only one sample, no median calculated
			Pine Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1		1	D		ng/g	Dry				
			Pine Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1		1	D		ng/g	Dry				
			Pine Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1		1	1 1	100% 1	ng/g	Dry	2.2		2.2	2.2 Only one sample, no median calculated
			Pine Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1		1	D		ng/g	Dry				
			Pine Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1		1	1 1	100% 1	ng/g	Dry	2.0		2.0	2.0 Only one sample, no median calculated
			Pine Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1		1	1 1	100% 1	ng/g	Dry	2.3		2.3	2.3 Only one sample, no median calculated
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	San Leandro Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			3.9	8.6 Unable to determine number of detects or % detected, only range provided.
			San Leandro Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1		4			ng/g	Dry				
			San Leandro Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			1.8	5.3 Unable to determine number of detects or % detected, only range provided.
			San Leandro Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1		4			ng/g	Dry				
			San Leandro Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1		4			ng/g	Dry				
			San Leandro Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1		4		,	ng/g	Dry			1.3	3.3 Unable to determine number of detects or % detected, only range provided.
			San Leandro Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			2.8	14.0 Unable to determine number of detects or % detected, only range provided.
Amweg et al., 2006	Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee	East Bay, CA	San Pablo Creek	2004-2005	Bifenthrin	Dry	Sediment	Receiving	1		4			ng/g	Dry			3.0	8.1 Unable to determine number of detects or % detected, only range provided.
			San Pablo Creek	2004-2005	Cyfluthrin	Dry	Sediment	Receiving	1		4			ng/g	Dry				
			San Pablo Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	1		4			ng/g	Dry				
			San Pablo Creek	2004-2005	Deltamethrin	Dry	Sediment	Receiving	1		4		1	ng/g	Dry			1.4	3.4 Unable to determine number of detects or % detected, only range provided.
			San Pablo Creek	2004-2005	Esfenvalerate	Dry	Sediment	Receiving	1		4		1	ng/g	Dry				
			San Pablo Creek	2004-2005	L-Cyhalothrin	Dry	Sediment	Receiving	1		4		1	ng/g	Dry			0.5	Unable to determine number of detects or % detected, only range provided. U= 2.1 undetected at 1 ng/g. Substituted as 1/2 the detection limit (0.5 ng/g)
			San Pablo Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	1		4		1	ng/g	Dry			1.6	17.1 Unable to determine number of detects or % detected, only range provided.
Anderson et al., 2010	Evaluation of methods to determine causes of sedime toxicity in San Diego Bay, California USA	nt San Diego County	Switzer Creek	2004 2004	Bifenthrin Cyfluthrin	Dry	Sediment	Receiving	1		1				Dry Dry	23.9			
			Switzer Creek Switzer Creek Switzer Creek	2004 2004 2004	Cypermethrin Permethrin	Dry Dry Dry	Sediment Sediment	Receiving Receiving	1		1	0	0% 1	ng/g	Dry Dry Dry	183.0 135.0			
Aqua-Science, 2007	Acute Toxicity of Sacramento Area Urban Creeks to Ceriodaphnia Dubia	Sacramento	Elk Grove Creek	2007	Cyfluthrin	Dry	Water	Receiving	1		1			.9-9 Jg/L	,	0.136		0.136	0.136 Only one sample, thus one detect. Min and max values are the same, no median.
			Elk Grove Creek	2007	Deltamethrin	Dry	Water	Receiving	1		1	1 1	100% j	ug/L		0.023		0.023	0.023
			Elk Grove Creek Elk Grove Creek	2007 2007	L-Cyhalothrin Permethrin	Dry Dry	Water Water	Receiving Receiving	1		1			ug/L ug/L		0.008 0.027		0.008 0.027	0.008 0.027
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	Santa Clara River Watershed and Calleguas Creek Watershed		Fipronil	Wet	Water	Receiving	4		8	4	50% i	ng/L		6.36	1.45	0.50	19.00 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water			# tected D	% Detected		Sed. Unit Weight	Mean	Median	Min	Max Notes
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Desulfinyl	Wet	Water	Receiving	4	8	4	50%	6 ng/L		2.26	1.05	0.50	6.10 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek		. ,								Ū					
			Watershed Santa Clara River Watershed and Calleguas Creek	2009	Fipronil Sulfide	Wet	Water	Receiving	4	8	4	50%	6 ng/L		1.44	0.55	0.50	4.20 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Watershed Santa Clara River Watershed	2009	Fipronil Sulfone	Wet	Water	Receiving	4	8	5	63%	6 ng/L		6.06	2.40	0.50	18.10 ND and trace detections substituted as 1/2 the detection limit(1.0 $\mbox{ng/L})$
			and Calleguas Creek Watershed	2009	Bifenthrin	Wet	Water	Receiving	4	8	4	50%	6 ng/L		35.29	6.10	0.50	134.00 ND and trace detections substituted as 1/2 the detection limit(1.0 $\mbox{ng/L})$
			Santa Clara River Watershed and Calleguas Creek Watershed		Fenpropathrin	Wet	Water	Receiving	4	8	2	25%	6 ng/L		5.30	0.50	0.50	30.10 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Lambda-cyhalothrin	Wet	Water	Receiving	4	8	1	13%	6 ng/L		2.66	0.50	0.50	17.80 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin cis	Wet	Water	Receiving	4	8	3	38%	6 ng/L		26.53	0.50	0.50	94.50 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Permethrin trans	Wet	Water	Receiving	4	8	4	50%	6 ng/L		80.44	15.75	0.50	239.00 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek							-			Ū					
			Watershed Santa Clara River Watershed and Calleguas Creek		Cyfluthrin	Wet	Water	Receiving	4	8	4	50%	6 ng/L		7.24	1.60	0.50	38.10 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Watershed Santa Clara River Watershed and Calleguas Creek	2009	Cypermethrin	Wet	Water	Receiving	4	8	5	63%	6 ng/L		76.43	6.60	0.50	519.00 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Watershed Santa Clara River Watershed	2009	Esfenvalerate	Wet	Water	Receiving	4	8	3	38%	6 ng/L		1.63	0.50	0.50	5.60 ND and trace detections substituted as 1/2 the detection limit(1.0 $\mbox{ng/L})$
	Occurrence and Toxicity of Three Classes of		and Calleguas Creek Watershed Santa Clara River Watershed	2009	Deltamethrin	Wet	Water	Receiving	4	8	0	0%	6 ng/L					
Delgado-Moreno et al., 2011	Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	and Calleguas Creek Watershed	2009	Fipronil	Dry	Water	Receiving	4	8	2	25%	6 ng/L		7.10	0.50	0.50	34.80 ND and trace detections substituted as 1/2 the detection limit(1.0 $\mbox{ng/L})$
			Santa Clara River Watershed and Calleguas Creek Watershed		Fipronil Desulfinyl	Dry	Water	Receiving	4	8	3	38%	6 ng/L		2.58	0.50	0.50	9.90 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfide	Dry	Water	Receiving	4	8	2	25%	6 ng/L		1.50	0.50	0.50	6.40 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil Sulfone	Dry	Water	Receiving	4	8	3	38%	6 ng/L		4.14	0.50	0.50	17.50 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			and Calleguas Creek Watershed Santa Clara River Watershed	2009	Bifenthrin	Dry	Water	Receiving	4	8	2	25%	6 ng/L		1.10	0.50	0.50	4.70 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			and Calleguas Creek		Fenpropathrin	Dry	Water	Receiving	4	8	0	0%	6 ng/L					
			Santa Clara River Watershed and Calleguas Creek			_												
			Watershed and Calleguas Creek	2009	Lambda-cyhalothrin	Dry	Water	Receiving	4	8	0	0%	, i i i i i i i i i i i i i i i i i i i					unusually high concentrations were a single-time episode and may be due to
			Watershed Santa Gara Niver Watersheu and Calleguas Creek Watershed	2009 2009	Permethrin cis Permethrin trans	Dry Dry	Water	Receiving	4	8	1 2	13%	6 ng/L 6 ng/L		534.39 1585.26	0.50		4806.00 application drift, cleaning of spray equipment, or improper disposal of spray waste rea and reace version a substance of the area version and the reace of the area of the area of the area of the unusually high concentrations were a single-time episode and may be due to 12652.00 application drift, cleaning of spray equipment, or improper disposal of spray waste
			Santa Clara River Watershed and Calleguas Creek Watershed		Cyfluthrin	Dry	Water	Receiving	4	8	2	25%	6 na/L		1.34	0.50	0.50	4.90 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L)
			Santa Clara River Watershed and Calleguas Creek		Oynuu IIII	Diy	**alci	Receiving	+	0	۷		, j				0.00	the and vacu detections substituted as ind the detection minit (.0 hg/L)
			Watershed	2009	Cypermethrin	Dry	Water	Receiving	4	8	1	13%	6 ng/L		1.66	0.50	0.50	9.80 ND and trace detections substituted as 1/2 the detection limit(1.0 ng/L) $$

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# # Sites Samp		% ted Dete		Sed. Uni s Weight	Mean	Median	Min	Max Notes
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Esfenvalerate	Dry	Water	Receiving	4	8	0	0% ng/					
			Santa Clara River Watershed and Calleguas Creek Watershed		Deltamethrin	Dry	Water	Receiving	4	8	0	0% ng/					
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fipronil	Wet	Sediment	Receiving	4	8	1	13% ng/	ı Dry	0.08	0.05	0.05	0.30 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed		Fipronil Desulfinyl	Wet	Sediment	Receiving	4	8	1	13% ng/	J Dry	0.09	0.05	0.05	0.40 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed		Fipronil Sulfide		Sediment	Receiving	4	8	1	13% ng/		0.13	0.05	0.05	0.70 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/q)
			Santa Clara River Watershed and Calleguas Creek Watershed					Ū	4	8	5	Ĵ					
			Santa Clara River Watershed and Calleguas Creek		Fipronil Sulfone		Sediment	Receiving				63% ng/		0.67	0.10	0.05	2.60 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Watershed Santa Clara River Watershed and Calleguas Creek		Bifenthrin		Sediment	Receiving	4	8	7	88% ng/	. ,	6.29	1.10	0.05	30.10 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Watershed Santa Clara River Watershed and Calleguas Creek		Fenpropathrin	Wet	Sediment	Receiving	4	8	1	13% ng/	j Dry	0.19	0.05	0.05	1.20 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Watershed Santa Clara River Watershed and Calleguas Creek	2009	Lambda-cyhalothrin	Wet	Sediment	Receiving	4	8	1	13% ng/	j Dry	0.36	0.05	0.05	2.50 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Watershed Santa Clara River Watershed and Calleguas Creek	2009	Permethrin cis	Wet	Sediment	Receiving	4	8	6	75% ng/	j Dry	20.74	8.55	0.05	85.30 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Watershed Santa Clara River Watershed	2009	Permethrin trans	Wet	Sediment	Receiving	4	8	7	88% ng/	Dry	29.66	18.15	0.05	81.20 ND and trace detections substituted as 1/2 the detection limit(0.05 $\mbox{ng/g})$
			and Calleguas Creek Watershed Santa Clara River Watershed	2009	Cyfluthrin	Wet	Sediment	Receiving	4	8	5	63% ng/	j Dry	1.88	1.10	0.05	6.50 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			and Calleguas Creek Watershed Santa Clara River Watershed		Cypermethrin	Wet	Sediment	Receiving	4	8	7	88% ng/	J Dry	143.66	2.90	0.05	987.50 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			and Calleguas Creek Watershed Santa Clara River Watershed	2009	Esfenvalerate	Wet	Sediment	Receiving	4	8	1	13% ng/	j Dry	1.49	0.05	0.05	11.60 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
	Occurrence and Toxicity of Three Classes of		and Calleguas Creek Watershed Santa Clara River Watershed		Deltamethrin	Wet	Sediment	Receiving	4	8	0	0% ng/	j Dry				
Delgado-Moreno et al., 2011	Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	Southern California	and Calleguas Creek Watershed Santa Clara River Watershed		Fipronil	Dry	Sediment	Receiving	4	8	2	25% ng/	I Dry	0.08	0.05	0.05	0.20 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			and Calleguas Creek Watershed		Fipronil Desulfinyl	Dry	Sediment	Receiving	4	8	3	38% ng/	J Dry	0.16	0.05	0.05	0.60 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed		Fipronil Sulfide	Dry	Sediment	Receiving	4	8	3	38% ng/	I Dry	0.18	0.05	0.05	0.90 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed		Fipronil Sulfone	Dry	Sediment	Receiving	4	8	4	50% ng/	J Dry	0.55	0.23	0.05	1.70 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed and Calleguas Creek Watershed		Bifenthrin	Dry	Sediment	Receiving	4	8	8	100% ng/	I Dry	2.59	2.00	0.50	8.70
			Santa Clara River Watershed and Calleguas Creek Watershed	2009	Fenpropathrin	Dry	Sediment	Receiving	4	8	1	13% ng/	J Dry	0.76	0.05	0.05	5.70 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites S	# amples [# Detected	% Detected		Sed. Unit Weight	Mean	Median	Min	Max Notes
Citation - Abbrev.	nepol/study fille	negion	Santa Clara River Watershed	Timename	Pesticide (Analyte)	weather	Seument	Necenning water	# 31165 3	ampies i	Jelecleu	Delected	onits	weight	wear	weulan	WITT	INGA NOLES
			and Calleguas Creek Watershed	2009	Lambda-cyhalothrin	Dry	Sediment	Receiving	4	8	2	25%	ng/g	Dry	1.10	0.05	0.05	5.90 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed	2000		5.9	ocument	reconning	•	0	-	2070	19.9	2.1		0.00	0.00	ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g).
			and Calleguas Creek			_								_				unusually high concentrations were a single-time episode and may be due to
			Watershed	2009	Permethrin cis	Dry	Sediment	Receiving	4	8	3	38%	ng/g	Dry	10.19	0.05	0.05	62.40 application drift, cleaning of spray equipment, or improper disposal of spray waste
			Santa Clara River Watershed and Calleguas Creek															ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g); The unusually high concentrations were a single-time episode and may be due to
			Watershed	2009	Permethrin trans	Dry	Sediment	Receiving	4	8	3	38%	ng/g	Dry	4.72	0.05	0.05	21.50 application drift, cleaning of spray equipment, or improper disposal of spray waste
			Santa Clara River Watershed															
			and Calleguas Creek															
			Watershed	2009	Cyfluthrin	Dry	Sediment	Receiving	4	8	4	50%	ng/g	Dry	1.80	0.53	0.05	7.90 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed															
			and Calleguas Creek Watershed	2009	Cypermethrin	Dry	Sediment	Receiving	4	8	2	25%	ng/g	Dry	13.91	0.05	0.05	108.20 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
				2003	Cypermeanin	Diy	ocument	receiving	-	0	2	2070	ng/g	Diy	10.01	0.00	0.00	100.20 MD and trace detections substituted as 172 the detection linitia(0.00 Hg/g)
			Santa Clara River Watershed and Calleguas Creek															
			Watershed	2009	Esfenvalerate	Dry	Sediment	Receiving	4	8	2	25%	ng/g	Dry	0.61	0.05	0.05	2.70 ND and trace detections substituted as 1/2 the detection limit(0.05 ng/g)
			Santa Clara River Watershed															
			and Calleguas Creek															
	Pyrethroid Insecticide Concentration and Toxicity in		Watershed	2009	Deltamethrin	Dry	Sediment	Receiving	4	8	0			Dry				
	Streambed Sediments and Loads in Surface Waters of	f																
Domagalski et al., 2010	the San Joaquin Valley California USA	Northern California	San Joaquin watersheds		Bifenthrin	Wet	Sediment	Receiving	8	59	38	64%		Dry	1.65	1.10	0.10	15.80 ND substituted as 1/2 the detection limit (2.2 ng/g)
	Monitoring Urban Pesticide Runoff in California 2008-		San Joaquin watersheds	2007	L-Cyhalothrin	Wet	Sediment	Receiving	8	59	20	34%	ng/g	Dry	1.9	1.2	0.2	19.8 ND substituted as 1/2 the detection limit (2.4 ng/g)
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-AV01	2008-2009	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	236.5		236.5	236.5 Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	.,	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	44.6		44.6	44.6 Only one sample, no median calculated
			Wood Canyon-AV01		Cypermethrin	Dry	Sediment	Receiving	1	1	0	0%		Dry				
			Wood Canyon-AV01 Wood Canyon-AV01		Deltamethrin Fenvalerate/esfenvalerate	Dry	Sediment Sediment	Receiving Receiving	1	1	1	100% 100%		Dry	12.3 9.4		12.3 9.4	12.3 Only one sample, no median calculated 9.4 Only one sample, no median calculated
			Wood Canyon-AV01		I ambda cyhalothrin	Dry Dry	Sediment	Receiving	1	1	1	100%	µg/kg µg/kg	Dry Dry	9.4 21.6		9.4 21.6	21.6 Only one sample, no median calculated
			Wood Canyon-AV01		Permethrin cis	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	45.7		45.7	45.7 Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009	Permethrin trans	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	27.5		27.5	27.5 Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009		Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		Wood Canyon-AV01	2008-2009	Fenpropathrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	SFB	Grayson Creek-GRY010	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	7.8		7.8	7.8 Only one sample, no median calculated
			Grayson Creek-GRY010	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Grayson Creek-GRY010		Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%		Dry				
			Grayson Creek-GRY010 Grayson Creek-GRY010	2008-2009	Deltamethrin Fenvalerate/esfenvalerate	Dry	Sediment	Discharge Discharge	1	1	0	0% 0%		Dry Dry				
			Grayson Creek-GRY010		Lambda cyhalothrin	Dry Dry	Sediment Sediment	Discharge	1	1	0	0%		Dry				
			Grayson Creek-GRY010		Permethrin cis	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Grayson Creek-GRY010	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Grayson Creek-GRY010	2008-2009		Dry	Sediment	Discharge	1	1	0	0%		Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		Grayson Creek-GRY010	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	SFB	Grayson Creek-GRY020	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	15.5	15.5	13.1	17.9
			Grayson Creek-GRY020	2008-2009	.,	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	2.5	2.5	2.1	2.9
			Grayson Creek-GRY020 Grayson Creek-GRY020		Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
			Grayson Creek-GRY020		Deltamethrin Fenvalerate/esfenvalerate	Dry Dry	Sediment Sediment	Discharge Discharge	1	2	1	50% 0%		Dry Dry	1.15	1.15	0.5	1.8 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY020		Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	2	100%		Dry	3.95	3.95	3.3	4.6
			Grayson Creek-GRY020	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	2.0	2	1.8	2.2
			Grayson Creek-GRY020		Permethrin trans	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
			Grayson Creek-GRY020 Grayson Creek-GRY020	2008-2009		Dry	Sediment Sediment	Discharge	1	2	0	0%		Dry				
	Monitoring Urban Pesticide Runoff in California 2008-			2000-2009	Fenpropathrin	Dry	Jeuiment	Discharge	1	2	U	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	SFB	Grayson Creek-GRY030	2008-2009		Dry	Sediment	Receiving	1	4	4		µg/kg	Dry	17.0	16.5	8.9	26.8
			Grayson Creek-GRY030	2008-2009	.,	Dry	Sediment	Receiving	1	4	3	75%		Dry	3.83	3.85	0.5	7.1 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY030 Grayson Creek-GRY030		Cypermethrin Deltamethrin	Dry Dry	Sediment Sediment	Receiving Receiving	1	4	0	0% 25%	µg/kg µg/kg	Dry Dry	0.95	0.50	0.5	2.3 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY030		Fenvalerate/esfenvalerate	Dry	Sediment	Receiving	1	4	0	25%		Dry	0.00	0.00	0.0	Lo no capatitated as inz the reporting infit. (1.0 µg/kg)
			Grayson Creek-GRY030		Lambda cyhalothrin	Dry	Sediment	Receiving	1	4	0	0%	µg/kg	Dry				
			Grayson Creek-GRY030		Permethrin cis	Dry	Sediment	Receiving	1	4	4	100%		Dry	4.4	4.25	2.2	7
			Grayson Creek-GRY030		Permethrin trans	Dry	Sediment	Receiving	1	4	2	50%		Dry	2.85	0.5	0.5	5.2 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Grayson Creek-GRY030 Grayson Creek-GRY030	2008-2009	Resmethrin Fenpropathrin	Dry	Sediment Sediment	Receiving Receiving	1	4	0	0% 0%		Dry Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		Martin/Koopman Canyon			Dry	Sediment	Receiving	1	4	U		µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	SFB	Creek-MCC010	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	24.7	24.7	11.9	37.5

Citation - Abbrev.	Report/study Title	Pagian	Site(s)	Timeframe Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# Siton St	#	#	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max Notes
Citation - Abbrev.	Report/study The	Region	Martin/Koopman Canyon Creek-MCC010	2008-2009 Cvfluthrin	Dry	Sediment	Discharge	# Sites 58	ampies L	2	100%	units	Dry	13.85	13.85	MIN 4.3	23.4 Notes
			Martin/Koopman Canyon				•		_	_				13.65	13.65	4.5	23.4
			Creek-MCC010 Martin/Koopman Canyon	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
			Creek-MCC010 Martin/Koopman Canyon	2008-2009 Deltamethrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	3.85	3.85	0.5	7.2 ND substituted as 1/2 the reporting limit $(1.0 \ \mu g/kg)$
			Creek-MCC010 Martin/Koopman Canyon	2008-2009 Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
			Creek-MCC010 Martin/Koopman Canyon	2008-2009 Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	1	50%	µg/kg	Dry	1.00	1.0	0.5	1.5 ND substituted as 1/2 the reporting limit $~(1.0~\mu\text{g/kg})$
			Creek-MCC010 Martin/Koopman Canyon	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	4.65	4.65	4.3	5
			Creek-MCC010	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	4.10	4.1	4.1	4.1
			Martin/Koopman Canyon Creek-MCC010	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
			Martin/Koopman Canyon Creek-MCC010	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	SFB	Martin/Koopman Canyon Creek-MCC020	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	0.1		0.1	0.1 Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	18.9		18.9	18.9 Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				····
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Deltamethrin				1		-							
			Martin/Koopman Canyon		Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Creek-MCC020 Martin/Koopman Canyon	2008-2009 Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Creek-MCC020 Martin/Koopman Canyon	2008-2009 Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Creek-MCC020 Martin/Koopman Canyon	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Creek-MCC020 Martin/Koopman Canyon	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Creek-MCC020	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	SFB	Martin/Koopman Canyon Creek-MCC030	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	25.5		25.5	25.5 Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	19.6		19.6	19.6 Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Deltamethrin	Dry	Sediment	Discharge	1	1	- 1	100%	µg/kg	Dry	5.2		5.2	5.2 Only one sample, no median calculated
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Fenvalerate/esfenvalerate						1				5.2		5.2	3.2 Only one sample, no median calculated
			Martin/Koopman Canyon		Dry	Sediment	Discharge	1	1	U	0%	µg/kg	Dry				
			Creek-MCC030 Martin/Koopman Canyon	2008-2009 Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Creek-MCC030 Martin/Koopman Canyon	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	3.8		3.8	3.8 Only one sample, no median calculated
			Creek-MCC030 Martin/Koopman Canyon	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Creek-MCC030 Martin/Koopman Canyon	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		Creek-MCC030 Pleasant Grove Creek-	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	Sacramento	PGC010	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	3	3	100%	µg/kg	Dry	386.50	438.4	41.5	679.8
			Pleasant Grove Creek- PGC010	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	3	3	100%	µg/kg	Dry	76.43	75.20	5.5	148.6
			Pleasant Grove Creek- PGC010	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	3	2	67%	µg/kg	Dry	33.13	45.30	0.5	53.6 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			Pleasant Grove Creek- PGC010	2008-2009 Deltamethrin	Dry	Sediment	Discharge	1	3	3	100%	µg/kg	Dry	11.83	13.20	2	20.3
			Pleasant Grove Creek- PGC010	2008-2009 Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	3	0	0%	µg/kg	Dry				
			Pleasant Grove Creek- PGC010	2008-2009 Lambda cyhalothrin		Sediment	Discharge		3	2	67%		Dry	7.80	8.1	0.5	14.9. ND substituted as 1(2 the repeating limit (1.0 up/lup)
			Pleasant Grove Creek-		Dry		•		-	_		µg/kg					14.8 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			PGC010 Pleasant Grove Creek-	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	3	3	100%		Dry	68.56	89.20	3.4	113.1
			PGC010 Pleasant Grove Creek-	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	3	2	67%	µg/kg	Dry	30.56	38.4	0.5	52.8 ND substituted as 1/2 the reporting limit (1.0 $\mu g/kg)$
			PGC010 Pleasant Grove Creek-	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	3	0	0%	µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		PGC010 Pleasant Grove Creek-	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	3	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	Sacramento	PGC020 Pleasant Grove Creek-	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	6	6	100%	µg/kg	Dry	259.28	232.05	61.4	605.6
			PGC020	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	6	6	100%	µg/kg	Dry	32.36	21.65	4.4	83.7
			Pleasant Grove Creek- PGC020	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	6	5	83%	µg/kg	Dry	13.73	14.95	0.5	22.7 ND substituted as 1/2 the reporting limit (1.0 $\mu g/kg)$

Char Max Find Matrix No Matrix Matrix <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Wet/Dry</th> <th>Water/</th> <th>Discharge/</th> <th></th> <th>#</th> <th>#</th> <th>%</th> <th></th> <th>Sed. Unit</th> <th></th> <th></th> <th></th> <th></th>								Wet/Dry	Water/	Discharge/		#	#	%		Sed. Unit				
Res Res <th>Res Res Res<th>Citation - Abbrev.</th><th>Report/study Title</th><th>Region</th><th></th><th>Timeframe</th><th>Pesticide (Analyte)</th><th>Weather</th><th>r Sediment</th><th>Receiving Water</th><th># Sites Sar</th><th>mples</th><th>Detected</th><th>Detected</th><th>Units</th><th>Weight</th><th>Mean</th><th>Median</th><th>Min</th><th>Max Notes</th></th>	Res Res <th>Citation - Abbrev.</th> <th>Report/study Title</th> <th>Region</th> <th></th> <th>Timeframe</th> <th>Pesticide (Analyte)</th> <th>Weather</th> <th>r Sediment</th> <th>Receiving Water</th> <th># Sites Sar</th> <th>mples</th> <th>Detected</th> <th>Detected</th> <th>Units</th> <th>Weight</th> <th>Mean</th> <th>Median</th> <th>Min</th> <th>Max Notes</th>	Citation - Abbrev.	Report/study Title	Region		Timeframe	Pesticide (Analyte)	Weather	r Sediment	Receiving Water	# Sites Sar	mples	Detected	Detected	Units	Weight	Mean	Median	Min	Max Notes
No. No. No. No. No.	 International state of the stat				PGC020	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	6	3	50%	6 μg/kg	Dry	4.30	1.65	0.5	14 ND substituted as 1/2 the reporting limit (1.0 $\mu g/kg)$
<tt></tt>	Normal Normal<				PGC020	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	6	1	179	6 μg/kg	Dry	1.23	0.5	0.5	4.9 ND substituted as 1/2 the reporting limit $(1.0 \ \mu g/kg)$
Image: state	Partial Partial <t< td=""><td></td><td></td><td></td><td></td><td>2008-2009</td><td>Lambda cyhalothrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>6</td><td>4</td><td>67%</td><td>6 µg/kg</td><td>Dry</td><td>3.40</td><td>3.35</td><td>0.5</td><td>6.9 ND substituted as 1/2 the reporting limit (1.0 µg/kg)</td></t<>					2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	6	4	67%	6 µg/kg	Dry	3.40	3.35	0.5	6.9 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
And the second	<tt></tt>								0	Distance				4000		D-1	05.40	04.05		
An subset is a	Result in the second				Pleasant Grove Creek-			Diy	Sediment	Discharge	1	0	0	100-	∘ µg/кg	Diy	35.42			
Part of the state state of the state of the state of the state of the sta	Partial Partial <t< td=""><td></td><td></td><td></td><td></td><td>2008-2009</td><td>Permethrin trans</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>6</td><td>6</td><td>1009</td><td>6 μg/kg</td><td>Dry</td><td>23.68</td><td>23.85</td><td>2.9</td><td>45.2</td></t<>					2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	6	6	1009	6 μg/kg	Dry	23.68	23.85	2.9	45.2
	Participant Participant <				PGC020	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	6	1	179	6 μg/kg	Dry	4.416	0.5	0.5	24 ND substituted as 1/2 the reporting limit $(1.0 \ \mu\text{g/kg})$
90 * 0 * 0 * 0 * 0 * 0 * 0 * 0 * 0 * 0 *	Bench Bench Bench Bench Fert Bench Fert Fert <td></td> <td></td> <td></td> <td></td> <td>2008-2009</td> <td>Fenpropathrin</td> <td>Dry</td> <td>Sediment</td> <td>Discharge</td> <td>1</td> <td>6</td> <td>0</td> <td>09</td> <td>6 µg/kg</td> <td>Dry</td> <td></td> <td></td> <td></td> <td></td>					2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	6	0	09	6 µg/kg	Dry				
Norm Norm <th< td=""><td>Norm Norm <th< td=""><td>Ensminner and Kelley 2011a</td><td></td><td></td><td></td><td>2008 2000</td><td>Pifonthrin</td><td>Dov</td><td>Sodimont</td><td>Dischargo</td><td>1</td><td>2</td><td>2</td><td>1009</td><td>(ualka</td><td>Day</td><td>42.75</td><td>42.75</td><td>24</td><td>62.5</td></th<></td></th<>	Norm Norm <th< td=""><td>Ensminner and Kelley 2011a</td><td></td><td></td><td></td><td>2008 2000</td><td>Pifonthrin</td><td>Dov</td><td>Sodimont</td><td>Dischargo</td><td>1</td><td>2</td><td>2</td><td>1009</td><td>(ualka</td><td>Day</td><td>42.75</td><td>42.75</td><td>24</td><td>62.5</td></th<>	Ensminner and Kelley 2011a				2008 2000	Pifonthrin	Dov	Sodimont	Dischargo	1	2	2	1009	(ualka	Day	42.75	42.75	24	62.5
Image: series in the series of the series in the series of the series in the series of the series in the	Prime Prim Prime Prime	Enoninger and realoy, 2011a	2000	Sacramento	Pleasant Grove Creek-										10 0					
First First <th< td=""><td>First First <th< td=""><td></td><td></td><td></td><td></td><td>2008-2009</td><td>Cyfluthrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>2</td><td>2</td><td>100%</td><td>6 μg/kg</td><td>Dry</td><td>6.35</td><td>6.35</td><td>2.9</td><td>9.8</td></th<></td></th<>	First First <th< td=""><td></td><td></td><td></td><td></td><td>2008-2009</td><td>Cyfluthrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>2</td><td>2</td><td>100%</td><td>6 μg/kg</td><td>Dry</td><td>6.35</td><td>6.35</td><td>2.9</td><td>9.8</td></th<>					2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	2	100%	6 μg/kg	Dry	6.35	6.35	2.9	9.8
Norm Norm <th< td=""><td>Norm Norm <th< td=""><td></td><td></td><td></td><td>PGC030</td><td>2008-2009</td><td>Cypermethrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>2</td><td>1</td><td>50%</td><td>6 μg/kg</td><td>Dry</td><td>2.55</td><td>2.55</td><td>0.5</td><td>4.6 ND substituted as 1/2 the reporting limit (1.0 $\mu g/kg)$</td></th<></td></th<>	Norm Norm <th< td=""><td></td><td></td><td></td><td>PGC030</td><td>2008-2009</td><td>Cypermethrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>2</td><td>1</td><td>50%</td><td>6 μg/kg</td><td>Dry</td><td>2.55</td><td>2.55</td><td>0.5</td><td>4.6 ND substituted as 1/2 the reporting limit (1.0 $\mu g/kg)$</td></th<>				PGC030	2008-2009	Cypermethrin	Dry	Sediment	Discharge	1	2	1	50%	6 μg/kg	Dry	2.55	2.55	0.5	4.6 ND substituted as 1/2 the reporting limit (1.0 $\mu g/kg)$
Normal Normal<	Normal Normal<				Pleasant Grove Creek- PGC030	2008-2009	Deltamethrin	Dry	Sediment	Discharge	1	2	1	50%	6 μg/kg	Dry	1.30	1.30	0.5	2.1 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
Processes Processes <t< td=""><td>Processes Processes <t< td=""><td></td><td></td><td></td><td></td><td>2008 2000</td><td>Eonvalorato/onfonvalorato</td><td>Dov</td><td>Sodimont</td><td>Dischargo</td><td>1</td><td>2</td><td>0</td><td>0</td><td>(ualka</td><td>Day</td><td></td><td></td><td></td><td></td></t<></td></t<>	Processes Processes <t< td=""><td></td><td></td><td></td><td></td><td>2008 2000</td><td>Eonvalorato/onfonvalorato</td><td>Dov</td><td>Sodimont</td><td>Dischargo</td><td>1</td><td>2</td><td>0</td><td>0</td><td>(ualka</td><td>Day</td><td></td><td></td><td></td><td></td></t<>					2008 2000	Eonvalorato/onfonvalorato	Dov	Sodimont	Dischargo	1	2	0	0	(ualka	Day				
Norme Norme <th< td=""><td>Norme Norme <th< td=""><td></td><td></td><td></td><td>Pleasant Grove Creek-</td><td></td><td></td><td>,</td><td></td><td>-</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<></td></th<>	Norme Norme <th< td=""><td></td><td></td><td></td><td>Pleasant Grove Creek-</td><td></td><td></td><td>,</td><td></td><td>-</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>				Pleasant Grove Creek-			,		-	1									
Image: sector	Image: sector					2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	1	50%	6 μg/kg	Dry	1.25	1.25	0.5	2 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
Processes <	Processes <				PGC030	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	1009	6 μg/kg	Dry	25.10	25.10	5.2	45
Image: sector Norme Norme Norme Norme	Image: sector Norme Norme Norme Norme				Pleasant Grove Creek- PGC030	2008-2009	Permethrin trans	Drv	Sediment	Discharge	1	2	2	1009	6 ua/ka	Drv	13.55	13.55	3.1	24
Barting the form	Barting the form					2008 2000	Deemethrin	,	Codimont	•		2								
Marge with Range with	Marge with Range with				Pleasant Grove Creek-			,			1	-			10 0					
Bind Bind <th< td=""><td>Bind Bind <th< td=""><td></td><td>Monitoring Urban Pesticide Runoff in California 2008-</td><td></td><td>PGC030</td><td>2008-2009</td><td>Fenpropathrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>2</td><td>0</td><td>09</td><td>6 μg/kg</td><td>Dry</td><td></td><td></td><td></td><td></td></th<></td></th<>	Bind Bind <th< td=""><td></td><td>Monitoring Urban Pesticide Runoff in California 2008-</td><td></td><td>PGC030</td><td>2008-2009</td><td>Fenpropathrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>2</td><td>0</td><td>09</td><td>6 μg/kg</td><td>Dry</td><td></td><td></td><td></td><td></td></th<>		Monitoring Urban Pesticide Runoff in California 2008-		PGC030	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	09	6 μg/kg	Dry				
 	 	Ensminger and Kelley, 2011a						Dry	Sediment	Discharge	1	2	2		100	Dry				
Backed of the second	Backed of the second						,			-	1						8.90	8.90	3.7	14.1
Barbox Barbox<	Barbox Barbox<							,			1	-	-							
Burney and Negative set in the s	Burney and Negative set in the s									•	1	-	-				4.0	4.0	2.2	5.8
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Mathematic function	Mathematic function							,			1	-				,				
Bartery Line Peticity Rule Peticity	Bartery Line Peticity Rule Peticity							,		. .	1	-								
Barbard Barbard <t< td=""><td>Barbard Barbard <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>-</td><td></td><td></td><td>10 0</td><td></td><td>20.5</td><td>20.5</td><td>19.5</td><td>21.5</td></t<></td></t<>	Barbard Barbard <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>-</td><td></td><td></td><td>10 0</td><td></td><td>20.5</td><td>20.5</td><td>19.5</td><td>21.5</td></t<>										1	-			10 0		20.5	20.5	19.5	21.5
Matching up we heads in graph and balance And a	Matching up we heads in graph and balance And a										1									
finite print of Male, 2019 Qang Caum Bit Que, Col Bit Que, Col Que, Que, Que, Col Bit Que, Col Que, Que, Que, Que, Col Que, Que, Que, Que, Que, Que, Que, Que,	finite print of Male, 2019 Qang Caum Bit Que, Col Bit Que, Col Que, Que, Que, Col Bit Que, Col Que, Que, Que, Que, Col Que, Que, Que, Que, Que, Que, Que, Que,		Monitoring Urban Pesticide Runoff in California 2008-		Sall Creek-SCT	2008-2009	Fenpropatnrin	Dry	Sediment	Discharge	1	2	0	05	⊚ µg/кg	Dry				
Monory Uban Periods Rough In California None of the Section Sectin Section Section Section Section Section Section Sec	Monory Uban Periods Rough In California None of the Section Sectin Section Section Section Section Section Section Sec	Ensminger and Kelley, 2011a			Salt Creek-SC3	2008-2009	Bifenthrin	Dry	Sediment	Discharge	1	2	1	50%	6 μg/kg	Dry	20.10	20.10	0.5	39.7 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
Backenescie	Backenescie				Salt Creek-SC3	2008-2009	Cyfluthrin	Dry	Sediment	Discharge	1	2	1	50%	6 µg/kg	Dry	19.35	19.35	0.5	38.2 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
Image: second	Image: second				Salt Creek-SC3	2008-2009	Cypermethrin			-	1	2	0	09						
Result Result<	Result Result<				Salt Creek-SC3			Dry			1	2	2	1009			14.7	14.7	2.7	26.8
Image: series of the	Image: series of the				Salt Creek-SC3	2008-2009	Fenvalerate/esfenvalerate	Dry	Sediment		1	2	0	09						
Barbore-Science Solder-Science Solder	Barbore-Science Solder-Science Solder				Salt Creek-SC3	2008-2009	Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	2	100%	6 μg/kg	Dry	6.05	6.05	4.60	7.5
Bactories Construint Sectories Construint	Bactories Construint Sectories Construint				Salt Creek-SC3	2008-2009	Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	6 μg/kg	Dry	26.05	26.05	6.8	45.3
Ballower Ballower Div Sector Div Div Div Div <	Ballower Ballower Div Sector Div Div Div Div <				Salt Creek-SC3	2008-2009	Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	6 μg/kg	Dry	31.05	31.05	15.6	46.5
Monitoring Unbane Pesitide Runoff in California 2005 Salt Creek-SCS 2005 000 Berlinking on California 2005 Contrage County Salt Creek-SCS 2005 000 Optimization Display Contrage I C I C I Display Displa	Monitoring Unbane Pesitide Runoff in California 2005 Salt Creek-SCS 2005 000 Berlinking on California 2005 Contrage County Salt Creek-SCS 2005 000 Optimization Display Contrage I C I C I Display Displa				Salt Creek-SC3	2008-2009	Resmethrin	Dry	Sediment	Discharge	1	2	0	09	6 μg/kg	Dry				
Emminger and Kelley, 2011 2009 Orange County Sold ceek-SCS 2008-200 Optimethin Disk Disk Disk-apper <td>Emminger and Kelley, 2011 2009 Orange County Sold ceek-SCS 2008-200 Optimethin Disk Disk Disk-apper Disk-apper<td></td><td></td><td></td><td>Salt Creek-SC3</td><td>2008-2009</td><td>Fenpropathrin</td><td>Dry</td><td>Sediment</td><td>Discharge</td><td>1</td><td>2</td><td>0</td><td>09</td><td>6 μg/kg</td><td></td><td></td><td></td><td></td><td></td></td>	Emminger and Kelley, 2011 2009 Orange County Sold ceek-SCS 2008-200 Optimethin Disk Disk Disk-apper <td></td> <td></td> <td></td> <td>Salt Creek-SC3</td> <td>2008-2009</td> <td>Fenpropathrin</td> <td>Dry</td> <td>Sediment</td> <td>Discharge</td> <td>1</td> <td>2</td> <td>0</td> <td>09</td> <td>6 μg/kg</td> <td></td> <td></td> <td></td> <td></td> <td></td>				Salt Creek-SC3	2008-2009	Fenpropathrin	Dry	Sediment	Discharge	1	2	0	09	6 μg/kg					
Member of the period	Member of the period	Freminana and K-11 0011-	Monitoring Urban Pesticide Runoff in California 2008-	-	Calk Creak, COT	0000	D7	D -1	0.1	Distance		-			· · · · -		40.55	10.5-		
Monitoring Untain Pesticide Runoff in California 2008- San Diego River-SDR101 2008-200 Opermentivin Dry Sediment Discharge 1 2 0 0% upids Disc Unit Control Sant Creek-SC5 2008-200 Disementivin Dry Sediment Discharge 1 2 1 50% upids Disc 0.5 4.7 ND substituted as 1/2 the reporting limit (1.0 µg/kg) Sant Creek-SC5 2008-200 Limit disc vinitation Dry Sediment Discharge 1 2 2 10% µg/kg Dry 2.50 2.50 3.00 3.1 Sant Creek-SC5 2008-200 Permetrivin trans Dry Sediment Discharge 1 2 2 10% yg/kg Dry 5.65 2.7 8.6 Sant Creek-SC5 2008-200 Remetrivin trans Dry Sediment Discharge 1 2 2 10% yg/kg Dry 4.8 Able dual table as 1/2 the reporting limit (1.0 µg/kg) 1.5 S	Monitoring Untain Pesticide Runoff in California 2008- San Diego River-SDR101 2008-200 Opermentivin Dry Sediment Discharge 1 2 0 0% upids Disc Unit Control Sant Creek-SC5 2008-200 Disementivin Dry Sediment Discharge 1 2 1 50% upids Disc 0.5 4.7 ND substituted as 1/2 the reporting limit (1.0 µg/kg) Sant Creek-SC5 2008-200 Limit disc vinitation Dry Sediment Discharge 1 2 2 10% µg/kg Dry 2.50 2.50 3.00 3.1 Sant Creek-SC5 2008-200 Permetrivin trans Dry Sediment Discharge 1 2 2 10% yg/kg Dry 5.65 2.7 8.6 Sant Creek-SC5 2008-200 Remetrivin trans Dry Sediment Discharge 1 2 2 10% yg/kg Dry 4.8 Able dual table as 1/2 the reporting limit (1.0 µg/kg) 1.5 S	Ensminger and Kelley, 2011a	2009	Orange County						. .	1		1		10 0	,				
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Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe Pesticide (Analvte)	Wet/Dry Weather		Discharge/ Receiving Water	# # Sites Samp	/		% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max Notes
		-	San Diego River-SDR101	2008-2009 Fenpropathrin	Dry	Sediment	Receiving	1	3	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	San Diego	San Diego River-SDR102	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	1.65	1.65	0.1	3.2 Although the lowest detection value is lower than half the RL (it was not labeled as a n
Enoninger and Kelley, 2011a	2000	Gan Diego	San Diego River-SDR102	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	2	2	100%		Dry	2.55	2.55	2.0	3.1
			San Diego River-SDR102	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	2	0	0%	ua/ka	Dry	2.00	2.00	2.0	5.1
			San Diego River-SDR102	2008-2009 Deltamethrin	Dry	Sediment	Discharge	1	2	0	0%	10 0	Dry				
			San Diego River-SDR102	2008-2009 Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	2	0	0%		Dry				
			San Diego River-SDR102	2008-2009 Lambda cyhalothrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
			San Diego River-SDR102	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	4.10	4.10	1.7	6.5
			San Diego River-SDR102	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	2	2	100%	µg/kg	Dry	5.0	5.0	1.6	8.4
			San Diego River-SDR102	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	2	1	50%		Dry	2.75	2.75	0.5	5.0 ND substituted as 1/2 the reporting limit (1.0 μg/kg)
			San Diego River-SDR102	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	2	0	0%	µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-																
Ensminger and Kelley, 2011a	2009	San Diego	San Diego River-SDR151	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	3.3		3.3	3.3 Only one sample, no median calculated
			San Diego River-SDR151	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry	1.9		1.9	10 Only on a second
			San Diego River-SDR151 San Diego River-SDR151	2008-2009 Cypermethrin 2008-2009 Deltamethrin	Dry Dry	Sediment Sediment	Discharge Discharge	1	1	1	100% 0%		Dry Dry	1.9		1.9	1.9 Only one sample, no median calculated
			San Diego River-SDR151	2008-2009 Denamentation	Dry	Sediment	Discharge	1	1	0	0%						
			San Diego River-SDR151	2008-2009 Perivalerate/esterivalerate 2008-2009 Lambda cyhalothrin		Sediment	Discharge	1	1	0	0%	µg/kg µg/kg	Dry				
			San Diego River-SDR151	2008-2009 Permethrin cis	Dry Dry	Sediment	Discharge	1	1	0	0%	µg/kg µg/kg	Dry Dry				
			San Diego River-SDR151	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			San Diego River-SDR151	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			San Diego River-SDR151	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	ua/ka	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		-	2000 2000 1 010100000	2.,	occument	Distinge	•		Ū	0,0	P9/19	5.9				
Ensminger and Kelley, 2011a	2009	San Diego	San Diego River-SDR156	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	8.3		8.3	8.3 Only one sample, no median calculated
			San Diego River-SDR156	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	4.2		4.2	4.2 Only one sample, no median calculated
			San Diego River-SDR156	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	7.9		7.9	7.9 Only one sample, no median calculated
			San Diego River-SDR156	2008-2009 Deltamethrin	Dry	Sediment	Discharge	1	1	0	0%		Dry				
			San Diego River-SDR156	2008-2009 Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	0	0%		Dry				
			San Diego River-SDR156	2008-2009 Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	0	0%		Dry				
			San Diego River-SDR156	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	3.2		3.2	3.2 Only one sample, no median calculated
			San Diego River-SDR156	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	2.9		2.9	2.9 Only one sample, no median calculated
			San Diego River-SDR156	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		San Diego River-SDR156	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	San Diego	San Diego River-SDR158	2008-2009 Bifenthrin	Drv	Sediment	Receiving	1	2	2	100%	ua/ka	Drv	6.00	6.00	1.3	10.7
,,		oun blogo	San Diego River-SDR158	2008-2009 Cvfluthrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Drv	3.25	3.25	0.5	 6.0 ND substituted as 1/2 the reporting limit (1.0 μg/kg)
			San Diego River-SDR158	2008-2009 Cypermethrin	Dry	Sediment	Receiving	1	2	1	50%	µg/kg	Dry	2.25	2.25	0.5	4.0 ND substituted as 1/2 the reporting limit (1.0 μg/kg)
			San Diego River-SDR158	2008-2009 Deltamethrin	Dry	Sediment	Receiving	1	2	1	50%		Dry	1.15	1.15	0.5	1.8 ND substituted as 1/2 the reporting limit (1.0 μg/kg)
			San Diego River-SDR158	2008-2009 Fenvalerate/esfenvalerate	Dry	Sediment	Receiving	1	2	0	0%		Dry				
			San Diego River-SDR158	2008-2009 Lambda cyhalothrin	Dry	Sediment	Receiving	1	2	0	0%		Dry				
			San Diego River-SDR158	2008-2009 Permethrin cis	Dry	Sediment	Receiving	1	2	1	50%		Dry	1.30	1.30	0.5	2.1 ND substituted as 1/2 the reporting limit (1.0 µg/kg)
			San Diego River-SDR158	2008-2009 Permethrin trans	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry				
			San Diego River-SDR158	2008-2009 Resmethrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry				
			San Diego River-SDR158	2008-2009 Fenpropathrin	Dry	Sediment	Receiving	1	2	0	0%	µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-				_							-	_				
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-WC1	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	323.7		323.7	323.7 Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	89.3 18.2		89.3 18.2	89.3 Only one sample, no median calculated
			Wood Canyon-WC1 Wood Canyon-WC1	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	18.2			18.2 Only one sample, no median calculated
			,	2008-2009 Deltamethrin	Dry	Sediment Sediment	Discharge	1	1	1	100%	µg/kg	Dry	15.7		15.7 4 0	15.7 Only one sample, no median calculated
			Wood Canyon-WC1 Wood Canyon-WC1	2008-2009 Fenvalerate/esfenvalerate 2008-2009 Lambda cvhalothrin	Dry	Sediment	Discharge Discharge	1	1	1	100% 100%	µg/kg	Dry Dry	4.0 31.9		4.0 31.9	4.0 Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009 Permethrin cis	Dry Dry	Sediment	Discharge	1	1	1	100 %	µg/kg µg/kg	Dry	149.0		149.0	31.9 Only one sample, no median calculated 149.0 Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	1	1	100%		Dry	206.7		206.7	206.7 Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	1	0	0%		Dry	200.7		200.7	200.1 Only one sample, no median calculated
			Wood Canyon-WC1	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in California 2008-			2000 2000 1 010/00/041111	2.1	oodiinont	Districtingo			Ū	070	P9/19	5.9				
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-WC2	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	141.0		141.0	141.0 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	39.0		39.0	39.0 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
			Wood Canyon-WC2	2008-2009 Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	6.9		6.9	6.9 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	6.6		6.6	6.6 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	31.0		31.0	31.0 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	62.6		62.6	62.6 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	67.0		67.0	67.0 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	1	0	0%		Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		Wood Canyon-WC2	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	1	0	0%	µg/kg	Dry				
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-WC3	2008-2009 Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	207.6		207.6	207.6 Only one sample, no median calculated
- · · · · · · · ·			Wood Canyon-WC3	2008-2009 Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	67.2		67.2	67.2 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 Cypermethrin	Dry	Sediment	Discharge	1	1	1	100%	µg/kg	Dry	22.0		22.0	22.0 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	10 0	Dry	50.7		50.7	50.7 Only one sample, no median calculated
							-										

					Wet/Dry		Discharge/	#			%		I. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s) Wood Canyon-WC3	Timeframe Pesticide (Analyte) 2008-2009 Fenvalerate/esfenvalerate	Weather Dry	Sediment Sediment	t Receiving Water Discharge	# Sites Sam	ples Detect	ted Dete			eight Me Dry	an Media 20.3	n N	lin 20.3	Max Notes 20.3 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 Lambda cyhalothrin	Dry	Sediment	Discharge	1	1	1			Dry	30.1		30.1	30.1 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 Permethrin cis	Dry	Sediment	Discharge	1	1	1				171.0		171.0	171.0 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 Permethrin trans	Dry	Sediment	Discharge	1	1	1				207.6		207.6	207.6 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 Resmethrin	Dry	Sediment	Discharge	1	1	0			Dry				
			Wood Canyon-WC3	2008-2009 Fenpropathrin	Dry	Sediment	Discharge	1	1	0			Dry				
	Monitoring Urban Pesticide Runoff in California 2008-		Pleasant Grove Creek-		,							-55	,				
Ensminger and Kelley, 2011a	2009	Sacramento	PGC010	2008-2009 Desulfinyl fipronil	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek- PGC010				Distance				00/						
			Pleasant Grove Creek-	2008-2009 Desulfinyl FP amide	Dry	Water	Discharge	1	4	0	0%	µg/L					
			PGC010	2008-2009 Fipronil	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek-				-										
			PGC010	2008-2009 Fipronil amide	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek- PGC010	2008-2009 Fipronil sulfide	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek-	2000-2003	Diy	Water	Discharge		-	0	070	P9/L					
			PGC010	2008-2009 Fipronil sulfone	Dry	Water	Discharge	1	4	1	25%	µg/L	0.	038 0.0	25	0.025	0.064 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-														
			PGC010 Pleasant Grove Creek-	2008-2009 Bifenthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		25.7		25.7	25.7 Only one sample, no median calculated
			PGC010	2008-2009 Cyfluthrin	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Pleasant Grove Creek-	2000 2000 09/10/11/1	2.1	Trato.	Distinge	•		0	0,0	19.2					
			PGC010	2008-2009 Cypermethrin	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Pleasant Grove Creek-														
			PGC010 Pleasant Grove Creek-	2008-2009 Permethrin cis	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Pleasant Grove Creek-	2008-2009 Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L					
	Monitoring Urban Pesticide Runoff in California 2008-		Pleasant Grove Creek-	2000 2000 1 0111001111 0010	2.1	Trato.	Distinge	•		0	0,0	iig/2					
Ensminger and Kelley, 2011a	2009	Sacramento	PGC010	2008-2009 Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek- PGC010														
			PGC010 Pleasant Grove Creek-	2008-2009 Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L					
			PGC010	2008-2009 Fipronil	Wet	Water	Discharge	1	4	2	50%	ua/L	0.	054 0.0	41	0.025	0.107 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-									10					
			PGC010	2008-2009 Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek- PGC010	2008-2009 Fipronil sulfide	Wet	Water	Discharge	1	4	0	00/						
			Pleasant Grove Creek-	2008-2009 Fipronii suitide	wet	water	Discharge	1	4	0	0%	µg/L					
			PGC010	2008-2009 Fipronil sulfone	Wet	Water	Discharge	1	4	1	25%	µg/L	0.	35 0.0	25	0.025	0.059 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-														
			PGC010	2008-2009 Bifenthrin	Wet	Water	Discharge	1	4	3	75%	ng/L	10	.26 9	3.5	20.3	203.0
			Pleasant Grove Creek- PGC010	2008-2009 Cyfluthrin	Wet	Water	Discharge	1	4	0	0%	ng/L					
			Pleasant Grove Creek-	2008-2009 Cynddinn	wei	water	Discharge	1	4	U	0%	ng/L					
			PGC010	2008-2009 Cypermethrin	Wet	Water	Discharge	1	4	2	50%	ng/L	11	.34 1	5.1	0.005	18.9 ND substituted as 1/2 the reporting limit (0.005-0.015 ng/L)
			Pleasant Grove Creek-														
			PGC010	2008-2009 Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L					
			Pleasant Grove Creek- PGC010	2008-2009 Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L					
	Monitoring Urban Pesticide Runoff in California 2008-		Pleasant Grove Creek-	2006-2009 Permetrian trains	wei	water	Discharge		4	0	0 /0	ng/L					
Ensminger and Kelley, 2011a	2009	Sacramento	PGC020	2008-2009 Desulfinyl fipronil	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek-				-										
			PGC020	2008-2009 Desulfinyl FP amide	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek- PGC020	2008-2009 Fipronil	Dry	Water	Discharge	1	4	1	25%	µg/L	0.	171 01	25	0.025	0.164 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-	2008-2009 Pipionii	Diy	water	Discharge	1	4		25%	µg/L	0.		25	0.025	0.104 ND substituted as 1/2 the reporting liftit (0.05 µg/c)
			PGC020	2008-2009 Fipronil amide	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek-														
			PGC020	2008-2009 Fipronil sulfide	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek- PGC020	2008-2009 Fipronil sulfone	Dry	Water	Discharge	1	4	0	0%	uo/I					
			Pleasant Grove Creek-	2008-2009 Pipronii sulione	Diy	water	Discharge	1	4	U	0%	µg/L					
			PGC020	2008-2009 Bifenthrin	Dry	Water	Discharge	1	4	1	25%	ng/L				8.58	8.58 Other three sample values missing, only one valid value reported, no mean or media
			Pleasant Grove Creek-				, i i i i i i i i i i i i i i i i i i i					•					
			PGC020	2008-2009 Cyfluthrin	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Pleasant Grove Creek- PGC020	2008-2009 Cypermethrin	Dry	Water	Discharge	1	4	0	0%	ng/l					
			Pleasant Grove Creek-	2008-2009 Cypermeanin	Diy	water	Discharge		4	0	0 /0	ng/L					
			PGC020	2008-2009 Permethrin cis	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Pleasant Grove Creek-				-					-					
			PGC020	2008-2009 Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Sacramento	Pleasant Grove Creek- PGC020	2008 2000 Doorfind firmail	Met	Wote-	Discharge	1	4	0	08/	ug/l					
charminger and Kelley, 20118	_00 <i>0</i>	Jacianiciilo	Pleasant Grove Creek-	2008-2009 Desulfinyl fipronil	Wet	Water	Discharge	1	4	0	0%	hâ\r					
			PGC020	2008-2009 Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L					
			Pleasant Grove Creek-	,			-										
			PGC020	2008-2009 Fipronil	Wet	Water	Discharge	1	4	2	50%	µg/L	0.	079 0.0	15	0.025	0.146 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek- PGC020	2008-2009 Fipronil amide	Wet	Wote-	Discharge	4	4	0	08/	ug/l					
			Pleasant Grove Creek-	2000-2009 Fibronii annue	wei	Water	Discharge		4	U	0%	µy/∟					
			PGC020	2008-2009 Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L					

Citation - Abbrev.	D */- h + Titl -	Desian	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Oltan One			% ected	Sed. Uni Units Weight		Median	Min	Max Notes
Citation - Abbrev.	Report/study Title	Region	Pleasant Grove Creek- PGC020		Fipronil sulfone	Wet	Water	Discharge	# Siles Sail	4	2	50%		0.043	0.0415	0.025	0.064 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek-						1				µg/L				
			PGC020 Pleasant Grove Creek-	2008-2009 E		Wet	Water	Discharge	1	4	3	75%	•	27.40	19.2	14.5	48.5 One sample value missing
			PGC020 Pleasant Grove Creek-	2008-2009		Wet	Water	Discharge	1	4	0		ng/L				
			PGC020 Pleasant Grove Creek-	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L				
			PGC020 Pleasant Grove Creek-	2008-2009 F	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L				
	Monitoring Urban Pesticide Runoff in California 2008-		PGC020 Pleasant Grove Creek-	2008-2009 F	Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L				
Ensminger and Kelley, 2011a	2009	Sacramento	PGC030 Pleasant Grove Creek-	2008-2009	Desulfinyl fipronil	Dry	Water	Discharge	1	4	1	25%	µg/L	0.035	0.025	0.025	0.054 ND substituted as 1/2 the reporting limit $(0.05\mu\text{g/L})$
			PGC030	2008-2009	Desulfinyl FP amide	Dry	Water	Discharge	1	4	0	0%	µg/L				
			Pleasant Grove Creek- PGC030	2008-2009 F	Fipronil	Dry	Water	Discharge	1	4	2	50%	µg/L	0.052	0.064	0.025	0.066 ND substituted as 1/2 the reporting limit $(0.05\mu\text{g/L})$
			Pleasant Grove Creek- PGC030	2008-2009 F	Fipronil amide	Dry	Water	Discharge	1	4	0	0%	μg/L				
			Pleasant Grove Creek- PGC030	2008-2009 F	Fipronil sulfide	Dry	Water	Discharge	1	4	0	0%	µg/L				
			Pleasant Grove Creek- PGC030	2008-2009 F	Fipronil sulfone	Dry	Water	Discharge	1	4	1	25%	µg/L	0.056	0.025	0.025	0.118 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Pleasant Grove Creek- PGC030	2008-2009 E	Bifenthrin	Dry	Water	Discharge	1	4	1	25%		20.8		20.8	20.8 Only one sample, no median calculated
			Pleasant Grove Creek- PGC030	2008-2009		Drv	Water	Discharge	1	4	1	25%	-	18.9		18.9	18.9 Only one sample, no median calculated
			Pleasant Grove Creek- PGC030	2008-2009		Dry	Water	Discharge		4	0		ng/L	10.0		10.0	
			Pleasant Grove Creek- PGC030		Permethrin cis	Dry	Water	Discharge	1	4	1	25%	-	28.5		28.5	28.5 Only one sample, no median calculated
			Pleasant Grove Creek- PGC030					-		4	1		-				
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008-	0	Pleasant Grove Creek-		Permethrin trans	Dry	Water	Discharge	1	-		25%		25.4		25.4	25.4 Only one sample, no median calculated
Ensminger and Kelley, 2011a	2009	Sacramento	PGC030 Pleasant Grove Creek-		Desulfinyl fipronil	Wet	Water	Discharge	1	4	0		µg/L				
			PGC030 Pleasant Grove Creek-		Desulfinyl FP amide	Wet	Water	Discharge	1	4	0		µg/L				
			PGC030 Pleasant Grove Creek-	2008-2009 F		Wet	Water	Discharge	1	4	2		µg/L	0.0453	0.0445	0.025	0.067 ND substituted as 1/2 the reporting limit $(0.05 \ \mu g/L)$
			PGC030 Pleasant Grove Creek-	2008-2009 F	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L				
			PGC030 Pleasant Grove Creek-	2008-2009 F	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L				
			PGC030 Pleasant Grove Creek-	2008-2009 F	Fipronil sulfone	Wet	Water	Discharge	1	4	0	0%	µg/L				
			PGC030 Pleasant Grove Creek-	2008-2009 B	Bifenthrin	Wet	Water	Discharge	1	4	3	75%	ng/L	36.80	43.60	20.10	46.7 One sample value missing
			PGC030 Pleasant Grove Creek-	2008-2009	Cyfluthrin	Wet	Water	Discharge	1	4	0	0%	ng/L				
			PGC030	2008-2009	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L				
			Pleasant Grove Creek- PGC030	2008-2009 F	Permethrin cis	Wet	Water	Discharge	1	4	0	0%	ng/L				
			Pleasant Grove Creek- PGC030	2008-2009 F	Permethrin trans	Wet	Water	Discharge	1	4	0	0%	ng/L				
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Sacramento	Pleasant Grove Creek- PGC040	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	4	0	0%	μg/L				
			Pleasant Grove Creek- PGC040	2008-2009	Desulfinyl FP amide	Dry	Water	Receiving	1	4	0	0%	μg/L				
			Pleasant Grove Creek- PGC040	2008-2009 F	Fipronil	Dry	Water	Receiving	1	4	1	25%	µg/L	0.0370	0.025	0.025	0.061 One sample value missing and ND substituted as 1/2 the reporting limit (0.05 μ g/L)
			Pleasant Grove Creek- PGC040	2008-2009 F	Fipronil amide	Dry	Water	Receiving	1	4	0	0%	µg/L				
			Pleasant Grove Creek- PGC040	2008-2009 F		Dry	Water	Receiving	1	4	0		µg/L				
			Pleasant Grove Creek- PGC040		Fipronil sulfone	Dry	Water	Receiving	1	4	1		μg/L	0.0426	0.025	0.025	0.078 One sample value missing and ND substituted as 1/2 the reporting limit (0.05 μ g/L)
			Pleasant Grove Creek- PGC040	2008-2009 E		Dry	Water	Receiving	1	4	0		ng/L				
			Pleasant Grove Creek- PGC040			Dry	Water	Receiving	4	4	0						
			Pleasant Grove Creek- PGC040	2008-2009		,	Water	•	1	4	0		ng/L				
			Pleasant Grove Creek-			Dry		Receiving					-				
			PGC040 Pleasant Grove Creek-		Permethrin cis	Dry	Water	Receiving	1	4	0		ng/L				
	Monitoring Urban Pesticide Runoff in California 2008-		PGC040 Pleasant Grove Creek-		Permethrin trans	Dry	Water	Receiving	1	4	0		ng/L				
Ensminger and Kelley, 2011a	2009	Sacramento	PGC040 Pleasant Grove Creek-		Desulfinyl fipronil	Wet	Water	Receiving	1	4	0		µg/L				
			PGC040 Pleasant Grove Creek-		Desulfinyl FP amide	Wet	Water	Receiving	1	4	0		µg/L				
			PGC040	2008-2009 F	Fipronil	Wet	Water	Receiving	1	4	0	0%	µg/L				

						Wet/Dry	Water/	Discharge/	4		#	%	Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s) Pleasant Grove Creek-	Timeframe	Pesticide (Analyte)	Weather	Sediment	Receiving Water	# Sites Sam	ples Det			Units Weight	Mean	Median	Min	Max Notes
			PGC040 Pleasant Grove Creek-	2008-2009 F	Fipronil amide	Wet	Water	Receiving	1	4	0	0%	µg/L				
			PGC040 Pleasant Grove Creek-	2008-2009 F	ipronil sulfide	Wet	Water	Receiving	1	4	0	0%	µg/L				
			PGC040 Pleasant Grove Creek-	2008-2009 F	ipronil sulfone	Wet	Water	Receiving	1	4	0	0%	µg/L				
			PGC040	2008-2009 E	Bifenthrin	Wet	Water	Receiving	1	4	3	75%	ng/L	11.20	3.87	7.74	17.0 One sample value missing
			Pleasant Grove Creek- PGC040	2008-2009	Cyfluthrin	Wet	Water	Receiving	1	4	0	0%	ng/L				
			Pleasant Grove Creek- PGC040	2008-2009 0	Cypermethrin	Wet	Water	Receiving	1	4	0	0%	na/L				
			Pleasant Grove Creek- PGC040					-		4	0		0				
			Pleasant Grove Creek-	2008-2009 F			Water	Receiving	I			0%	-				
	Monitoring Urban Pesticide Runoff in California 2008-		PGC040		Permethrin trans		Water	Receiving	1	4	0	0%	ng/L				
Ensminger and Kelley, 2011a	2009	Sacramento	Grayson Creek-GRY010 Grayson Creek-GRY010		Desulfinyl fipronil Desulfinyl FP amide		Water Water	Discharge Discharge	1	4	0	0% 0%	μg/L μg/L				
			Grayson Creek-GRY010	2008-2009 L				Discharge	1	4	2	50%	µg/L	0.0445	0.0430	0.025	0.067 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Grayson Creek-GRY010	2008-2009 F	4.4			Discharge	1	4	0	0%	µg/L	0.0445	0.0430	0.025	0.007 ND substituted as 1/2 the reporting innic (0.05 pg/c)
			Gravson Creek-GRY010	2008-2009 F				Discharge	1	4	0	0%	µg/L				
			Gravson Creek-GRY010	2008-2009 F			Water	Discharge		4	0	0%	µg/L				
			Grayson Creek-GRY010	2008-2009 F			Water	Discharge	1	4	1	25%		0.024	0.005	0.005	0.079 ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Grayson Creek-GRY010	2008-2009 E				Discharge	1	4	1	25% 50%	ng/L	0.024 8.075	8.02	0.005 0.005	0.079 ND substituted as 1/2 the RL (0.005-0.0015 hg/L) 16.2 One sample value missing, and ND substituted as 1/2 the RL (0.005-0.0015 hg/L)
			Grayson Creek-GRY010	2008-2009 (Water Water	Discharge	1	4	2	0%	ng/L ng/L	6.075	0.02	0.005	16.2 One sample value missing, and ND substituted as 1/2 the RL (0.005-0.0015 hg/L)
			Grayson Creek-GRY010	2008-2009 C 2008-2009 F			Water	Discharge	1	4	0	0%	ng/L ng/L				
			Grayson Creek-GRY010		Permethrin trans			Discharge	1	4	0	0%	ng/L				
	Monitoring Urban Pesticide Runoff in California 2008-		Glayson Cleek-GR1010	2008-2009 F	renneunn uans	wei	water	Discharge	1	4	U	0%	ng/L				
Ensminger and Kelley, 2011a	2009	Sacramento	Grayson Creek-GRY020		Desulfinyl fipronil		Water	Discharge	1	4	0	0%	µg/L				
			Grayson Creek-GRY020		Desulfinyl FP amide	Wet	Water	Discharge	1	4	0	0%	µg/L				
			Grayson Creek-GRY020	2008-2009 F		Wet	Water	Discharge	1	4	1	25%	µg/L	0.1333	0.025	0.025	0.458 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Grayson Creek-GRY020	2008-2009 F	Fipronil amide	Wet	Water	Discharge	1	4	0	0%	µg/L				
			Grayson Creek-GRY020	2008-2009 F	Fipronil sulfide	Wet	Water	Discharge	1	4	0	0%	µg/L				
			Grayson Creek-GRY020	2008-2009 F	ipronil sulfone	Wet	Water	Discharge	1	4	1	25%	µg/L	0.040	0.025	0.025	0.085 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Grayson Creek-GRY020	2008-2009 E	Bifenthrin	Wet	Water	Discharge	1	4	1	25%	ng/L	0.019	0.005	0.005	0.06 One sample value missing, and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Grayson Creek-GRY020	2008-2009 0	Cyfluthrin	Wet	Water	Discharge	1	4	3	75%	ng/L	16.13	9.2	6.6	32.6
			Grayson Creek-GRY020	2008-2009 0	Cypermethrin	Wet	Water	Discharge	1	4	0	0%	ng/L				
			Grayson Creek-GRY020	2008-2009 F			Water	Discharge	1	4	0	0%	ng/L				
			Grayson Creek-GRY020	2008-2009 F	Permethrin trans	Wet	Water	Discharge	1	4	1	25%	ng/L	5.2	0.005	0.005	15.5 One sample value missing, and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Sacramento	Grayson Creek-GRY030	2008 2000	Desulfinyl fipronil	Wet	Water	Discharge			0	0%	µg/L				
Ensininger and Reliey, 2011a	2009	Sacramento	Grayson Creek-GRY030		Desulfinyl FP amide		Water	Discharge	1	4	0	0%	µg/L				
			Grayson Creek-GRY030	2008-2009 F				Discharge	1	4	0	0%	ua/L				
			Grayson Creek-GRY030	2008-2009 F				Discharge	1	4	0	0%	µg/L µg/L				
			Grayson Creek-GRY030	2008-2009 F	4			Discharge	1	4	0	0%	10				
			Grayson Creek-GRY030		· · · · · · · · · · · · · · · · · · ·			Discharge	1	4	0	0%	µg/L				
			Gravson Creek-GRY030	2008-2009 F 2008-2009 E				Discharge	1	4	1	25%	µg/L	0.018	0.005	0.005	0.055 ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Gravson Creek-GRY030										ng/L				
			Grayson Creek-GRY030	2008-2009			Water	Discharge	1	4	3	75%	ng/L	17.26	20	8.4	23.4 One sample value missing
			,	2008-2009			Water	Discharge	1		0	0%	ng/L				
			Grayson Creek-GRY030 Grayson Creek-GRY030	2008-2009 F			Water	Discharge	1	4 4	0	0%	ng/L				
	Monitoring Urban Pesticide Runoff in California 2008-		Martin/Koopman Canyon	2008-2009 F	Permethrin trans	vvet	Water	Discharge	1	4	0	0%	ng/L				
Ensminger and Kelley, 2011a	2009	Sacramento	Creek-MCC010	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	3	0	0%	µg/L				
			Martin/Koopman Canyon Creek-MCC010					Distance		3		00/					
			Martin/Koopman Canyon	2008-2009 L	Desulfinyl FP amide	Wet	Water	Discharge	1	3	0	0%	µg/L				
			Creek-MCC010	2008-2009 F	ipronil	Wet	Water	Discharge	1	3	1	33%	µg/L	0.033	0.025	0.025	0.05 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Martin/Koopman Canyon Creek-MCC010					Distance	1	3	0						
			Martin/Koopman Canyon	2008-2009 F	-ipronii amide	Wet	Water	Discharge	1	3	0	0%	hâ/r				
			Creek-MCC010	2008-2009 F	Fipronil sulfide	Wet	Water	Discharge	1	3	0	0%	µg/L				
			Martin/Koopman Canyon Creek-MCC010	2008-2009 F	Tinnenii oulfene	Wet	Water	Discharge		3	0	0%					
			Martin/Koopman Canyon	2008-2009 F	-ipronii suitone	wei	water	Discharge		3	U	0%	µg/L				
			Creek-MCC010	2008-2009 E	Bifenthrin	Wet	Water	Discharge	1	3	1	33%	ng/L	0.028	0.005	0.005	0.075 ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
			Martin/Koopman Canyon Creek-MCC010	2008-2009 (Cuflethrin	Wet	Water	Discharge	1	3	3	100%	201	12,795	12 795	5.89	19.7 One sample value missing
			Martin/Koopman Canyon	2006-2009 0	Synutrinin	wei	water	Discharge		3	3	100%	ng/L	12.795	12.795	5.69	19.7 One sample value missing
			Creek-MCC010	2008-2009 0	Cypermethrin	Wet	Water	Discharge	1	3	0	0%	ng/L				
			Martin/Koopman Canyon Creek-MCC010		Second Harden and			Distance		3							
			Martin/Koopman Canyon	2008-2009 F	rennethrin cis	Wet	Water	Discharge	1	3	0	0%	ng/L				
			Creek-MCC010	2008-2009 F	Permethrin trans	Wet	Water	Discharge	1	3	0	0%	ng/L				
Ensminger and Kelley 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Sacramento	Martin/Koopman Canyon Creek-MCC020	2008-2000	Desulfinyl fipronil	Wet	Water	Discharge	1	3	0	0%	µg/L				
Enorminger and Reliey, 2011a	2000	Sacramonto	Martin/Koopman Canyon	2000-2009 L	seauninyi nproritti	AA CI	**atci	Discharge	1	J	J	0%	FA_				
			Creek-MCC020	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	3	0	0%	µg/L				

Citation - Abbrev.	Papart/study Titls	Region	Site(s)	Timeframe Pesticide (Analyte)	Wet/Dry Weathe		Discharge/ Receiving Water	# Citoo Co	#	#	%	d Units	Sed. Unit Weight	Mean	Median	Min	Max Notes
Citation - Abbrev.	Report/study Title	Region	Site(s) Martin/Koopman Canyon Creek-MCC020	2008-2009 Fipronil	Wet	Water	Discharge	# Sites 5a	3 amples	o elected		a Units 1% µg/L	weight	wean	wedian	MIN	Max Notes
			Martin/Koopman Canyon				•										
			Creek-MCC020 Martin/Koopman Canyon	2008-2009 Fipronil amide	Wet	Water	Discharge	1	3	0		ι% μg/L					
			Creek-MCC020 Martin/Koopman Canyon	2008-2009 Fipronil sulfide	Wet	Water	Discharge	1	3	0	C	1% μg/L					
			Creek-MCC020 Martin/Koopman Canyon	2008-2009 Fipronil sulfone	Wet	Water	Discharge	1	3	0	C	1% μg/L					
			Creek-MCC020	2008-2009 Bifenthrin	Wet	Water	Discharge	1	3	0	C	1% ng/L					
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Cyfluthrin	Wet	Water	Discharge	1	3	2	67	% ng/L		13.80	13.80	13.7	13.9 One sample value missing
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Cypermethrin	Wet	Water	Discharge	1	3	0	C	1% ng/L					
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Permethrin cis	Wet	Water	Discharge	1	3	0		% ng/L					
			Martin/Koopman Canyon Creek-MCC020	2008-2009 Permethrin trans	Wet	Water	Discharge	1	3	0		% ng/L					
Enemineer and Kelley, 2014a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Sacramento	Martin/Koopman Canyon				•										
Ensminger and Kelley, 2011a	2009	Sacramento	Creek-MCC030 Martin/Koopman Canyon	2008-2009 Desulfinyl fipronil	Wet	Water	Discharge	1	3	0		% μg/L					
			Creek-MCC030 Martin/Koopman Canyon	2008-2009 Desulfinyl FP amide	Wet	Water	Discharge	1	3	0	C	1% μg/L					
			Creek-MCC030 Martin/Koopman Canyon	2008-2009 Fipronil	Wet	Water	Discharge	1	3	1	33	% μg/L		0.043	0.025	0.025	0.078 ND substituted as 1/2 the reporting limit (0.05 $\mu g/L)$
			Creek-MCC030	2008-2009 Fipronil amide	Wet	Water	Discharge	1	3	0	C	1% μg/L					
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Fipronil sulfide	Wet	Water	Discharge	1	3	0	C	1% μg/L					
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Fipronil sulfone	Wet	Water	Discharge	1	3	0	C	% μg/L					
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Bifenthrin	Wet	Water	Discharge	1	3	0	C	% ng/L					
			Martin/Koopman Canyon Creek-MCC030	2008-2009 Cyfluthrin	Wet	Water	Discharge	1	3	2		% ng/L		16.34	16.34	5.47	27.2 One sample value missing
			Martin/Koopman Canyon Creek-MCC030					1	3	0				10.01	10.01	0.11	
			Martin/Koopman Canyon	2008-2009 Cypermethrin	Wet	Water	Discharge			U		% ng/L					
			Creek-MCC030 Martin/Koopman Canyon	2008-2009 Permethrin cis	Wet	Water	Discharge	1	3	1		% ng/L		8.05	8.05	0.005	16.1 One sample value missing ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
	Monitoring Urban Pesticide Runoff in California 2008-		Creek-MCC030 Martin/Koopman Canyon	2008-2009 Permethrin trans	Wet	Water	Discharge	1	3	1	33	% ng/L		11.95	11.95	0.005	23.9 One sample value missing and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
Ensminger and Kelley, 2011a	2009	Sacramento	Creek-MCC040 Martin/Koopman Canyon	2008-2009 Desulfinyl fipronil	Wet	Water	Receiving	1	3	0	C	1% μg/L					
			Creek-MCC040	2008-2009 Desulfinyl FP amide	Wet	Water	Receiving	1	3	0	C	% μg/L					
			Martin/Koopman Canyon Creek-MCC040	2008-2009 Fipronil	Wet	Water	Receiving	1	3	0	C	1% μg/L					
			Martin/Koopman Canyon Creek-MCC040	2008-2009 Fipronil amide	Wet	Water	Receiving	1	3	0	C	% μg/L					
			Martin/Koopman Canyon Creek-MCC040	2008-2009 Fipronil sulfide	Wet	Water	Receiving	1	3	0	C	% μg/L					
			Martin/Koopman Canyon Creek-MCC040	2008-2009 Fipronil sulfone	Wet	Water	Receiving	1	3	0		1% μg/L					
			Martin/Koopman Canyon Creek-MCC040	2008-2009 Bifenthrin	Wet	Water	Receiving	1	3	0							
			Martin/Koopman Canyon				-	-				% ng/L					
			Creek-MCC040 Martin/Koopman Canyon	2008-2009 Cyfluthrin	Wet	Water	Receiving	1	3	2	67	% ng/L		16.23	16.23	5.25	27.2 One sample value missing
			Creek-MCC040 Martin/Koopman Canyon	2008-2009 Cypermethrin	Wet	Water	Receiving	1	3	0	C	% ng/L					
			Creek-MCC040 Martin/Koopman Canyon	2008-2009 Permethrin cis	Wet	Water	Receiving	1	3	1	33	% ng/L		8.05	8.05	0.005	16.1 One sample value missing ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
	Monitoring Urban Pesticide Runoff in California 2008-		Creek-MCC040	2008-2009 Permethrin trans	Wet	Water	Receiving	1	3	1	33	% ng/L		11.95	11.95	0.005	23.9 One sample value missing and ND substituted as 1/2 the RL (0.005-0.0015 ng/L)
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-AV01	2008-2009 Desulfinyl fipronil	Dry	Water	Receiving	1	4	4	100			0.057	0.0565	0.053	0.061
			Wood Canyon-AV01 Wood Canyon-AV01	2008-2009 Desulfinyl FP amide 2008-2009 Fipronil	Dry Dry	Water Water	Receiving Receiving	1	4	0	0 100	1% µg/L 1% µa/L		0.117	0.086	0.063	0.232
			Wood Canyon-AV01	2008-2009 Fipronil amide	Dry	Water	Receiving	1	4	0		1% μg/L 1% μg/L		0.117	0.080	0.003	0.232
			Wood Canyon-AV01 Wood Canyon-AV01	2008-2009 Fipronil sulfide	Dry	Water	Receiving	1	4	0		1% μg/L					
			Wood Canyon-AV01 Wood Canyon-AV01	2008-2009 Fipronil sulfone 2008-2009 Bifenthrin	Dry Dry	Water Water	Receiving Receiving	1	4	3 0		i% μg/L I% ng/L		0.070	0.073	0.025	0.107 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-AV01	2008-2009 Fenvalerate/esfenvalerate	Dry	Water	Receiving	1	4	0	C	% ng/L					
			Wood Canyon-AV01 Wood Canyon-AV01	2008-2009 Lambda-cyhalothrin 2008-2009 Permethrin cis	Dry Dry	Water Water	Receiving Receiving	1	4	0		1% ng/L 1% ng/L					
	Manifestra Urban Dastinid, Darati - Octore - Const		Wood Canyon-AV01	2008-2009 Permethrin trans	Dry	Water	Receiving	1	4	0		% ng/L					
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Orange County	Wood Canyon-AV01	2008-2009 Desulfinyl fipronil	Wet	Water	Receiving	1	1	1	100			0.085		0.085	0.085 Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009 Desulfinyl FP amide	Wet	Water	Receiving	1	1	1	100			0.058		0.058	0.058 Only one sample, no median calculated
			Wood Canyon-AV01 Wood Canyon-AV01	2008-2009 Fipronil 2008-2009 Fipronil amide	Wet Wet	Water Water	Receiving Receiving	1 1	1 1	1	100 100			0.164 0.088		0.164 0.088	0.164 Only one sample, no median calculated 0.088 Only one sample, no median calculated
			Wood Canyon-AV01	2008-2009 Fipronil sulfide	Wet	Water	Receiving	1	1	0	C	1% μg/L					
			Wood Canyon-AV01	2008-2009 Fipronil sulfone	Wet	Water	Receiving	1	1	1	100	1% μg/L		0.141		0.141	0.141 Only one sample, no median calculated

						Wet/Dry	Water/	Discharge/	4	¥ .	#	%	S	ed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather		-	# Sites Sam	ples Dete	ected [Veight	Mean	Median	Min	Max Notes
			Wood Canyon-AV01		Bifenthrin	Wet	Water	Receiving	1	1	0	0%	ng/L					Sample value missing
			Wood Canyon-AV01		Fenvalerate/esfenvalerate	Wet Wet	Water Water	Receiving Receiving	1	1	0	0%	ng/L					Sample value missing
			Wood Canyon-AV01		Lambda-cyhalothrin				1	1	0	0%	ng/L					Sample value missing
			Wood Canyon-AV01 Wood Canyon-AV01		Permethrin cis Permethrin trans	Wet Wet	Water Water	Receiving Receiving	1	1		0%	ng/L					Sample value missing
	Monitoring Urban Pesticide Runoff in California 2008-		Wood Gallyon Aven	2008-2009	Permeulin trans	wei	water	Receiving			0	0%	ng/L					Sample value missing
Ensminger and Kelley, 2011a	2009	Orange County	Salt Creek-SC1	2008-2009	Desulfinyl fipronil	Dry	Water	Discharge	1	5	1	20%	µg/L		0.034	0.025	0.025	0.069 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Desulfinyl FP amide	Dry	Water	Discharge	1	5	0	0%	µg/L					
			Salt Creek-SC1	2008-2009	Fipronil	Dry	Water	Discharge	1	5	2	40%	µg/L		0.047	0.025	0.025	0.085 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Fipronil amide	Dry	Water	Discharge	1	5	1	20%	µg/L		0.030	0.025	0.025	0.051 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Fipronil sulfide	Dry	Water	Discharge	1	5	0	0%	µg/L					
			Salt Creek-SC1	2008-2009	Fipronil sulfone	Dry	Water	Discharge	1	5	3	60%	µg/L		0.047	0.051	0.025	0.07 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC1	2008-2009	Bifenthrin	Dry	Water	Discharge	1	5	0	0%	ng/L					All but one sample value missing, other non detect.
			Salt Creek-SC1	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Discharge	1	5	0	0%	ng/L					All but one sample value missing, other non detect.
			Salt Creek-SC1		Lambda-cyhalothrin	Dry	Water	Discharge	1	5	0	0%	ng/L					All but one sample value missing, other non detect.
			Salt Creek-SC1		Permethrin cis	Dry	Water	Discharge	1	5	0	0%	ng/L					All but one sample value missing, other non detect.
	Marinala III a Restrict Restrict Contracts 0000		Salt Creek-SC1	2008-2009	Permethrin trans	Dry	Water	Discharge	1	5	0	0%	ng/L					All but one sample value missing, other non detect.
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Orange County	Salt Creek-SC1	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	1	0	0%	µg/L					
,,			Salt Creek-SC1		Desulfinyl FP amide	Wet	Water	Discharge	1	1	0	0%	μg/L					
			Salt Creek-SC1		Fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.103		0.103	0.103 Only one sample, no median calculated
			Salt Creek-SC1		Fipronil amide	Wet	Water	Discharge	1	1	0	0%	µg/L		0.100		0.100	
			Salt Creek-SC1		Fipronil sulfide	Wet	Water	Discharge	1	1	0	0%	µg/L					
			Salt Creek-SC1		Fipronil sulfone	Wet	Water	Discharge	1	1	1	100%	µg/L		0.076		0.076	0.076 Only one sample, no median calculated
			Salt Creek-SC1	2008-2009		Wet	Water	Discharge	1	1	0	0%	na/L					Sample value missing
			Salt Creek-SC1		Fenvalerate/esfenvalerate	Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
			Salt Creek-SC1		Lambda-cvhalothrin	Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
			Salt Creek-SC1	2008-2009	Permethrin cis	Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
			Salt Creek-SC1	2008-2009	Permethrin trans	Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
	Monitoring Urban Pesticide Runoff in California 2008-							-					-					
Ensminger and Kelley, 2011a	2009	Orange County	Salt Creek-SC3		Desulfinyl fipronil	Wet	Water	Discharge	1	5	4	80%	µg/L		0.118	0.129	0.025	0.167 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC3		Desulfinyl FP amide	Wet	Water	Discharge	1	5	1	20%	µg/L		0.033	0.025	0.025	0.063 ND substituted as 1/2 the reporting limit (0.05 $\mu\text{g/L}$)
			Salt Creek-SC3	2008-2009		Wet	Water	Discharge	1	5	4	80%	µg/L		0.242	0.175	0.025	0.518 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC3 Salt Creek-SC3		Fipronil amide	Wet	Water	Discharge	1	5	0	0%	µg/L					
			Salt Creek-SC3 Salt Creek-SC3		Fipronil sulfide	Wet	Water	Discharge	1	5	0	0%	µg/L					
			Salt Creek-SC3 Salt Creek-SC3		Fipronil sulfone	Wet	Water	Discharge	1	5	5	100%	µg/L		0.128	0.11	0.068	0.244
			Salt Creek-SC3		Bifenthrin Fenvalerate/esfenvalerate	Wet	Water Water	Discharge	1	5	2	40%	ng/L ng/L		25.05	25.05	23.7	26.4 Three sample values missing
			Salt Creek-SC3		Lambda-cyhalothrin	Wet	Water	Discharge	1	5	1	20% 20%	ng/L ng/L		13.90 8.953	13.90 8.953	0.005	27.8 Three sample values missing, ND substituted as 1/2 the reporting limit (0.005-0.015 n 17.9 Three sample values missing, ND substituted as 1/2 the reporting limit (0.005-0.015 n
			Salt Creek-SC3		Permethrin cis	Wet	Water	Discharge Discharge	1	5	2	40%	ng/L		8.955 23.80	23.80	21.7	25.9 Three sample values missing, ND substituted as 1/2 the reporting limit (0.005-0.015 m 25.9 Three sample values missing
			Salt Creek-SC3		Permethrin trans	Wet	Water	Discharge	1	5	2	40%	ng/L		31.80	31.80	25.9	37.7 Three sample values missing
	Monitoring Urban Pesticide Runoff in California 2008-			2008-2009	r enneulin uans	WEL	Water	Discharge		5	2	40 /0	lig/L		31.00	31.00	23.5	ST.T Three sample values missing
Ensminger and Kelley, 2011a	2009	Orange County	Salt Creek-SC3	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.05		0.05	0.05 Only one sample, no median calculated
			Salt Creek-SC3	2008-2009	Desulfinyl FP amide	Wet	Water	Discharge	1	1	0	0%	µg/L					
			Salt Creek-SC3	2008-2009	Fipronil	Wet	Water	Discharge	1	1	1	100%	µg/L		0.148		0.148	0.148 Only one sample, no median calculated
			Salt Creek-SC3		Fipronil amide	Wet	Water	Discharge	1	1	0	0%	µg/L					
			Salt Creek-SC3	2008-2009	Fipronil sulfide	Wet	Water	Discharge	1	1	0	0%	µg/L					
			Salt Creek-SC3	2008-2009	Fipronil sulfone	Wet	Water	Discharge	1	1	1	100%	µg/L		0.061		0.061	0.061 Only one sample, no median calculated
			Salt Creek-SC3	2008-2009		Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
			Salt Creek-SC3		Fenvalerate/esfenvalerate	Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
			Salt Creek-SC3		Lambda-cyhalothrin	Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
			Salt Creek-SC3	2008-2009		Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
	Monitoring Urban Pesticide Runoff in California 2008-		Salt Creek-SC3	2008-2009	Permethrin trans	Wet	Water	Discharge	1	1	0	0%	ng/L					Sample value missing
Ensminger and Kelley, 2011a	2009	Orange County	Salt Creek-SC5	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	5	1	20%	µg/L		0.033	0.025	0.025	0.064 ND substituted as 1/2 the reporting limit (0.05 μ g/L)
			Salt Creek-SC5		Desulfinyl FP amide	Dry	Water	Receiving	1	5	0	0%	µg/L					
			Salt Creek-SC5	2008-2009		Dry	Water	Receiving	1	5	3	60%	μg/L		0.059	0.052	0.025	0.132 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC5		Fipronil amide	Dry	Water	Receiving	1	5	0	0%	µg/L					, , , , , ,
			Salt Creek-SC5		Fipronil sulfide	Dry	Water	Receiving	1	5	0	0%	μg/L					
			Salt Creek-SC5		Fipronil sulfone	Dry	Water	Receiving	1	5	3	60%	µg/L		0.048	0.056	0.025	0.072 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Salt Creek-SC5	2008-2009	Bifenthrin	Dry	Water	Receiving	1	5	0	0%	ng/L					Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Fenvalerate/esfenvalerate	Dry	Water	Receiving	1	5	0	0%	ng/L					Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Lambda-cyhalothrin	Dry	Water	Receiving	1	5	0	0%	ng/L					Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Permethrin cis	Dry	Water	Receiving	1	5	0	0%	ng/L					Three sample values missing, others non detect
			Salt Creek-SC5	2008-2009	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L					Three sample values missing, others non detect
Enemineer and Kalley, 2011	Monitoring Urban Pesticide Runoff in California 2008- 2009	Orenes County	Call Canaly CCE	0000 0000	D	14/-1		Development				1000			0.50		0.50	0.50 Only an end of a solution
Ensminger and Kelley, 2011a	2003	Orange County	Salt Creek-SC5 Salt Creek-SC5		Desulfinyl fipronil Desulfinyl FP amide	Wet Wet	Water Water	Receiving Receiving	1	1	1	100% 0%	µg/L		0.59		0.59	0.59 Only one sample, no median calculated
			Salt Creek-SC5 Salt Creek-SC5		,	Wet	Water Water	5	1	1	0	0% 100%	µg/L		0.12		0.12	0.12. Only one completion exclusion
			Salt Creek-SC5	2008-2009		Wet	Water Water	Receiving	1	1	1		µg/L		0.12		0.12	0.12 Only one sample, no median calculated
			Salt Creek-SC5	2008-2009 2008-2009		Wet	Water	Receiving Receiving	1	1	0	0% 0%	μg/L μg/L					
			Salt Creek-SC5		Fipronil sulfone	Wet	Water	Receiving	1	1	1	100%	µg/L		0.077		0.077	0.077 Only one sample, no median calculated
				2000 2000							•	.0070	P9		0.017		0.077	

						Wet/Dry	Water/	Discharge/		#	#	%		Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather			# Sites Sa	mples	Detected			Weight	Mean	Median	Min	Max Notes
			Salt Creek-SC5	2008-2009 B		Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
			Salt Creek-SC5		envalerate/esfenvalerate	Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
			Salt Creek-SC5		ambda-cyhalothrin	Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
			Salt Creek-SC5	2008-2009 P		Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
	Machada III an Destable Description Oatfacts 0000		Salt Creek-SC5	2008-2009 P	ermethrin trans	Wet	Water	Receiving	1	1	0	0	% ng/L					Sample value missing
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Orange County	Wood Canyon-WC1	2008-2009	Desulfinyl fipronil	Dry	Water	Receiving	1	4	1	25	% µg/L		0.05	0.025	0.025	0.111 ND substituted as 1/2 the reporting limit (0.05 µg/L)
,,		j)	Wood Canyon-WC1		Desulfinvl FP amide	Dry	Water	Receiving	1	4	. 0		% μg/L		0.00	0.020	0.020	e. TTT THE debutted as the reporting intra (0.00 pg/2)
			Wood Canyon-WC1	2008-2009 F		Dry	Water	Receiving	1	4	1	25			0.064	0.025	0.025	0.179 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canvon-WC1	2008-2009 F		Dry	Water	Receiving	1	. 4	. 0		% μg/L		0.001	0.020	0.020	et no no dobatato do ne alo reporting inna (oto pgre)
			Wood Canvon-WC1	2008-2009 F		Dry	Water	Receiving	1	4	0	-	% μg/L % μg/L					
			Wood Canyon-WC1	2008-2009 F		Dry	Water	Receiving	1	4	2				0.046	0.039	0.025	0.08 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC1	2008-2009 B		Dry	Water	Receiving	1	4	- 1	25			0.040	0.000	12.3	12.3 Three sample values missing, no mean or median calculated
			Wood Canyon-WC1		envalerate/esfenvalerate	Dry	Water	Receiving	1	4	0		% ng/L % ng/L				12.5	Three sample values missing, no mean of median calculated
			Wood Canyon-WC1		ambda-cyhalothrin	Dry	Water	Receiving	1	4	0		% ng/L					Three sample values missing, other non detect
			Wood Canyon-WC1	2008-2009 L 2008-2009 P	,	Dry	Water	Receiving	1	4	0		% ng/L % ng/L					Three sample values missing, other non detect
			Wood Canyon-WC1					•		4	0		-					
	Monitoring Urban Pesticide Runoff in California 2008-		wood Callyon-wen	2008-2009 P	erneurin uans	Dry	Water	Receiving	'	4	U	U	% ng/L					Three sample values missing, other non detect
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-WC2	2008-2009 D	Desulfinyl fipronil	Dry	Water	Receiving	1	5	3	60	% µg/L		0.044	0.051	0.025	0.061 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC2		Desulfinyl FP amide	Dry	Water	Receiving	1	5	0		% µg/L					
			Wood Canyon-WC2		ipronil	Dry	Water	Receiving	1	5	4				0.091	0.106	0.025	0.14 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC2	2008-2009 F	ipronil amide	Dry	Water	Receiving	1	5	0	0	% µg/L					
			Wood Canyon-WC2	2008-2009 F		Dry	Water	Receiving	1	5	0	0	% µg/L					
			Wood Canyon-WC2	2008-2009 F		Dry	Water	Receiving	1	5	4	80			0.063	0.066	0.025	0.092 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC2	2008-2009 B		Dry	Water	Receiving	1	5	0		% ng/L					Three sample values missing, others non detect
			Wood Canyon-WC2		envalerate/esfenvalerate	Dry	Water	Receiving	1	5	0		% ng/L					Three sample values missing, others non detect
			Wood Canyon-WC2		ambda-cyhalothrin	Dry	Water	Receiving	1	5	0		% ng/L					Three sample values missing, others non detect
			Wood Canyon-WC2	2008-2009 P		Dry	Water	Receiving	1	5	0		% ng/L					Three sample values missing, others non detect
			Wood Canyon-WC2	2008-2009 P		Dry	Water	Receiving	1	5	0		% ng/L					Three sample values missing, others non detect
	Monitoring Urban Pesticide Runoff in California 2008-			2000 2000 1		5.,	Trato.	reconning		0			/0 11g/2					nied dampie taldee mooning, ethere non detect
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-WC2	2008-2009 D	Desulfinyl fipronil	Wet	Water	Receiving	1	1	0	0	% µg/L					
			Wood Canyon-WC2	2008-2009 D	Desulfinyl FP amide	Wet	Water	Receiving	1	1	0	0	% µg/L					
			Wood Canyon-WC2	2008-2009 F	ipronil	Wet	Water	Receiving	1	1	1	100	% µg/L		0.076		0.076	0.076 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 F	ipronil amide	Wet	Water	Receiving	1	1	0	0	% µg/L					
			Wood Canyon-WC2	2008-2009 F	ipronil sulfide	Wet	Water	Receiving	1	1	0	0	% µg/L					
			Wood Canyon-WC2		ipronil sulfone	Wet	Water	Receiving	1	1	1	100			0.091		0.091	0.091 Only one sample, no median calculated
			Wood Canyon-WC2	2008-2009 B	Bifenthrin	Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
			Wood Canyon-WC2	2008-2009 F	envalerate/esfenvalerate	Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
			Wood Canyon-WC2		ambda-cyhalothrin	Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
			Wood Canyon-WC2	2008-2009 P		Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
			Wood Canyon-WC2	2008-2009 P	Permethrin trans	Wet	Water	Receiving	1	1	0		% ng/L					Sample value missing
	Monitoring Urban Pesticide Runoff in California 2008-							•										
Ensminger and Kelley, 2011a	2009	Orange County	Wood Canyon-WC3	2008-2009 D	, ,	Dry	Water	Discharge	1	5	5				0.086	0.093	0.056	0.118
			Wood Canyon-WC3		Desulfinyl FP amide	Dry	Water	Discharge	1	5	3				0.052	0.062	0.025	0.078 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC3	2008-2009 F	ipronil	Dry	Water	Discharge	1	5	5	100	% µg/L		0.618	0.359	0.064	2.11
			Wood Canyon-WC3	2008-2009 F		Dry	Water	Discharge	1	5	4	80			0.096	0.101	0.025	0.145 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC3	2008-2009 F	ipronil sulfide	Dry	Water	Discharge	1	5	1	20			0.031	0.025	0.025	0.057 ND substituted as 1/2 the reporting limit (0.05 µg/L)
			Wood Canyon-WC3	2008-2009 F	ipronil sulfone	Dry	Water	Discharge	1	5	5	100	% μg/L		0.215	0.171	0.069	0.546
			Wood Canyon-WC3	2008-2009 B	Bifenthrin	Dry	Water	Discharge	1	5	2	40	% ng/L		8.44	8.44	5.18	11.7 Three sample values missing
			Wood Canyon-WC3	2008-2009 F	envalerate/esfenvalerate	Dry	Water	Discharge	1	5	0	0	% ng/L					Three sample values missing, others non detects
			Wood Canyon-WC3	2008-2009 L	ambda-cyhalothrin	Dry	Water	Discharge	1	5	0	0	% ng/L					Three sample values missing, others non detects
			Wood Canyon-WC3	2008-2009 P		Dry	Water	Discharge	1	5	1	20	% ng/L		7.75	7.75	0.005	15.5 Three sample values missing, and ND substituted as 1/2 the reporting limit (0.005-0.1
			Wood Canyon-WC3	2008-2009 P	Permethrin trans	Dry	Water	Discharge	1	5	0	0	% ng/L					Three sample values missing, others non detects
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	Orange County	Wood Canyon-WC3	0000 0000 0		14/-1	14/-1	Distance				400			0.000		0.000	
Ensininger and Reliey, 2011a	2009	Oralige County	Wood Canyon-WC3		Desulfinyl fipronil	Wet	Water Water	Discharge	1	1	1	100			0.093		0.093	0.093 Only one sample, no median calculated
			,		Desulfinyl FP amide	Wet		Discharge	1	1	0	-	% μg/L					
			Wood Canyon-WC3	2008-2009 F		Wet	Water	Discharge	1	1	1	100			0.196		0.196	0.196 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 F		Wet	Water	Discharge	1	1	1	100			0.064		0.064	0.064 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 F		Wet	Water	Discharge	1	1	0		% μg/L					
			Wood Canyon-WC3	2008-2009 F		Wet	Water	Discharge	1	1	1	100			0.16		0.16	0.16 Only one sample, no median calculated
			Wood Canyon-WC3	2008-2009 B		Wet	Water	Discharge	1	1	0		% ng/L					Sample value missing
			Wood Canyon-WC3		envalerate/esfenvalerate	Wet	Water	Discharge	1	1	0		% ng/L					Sample value missing
			Wood Canyon-WC3		ambda-cyhalothrin	Wet	Water	Discharge	1	1	0		% ng/L					Sample value missing
			Wood Canyon-WC3	2008-2009 P		Wet	Water	Discharge	1	1	0		% ng/L					Sample value missing
	Monitoring Urban Pesticide Runoff in California 2008-		Wood Canyon-WC3	2008-2009 P	ermethrin trans	Wet	Water	Discharge	1	1	0	0	% ng/L					Sample value missing
Ensminger and Kelley, 2011a	2009	San Diego	San Diego River-SDR151	2008-2009	Desulfinyl fipronil	Wet	Water	Discharge	1	1	0	0	% µg/L					
			San Diego River-SDR151		Desulfinyl FP amide	Wet	Water	Discharge	1	. 1	0		% μg/L % μg/L					
			San Diego River-SDR151	2008-2009 F	,	Wet	Water	Discharge	1	1	1				0.053		0.053	0.053 Only one sample, no median calculated
			San Diego River-SDR151	2008-2009 F		Wet	Water	Discharge	1	1	0		% μg/L % μg/L		0.000		0.000	
			San Diego River-SDR151	2008-2009 F		Wet	Water	Discharge	1	1	0		% μg/L % μg/L					
			San Diego River-SDR151	2008-2009 F		Wet	Water	Discharge	1	1	1	-			0.071		0.071	0.071 Only one sample, no median calculated
			· · · · · · · · · · · · · · · · · · ·	2000 2000 1								.00	P9'L		0.071		0.077	

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe Pesticide (Analyte)	Wet/Dry Weathe		Discharge/ Receiving Water		# #	# cted De	% tected l	Sed. Un Units Weigh		Median	Min	Max Notes
Ensminger and Kelley, 2011a	Monitoring Urban Pesticide Runoff in California 2008- 2009	San Diego	San Diego River-SDR158													
Ensminger and Kelley, 2011a	2009	San Diego	San Diego River-SDR158 San Diego River-SDR158	2008-2009 Desulfinyl fipronil 2008-2009 Desulfinyl FP amide	Wet Wet	Water Water	Receiving Receiving	1	1	0		μg/L μg/L				
			San Diego River-SDR158	2008-2009 Fipronil	Wet	Water	Receiving	1	1	1		μg/L	0.058		0.058	0.058 Only one sample, no median calculated
			San Diego River-SDR158	2008-2009 Fipronil amide	Wet	Water	Receiving	1	1	0		μg/L				
			San Diego River-SDR158	2008-2009 Fipronil sulfide	Wet	Water	Receiving	1	1	0		µg/L				
			San Diego River-SDR158	2008-2009 Fipronil sulfone	Wet	Water	Receiving	1	1	1	100%	µg/L	0.079		0.079	0.079 Only one sample, no median calculated
	Monitoring Urban Pesticide Runoff in Northern California	1	Dry Creek, Alder Creek, Willow Creek, Pleasant													
Ensminger and Kelley, 2011b	2009-2010	Sacramento	Grove Creek	2009-2010 Desulfinyl Fipronil	Dry	Water	Discharge	8	11	1	9%	µg/L	0.031	0.025	0.025	0.088 ND and trace detections substituted as 1/2 the reporting limit (0.025 $\mu g/L)$
			Dry Creek, Alder Creek, Willow Creek, Pleasant													
			Grove Creek	2009-2010 Desulfinyl Fipronil Amide	Dry	Water	Discharge	8	11	0	0%	µg/L				
			Dry Creek, Alder Creek,				-									
			Willow Creek, Pleasant Grove Creek	2009-2010 Fipronil	Dry	Water	Discharge	8	11	1	9%	ua/L	0.045	0.025	0.025	0.244 ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
			Dry Creek, Alder Creek,		,			-				-3-				
			Willow Creek, Pleasant Grove Creek	2009-2010 Fipronil Amide	Dry	Water	Discharge	8	11	0	0%	110/				
			Dry Creek, Alder Creek,	2008-2010 Piptonii Anide	Diy	water	Discharge	0		0	0 /6	pg/L				
			Willow Creek, Pleasant		_											
			Grove Creek Dry Creek, Alder Creek	2009-2010 Fipronil Sulfide	Dry	Water	Discharge	8	11	0	0%	µg/L				
			Willow Creek, Pleasant													
			Grove Creek Dry Creek, Alder Creek,	2009-2010 Fipronil Sulfone	Dry	Water	Discharge	8	11	1	9%	µg/L	0.029	0.025	0.025	0.066 ND and trace detections substituted as 1/2 the reporting limit $(0.025\mu\text{g/L})$
			Willow Creek, Pleasant													
			Grove Creek	2009-2010 Bifenthrin	Dry	Water	Discharge	8	11	6	55%	ng/L	9.987	7.43	0.005	49.100 ND and trace detections substituted as 1/2 the reporting limit (0.005 ng/L)
			Dry Creek, Alder Creek, Willow Creek, Pleasant													
			Grove Creek	2009-2010 Permethrin trans	Dry	Water	Discharge	8	11	0	0%	ng/L				
			Dry Creek, Alder Creek,													
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010	Sacramento	Willow Creek, Pleasant Grove Creek	2009-2010 Desulfinyl Fipronil	Dry	Water	Receiving	2	3	0	0%	µg/L				
•			Dry Creek, Alder Creek,		,		5					10				
			Willow Creek, Pleasant Grove Creek	2009-2010 Desulfinyl Fipronil Amide	Dry	Water	Receiving	2	3	0	0%	110/				
			Dry Creek, Alder Creek,	2009-2010 Desuminyi Pipronii Amide	Diy	water	Receiving	2	3	U	0%	µg/L				
			Willow Creek, Pleasant													
			Grove Creek Dry Creek, Alder Creek,	2009-2010 Fipronil	Dry	Water	Receiving	2	3	0	0%	µg/L				
			Willow Creek, Pleasant													
			Grove Creek	2009-2010 Fipronil Amide	Dry	Water	Receiving	2	3	0	0%	µg/L				
			Dry Creek, Alder Creek, Willow Creek, Pleasant													
			Grove Creek	2009-2010 Fipronil Sulfide	Dry	Water	Receiving	2	3	0	0%	µg/L				
			Dry Creek, Alder Creek, Willow Creek, Pleasant													
			Grove Creek	2009-2010 Fipronil Sulfone	Dry	Water	Receiving	2	3	0	0%	µg/L				
			Dry Creek, Alder Creek,													
			Willow Creek, Pleasant Grove Creek	2009-2010 Bifenthrin	Dry	Water	Receiving	2	3	0	0%	ng/L				
			Dry Creek, Alder Creek,	2003-2010 Dilentinin	Diy	Water	receiving	2	5	0	070	ngic				
			Willow Creek, Pleasant Grove Creek	2009-2010 Permethrin trans	Dev	Mater	Dessides	2	3	0	0%					
			Dry Creek, Alder Creek,	2009-2010 Permetirin trans	Dry	Water	Receiving	2	3	U	0%	ng/L				
	Monitoring Urban Pesticide Runoff in Northern California	1	Willow Creek, Pleasant													
Ensminger and Kelley, 2011b	2009-2010	Sacramento	Grove Creek Dry Creek, Alder Creek	2009-2010 Desulfinyl Fipronil	Wet	Water	Discharge	7	13	0	0%	µg/L				
			Willow Creek, Pleasant													
			Grove Creek	2009-2010 Desulfinyl Fipronil Amide	Wet	Water	Discharge	7	13	0	0%	µg/L				
			Dry Creek, Alder Creek, Willow Creek, Pleasant													
			Grove Creek	2009-2010 Fipronil	Wet	Water	Discharge	7	13	5	38%	µg/L	0.054	0.025	0.025	0.203 ND and trace detections substituted as 1/2 the reporting limit (0.025 $\mu\text{g/L})$
			Dry Creek, Alder Creek, Willow Creek, Pleasant													
			Grove Creek	2009-2010 Fipronil Amide	Wet	Water	Discharge	7	13	0	0%	µg/L				
			Dry Creek, Alder Creek,				-									
			Willow Creek, Pleasant Grove Creek	2009-2010 Fipronil Sulfide	Wet	Water	Discharge	7	13	0	0%	ua/L				
			Dry Creek, Alder Creek,			Water	Discharge	'	15	0	070	P9/-				
			Willow Creek, Pleasant Grove Creek	0000 0010		14/-1	Distance	7	13	2	150/			0.005	0.005	
			Dry Creek Alder Creek	2009-2010 Fipronil Sulfone	Wet	Water	Discharge	/	13	2	15%	µg/L	0.0	0.025	0.025	0.062 ND and trace detections substituted as 1/2 the reporting limit (0.025 $\mu\text{g/L})$
			Willow Creek, Pleasant													
			Grove Creek Dry Creek, Alder Creek,	2009-2010 Bifenthrin	Wet	Water	Discharge	7	13	13	100%	ng/L	31.19	33.20	5.37	51.30
			Willow Creek, Pleasant													
			Grove Creek	2009-2010 Permethrin trans	Wet	Water	Discharge	7	13	1	8%	ng/L	1.54	0.005	0.005	20.0 ND and trace detections substituted as 1/2 the reporting limit $\ (.005 \ \text{ng/L})$
	Monitoring Urban Pesticide Runoff in Northern California	1	Dry Creek, Alder Creek, Willow Creek, Pleasant													
Ensminger and Kelley, 2011b	2009-2010	Sacramento	Grove Creek	2009-2010 Desulfinyl Fipronil	Wet	Water	Receiving	3	4	0	0%	µg/L				
			Dry Creek, Alder Creek, Willow Creek, Pleasant													
			Grove Creek	2009-2010 Desulfinyl Fipronil Amide	Wet	Water	Receiving	3	4	0	0%	µg/L				
								-								

Citation - Abbrev.	Report/study Title Region	Site(s)	Timeframe Pesticide (Analyte)	Wet/Dr Weathe		Discharge/ t Receiving Water	# Sites Sa	# amples De	# tected	% Detecte	d Units	Sed. Unit Weight	Mean	Median	Min	Max Notes
		Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010 Fipronil	Wet	Water	Receiving	3	4	1	25	% µg/L		0.039	0.039	0.025	0.053 ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
		Dry Creek, Alder Creek, Willow Creek, Pleasant	·			·										
		Grove Creek Dry Creek, Alder Creek, Willow Creek, Pleasant	2009-2010 Fipronil Amide	Wet	Water	Receiving	3	4	0	0	% µg/L					
		Grove Creek Dry Creek, Alder Creek,	2009-2010 Fipronil Sulfide	Wet	Water	Receiving	3	4	0	0	% µg/L					
		Willow Creek, Pleasant Grove Creek	2009-2010 Fipronil Sulfone	Wet	Water	Receiving	3	4	0	0	% µg/L					
		Dry Creek, Alder Creek, Willow Creek, Pleasant Grove Creek	2009-2010 Bifenthrin	Wet	Water	Receiving	3	4	4	100	% ng/L		13.658	13.45	19.5	8.23
		Dry Creek, Alder Creek, Willow Creek, Pleasant	2003-2010 Bildhumin	Wet	Water	receiving	5	-	-	100	// Ilg/E		10.000	10.40	13.5	0.20
	Monitoring Urban Pesticide Runoff in Northern California	Grove Creek Martin Canyon/Koopman	2009-2010 Permethrin trans	Wet	Water	Receiving	1	4	0		% ng/L					
Ensminger and Kelley, 2011b	2009-2010 SF Bay Area	Canyon Creek Martin Canyon/Koopman	2009-2010 Desulfinyl Fipronil	Wet	Water	Receiving	1	2	0		% μg/L					
		Canyon Creek Martin Canyon/Koopman Canyon Creek	2009-2010 Desulfinyl Fipronil Amide 2009-2010 Fipronil	Wet	Water	Receiving	1	2	0		% µg/L		0.0425	0.0425	0.025	0.06 ND and trace detections substituted as 1/2 the reporting limit (0.025 uo/L)
		Martin Canyon/Koopman Canyon Creek	2009-2010 Fipronil Amide	Wet Wet	Water	Receiving	1	2	1		% µg/L % µg/L		0.0425	0.0425	0.025	0.06 ND and trace detections substituted as 1/2 the reporting limit (0.025 µg/L)
		Martin Canyon/Koopman				-	1	2	0							
		Canyon Creek Martin Canyon/Koopman	2009-2010 Fipronil Sulfide	Wet	Water	Receiving		_			% μg/L					
		Canyon Creek Martin Canyon/Koopman Canyon Creek	2009-2010 Fipronil Sulfone 2009-2010 Bifenthrin	Wet Wet	Water Water	Receiving	1	2	0	100	% µg/L % ng/L		10.520	10.52	6.84	14.2
		Martin Canyon/Koopman Canyon Creek	2009-2010 Permethrin trans	Wet	Water	Receiving	1	2	0		% ng/L		10.520	10.32	0.04	172
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010 SF Bay Area	Martin Canyon/Koopman Canyon Creek	2009-2010 Desulfinyl Fipronil	Wet	Water	Discharge	3	-	0		% μg/L					
		Martin Canyon/Koopman Canyon Creek	2009-2010 Desulfinyl Fipronil Amide	Wet	Water	Discharge	3	6	0		/- µg/L					
		Martin Canyon/Koopman Canyon Creek	2009-2010 Fipronil	Wet	Water	Discharge	3	6	0		% µg/L					
		Martin Canyon/Koopman Canyon Creek	2009-2010 Fipronil Amide	Wet	Water	Discharge	3	6	0		% µg/L					
		Martin Canyon/Koopman Canyon Creek	2009-2010 Fipronil Sulfide	Wet	Water	Discharge	3	6	0	0	% µg/L					
		Martin Canyon/Koopman Canyon Creek	2009-2010 Fipronil Sulfone	Wet	Water	Discharge	3	6	0	0	% µg/L					
		Martin Canyon/Koopman Canyon Creek	2009-2010 Bifenthrin	Wet	Water	Discharge	3	6	6	100	% ng/L		18.02	15.85	8.92	34.8
		Martin Canyon/Koopman Canyon Creek	2009-2010 Permethrin trans	Wet	Water	Discharge	3	3	0	0	% ng/L					
Ensminger and Kelley, 2011b	Monitoring Urban Pesticide Runoff in Northern California 2009-2010 Northern California	Dublin and Roseville Outfalls	2009-2010 Bifenthrin	Dry	Sediment	Discharge	8	8	8	100	% µg/kg	Dry	81.3	101.25	3.26	138.14
		Dublin and Roseville Outfalls	2009-2010 Cyfluthrin	Dry	Sediment	Discharge	8	8	8	100	% µg/kg	Dry	21.0	14.89	1.69	70.74
		Dublin and Roseville Outfalls	2009-2010 Cypermethrin	Dry	Sediment	Discharge	8	8	5	63	% µg/kg	Dry	8.2	6.11	0.50	36.41 ND substituted as 1/2 the detection limit (1.0 $\mu\text{g/kg})$
		Dublin and Roseville Outfalls	2009-2010 Deltamethrin	Dry	Sediment	Discharge	8	8	4	50	% µg/kg	Dry	3.1	1.52	0.50	9.39 ND substituted as 1/2 the detection limit (1.0 $\mu\text{g/kg})$
		Dublin and Roseville Outfalls	2009-2010 Fenvalerate/esfenvalerate	Dry	Sediment	Discharge	8	8	0	0	% µg/kg	Dry				
		Dublin and Roseville Outfalls	2009-2010 Lambda-cyhalothrin	Dry	Sediment	Discharge	8	8	5	63	% µg/kg	Dry	3.0	2.77	0.50	6.20 ND substituted as 1/2 the detection limit (1.0 µg/kg)
		Dublin and Roseville Outfalls		Dry	Sediment	Discharge	8	8	8	100	% µg/kg	Dry	11.5	11.5	1.69	23.13
		Dublin and Roseville Outfalls		Dry	Sediment	Discharge	8	8	8	100		Dry	7.7	7.12	1.71	19.88
		Dublin and Roseville Outfalls		Dry	Sediment	Discharge	8	8	0		% µg/kg	Dry				
	Monitoring Urban Pesticide Runoff in Northern California		2009-2010 Fenpropathrin	Dry	Sediment	Discharge	8	8	0		% µg/kg	Dry				
Ensminger and Kelley, 2011b	2009-2010 Northern California	Dublin and Roseville Creeks		Dry	Sediment	Receiving	2	2	2		% µg/kg	Dry	61.0	61.02	15.89	106.15
		Dublin and Roseville Creeks		Dry	Sediment Sediment	Receiving	2	2	2 0		% µg/kg % µg/kg	Dry	9.9	9.89	3.98	15.79
		Dublin and Roseville Creeks	2009-2010 Cypermethrin 2009-2010 Deltamethrin	Dry Dry	Sediment	Receiving	2	2	0		% µg/kg % µg/kg	Dry Dry	2.4	2.40	0.50	4.30 ND substituted as 1/2 the detection limit (1.0 µg/kg)
		Dublin and Roseville Creeks		Dry	Sediment	Receiving	2	2	1		% µg/kg % µg/kg	Dry	2.4	2.40	0.00	Too no substituted as ind the detection minit (1.0 µg/kg)
		Dublin and Roseville Creeks		Dry	Sediment	Receiving	2	2	0		% µg/kg % µg/kg	Dry				
			2009-2010 Permethrin cis	Dry	Sediment	Receiving	2	2	1		% µg/kg	Dry	2.2	2.23	0.50	3.96 ND substituted as 1/2 the detection limit (1.0 µg/kg)
		Dabini and recornic Ofecka	2000 2010 1 Gilledini 60	Diy	Seament	. coosivilig	2	2	'	50	·• hāurā	Diy	2.2	2.23	0.00	o.ou no oucontor do nz ale deletion limit (1.0 pg/kg)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Wate	er #Sites	# Samples	# Detected	% Detecte	d Units	Sed. Unit Weight	Mean	Median	Min	Max Notes
	noportolady rido		Dublin and Roseville Creeks		Permethrin trans	Dry	Sediment	Receiving	2	2	20100100			Dry	1.2	1.22	0.50	1.93 ND substituted as 1/2 the detection limit (1.0 μg/kg)
			Dublin and Roseville Creeks	2009-2010		Dry	Sediment	Receiving	2	2					1.2	1.22	0.50	1.55 ND substituted as 1/2 the detection limit (1.0 µg/kg)
						,			-	-				Dry				
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in		Dublin and Roseville Creeks	2009-2010	Fenpropathrin	Dry	Sediment	Receiving	2	2) (ı% µg/kg	Dry				
Ensminger et al., 2012	three urban areas of California, USA, 2008-2011	Orange County-Laguna Niguel	Salt Creek- SC1	2008-2011	Bifenthrin	Dry	Water	Discharge	1	9		6 67	% ng/L		14.54	9.40	1.75	66.40 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC1	2008-2011		Dry	Water	Discharge	1	13					0.12	0.076	0.025	0.60 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μg /L)
			Salt Creek- SC1 Salt Creek- SC1	2008-2011 2008-2011		Dry Dry	Water Water	Discharge Discharge	1	13 9	1		15		0.07 6.27	0.059 5.0	0.025 5.0	0.173 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L) 16.40 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC1	2008-2011		Dry	Water	Discharge	1	9			% ng/L 1% ng/L		0.27	5.0	5.0	10.40 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ig /L)
			Salt Creek- SC1	2008-2011	- /	Dry	Water	Discharge	1	9			% ng/L					
			Salt Creek- SC1		Permethrin cis	Dry	Water	Discharge	1	9			% ng/L		6.84	5.0	5.0	21.60 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in		Salt Creek- SC1	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9		1 1	% ng/L		6.61	5.0	5.0	19.5 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L) $$
Ensminger et al., 2012	three urban areas of California, USA, 2008-2011	Orange County-Laguna Niguel	Salt Creek- SC2	2008-2011	Bifenthrin	Dry	Water	Discharge	1	7		5 7'	% ng/L		12.3	6.10	1.75	53.20 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC2	2008-2011		Dry	Water	Discharge	1	7			% µg/L		0.08	0.065	0.025	0.204 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC2	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	7					0.09	0.076	0.054	0.183
			Salt Creek- SC2	2008-2011		Dry	Water	Discharge	1	7			% ng/L					
			Salt Creek- SC2 Salt Creek- SC2	2008-2011		Dry	Water	Discharge	1	7			% ng/L					
			Salt Creek- SC2	2008-2011	L-Cynaiothrin Permethrin cis	Dry Dry	Water Water	Discharge Discharge	1	7			% ng/L % ng/L		5.1	5.0	5.0	5.71 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC2		Permethrin trans	Dry	Water	Discharge	. 1	. 7			% ng/L		5.19	5.0	5.0	6.67 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011							Ū					Ū					
Ensminger et al., 2012		Orange County-Laguna Niguel			Bifenthrin	Dry	Water	Discharge	1	9	1		-		20.6	17.5	6.05	53.0
			Salt Creek- SC3		Fipronil	Dry	Water	Discharge	1	13	1				0.2	0.15	0.03	0.52 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC3 Salt Creek- SC3		Fipronil sulfone Deltamethrin	Dry Dry	Water Water	Discharge Discharge	1	13 9	1				0.1 12.5	0.1097 5.0	0.06 5.0	0.319 42.7 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC3		Cvfluthrin	Dry	Water	Discharge	1	9					9.5	5.0	5.0	 27.4 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC3	2008-2011	-)	Dry	Water	Discharge	. 1	9					7.6	5.0	5.0	17.9 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC3	2008-2011	Permethrin cis	Dry	Water	Discharge	1	9		1 44	% ng/L		17.5	5.0	5.0	56.4 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in		Salt Creek- SC3	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9		1 44	% ng/L		25.5	5.0	5.0	101 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L) $$
Ensminger et al., 2012	three urban areas of California, USA, 2008-2011	Orange County-Laguna Niguel	Salt Creek- SC4	2008-2011	Bifenthrin	Dry	Water	Discharge	1	7		5 7'	% ng/L		7.5	5.82	1.75	22.5 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC4	2008-2011	Fipronil	Dry	Water	Discharge	1	7		6 86			0.10	0.09	0.025	0.18 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC4		Fipronil sulfone	Dry	Water	Discharge	1	7					0.09	0.084	0.025	0.139 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μ g /L)
			Salt Creek- SC4	2008-2011		Dry	Water	Discharge	1	7			% ng/L					
			Salt Creek- SC4 Salt Creek- SC4	2008-2011		Dry	Water	Discharge	1	7			% ng/L			5.0	5.0	
			Salt Creek- SC4	2008-2011	L-Cynaiothrin Permethrin cis	Dry Dry	Water Water	Discharge Discharge	1	9					7.6 7.8	5.0 5.0	5.0 5.0	 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L) Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC4		Permethrin trans	Dry	Water	Discharge	. 1	. 7					9.3	5.0	5.0	31.2 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011							Ū					Ū					
Ensminger et al., 2012		Orange County-Laguna Niguel		2008-2011		Dry	Water	Receiving	1	4			% ng/L					
			Salt Creek- SC5 Salt Creek- SC5	2008-2011	P	Dry	Water	Receiving	1	8			% µg/L		0.07	0.057	0.025	0.13 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC5 Salt Creek- SC5	2008-2011 2008-2011	Fipronil sulfone	Dry Dry	Water Water	Receiving Receiving	1	8			% µg/L 1% ng/L		0.05	0.058	0.025	0.077 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μg /L)
			Salt Creek- SC5	2008-2011		Dry	Water	Receiving	1	4			1% ng/L					
			Salt Creek- SC5	2008-2011		Dry	Water	Receiving	1	4			% ng/L					
			Salt Creek- SC5	2008-2011		Dry	Water	Receiving	1	4			% ng/L					
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in		Salt Creek- SC5	2008-2011	Permethrin trans	Dry	Water	Receiving	1	4) (% ng/L					
Ensminger et al., 2012	three urban areas of California, USA, 2008-2011	Orange County-Laguna Niguel	Salt Creek- SC6	2008-2011	Bifenthrin	Drv	Water	Receiving	1	7		2 29	% na/L		3.460	1.75	1.75	10.10 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC6		Fipronil	Dry	Water	Receiving	1	7		2 29			0.047	0.025	0.025	0.111 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Salt Creek- SC6	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	7			1% μg/L		0.04	0.025	0.025	0.06 Non-detects substituted as 1/2 the reporting limit (RL = 0.05µg /L)
			Salt Creek- SC6		Deltamethrin	Dry	Water	Receiving	1	7			% ng/L					
			Salt Creek- SC6 Salt Creek- SC6		Cyfluthrin	Dry	Water	Receiving	1	7			% ng/L					
			Salt Creek- SC6 Salt Creek- SC6	2008-2011	L-Cyhalothrin Permethrin cis	Dry Dry	Water Water	Receiving	1	7			1% ng/L 1% ng/L					
			Salt Creek- SC6		Permethrin cis Permethrin trans	Dry Dry	Water	Receiving Receiving	1	7			1% ng/L 1% ng/L					
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California. USA. 2008–2011			2000-2011		2.,		looming		ľ		. (nyr					
Ensminger et al., 2012		Orange County-Laguna Niguel		2008-2011	Bifenthrin	Dry	Water	Receiving	1	7		5 71	% ng/L		12.37	8.03	1.75	50.20 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Salt Creek- SC7	2008-2011	Fipronil	Dry	Water	Receiving	1	7		5 7	% µg/L		0.09	0.061	0.025	0.295 Non-detects substituted as 1/2 the reporting limit ($RL=0.05\mu g$ /L)

						Wet/Dry	Water/	Discharge/		#	#	%	Se	d. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather	Sediment	Receiving Water	# Sites San	nples De	etected D	etected	Units V	eight M		ledian	Min	Max Notes
			Salt Creek- SC7	2008-2011		Dry	Water	Receiving	1	7	5	71%	µg/L	(0.05	0.059	0.025	0.085 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μ g /L)
			Salt Creek- SC7 Salt Creek- SC7	2008-2011 2008-2011		Dry	Water	Receiving	1	7	0	0%	ng/L					
			Salt Creek- SC7 Salt Creek- SC7		-,	Dry	Water	Receiving	1 1	7	0	0%	ng/L					
			Salt Creek- SC7	2008-2011 2008-2011		Dry Dry	Water Water	Receiving Receiving	1	7	0 2	0% 29%	ng/L ng/L		2.54	5.0	5.0	260.0 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Salt Creek- SC7		Permethrin trans	Dry	Water	Receiving	1	7	2	29% 43%	ng/L ng/L		2.54 7.97	5.0	5.0	351.0 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark			2000-2011	cimetrini dens	Diy	water	Receiving		,	5	4070	119/L	5	1.51	5.0	5.0	551.6 Horedetees adoatated as 1/2 the reporting initia (Tre= 5-15hg/E)
	exceedances in urban surface waters and sediments in																	
Ensminger et al., 2012	three urban areas of California, USA, 2008-2011	Orange County-Aliso Viejo	Wood Creek-WC1	2008-2011	Bifenthrin	Drv	Water	Discharge	1	8	7	88%	ng/L	1	4.29	10.24	1.75	52.80 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
Enanninger et al., 2012			Wood Creek-WC1	2008-2011		Dry	Water	Discharge	1	11	4	36%	µg/L		0.06	0.025	0.025	0.179 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC1	2008-2011		Drv	Water	Discharge	1	11	5	45%	µg/L		0.05	0.025	0.025	0.122 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC1	2008-2011	Deltamethrin	Dry	Water	Discharge	1	8	0	0%	ng/L					
			Wood Creek-WC1	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	8	0	0%	ng/L					
			Wood Creek-WC1	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	8	0	0%	ng/L					
			Wood Creek-WC1	2008-2011	Permethrin cis	Dry	Water	Discharge	1	8	0	0%	ng/L					
			Wood Creek-WC1	2008-2011	Permethrin trans	Dry	Water	Discharge	1	8	0	0%	ng/L					
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																	
Ensminger et al., 2012		Orange County-Aliso Viejo	Wood Creek-WC2	2008-2011	Bifenthrin	Dry	Water	Receiving	1	10	6	60%	ng/L	1	0.53	6.975	1.75	37.10 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Wood Creek-WC2	2008-2011		Dry	Water	Receiving	1	14	12	86%	µg/L		.134	0.092	0.025	0.58 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC2		Fipronil sulfone	Dry	Water	Receiving	1	14	13	93%	µg/L	0	.077	0.081	0.025	0.106 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μ g /L)
			Wood Creek-WC2	2008-2011		Dry	Water	Receiving	1	10	0	0%	ng/L					
			Wood Creek-WC2	2008-2011		Dry	Water	Receiving	1	10	0	0%	ng/L					
			Wood Creek-WC2 Wood Creek-WC2	2008-2011	,	Dry	Water	Receiving	1	10	0	0%	ng/L					
			Wood Creek-WC2 Wood Creek-WC2	2008-2011	Permethrin cis Permethrin trans	Dry	Water Water	Receiving	1	10 10	0	0%	ng/L					
	Pesticide occurrence and aquatic benchmark		WOOD CIEEK-WCZ	2006-2011	Permeurin trans	Dry	water	Receiving	1	10	U	0%	ng/L					
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011					_												
Ensminger et al., 2012		Orange County-Aliso Viejo	Wood Creek-WC3 Wood Creek-WC3	2008-2011 2008-2011		Dry	Water Water	Discharge Discharge	1	9 13	9 11	100% 85%	ng/L		6.87).32	19.70 1.35	5.18 0.025	314.00 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Wood Creek-WC3		Fipronii Fipronil sulfone	Dry Dry	Water	Discharge	1	13	11	85% 77%	μg/L μg/L).32).13	0.091	0.025	2.11 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L) 0.546 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC3	2008-2011		Dry	Water	Discharge	1	9	1	11%	ng/L		5.12	5.0	5.0	6.06 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Wood Creek-WC3	2008-2011		Dry	Water	Discharge	1	9	0	0%	ng/L			0.0	0.0	
			Wood Creek-WC3	2008-2011		Dry	Water	Discharge	1	9	ů 0	0%	ng/L					
			Wood Creek-WC3	2008-2011	,	Dry	Water	Discharge	1	9	2	22%	ng/L	2	9.72	5.0	5.0	217.0 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Wood Creek-WC3	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9	2	22%	ng/L		9.04	5.0	5.0	311.0 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																	
Ensminger et al., 2012		Orange County-Aliso Viejo	Wood Creek-WC5	2008-2011	Bifenthrin	Dry	Water	Receiving	1	2	0	0%	ng/L					
			Wood Creek-WC5	2008-2011	Fipronil	Dry	Water	Receiving	1	6	6	100%	µg/L	().13	0.125	0.06343	0.23
			Wood Creek-WC5	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	6	5	83%	µg/L		0.1	0.092	0.025	0.141 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Wood Creek-WC5	2008-2011		Dry	Water	Receiving	1	2	0	0%	ng/L					
			Wood Creek-WC5	2008-2011		Dry	Water	Receiving	1	2	0	0%	ng/L					
			Wood Creek-WC5	2008-2011		Dry	Water	Receiving	1	2	0	0%	ng/L					
			Wood Creek-WC5	2008-2011		Dry	Water	Receiving	1	2	0	0%	ng/L					
	Pesticide occurrence and aquatic benchmark		Wood Creek-WC5	2008-2011	Permethrin trans	Dry	Water	Receiving	1	2	0	0%	ng/L					
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																	
Ensminger et al., 2012		Sacramento (SAC)	Alder Creek- FOL001 Alder Creek- FOL001	2008-2011		Dry	Water	Discharge	1	4	2	50%	ng/L		5.28	14.13	1.75	31.10 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alder Creek- FOL001 Alder Creek- FOL001	2008-2011		Dry	Water	Discharge	1	4	1	25%	µg/L).04).03	0.025	0.025	0.087 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Alder Creek- FOL001	2008-2011	Fipronil sulfone	Dry Dry	Water Water	Discharge Discharge	1	4	1	25% 0%	µg/L ng/L	L.	1.03	0.025	0.025	0.062 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μ g /L)
			Alder Creek- FOL001	2008-2011		Dry	Water	Discharge	1	4	0	0%	ng/L					
			Alder Creek- FOL001	2008-2011		Dry	Water	Discharge	1	4	0	0%	ng/L					
			Alder Creek- FOL001	2008-2011		Dry	Water	Discharge	1	4	0	0%	ng/L					
			Alder Creek- FOL001	2008-2011	Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L					
	Pesticide occurrence and aquatic benchmark					-		-					-					
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																	
Ensminger et al., 2012	ande a ban areas of Camornia, COA, 2000-2011	Sacramento (SAC) Folsom	Alder Creek- FOL002	2008-2011	Bifenthrin	Dry	Water	Discharge	1	4	3	75%	ng/L	2	0.01	19.45	1.75	39.40 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alder Creek- FOL002	2008-2011	Fipronil	Dry	Water	Discharge	1	4	0	0%	μg/L					
			Alder Creek- FOL002	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	4	0	0%	µg/L					
			Alder Creek- FOL002	2008-2011	Deltamethrin	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Alder Creek- FOL002	2008-2011		Dry	Water	Discharge	1	4	0	0%	ng/L					
			Alder Creek- FOL002	2008-2011	.,	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Alder Creek- FOL002		Permethrin cis	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Alder Creek- FOL002	2008-2011	Permethrin trans	Dry	Water	Discharge	1	4	0	0%	ng/L					

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sitos	#	# Detected	% Detected	Units	Sed. Unit Weight	Mean	Median	Min	Max Notes
Citation - Abbrev.	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in	negion	Sile(s)	Timetrame	Pesticide (Analyte)	weather	Seuiment	Receiving water	# Siles 3	sampies	Delected	Delected	Units	weight	Mean	weulan	WIII	wax NOIES
	three urban areas of California, USA, 2008-2011																	
Ensminger et al., 2012		Sacramento (SAC) Folsom	Alder Creek- FOL100 Alder Creek- FOL100		Bifenthrin	Dry	Water	Receiving	1	3	2	67%	•		8.49	8.23	1.75	15.50 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alder Creek- FOL100 Alder Creek- FOL100	2008-2011	Fipronil Fipronil sulfone	Dry Dry	Water Water	Receiving Receiving	1	3	0	0% 0%	μg/L μg/L					
			Alder Creek- FOL100		Deltamethrin	Dry	Water	Receiving	1	3	0	0%						
			Alder Creek- FOL100	2008-2011		Dry	Water	Receiving	1	3	0	0%						
			Alder Creek- FOL100		L-Cyhalothrin	Dry	Water	Receiving	1	3	ů 0	0%						
			Alder Creek- FOL100		Permethrin cis	Dry	Water	Receiving	1	3	0	0%	•					
			Alder Creek- FOL100	2008-2011	Permethrin trans	Dry	Water	Receiving	1	3	0	0%						
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in																	
	three urban areas of California, USA, 2008–2011		Pleasant Grove Creek-															
Ensminger et al., 2012		Sacramento (SAC) Roseville	KBC100	2008-2011	Bifenthrin	Dry	Water	Receiving	1	3	3	100%	ng/L		15.23	6.73	2.15	36.80
			Pleasant Grove Creek- KBC100	2008-2011	Finrani	Dry	Water	Receiving	1	3	1	33%	µg/L		0.033	0.025	0.025	0.058 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-	2008-2011	ripionii	Diy	water	Receiving		5	'	33%	hð\r		0.033	0.025	0.025	0.000 Non-detects substituted as 1/2 the reporting infit (RE= 0.00pg /E)
			KBC100	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	3	0	0%	µg/L					
			Pleasant Grove Creek- KBC100	2008 2011	Deltamethrin	Dev	Water	Receiving	1	3	0	09/						
			Pleasant Grove Creek-	2006-2011	Delametrini	Dry	water	Receiving		3	U	0%	ng/L					
			KBC100	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	3	1	33%	ng/L		5.02	5.0	5.0	5.05 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek- KBC100	2008 2011	L-Cyhalothrin	Dry	Water	Receiving	1	3	0	0%	ng/L					
			Pleasant Grove Creek-	2008-2011	L-Cyndiotrinin	Diy	water	Receiving		5	0	0 /6	ng/L					
			KBC100	2008-2011	Permethrin cis	Dry	Water	Receiving	1	3	0	0%	ng/L					
			Pleasant Grove Creek- KBC100	0000 0011	Described and	D		Development			0	00/						
	Pesticide occurrence and aquatic benchmark		KBC 100	2008-2011	Permethrin trans	Dry	Water	Receiving	1	3	0	0%	ng/L					
	exceedances in urban surface waters and sediments in																	
Ensminger et al., 2012	three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek- PGC010	2008-2011	Diforthrip	Dry	Water	Discharge	1	13	13	100%	ng/L		51.277	33.20	14.1	203.00
Ensimiliger et al., 2012		Saciamento (SAC) Roseville	Pleasant Grove Creek-	2008-2011	Dienuini	Diy	water	Discharge		15	15	100 /6	ng/L		51.277	33.20	14.1	203.00
			PGC010	2008-2011	Fipronil	Dry	Water	Discharge	1	16	8	50%	µg/L		0.06	0.039	0.025	0.244 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek- PGC010	2008 2011	Fipronil sulfone	Dry	Water	Discharge		16	3	19%	µg/L		0.03	0.025	0.025	0.066 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-	2006-2011	ripronii sulione	Diy	water	Discharge		10	3	19%	µg/L		0.03	0.025	0.025	0.000 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			PGC010	2008-2011	Deltamethrin	Dry	Water	Discharge	1	13	0	0%	ng/L					
			Pleasant Grove Creek- PGC010	2008-2011	Cuflethrin	Dry	Water	Discharge	1	13	2	15%	ng/L		5.5	5.0	5.0	11 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-	2000-2011	Cynddinin	Diy	water	Discharge		15	2	1376	ng/L		5.5	5.0	5.0	The reporting limit (RE= 5-15ig /E)
			PGC010	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	13	1	8%	ng/L		5.98	5.0	5.0	17.8 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek- PGC010	2008 2011	Permethrin cis	Dry	Water	Discharge	1	13	0	0%	ng/L					
			Pleasant Grove Creek-	2008-2011	remeanincis	Diy	water	Discharge		15	0	0 /6	ng/L					
			PGC010	2008-2011	Permethrin trans	Dry	Water	Discharge	1	13	0	0%	ng/L					
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in																	
	three urban areas of California, USA, 2008–2011		Pleasant Grove Creek-															
Ensminger et al., 2012		Sacramento (SAC) Roseville	PGC015	2008-2011	Bifenthrin	Dry	Water	Receiving	1	5	4	80%	ng/L		41.15	35.80	1.75	71.10 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Pleasant Grove Creek- PGC015	2008-2011	Fioronil	Drv	Water	Receiving	1	5	1	20%	µg/L		0.05	0.025	0.025	0.125 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-			,		receiving		5					0.05	0.025	0.025	0.125 NorPdetects substituted as 1/2 the reporting infit (TE= 0.05pg/E)
			PGC015 Pleasant Grove Creek-	2008-2011	Fipronil sulfone	Dry	Water	Receiving	1	5	0	0%	µg/L					
			Pleasant Grove Creek- PGC015	2008-2011	Deltamethrin	Dry	Water	Receiving	1	5	0	0%	ng/L					
			Pleasant Grove Creek-					rtoooning		0			-					
			PGC015	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	5	2	40%	ng/L		11.8	5.0	5.0	35.8 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek- PGC015	2008-2011	L-Cyhalothrin	Dry	Water	Receiving	1	5	0	0%	ng/L					
			Pleasant Grove Creek-			,				-	-							
			PGC015	2008-2011	Permethrin cis	Dry	Water	Receiving	1	5	0	0%	ng/L					
			Pleasant Grove Creek- PGC015	2008-2011	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L					
	Pesticide occurrence and aquatic benchmark			2000 2011		5.9	Trato.	rtoooning		0	Ū	0,0	19.2					
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011		Pleasant Grove Creek-															
Ensminger et al., 2012	thee urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	PGC019	2008-2011	Bifenthrin	Dry	Water	Discharge	1	5	5	100%	ng/L		46.20	22.50	10.6	124.00
•			Pleasant Grove Creek-															
			PGC019 Pleasant Grove Creek-	2008-2011	Fipronil	Dry	Water	Discharge	1	5	4	80%	µg/L		0.09	0.062	0.025	0.252 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			PGC019	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	5	1	20%	µg/L		0.04	0.025	0.025	0.085 Non-detects substituted as 1/2 the reporting limit (RL= 0.05ug /L)
			Pleasant Grove Creek-			,												
			PGC019 Blossopt Crove Crock	2008-2011	Deltamethrin	Dry	Water	Discharge	1	5	0	0%	ng/L					
			Pleasant Grove Creek- PGC019	2008-2011	Cyfluthrin	Dry	Water	Discharge	1	5	3	60%	ng/L		9.1	5.11	5.0	22.4 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
			Pleasant Grove Creek-										-					
			PGC019 Pleasant Grove Creek-	2008-2011	L-Cyhalothrin	Dry	Water	Discharge	1	5	0	0%	ng/L					
			PGC019	2008-2011	Permethrin cis	Dry	Water	Discharge	1	5	0	0%	ng/L					
			Pleasant Grove Creek- PGC019					-		-			-					
			PGC019	2008-2011	Permethrin trans	Dry	Water	Discharge	1	5	0	0%	ng/L					

Citation - Abbrev.	Report/study Title Pesticide occurrence and aquatic benchmark	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# Sites San	# Iples De	# etected D	% etected L	Sed. Uni Jnits Weight		Median	Min	Max Notes
Ensminger et al., 2012	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek- PGC020	2008-2011	Pifonthrin	Dry	Water	Discharge	1	9	9	100%	ng/L	23.16	14.60	5.53	51.30
Ensiminger et al., 2012		Saciamento (SAC) Roseville	Pleasant Grove Creek- PGC020	2008-2011		Dry	Water	Discharge	1	9 12	4		µg/L	0.07	0.025	0.025	0.203 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek-		Fipronil sulfone	Dry	Water	Discharge		12	3		μg/L	0.03	0.025	0.025	0.064 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek- PGC020	2008-2011		Dry	Water	Discharge	1	9	0	25%		0.03	0.025	0.025	0.004 Non-detects substituted as 1/2 the reporting innit (RL= 0.05µg /L)
			Pleasant Grove Creek- PGC020	2008-2011		Dry	Water	Discharge	1	9	0		ng/L				
			Pleasant Grove Creek- PGC020				Water	-	1	9	0		-				
			PGC020 Pleasant Grove Creek- PGC020	2008-2011		Dry		Discharge	1	-		0%	-				
			PGC020 Pleasant Grove Creek- PGC020	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9	0	0%					
	Pesticide occurrence and aquatic benchmark exceedances in urban surface waters and sediments in		PGC020	2008-2011	Permethrin trans	Dry	Water	Discharge	1	9	0	0%	ng/L				
Ensminger et al., 2012	three urban areas of California, USA, 2008–2011	Sacramento (SAC) Roseville	Pleasant Grove Creek- PGC025	2008-2011	Pifonthrin	Dry	Water	Receiving	1	5	5	100%	20/1	29.83	21.50	5.33	73.20
Ensminger et al., 2012		Sacramento (SAC) Roseville	Pleasant Grove Creek- PGC025							5	5		ng/L				
			Pleasant Grove Creek- PGC025	2008-2011		Dry	Water Water	Receiving	1	5	4		µg/L	0.10	0.063	0.025	0.275 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Pleasant Grove Creek- PGC025	2008-2011		Dry		Receiving					µg/L	0.05	0.025	0.025	0.089 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}0.05\mu\text{g}\text{/L})$
			PGC025 Pleasant Grove Creek- PGC025	2008-2011		Dry	Water	Receiving	1	5	0		ng/L				
			Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	5	1	20%		5.76	5.0	5.0	8.8 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}$ 5-15ng /L)
			PGC025 Pleasant Grove Creek-	2008-2011	,	Dry	Water	Receiving	1	5	0	0%					
			PGC025 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	5	0	0%	•				
	Pesticide occurrence and aquatic benchmark		PGC025	2008-2011	Permethrin trans	Dry	Water	Receiving	1	5	0	0%	ng/L				
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011		Pleasant Grove Creek- PGC030	2008-2011						13		100%			38.20		
Ensminger et al., 2012		Sacramento (SAC) Roseville	Pleasant Grove Creek-			Dry	Water	Discharge	1		13		ng/L	39.46		13.5	110.00
			PGC030 Pleasant Grove Creek-	2008-2011		Dry		Discharge	1	16	7		µg/L	0.06	0.025	0.025	0.254 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			PGC030 Pleasant Grove Creek-		Fipronil sulfone	Dry		Discharge	1	16	3		µg/L	0.04	0.025	0.025	0.118 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}0.05\mu\text{g}\text{/L})$
			PGC030 Pleasant Grove Creek-	2008-2011		Dry	Water	Discharge	1	13	0		ng/L				
			PGC030 Pleasant Grove Creek-	2008-2011		Dry	Water	Discharge	1	13	4		ng/L	6.80	5.0	5.0	18.9 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}$ 5-15ng /L)
			PGC030 Pleasant Grove Creek-	2008-2011		Dry	Water	Discharge	1	13	0		ng/L				
			PGC030 Pleasant Grove Creek-	2008-2011		Dry	Water	Discharge	1	13	5		ng/L	11.94	5.0	5.0	35.5 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}$ 5-15ng /L)
	Pesticide occurrence and aquatic benchmark		PGC030	2008-2011	Permethrin trans	Dry	Water	Discharge	1	13	5	38%	ng/L	10.3	5.0	5.0	33.7 Non-detects substituted as 1/2 the reporting limit ($RL=$ 5-15ng /L)
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011		Pleasant Grove Creek-								_						
Ensminger et al., 2012		Sacramento (SAC) Roseville	PGC040 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	13	7		ng/L	12.50	7.59	1.75	79.90 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}3.5\text{ng/L})$
			PGC040 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	16	2		µg/L	0.03	0.025	0.025	0.061 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}0.05\mu\text{g}$ /L)
			PGC040 Pleasant Grove Creek-		Fipronil sulfone	Dry	Water	Receiving	1	16	1		µg/L	0.03	0.025	0.025	0.078 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}0.05\mu\text{g}$ /L)
			PGC040 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	13	0	0%					
			PGC040 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	13	0	0%	-				
			PGC040 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	13	0	0%	-				
			PGC040 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	13	0	0%					
	Pesticide occurrence and aquatic benchmark		PGC040	2008-2011	Permethrin trans	Dry	Water	Receiving	1	13	0	0%	ng/L				
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011		Pleasant Grove Creek-			_							_				
Ensminger et al., 2012		Sacramento (SAC) Roseville	PGC050 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	3	3		ng/L	12.37	9.41	2.59	25.10
			PGC050 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	3	0	0%					
			PGC050 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	3	0	0%					
			PGC050 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1	3	0	0%					
			PGC050	2008-2011	Cyfluthrin	Dry	Water	Receiving	1	3	0	0%	ng/L				

						Wet/Dry	/ Water/	Discharge/		#	#		%	Sed. Un	it			
Citation - Abbrev.	Report/study Title	Region	Site(s) Pleasant Grove Creek- PGC050	Timeframe	Pesticide (Analyte)	Weathe		Receiving Wate	r # Sites					Units Weight	Mean	Median	Min	Max Notes
			Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1		3	0		ng/L				
			PGC050 Pleasant Grove Creek-	2008-2011		Dry	Water	Receiving	1		3	0	0%					
	Pesticide occurrence and aquatic benchmark		PGC050	2008-2011	Permethrin trans	Dry	Water	Receiving	1		3	0	0%	ng/L				
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																	
Ensminger et al., 2012		San Francisco Bay (SFB)	Grayson Creek- GRY010 Grayson Creek- GRY010	2008-2011 2008-2011		Dry	Water Water	Discharge Discharge	1		5 8	2 2		ng/L	5.89 0.03	1.75 0.025	1.75 0.025	16.20 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L) 0.067 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Grayson Creek- GRY010		Fipronil sulfone	Dry Dry	Water	Discharge	1		8	0	0%	μg/L μg/L	0.05	0.025	0.025	0.007 Non-detects substituted as 1/2 the reporting limit (RE= 0.05µg/E)
			Grayson Creek- GRY010		Deltamethrin	Dry	Water	Discharge	1		5	0		ng/L				
			Grayson Creek- GRY010 Grayson Creek- GRY010	2008-2011 2008-2011	Cyfluthrin L-Cybalothrin	Dry Dry	Water Water	Discharge Discharge	1		5 5	0	0% 0%	ng/L ng/L				
			Grayson Creek- GRY010		Permethrin cis	Dry	Water	Discharge	1		5	0	0%	ng/L				
	Pesticide occurrence and aquatic benchmark		Grayson Creek- GRY010	2008-2011	Permethrin trans	Dry	Water	Discharge	1		5	0	0%	ng/L				
	exceedances in urban surface waters and sediments in																	
Ensminger et al., 2012	three urban areas of California, USA, 2008–2011	San Francisco Bay (SFB)	Grayson Creek- GRY020	2008-2011	Bifenthrin	Dry	Water	Discharge	1		5	3	60%	ng/L	10.4	6.60	1.75	32.60 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Grayson Creek- GRY020	2008-2011		Dry	Water	Discharge	1		8	1		µg/L	0.08	0.025	0.025	0.458 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μ g /L)
			Grayson Creek- GRY020		Fipronil sulfone	Dry	Water	Discharge	1		8	1		µg/L	0.03	0.025	0.025	0.085 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}0.05\mu\text{g}\text{/L})$
			Grayson Creek- GRY020 Grayson Creek- GRY020	2008-2011 2008-2011		Dry Dry	Water Water	Discharge Discharge	1		5 5	0		ng/L ng/L				
			Grayson Creek- GRY020	2008-2011		Dry	Water	Discharge	1		5	0		ng/L				
			Grayson Creek- GRY020		Permethrin cis	Dry	Water	Discharge	1		5	0		ng/L				
	Pesticide occurrence and aquatic benchmark		Grayson Creek- GRY020	2008-2011	Permethrin trans	Dry	Water	Discharge	1		5	1	20%	ng/L	7.1	5.0	5.0	15.5 Non-detects substituted as 1/2 the reporting limit ($RL\text{=}$ 5-15ng /L)
	exceedances in urban surface waters and sediments in																	
Ensminger et al., 2012	three urban areas of California, USA, 2008–2011	San Francisco Bay (SFB)	Grayson Creek- GRY030	2008-2011	Bifenthrin	Dry	Water	Receiving	1		5	3	60%	ng/L	11.06	8.40	1.75	23.40 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Grayson Creek- GRY030		Fipronil	Dry	Water	Receiving	1		8	0		µg/L				
			Grayson Creek- GRY030		Fipronil sulfone	Dry	Water	Receiving	1		8	0	0%	µg/L				
			Grayson Creek- GRY030 Grayson Creek- GRY030		Deltamethrin Cvfluthrin	Dry	Water Water	Receiving	1		5 5	0		ng/L				
			Grayson Creek- GRY030	2008-2011	.,	Dry Dry	Water	Receiving Receiving	1		5 5	0		ng/L ng/L				
			Grayson Creek- GRY030		Permethrin cis	Dry	Water	Receiving	1		5	0		ng/L				
	Pesticide occurrence and aquatic benchmark		Grayson Creek- GRY030	2008-2011	Permethrin trans	Dry	Water	Receiving	1		5	0	0%	ng/L				
	exceedances in urban surface waters and sediments in																	
Ensminger et al., 2012	three urban areas of California, USA, 2008–2011	San Francisco Bay (SFB)	Alamo Creek- MCC010	2008-2011	Bifenthrin	Dry	Water	Discharge	1		7	4	57%	ng/L	9.2	5.80	1.75	19.70 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alamo Creek- MCC010		Fipronil	Dry	Water	Discharge	1		0	1	10%	µg/L	0.0275	0.025	0.025	0.05 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μ g /L)
			Alamo Creek- MCC010 Alamo Creek- MCC010		Fipronil sulfone	Dry	Water	Discharge	1		0	10	100%	µg/L				
			Alamo Creek- MCC010		Deltamethrin Cvfluthrin	Dry Dry	Water Water	Discharge Discharge	1		7 7	0	0% 0%	ng/L ng/L				
			Alamo Creek- MCC010	2008-2011	.,	Dry	Water	Discharge	1		7	0		ng/L				
			Alamo Creek- MCC010	2008-2011	Permethrin cis	Dry	Water	Discharge	1		7	0	0%	ng/L				
	Pesticide occurrence and aquatic benchmark		Alamo Creek- MCC010	2008-2011	Permethrin trans	Dry	Water	Discharge	1		7	0	0%	ng/L				
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																	
Ensminger et al., 2012	thee urban areas of California, USA, 2006–2011	San Francisco Bay (SFB)	Alamo Creek- MCC020	2008-2011	Bifenthrin	Dry	Water	Discharge	1		7	4	57%	ng/L	11.64	13.70	1.75	34.80 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alamo Creek- MCC020	2008-2011		Dry	Water	Discharge	1	1	-	0		µg/L				
			Alamo Creek- MCC020		Fipronil sulfone	Dry	Water	Discharge	1	1		0		µg/L				
			Alamo Creek- MCC020 Alamo Creek- MCC020	2008-2011 2008-2011	Deltamethrin Cvfluthrin	Dry Dry	Water Water	Discharge Discharge	1		7 7	0		ng/L ng/L				
			Alamo Creek- MCC020	2008-2011	.,	Dry	Water	Discharge	1		7	0		ng/L				
			Alamo Creek- MCC020		Permethrin cis	Dry	Water	Discharge	1		7	0		ng/L				
	Pesticide occurrence and aquatic benchmark		Alamo Creek- MCC020	2008-2011	Permethrin trans	Dry	Water	Discharge	1		7	0	0%	ng/L				
	exceedances in urban surface waters and sediments in																	
Ensminger et al., 2012	three urban areas of California, USA, 2008–2011	San Francisco Bay (SFB)	Alamo Creek- MCC030	2008-2011	Bifenthrin	Dry	Water	Discharge	1		7	4	57%	ng/L	7.28	5.47	1.75	16.90 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
Enormiger et al., 2012		currianosco suy (cr s)	Alamo Creek- MCC030	2008-2011		Dry	Water	Discharge	1			1		µg/L	0.03	0.025	0.025	0.78 Non-detects substituted as 1/2 the reporting limit (RL= 0.05µg /L)
			Alamo Creek- MCC030	2008-2011	Fipronil sulfone	Dry	Water	Discharge	1	1	0	0	0%	µg/L				
			Alamo Creek- MCC030		Deltamethrin	Dry	Water	Discharge	1		7	0		ng/L				
			Alamo Creek- MCC030	2008-2011	.,	Dry	Water	Discharge	1		7	0		ng/L				
			Alamo Creek- MCC030	2008-2011	.,	Dry	Water	Discharge	1		7	0		ng/L				
			Alamo Creek- MCC030 Alamo Creek- MCC030		Permethrin cis Permethrin trans	Dry Dry	Water Water	Discharge Discharge	1		7 7	0		ng/L ng/L				
	Pesticide occurrence and aquatic benchmark			2000-2011		2.,		Stoorialige			•	č	570	··				
	exceedances in urban surface waters and sediments in three urban areas of California, USA, 2008–2011																	
Ensminger et al., 2012		San Francisco Bay (SFB)	Alamo Creek- MCC040	2008-2011		Dry	Water	Receiving	1		7	4		ng/L	8.39	5.25	1.75	27.20 Non-detects substituted as 1/2 the reporting limit (RL= 3.5ng/L)
			Alamo Creek- MCC040	2008-2011	r ipronil	Dry	Water	Receiving	1	1	0	1	10%	µg/L	0.03	0.025	0.025	0.06 Non-detects substituted as 1/2 the reporting limit (RL= 0.05 μg /L)

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# Sites Sa	# nples Det	# ected De	% etected		d.Unit 'eight Me	ean M	dian	Min	Max Notes
	hoporociaa, mio	nogion	Alamo Creek- MCC040	2008-2011 Fipronil sulfone	Dry	Water	Receiving	1	10	0	0%	µg/L	orgin in		andri		10100
			Alamo Creek- MCC040	2008-2011 Deltamethrin	Dry	Water	Receiving	1	7	0	0%	ng/L					
			Alamo Creek- MCC040	2008-2011 Cyfluthrin	Dry	Water	Receiving	1	7	0	0%	ng/L					
			Alamo Creek- MCC040	2008-2011 L-Cyhalothrin	Dry	Water	Receiving	1	7	0	0%	ng/L					
			Alamo Creek- MCC040	2008-2011 Permethrin cis	Dry	Water	Receiving	1	7	1	14%	ng/L		.59	5.0	5.0	16.1 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
	Occurrence of Fipronil and Its Biologically Active		Alamo Creek- MCC040	2008-2011 Permethrin trans	Dry	Water	Receiving	1	7	1	14%	ng/L	7	7.7	5.0	5.0	23.9 Non-detects substituted as 1/2 the reporting limit (RL= 5-15ng /L)
et al., 2012	Derivatives in Urban Residential Runoff	Sacramento	N1	2006-2008 Fipronil	Dry	Water	Discharge	1	82		85%	ng/L			5.60	<dl< td=""><td>108.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	108.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
10101.,2012		Gaciamento	N1	2006-2008 Fipronil desulfinyl	Dry	Water	Discharge	1	82		82%	ng/L			2.90	<dl< td=""><td>33.60 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	33.60 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
			N1	2006-2008 fipronil sulfone	Dry	Water	Discharge	1	82		99%	ng/L			8.00	<dl< td=""><td>44.80 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	44.80 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
			N1	2006-2008 fipronil sulfide	Dry	Water	Discharge	1	82		58%	ng/L			1.10	<dl< td=""><td>54.20 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	54.20 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
	Occurrence of Fipronil and Its Biologically Active			2000-2008 Ilpionii suilue	Diy	water	Discharge		02		30 /6	ng/L			1.10	-DL	54.20 DE= below detection limit (1.5 hg/E) No mean provided
et al., 2012	Derivatives in Urban Residential Runoff	Sacramento	N2	2006-2008 Fipronil	Dry	Water	Discharge	1	79		66%	ng/L			3.10	<dl< td=""><td>2053.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	2053.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
			N2	2006-2008 Fipronil desulfinyl	Dry	Water	Discharge	1	79		72%	ng/L			1.60	<dl< td=""><td>26.20 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	26.20 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
			N2	2006-2008 fipronil sulfone	Dry	Water	Discharge	1	79		64%	ng/L			4.70	<dl< td=""><td>391.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	391.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
			N2	2006-2008 fipronil sulfide	Dry	Water	Discharge	1	79		47%	ng/L			<dl< td=""><td><dl< td=""><td>26.20 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<></td></dl<>	<dl< td=""><td>26.20 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	26.20 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
	Occurrence of Fipronil and Its Biologically Active																
et al., 2012	Derivatives in Urban Residential Runoff	Orange County	S1	2006-2008 Fipronil	Dry	Water	Discharge	1	69	69	100%	ng/L			131.00	13.5	1721.00 No mean provided
			S1	2006-2008 Fipronil desulfinyl	Dry	Water	Discharge	1	69	69	100%	ng/L			77.10	8.1	892.00 No mean provided
			S1	2006-2008 fipronil sulfone	Dry	Water	Discharge	1	69	69	100%	ng/L			145.00	3.8	925.00 No mean provided
	Operations of Figure 1 and the Distribution in the		S1	2006-2008 fipronil sulfide	Dry	Water	Discharge	1	69	69	100%	ng/L			19.8	1.4	154.00 No mean provided
et al., 2012	Occurrence of Fipronil and Its Biologically Active Derivatives in Urban Residential Runoff	Orange County	S2	2006-2008 Fipronil	Dry	Water	Discharge	1	98	98	100%	ng/L			81.10	2.8	2730.00 No mean provided
or an, 2012	Serveryes in orban residential rendit	Grange County	S2	2006-2008 Fipronil desulfinyl		Water	Discharge	1	98 68	96 68	100%	-			42.10	2.0	335.00 No mean provided
			S2	2006-2008 Fipronil desulfingi 2006-2008 fipronil sulfone	Dry Dry	Water	Discharge	1	68	68	100%	ng/L ng/L			42.10 64.30	2.4 3.2	238.00 No mean provided 238.00 No mean provided
			S2				•			00		•					•
	Occurrence of Fipronil and Its Biologically Active		02	2006-2008 fipronil sulfide	Dry	Water	Discharge	1	68		98%	ng/L			9.6	<dl< td=""><td>59.50 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	59.50 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
et al., 2012	Derivatives in Urban Residential Runoff	Orange County	S3	2006-2008 Fipronil	Dry	Water	Discharge	1	68		98%	ng/L			114.00	6.5	2481.00 No mean provided
		• •	S3	2006-2008 Fipronil desulfinyl	Dry	Water	Discharge	1	68		98%	ng/L			68.60	5.4	735.00 No mean provided
			S3	2006-2008 fipronil sulfone	Dry	Water	Discharge	1	68		98%	ng/L			59.10	<dl< td=""><td>1961.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	1961.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
			S3	2006-2008 fipronil sulfide	Dry	Water	Discharge	1	68		97%	ng/L			18.5	<dl< td=""><td>203.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	203.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
	Occurrence of Fipronil and Its Biologically Active																
et al., 2012	Derivatives in Urban Residential Runoff	Orange County	S4	2006-2008 Fipronil	Dry	Water	Discharge	1	61		100%	ng/L			79.00	1.8	10004.00 No mean provided
			S4	2006-2008 Fipronil desulfinyl	Dry	Water	Discharge	1	61		98%	ng/L			52.10	5.3	1123.00 No mean provided
			S4	2006-2008 fipronil sulfone	Dry	Water	Discharge	1	61		100%	ng/L			91.70	2.1	1169.00 No mean provided
			S4	2006-2008 fipronil sulfide	Dry	Water	Discharge	1	61		98%	ng/L			15.1	<dl< td=""><td>330.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=></td></dl<>	330.00 <dl= (1.5="" below="" detection="" l)="" limit="" mean="" ng="" no="" provided<="" td=""></dl=>
	Concentrations and loads of suspended sediment- associated pesticides in the San Joaquin River,		San Joaquin River and														
k et al., 2009	California and Tributaries during storm events	Northern California	tributaries	2008 Bifenthrin	Wet	Sediment	Receiving	9	16	16	100%	ng/g	Dry 5	5.5	1.35	0.2	51
	····· •		San Joaquin River and														
			tributaries	2008 Cyhalothrin	Wet	Sediment	Receiving	9	16	6	38%	ng/g	Dry 0	0.8	0.1	0.1	4.9 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			San Joaquin River and	0000 = 4 4 4													
			tributaries San Joaquin River and	2008 Esfenvalerate	Wet	Sediment	Receiving	9	16	10	63%	ng/g	Dry 0	0.5	0.3	0.1	1.5 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			tributaries	2008 Fenpropathrin	Wet	Sediment	Receiving	9	16	2	13%	ng/g	Dry 0	0.3	0.1	0.1	2.3 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			San Joaquin River and			ocument	rtoooning			-	1070		0.)		0.1	0.1	2.5 HB and have detections educated as h2 are detection minit (.5 Higg)
			tributaries	2008 Permethrin	Wet	Sediment	Receiving	9	16	8	50%	ng/g	Dry 2	2.9	0.65	0.1	16 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			tributaries San Joaquin River and				-	9		8		ng/g					
			tributaries	2008 Permethrin 2008 Resmethrin	Wet Wet	Sediment Sediment	Receiving Receiving	9 9	16 16	8 1	50% 6%	ng/g ng/g		2.9 1.3	0.65 0.1	0.1 0.1	16 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
			tributaries San Joaquin River and tributaries	2008 Resmethrin			-	-		8 1							
	Pyrethroid insecticides in bed sediments from urbar		tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc	2008 Resmethrin	Wet	Sediment	Receiving	-		8	6%	ng/g	Dry 1	1.3		0.1	19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
and Kuivila, 2012	Pyrethroid insecticides in bed sediments from urban agricultural streams across the United States	n and Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights	2008 Resmethrin o 2009 Bifenthrin	Wet	Sediment	Receiving	-		8 1 1	6% 100%	ng/g	Dry 1 Dry 1	1.3		0.1	 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) Only one sample, no median calculated
s and Kuivila, 2012			tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights	2008 Resmethrin o 2009 Bifenthrin 2009 Cyfluthrin	Wet Dry Dry	Sediment Sediment	Receiving Receiving Receiving	-		1 1 1	6% 100% 100%	ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7	1.3		0.1	19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g)
and Kuivila, 2012			tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights	2008 Resmethrin o 2009 Bilenthrin 2009 Cyfuthrin 2009 Cyfualthrin	Wet Dry Dry Dry	Sediment Sediment Sediment	Receiving Receiving Receiving Receiving	9 1 1 1		1 1 1 0	6% 100% 100% 0%	ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7	1.3		0.1	 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) Only one sample, no median calculated
k and Kuivila, 2012			tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights	2008 Resmethrin 0 2009 Bifenthrin 2009 Cyfluthrin 2009 Cybelothrin 2009 Cypermethrin	Wet Dry Dry Dry Dry	Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1		1 1 1 0 0	6% 100% 100% 0%	ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry	1.3		0.1	 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) Only one sample, no median calculated
x and Kuivila, 2012			tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights	2008 Resmethrin o 2009 Bilenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Cytenthrin 2009 Delta/Traiomethrin	Wet Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1	16 1 1 1 1 1	1 1 1 0 0 0	6% 100% 100% 0% 0%	ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated
x and Kuivila, 2012			tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights	2008 Resmethrin 0 2009 Bifenthrin 2009 Cyfluthrin 2009 Cybelothrin 2009 Cypermethrin	Wet Dry Dry Dry Dry	Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1		1 1 1 0 0	6% 100% 100% 0%	ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry Dry	1.3		0.1	 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) Only one sample, no median calculated
s and Kuivila, 2012			tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Heights	2008 Resmethrin 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Cypermethrin 2009 Deta/Tralomethrin 2009 Permethrin	Wet Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1	16 1 1 1 1 1	1 1 1 0 0 0	6% 100% 100% 0% 0%	ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated
and Kuivila, 2012			tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Heights Arcade Creek near Del Pasc	2008 Resmethrin 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Cypermethrin 2009 Deta/Tralomethrin 2009 Permethrin	Wet Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1	16 1 1 1 1 1 1	1 1 0 0 1	6% 100% 0% 0% 0% 100%	ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry Dry Dry Dry Dry C	1.3 1.2 7.7		0.1 1.2 7.7	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated
and Kuivila, 2012	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Heights	2008 Resmethrin 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Cypermethrin 2009 Deta/Tralomethrin 2009 Permethrin	Wet Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1	16 1 1 1 1 1	1 1 1 0 0 0	6% 100% 100% 0% 0%	ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated
		Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Arcade Creek near Del Pasc Heights	2008 Resmethrin D 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Oypermethrin 2009 Permethrin 2009 Permethrin 2009 Resmethrin	Wet Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1	16 1 1 1 1 1 1	1 1 0 0 1	6% 100% 0% 0% 100%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Heights Arcade Creek near Del Pasc	2008 Resmethrin 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Cypermethrin 2009 Deta/Tralomethrin 2009 Permethrin	Wet Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1	1 1 0 0 1 0	6% 100% 0% 0% 0% 100%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Arcade Creek near Del Pasc Heights Ducker Creek	2008 Resmethrin 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyhalothrin 2009 Opermethrin 2009 Permethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Bifenthrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1	1 1 0 0 1 0 1	6% 100% 0% 0% 100% 0%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Arcade Creek near Del Pasc Heights	2008 Resmethrin D 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Oypermethrin 2009 Permethrin 2009 Permethrin 2009 Resmethrin	Wet Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1	1 1 0 0 1 0	6% 100% 0% 0% 100%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Arcade Creek near Del Pasc Heights Ducker Creek	2008 Resmethrin 2009 Bilenthrin 2009 Cyfluthrin 2009 Cyhalothrin 2009 Deta/Trabomethrin 2009 Permethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Bilenthrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1	1 1 0 0 1 0 1	6% 100% 0% 0% 100% 0%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Arcade Creek near Del Pasc Heights Ducker Creek	2008 Resmethrin 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyhalothrin 2009 Opermethrin 2009 Permethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Bifenthrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1 1 1	- 1 1 0 0 0 1 1 0	6% 100% 0% 0% 100% 0% 100%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
ik and Kuivila, 2012 nes et al., 2008	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Arcade Creek near Del Pasc Heights Ducker Creek	2008 Resmethrin 2009 Bilenthrin 2009 Cyfluthrin 2009 Cyhalothrin 2009 Deta/Trabomethrin 2009 Permethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Bilenthrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1 1 1	- 1 1 0 0 0 1 1 0	6% 100% 0% 0% 100% 0% 100%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Heights Ducker Creek Ducker Creek Ducker Creek	2008 Resmethrin P 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Detar/ralomethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Bifenthrin 2006-2007 Cyfluthrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1 1 1	1 1 0 0 1 0 1 0 0	6% 100% 0% 0% 100% 0% 100%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry 0 Dry 0 Dry 0 Dry 0 Dry 0	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Heights Heights Ducker Creek Ducker Creek Ducker Creek	2008 Resmethrin P 2009 Bifenthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Cyfluthrin 2009 Detar/ralomethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Bifenthrin 2006-2007 Cyfluthrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1 1 1	1 1 0 0 1 0 1 0 0	6% 100% 0% 0% 100% 0% 0% 0%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry 0 Dry 0	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Arcade Creek near Del Pasc Heights Ducker Creek Ducker Creek Ducker Creek Ducker Creek Ducker Creek	2008 Resmethrin 2009 Biferthrin 2009 Cyfluthrin 2009 Cypermethrin 2009 Cypermethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Biferthrin 2006-2007 Cyfluthrin 2006-2007 Cypermethrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1 1 1	1 1 0 0 1 0 1 0 0 0 0 0	6% 100% 0% 0% 100% 0% 0% 0%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry Dry Dry 0 Dry 0 Dry 0 Dry 0 Dry 0	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated
	agricultural streams across the United States	Central Valley	tributaries San Joaquin River and tributaries Arcade Creek near Del Pasc Heights Heights Heights Heights Arcade Creek near Del Pasc Heights Ducker Creek Ducker Creek Ducker Creek	2008 Resmethrin 2009 Biferthrin 2009 Cyfluthrin 2009 Cypermethrin 2009 Cypermethrin 2009 Permethrin 2009 Resmethrin 2006-2007 Biferthrin 2006-2007 Cyfluthrin 2006-2007 Cypermethrin	Wet Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	9 1 1 1 1 1 1 1 1 1 1 1	16 1 1 1 1 1 1 1 1 1	1 1 0 0 1 0 1 0 0 0 0 0	6% 100% 0% 0% 100% 0% 0% 0%	ng/g ng/g ng/g ng/g ng/g ng/g ng/g ng/g	Dry 1 Dry 1 Dry 7 Dry 7 Dry 0 Dry 0	1.3 1.2 7.7		0.1 1.2 7.7 0.4	 19 ND and trace detections substituted as 1/2 the detection limit (.01 ng/g) 1.2 Only one sample, no median calculated 7.7 Only one sample, no median calculated 0.4 Only one sample, no median calculated

						Wet/Dry	Water/	Discharg	10/	#	#		%		Sed. Unit				
Citation - Abbrev.	Report/study Title Statewide Investigation of the Role of Pyrethroid	Region	Site(s)	Timeframe	Pesticide (Analyte)		Sediment		Vater # Sites	" Sampl		ed De			Weight	Mean	Median	Min	Max Notes
Holmes et al., 2008	Pesticides in Sediment Toxicity in California's Urban Waterways	North Coast	Hinebaugh Creek	2006-2007	Pifonthrip	Dry	Sediment	Receiving	1	1	1	1	100%	na/a	Dry	9.73		9.73	9.73 Only one sample, no median calculated
Holmes et al., 2000	Waterways	North Coast	Hinebaugh Creek	2006-2007		Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	8.00		8.00	8.00 Only one sample, no median calculated
			Hinebaugh Creek		Cypermethrin	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry				
			Hinebaugh Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry				
			Hinebaugh Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry				
			Hinebaugh Creek		Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry				
	Statewide Investigation of the Role of Pyrethroid		Hinebaugh Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry	4.00		4.00	4.00 Trace indicates below reporting limit, substituted 1/2 the reporting limit (permethrin <
	Pesticides in Sediment Toxicity in California's Urban																		
Holmes et al., 2008	Waterways	SF Bay	Blue Rock Springs	2006-2007		Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	9.01		9.01	9.01 Only one sample, no median calculated
			Blue Rock Springs	2006-2007	-,	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	20.10		20.10	20.10 Only one sample, no median calculated
			Blue Rock Springs Blue Rock Springs	2006-2007 2006-2007	Cypermethrin	Dry	Sediment Sediment	Receiving	1	1		0	0% 0%	ng/g	Dry				
			Blue Rock Springs		Esfenvalerate	Dry Dry	Sediment	Receiving Receiving	1			0	0%	ng/g ng/g	Dry Dry				
			Blue Rock Springs		Lambda-cyhalothrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Blue Rock Springs	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	8.61		8.61	8.61 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban																		
Holmes et al., 2008	Waterways	SF Bay	Corte Madera Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	2.83		2.83	2.83 Only one sample, no median calculated
			Corte Madera Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	2.19		2.19	2.19 Only one sample, no median calculated
			Corte Madera Creek		Cypermethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Corte Madera Creek Corte Madera Creek	2006-2007		Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Corte Madera Creek		Esfenvalerate Lambda-cvhalothrin	Dry	Sediment Sediment	Receiving	1			0	0%	ng/g	Dry				
			Corte Madera Creek	2006-2007		Dry Dry	Sediment	Receiving Receiving	1			1	0% 100%	ng/g ng/g	Dry Dry	9.10		9.10	9.10 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid			2000 2007		5.9	ocument	recounting			•		10070		5.9	0.10		0.10	
Holmes et al., 2008	Pesticides in Sediment Toxicity in California's Urban Waterways	SF Bay	Covote Creek	2006-2007	Difection	Dev	Sediment	Receiving	1				100%		Dev	12.20		12.20	12.20 Only one sample, no median calculated
Holmes et al., 2000	Waterways	SF Day	Covote Creek	2006-2007		Dry Dry	Sediment	Receiving	1		1	1	100%	ng/g ng/g	Dry Dry	12.20		12.20	13.70 Only one sample, no median calculated
			Coyote Creek		Cypermethrin	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry	10.10		10.10	
			Coyote Creek	2006-2007	Deltamethrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	9.31		9.31	9.31 Only one sample, no median calculated
			Coyote Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry				
			Coyote Creek		Lambda-cyhalothrin	Dry	Sediment	Receiving	1			1	100%	ng/g	Dry	2.19		2.19	2.19 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban		Coyote Creek	2006-2007	Permethrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	34.20		34.20	34.20 Only one sample, no median calculated
Holmes et al., 2008	Waterways	SF Bay	Rheem Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	9.80		9.80	9.80 Only one sample, no median calculated
			Rheem Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	0	0%	ng/g	Dry				
			Rheem Creek		Cypermethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Rheem Creek Rheem Creek		Deltamethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Rheem Creek		Esfenvalerate Lambda-cyhalothrin	Dry Dry	Sediment Sediment	Receiving Receiving	1	1		0	0% 0%	ng/g ng/g	Dry Dry				
			Rheem Creek	2006-2007		Dry	Sediment	Receiving	1			0	0%	ng/g	Dry				
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban					,		5							,				
Holmes et al., 2008	Waterways	SF Bay	Stevens Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	11.70		11.70	11.70 Only one sample, no median calculated
			Stevens Creek	2006-2007		Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	18.60		18.60	18.60 Only one sample, no median calculated
			Stevens Creek		Cypermethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Stevens Creek Stevens Creek		Deltamethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Stevens Creek		Esfenvalerate Lambda-cyhalothrin	Dry Dry	Sediment Sediment	Receiving Receiving	1	1		0	0% 0%	ng/g ng/g	Dry Dry				
			Stevens Creek	2006-2007		Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	24.00		24.00	24.00 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban					,									,				
Holmes et al., 2008	Waterways	Central Coast	Del Rey Oaks Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	3.33		3.33	3.33 Only one sample, no median calculated
			Del Rey Oaks Creek	2006-2007	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	6.07		6.07	6.07 Only one sample, no median calculated
			Del Rey Oaks Creek		Cypermethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Del Rey Oaks Creek		Deltamethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Del Rey Oaks Creek Del Rey Oaks Creek		Esfenvalerate Lambda-cyhalothrin	Dry Dry	Sediment Sediment	Receiving Receiving	1			0	0% 0%	ng/g ng/g	Dry Dry				
			Del Rey Oaks Creek	2006-2007		Dry	Sediment	Receiving	1		1	1	100%	ng/g	Dry	26.50		26.50	26.50 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban					,		5							,				
Holmes et al., 2008	Waterways	Central Coast	Franklin Creek	2006-2007		Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	7.16		7.16	7.16 Only one sample, no median calculated
			Franklin Creek	2006-2007		Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	6.98		6.98	6.98 Only one sample, no median calculated
			Franklin Creek		Cypermethrin	Dry	Sediment	Receiving	1	1		0	0%	ng/g	Dry				
			Franklin Creek Franklin Creek		Deltamethrin Esfenvalerate	Dry	Sediment Sediment	Receiving	1	1		0	0% 0%	ng/g	Dry				
			Franklin Creek		Estenvalerate Lambda-cyhalothrin	Dry Dry	Sediment	Receiving Receiving	1	י 1	1	1	0% 100%	ng/g ng/g	Dry Dry	24.20		24.20	24.20 Only one sample, no median calculated
			Franklin Creek	2006-2007		Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	10.40		10.40	10.40 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban														-				
Holmes et al., 2008	Waterways	Los Angeles	Arroyo Simi Creek	2006-2007	Bifenthrin	Dry	Sediment	Receiving	1	1	1	1	100%	ng/g	Dry	8.93		8.93	8.93 Only one sample, no median calculated

						Wet/Dry		Discharge/		#	#	%		Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s) Arroyo Simi Creek	Timeframe Pesti 2006-2007 Cvfluthrin		Weather Drv	Sediment Sediment	Receiving Water Receiving	# Sites Sa	amples D	etected 0	Detected 0%	Units ng/g	Weight Drv	Mean Me	dian	Min	Max Notes
			Arroyo Simi Creek	2006-2007 Cynutrini 2006-2007 Cynutrini		·	Sediment	Receiving	1	1	0	0%		Dry				
			Arroyo Simi Creek	2006-2007 Cypermen 2006-2007 Deltameth		'	Sediment	Receiving	1	1	0	0%	ng/g ng/g	Dry				
			Arroyo Simi Creek	2006-2007 Esfenvaler		·	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Arroyo Simi Creek	2006-2007 Lambda-c			Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Arroyo Simi Creek	2006-2007 Permethrir			Sediment	Receiving	1	1	0	0%	ng/g	Dry	4.00		4.00	4.00 Trace indicates below reporting limit, substituted 1/2 the reporting limit (permethrin <
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban					,								,				···· ·································
Holmes et al., 2008	Waterways	Los Angeles	Ballona Creek	2006-2007 Bifenthrin	[Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	5.02		5.02	5.02 Only one sample, no median calculated
		•	Ballona Creek	2006-2007 Cyfluthrin			Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Ballona Creek	2006-2007 Cypermeth	thrin [Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Ballona Creek	2006-2007 Deltameth	nrin E	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Ballona Creek	2006-2007 Esfenvaler	rate D	Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Ballona Creek	2006-2007 Lambda-c	cyhalothrin [Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
	Statewide Investigation of the Role of Pyrethroid		Ballona Creek	2006-2007 Permethrir	in [Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	14.10		14.10	14.10 Only one sample, no median calculated
	Pesticides in Sediment Toxicity in California's Urban																	
Holmes et al., 2008	Waterways	Los Angeles	Bouquet Canyon Creek	2006-2007 Bifenthrin		Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	173.00		173.00	173.00 Only one sample, no median calculated
			Bouquet Canyon Creek	2006-2007 Cyfluthrin		,	Sediment	Receiving	1	1	1	100%	ng/g	Dry	67.30		67.30	67.30 Only one sample, no median calculated
			Bouquet Canyon Creek	2006-2007 Cypermeth		Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	30.40		30.40	30.40 Only one sample, no median calculated
			Bouquet Canyon Creek	2006-2007 Deltameth			Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Bouquet Canyon Creek	2006-2007 Esfenvaler		'	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Bouquet Canyon Creek	2006-2007 Lambda-c	,	'	Sediment	Receiving	1	1	1	100%	ng/g	Dry	9.80		9.80	9.80 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid		Bouquet Canyon Creek	2006-2007 Permethrir	in [Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	53.10		53.10	53.10 Only one sample, no median calculated
Holmes et al., 2008	Pesticides in Sediment Toxicity in California's Urban Waterways		Los Angeles River	2006-2007 Bifenthrin		Dette	Sediment	Receiving			1	100%		Dev	6.50		6 50	C 50 Only one completion collegisted
Hoimes et al., 2006	Waterways	Los Angeles	Los Angeles River			'	Sediment	Receiving	1	1	0	100%	ng/g	Dry	6.52		6.52	6.52 Only one sample, no median calculated
			Los Angeles River	2006-2007 Cyfluthrin 2006-2007 Cypermeth			Sediment	Receiving	1	1	1	0% 100%	ng/g	Dry Dry	5.65		5.65	5.65 Only one sample, no median calculated
			Los Angeles River	2006-2007 Cypermetr 2006-2007 Deltameth		,	Sediment	Receiving	1	1	0	0%	ng/g		5.05		5.05	5.65 Only one sample, no median calculated
			Los Angeles River	2006-2007 Deltametri 2006-2007 Esfenvaler			Sediment	Receiving	1	1	0	0%	ng/g ng/g	Dry Dry				
			Los Angeles River	2006-2007 Lambda-c			Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Los Angeles River	2006-2007 Permethrir		Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	18.00		18.00	18.00 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid			2000-2007 1 611160111		biy	ocument	receiving				100/0	19/9	Diy	10.00		10.00	10.00 Only one sample, no median calculated
	Pesticides in Sediment Toxicity in California's Urban																	
Holmes et al., 2008	Waterways	Los Angeles	Walnut Creek	2006-2007 Bifenthrin			Sediment	Receiving	1	1	1	100%	ng/g	Dry	24.20		24.20	24.20 Only one sample, no median calculated
			Walnut Creek	2006-2007 Cyfluthrin		,	Sediment	Receiving	1	1	1	100%	ng/g	Dry	20.40		20.40	20.40 Only one sample, no median calculated
			Walnut Creek	2006-2007 Cypermeth		,	Sediment	Receiving	1	1	1	100%	ng/g	Dry	16.70		16.70	16.70 Only one sample, no median calculated
			Walnut Creek	2006-2007 Deltameth		,	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Walnut Creek Walnut Creek	2006-2007 Esfenvaler		'	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Walnut Creek	2006-2007 Lambda-c 2006-2007 Permethrir			Sediment Sediment	Receiving Receiving	1	1	1	100% 100%	ng/g	Dry Dry	5.21 35.70		5.21 35.70	5.21 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid		Wallut Cleek	2000-2007 Permetrini	II L	Diy	Sediment	Receiving	1	'	1	100%	ng/g	Diy	35.70		35.70	35.70 Only one sample, no median calculated
Holmes et al., 2008	Pesticides in Sediment Toxicity in California's Urban Waterways	Central Valley	Carson Creek	2006-2007 Bifenthrin	, ,	Dry	Sediment	Receiving	1	1	1	100%	20/0	Dry	112.00		112.00	112.00 Only one sample, no median calculated
	(Additional)	Central valley	Carson Creek	2006-2007 Cvfluthrin			Sediment	Receiving	1	1	1	100%	ng/g ng/g	Dry	14.50		14.50	14.50 Only one sample, no median calculated
			Carson Creek	2006-2007 Cypermeth			Sediment	Receiving	1	1	0	0%	ng/g	Dry	14.50		14.50	14.00 Only one sample, no median calculated
			Carson Creek	2006-2007 Deltameth			Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Carson Creek	2006-2007 Esfenvaler			Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Carson Creek	2006-2007 Lambda-c			Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Carson Creek	2006-2007 Permethrir			Sediment	Receiving	1	1	1	100%	ng/g	Dry	28.70		28.70	28.70 Only one sample, no median calculated
	Statewide Investigation of the Role of Pyrethroid Pesticides in Sediment Toxicity in California's Urban					,		Ū										
Holmes et al., 2008	Waterways	Central Valley	Clover Creek	2006-2007 Bifenthrin	[Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	219.00		219.00	219.00 Only one sample, no median calculated
			Clover Creek	2006-2007 Cyfluthrin		,	Sediment	Receiving	1	1	1	100%	ng/g	Dry	21.10		21.10	21.10 Only one sample, no median calculated
			Clover Creek	2006-2007 Cypermeth			Sediment	Receiving	1	1	1	100%	ng/g	Dry	14.70		14.70	14.70 Only one sample, no median calculated
			Clover Creek	2006-2007 Deltameth		Dry	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Clover Creek	2006-2007 Esfenvaler		,	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
			Clover Creek	2006-2007 Lambda-c	,	'	Sediment	Receiving	1	1	0	0%	ng/g	Dry				
	Final Project Report: Investigations of Sources and		Clover Creek	2006-2007 Permethrir	in C	Dry	Sediment	Receiving	1	1	1	100%	ng/g	Dry	47.60		47.60	47.60 Only one sample, no median calculated
Laure et al. 2007	Effects of Pyrethroid Pesticides in Watersheds of the	Tributarias to CE Estuary	Potolumo Rivor	2004 2005 Difertheir		Deu	Codimont	Dessides	2			25%		Dev	67		67	6.7. Only one completion and increasing included
Lowe et al., 2007	San Francisco Estuary	Tributaries to SF Estuary	Petaluma River Petaluma River	2004-2005 Bifenthrin 2004-2005 Cvfluthrin		'	Sediment Sediment	Receiving	2	4	1	25% 0%	µg/kg	Dry	6.7		6.7	6.7 Only one sample, no median calculated
			Petaluma River Petaluma River	2004-2005 Cyfluthrin 2004-2005 Cypermeth			Sediment	Receiving	2	4	0	0%	µg/kg µg/kg	Dry Dry				
			Petaluma River	2004-2005 Cypermetri 2004-2005 Permethrir			Sediment	Receiving	2	4	0	0%	µg/kg µg/kg					
	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the			2004-2000 Feillelill	., L	Dry	ocument	Receiving	2	-	0	0 %	hàirà	Dry				
Lowe et al., 2007	San Francisco Estuary	Tributaries to SF Estuary	Napa River	2004-2005 Bifenthrin	C	Dry	Sediment	Receiving	2	4	2	50%	µg/kg	Dry	1.6	1.55	1.1	2
		,	Napa River	2004-2005 Cyfluthrin			Sediment	Receiving	2	4	0	0%	µg/kg	Dry				
			Napa River	2004-2005 Cypermeth	thrin E	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry				
	Field Paris d Parast Jaw 70 10 10		Napa River	2004-2005 Permethrir	in C	Dry	Sediment	Receiving	2	4	0	0%	µg/kg	Dry				
	Final Project Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the																	
Lowe et al., 2007	San Francisco Estuary	Tributaries to SF Estuary	Suisun Creek	2004-2005 Bifenthrin	E	Dry	Sediment	Receiving	2	4	1	25%	µg/kg	Dry			3.6	3.6 Only one sample, no median calculated

						Wet/Dry	Water/	Discharge/	,	#		%	Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s) Suisun Creek	Timeframe 2004-2005	Pesticide (Analyte)	Weather Drv			# Sites Sam	ples Detect		tected Units		Mean	Median	Min	Max Notes
			Suisun Creek		Cynutnrin Cypermethrin	Dry Dry	Sediment Sediment	Receiving Receiving	2	4	0	0% μg/κg 0% μg/kg					
	Final Project Report: Investigations of Sources and		Suisun Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	1	25% μg/kg		3.2		3.2	3.2 Only one sample, no median calculated
	Effects of Pyrethroid Pesticides in Watersheds of the																
Lowe et al., 2007	San Francisco Estuary	Tributaries to SF Estuary	San Lorenzo Creek San Lorenzo Creek	2004-2005 2004-2005		Dry Dry	Sediment Sediment	Receiving Receiving	2	4	2 0	50% µg/kg 0% µg/kg		3.3	3.25	2.1	4.4
			San Lorenzo Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	0	0% µg/kg	Dry				
	Final Project Report: Investigations of Sources and		San Lorenzo Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	1	25% µg/kg	g Dry	3.8		3.8	3.8 Only one sample, no median calculated
	Effects of Pyrethroid Pesticides in Watersheds of the		Coyote Creek	2004-2005	07		0	Description				750/					
Lowe et al., 2007	San Francisco Estuary	Tributaries to SF Estuary	Coyote Creek	2004-2005 2004-2005		Dry Dry	Sediment Sediment	Receiving Receiving	2	4	3 0	75% μg/kg 0% μg/kg		1.6	1.9	0.9	2
			Coyote Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	0	0% µg/kg	Dry				
	Final Project Report: Investigations of Sources and		Coyote Creek	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	0	0% µg/kg	Dry				
	Effects of Pyrethroid Pesticides in Watersheds of the	Tributaries to SF Estuary	San Mateo Creek	2004-2005	D7	D.	Sediment	Beeching		4	3	75% ua/ka		6.5	6.7	24	10.3
Lowe et al., 2007	San Francisco Estuary	Tributaries to SF Estuary	San Mateo Creek San Mateo Creek	2004-2005		Dry Dry	Sediment	Receiving Receiving	2	4	3 1	75% μg/kg 25% μg/kg		6.5 8.6	6.7	2.4 8.6	8.6 Only one sample, no median calculated
			San Mateo Creek	2004-2005	Cypermethrin	Dry	Sediment	Receiving	2	4	1	25% µg/kg	Dry	4.2		4.2	4.2 Only one sample, no median calculated
	Patterns of Pyrethroid Contamination and Toxicity in		San Mateo Creek Gabilan, Natividad and Alisal	2004-2005	Permethrin	Dry	Sediment	Receiving	2	4	2	50% µg/kg	g Dry	11.9	11.85	3.2	20.5
Ng et al., 2008	Agricultural and Urban Stream Segments	Central California	Creeks, Salinas	2005	Bifenthrin	Dry	Sediment	Receiving	5	5	5	100% ng/g	Dry	7.0	8.8	1.2	10.7 Urban sites are downstream from ag areas
			Gabilan, Natividad and Alisal Creeks, Salinas	2005	Cyfluthrin	Dry	Sediment	Receiving	5	5	3	60% ng/g	Dry	1.9	1.1	0.5	3.7 ND substituted as 1/2 the detection limit (0.5 ng/g)
			Gabilan, Natividad and Alisal Creeks, Salinas				0	-	-	-	-						
			Gabilan, Natividad and Alisal	2005	Cypermethrin	Dry	Sediment	Receiving	5	5	5	100% ng/g	Dry	4.1	4.6	1	7
			Creeks, Salinas Gabilan, Natividad and Alisal	2005	Esfenvalerate	Dry	Sediment	Receiving	5	5	3	60% ng/g	Dry	1.4	1	0.5	3.4 ND substituted as 1/2 the detection limit (0.5 ng/g)
			Creeks, Salinas	2005	Lambda-cyhalothrin	Dry	Sediment	Receiving	5	5	2	40% ng/g	Dry	2.3	0.5	0.5	6.8 ND substituted as 1/2 the detection limit (0.5 ng/g)
			Gabilan, Natividad and Alisal Creeks, Salinas	2005	Permethrin	Dev	Sediment	Receiving	5	5	5	100% na/a	Drv	23.3	9.3	5.4	82.5
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring	Southern California	,	2005		Dry	Sediment	Receiving	5	5	-	100% ng/g 100% ng/L					ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions
Riverside County, 2011	Report - Appendix G Santa Margarita River Watershed Annual Monitoring	Southern California	Cole Creek	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	3	3			0.7	0.5	0.5	1.0 made for consistency
Riverside County, 2011	Report - Appendix G	Southern California	Long Canyon Channel		Bifenthrin	Wet	Water	Receiving	1	2	2			35.0	35.0	30.0	40.0
			Long Canyon Channel		Cyfluthrin	Wet	Water	Receiving	1	2	2	100% ng/L		17.0	34.0	34.0	34.0
			Long Canyon Channel	2010-2011	Cypermethrin	Wet	Water	Receiving	1	2	2	100% ng/L		2.8	2.75	0.5	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions 5.0 made for consistency
			Long Canyon Channel	2010-2011	Esfenvalerate	Wet	Water	Receiving		2	2	100% ng/L		0.6	0.55	0.5	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions
			Long Canyon Channel	2010-2011	Lambda-cyhalothrin	Wet	Water	Receiving	1	2	2	100% ng/L		3.0	3.0	3.0	0.6 made for consistency 3.0
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring	Southern California		2010-2011								100% ng/L					
	Report - Appendix G		Murrieta Creek		Bifenthrin	Wet	Water	Receiving	1	3	3			47.7	20.0	3.0	120.0
			Murrieta Creek	2010-2011	Cvfluthrin	Wet	Water	Receiving		3	3	100% ng/L		3.3	0.5	0.5	ND results substituted as 1/2 the detection limit (0.0005 μ g/L); Unit conversions 9.0 made for consistency
			Mumeta Creek	2010-2011	Cynutnrin	vvet	vvater	Receiving	1	3	3	100% ng/L		3.3	0.5	0.5	9.0 made for consistency ND results substituted as 1/2 the detection limit (0.0005 μg/L); Unit conversions
			Murrieta Creek	2010 2011	Cypermethrin	Wet	Water	Receiving	1	3	3	1000/		1.0	0.5	0.5	2.0 made for consistency
			Murrieta Creek	2010-2011	Lambda-cyhalothrin	Wet	Water	Receiving	1	3	3	100% ng/L		1.0	0.5	0.5	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions 2.0 made for consistency
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring Report - Appendix G	Southern California	Redhawk Channel	2010-2011	Difectivic	Dev	Water	Dessiving		2	2	ng/L 100%		4.3	4.05	0.5	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions 8.0 made for consistency
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring	Southern California		2010-2011	Bifenthrin	Dry	Water	Receiving	1	2		ng/L		4.5	4.25		
	Report - Appendix G		Santa Gertrudis Channel	2010-2011	Bifenthrin	Wet	Water	Receiving	1	2	2	100% 100% ng/L		20.0	20.0	10.0	30.0 ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions
			Santa Gertrudis Channel	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	2	2	100 /0 Hg/L		5.3	5.25	0.5	10.0 made for consistency
			Santa Gertrudis Channel	2010-2011	0	Wet	Water	Bushin				100% ng/L		1.8	1.75	0.5	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions 3.0 made for consistency
			Santa Gertrudis Channel Santa Gertrudis Channel	2010-2011	Cypermethrin Lambda-cyhalothrin	Wet	Water	Receiving Receiving	1	2 2	2 2	100% ng/L		1.8	2.0	0.5	3.0 made for consistency 3.0
			Santa Gertrudis Channel		Permethrin	Wet	Water	Receiving	1	1	1	100% ng/L		410.0			410.0 Only mean and max provided in data set
			Casta Casta dia Chassal	2010-2011	Permethrin cis	Wet	Water	Receiving				100% ng/L		30.0			30.0 Only mean and max provided in data set
			Santa Gertrudis Channel	2010-2011	Permetinin cis	vvet	vvater	Receiving	1	1	1	100% ng/L		30.0			30.0 Only mean and max provided in data set
			Santa Gertrudis Channel		Permethrin trans	Wet	Water	Receiving	1	1	1			60.0			60.0 Only mean and max provided in data set
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring	Southern California	Transition of the	2010-2011								ng/L					ND results substituted as 1/2 the detection limit (0.0005 μ g/L); Unit conversions
	Report - Appendix G		Temecula Creek	2010-2011	Bifenthrin	Wet	Water	Receiving	1	3	3	100% 100% ng/L		76.8	80.0	0.5	150.0 made for consistency ND results substituted as 1/2 the detection limit (0.0005 μg/L); Unit conversions
			Temecula Creek	2010 2011	Cyfluthrin	Wet	Water	Receiving	1	3	3	-		18.2	4.0	0.5	50.0 made for consistency
			Temecula Creek	2010-2011	Cypermethrin	Wet	Water	Receiving	1	3	3	100% ng/L		2.3	0.5	0.5	ND results substituted as 1/2 the detection limit (0.0005 μ g/L); Unit conversions 6.0 made for consistency
			Temecula Creek	2010-2011	Esfenvalerate	Wet	Water	Receiving	1	3	3	100% ng/L		0.6	0.5	0.5	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions 0.7 made for consistency
				2010-2011								100% ng/L					ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions
			Temecula Creek	2010-2011	Fenvalerate	Wet	Water	Receiving	1	3	3	100% ng/L		0.5	0.5	0.5	0.6 made for consistency ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions
			Temecula Creek		Lambda-cyhalothrin	Wet	Water	Receiving	1	3	3			3.8	3.0	0.5	8.0 made for consistency
			Temecula Creek	2010-2011	Descuella de			Description				100% ng/L					
Riverside County, 2011	Santa Margarita River Watershed Annual Monitoring	Southern California		2010-2011	Permethrin	Wet	Water	Receiving	1	1	1	ng/L		30			Only mean provided in data set
	Report - Appendix G		Warm Springs Channel	2010-2011	Bifenthrin	Wet	Water	Receiving	1	2	2	100%		39.0	39.0	8.0	70.0 ND results substituted as 1/2 the detection limit (0.0005 μg/L); Unit conversions
			Warm Springs Channel	2010-2011	Cyfluthrin	Wet	Water	Receiving	1	2	2	100% ng/L		42.0	42.0	4.0	ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions 80.0 made for consistency
								-									

Citation Abbrou	Papart/study Title	Pagian	Site(s)	Timeframe	Posticido (Apoluto)	Wet/Dry Weather	Water/ Sediment	Discharge/	# Sites Sam	# #	, tod Date			Sed. Unit Weight	Maan	Modion	Min	May Notae
Citation - Abbrev.	Report/study Title	Region		2010-2011	Pesticide (Analyte)			Receiving Water	# Sites Sam	iples Detec	ted Dete		ng/L	weight	Mean	Median		Max Notes ND results substituted as 1/2 the detection limit (0.0005 µg/L); Unit conversions
			Warm Springs Channel Warm Springs Channel	2010-2011	Cypermethrin Lambda-cyhalothrin	Wet Wet	Water Water	Receiving Receiving	1	2	2	100%	ng/L		0.8 1.8	0.75 1.8	0.5 0.6	1.0 made for consistency 3.0
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Natomas STA2	2008	Allethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Bifenthrin	Wet	Water	Discharge	1	2	2	100%	ng/L		20.367	18.4	15.2	27.5
			Natomas STA2 Natomas STA2	2008 2008	Cyfluthrin Cypermethrin	Wet Wet	Water Water	Discharge Discharge	1	2	1 2		ng/L		3.625 3.3		0.25	7.0 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Danitol	Wet	Water	Discharge	1	2	0	0%	ng/L ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Deltamethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2 Natomas STA2	2008 2008	Esfenvalerate Fenvalerate	Wet Wet	Water Water	Discharge Discharge	1	2	0		ng/L ng/L		0.25 1.075		0.25 0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 1.9 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	Fluvalinate	Wet	Water	Discharge	1	2	1		ng/L		1.975		0.25	3.7 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2008	L-Cyhalothrin	Wet	Water	Discharge	1	2	1		ng/L		0.625		0.25	 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2 Natomas STA2	2008 2008	Permethrin Permethrin, cis-	Wet Wet	Water Water	Discharge Discharge	1	2	0		ng/L ng/L		2.5 2.5		2.5 2.5	 2.5 ND substituted as 1/2 the reporting limit (5 ng/L). 2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2008	Permethrin, trans-	Wet	Water	Discharge	1	1	õ	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2008	Prallethrin	Wet	Water	Discharge	1	2	0		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2 Arcade Creek at Watt	2008	Resmethrin	Wet	Water	Discharge	1	2	0	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue Arcade Creek at Watt	2008	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Avenue	2008	Bifenthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 μ g/kg).
			Arcade Creek at Watt Avenue	2008	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Avenue	2008	Deltamethrin	Wet	Sediment	Receiving	1	1	õ		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Esfenvalerate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Arcade Creek at Watt Avenue	2008	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Arcade Creek at Watt Avenue	2008	Phenothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 µg/kg).
			Arcade Creek at Watt Avenue	2008	Resmethrin	Wet	Sediment	Receiving	1	1	0		na/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt Avenue	2008	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Arcade Creek at Watt	2008	Tetramethrin	Wet	Sediment	Receiving	1	1	0		na/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Franklin	2008	Allethrin	Wet	Sediment	Receiving	1	1	õ		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Bifenthrin	Wet	Sediment	Receiving	1	1	1		µg/kg	Dry	4		4	4 Only one sample, no median calculated
			Laguna Creek at Franklin Laguna Creek at Franklin	2008 2008	Cyfluthrin Cypermethrin	Wet Wet	Sediment Sediment	Receiving Receiving	1	1	0		ng/L ng/L	Dry Dry	0.75 0.75		0.75 0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L). 0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Deltamethrin	Wet	Sediment	Receiving	1	1	0		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Esfenvalerate	Wet	Sediment	Receiving	1	1	0		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	ua/ka	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Laguna Creek at Franklin	2008	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	õ	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Permethrin	Wet	Sediment	Receiving	1	1	0		µg/kg	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Laguna Creek at Franklin Laguna Creek at Franklin	2008 2008	Phenothrin Resmethrin	Wet Wet	Sediment Sediment	Receiving Receiving	1	1	0		µg/kg ng/L	Dry Dry	0.75 0.75		0.75 0.75	 0.75 ND substituted as 1/2 the reporting limit (1.5 μg/kg). 0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Laguna Creek at Franklin	2008	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2008	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Bifenthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Willow Creek at Blue Ravine Road	2008	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Road	2008	Deltamethrin	Wet	Sediment	Receiving	1	1	0		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Esfenvalerate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Fenpropathrin	Wet	Sediment	Receiving	1	1	0		µg/kg	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Willow Creek at Blue Ravine Road	2008	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Permethrin	Wet	Sediment	Receiving	1	1	0		µg/kg	Dry	0.5		0.5	0.5 ND substituted as 1/2 the reporting limit (1.0 µg/kg).
			Willow Creek at Blue Ravine Road	2008	Phenothrin	Wet	Sediment	Receiving	1	1	0		µg/kg	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 µg/kg).
			Willow Creek at Blue Ravine Road	2008	Resmethrin	Wet	Sediment	Receiving	1	1	0		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
			Willow Creek at Blue Ravine Road	2008	Tetramethrin	Wet	Sediment	Receiving	1	1	0		ng/L	Dry	0.75		0.75	0.75 ND substituted as 1/2 the reporting limit (1.5 ng/L).
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Citation - Abbrev. Sacramento County, 2011	Report/study Title Discharge Monitoring Report	Region Sacramento, CA	Site(s) Natomas STA2 Natomas STA2 Natomas STA2	Timeframe 2009 2009 2009 2009	Pesticide (Analyte) Allethrin Bifenthrin Cyfluthrin Cypermethrin	Wet/Dry Weather Dry Dry Dry Dry	Water/ Sediment Water Water Water Water Water	Discharge/ Receiving Water Discharge Discharge Discharge Discharge	r # Sites 1 1 1 1	# Samples 1 2 1 2 1 2 1 2	C 1 0	0% 50% 0%	Units ng/L ng/L ng/L	Sed. Unit Weight	Mean Med 0.25 1.475 0.25 0.25	ian N	Win 0.25 0.25 0.25 0.25	Max Notes 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 2.7 ND substituted as 1/2 the reporting limit (0.5 ng/L). 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Danitol	Dry	Water	Discharge	1	1 2	-				0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Deltamethrin	Dry	Water	Discharge	1	1 2	C	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Esfenvalerate	Dry	Water	Discharge	1	1 1			ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Esfenvalerate/Fenvalerate	Dry	Water	Discharge	1	1 1	0				0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2 Natomas STA2	2009 2009	Fenvalerate Fluvalinate	Dry Dry	Water Water	Discharge Discharge	1	1 2	-		ng/L ng/L		0.25 0.25		0.25 0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	L-Cyhalothrin	Dry	Water	Discharge	1	1 2	-				0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Permethrin	Dry	Water	Discharge	1	1 2	C				2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2009	Prallethrin	Dry	Water	Discharge	1	1 2	0		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
0	Distant Maria in David	0	Natomas STA2	2009	Resmethrin	Dry	Water	Discharge	1	1 2	. C		ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Strong Ranch Slough Strong Ranch Slough	2009 2009	Allethrin Bifenthrin	Dry Dry	Water Water	Discharge Discharge	1	1 1 1 1	1		ng/L na/L		0.25 2.1		0.25 2.1	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 2.1 Only one sample, no median calculated
			Strong Ranch Slough	2009	Cyfluthrin	Dry	Water	Discharge	1	, , 1 1	0		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Cypermethrin	Dry	Water	Discharge	1	1 1	C		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Danitol	Dry	Water	Discharge	1	1 1	C		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Deltamethrin	Dry	Water	Discharge	1	1 1	C	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Esfenvalerate	Dry	Water	Discharge	1	1 1	C				0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Fenvalerate	Dry	Water	Discharge	1	1 1	0		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough Strong Ranch Slough	2009 2009	Fluvalinate L-Cyhalothrin	Dry Dry	Water Water	Discharge Discharge	1	1 1	0		ng/L na/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 0.8 Only one sample, no median calculated
			Strong Ranch Slough	2009	Permethrin	Dry	Water	Discharge	1	1 1 1 1	1 C		ng/L		2.5		2.5	 2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Strong Ranch Slough	2009	Prallethrin	Dry	Water	Discharge	1	1 1	0		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Resmethrin	Dry	Water	Discharge	1	1 1	C				2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Sump 111	2009	Allethrin	Dry	Water	Discharge	1	1 1	0		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111 Sump 111	2009 2009	Bifenthrin Cyfluthrin	Dry Dry	Water Water	Discharge Discharge	1	1 1	1	100% 100%	ng/L ng/L		12.7 6.0		12.7 6.0	12.7 Only one sample, no median calculated 6.0 Only one sample, no median calculated
			Sump 111	2009	Cypermethrin	Dry	Water	Discharge	1	1 1	1	100%	ng/L		12.8		12.8	12.8 Only one sample, no median calculated
			Sump 111	2009	Danitol	Dry	Water	Discharge	1	1 1	1	100%	ng/L		3.8		3.8	3.8 Only one sample, no median calculated
			Sump 111	2009	Deltamethrin	Dry	Water	Discharge	1	1 1	C	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Esfenvalerate	Dry	Water	Discharge	1	1 1	1	100%	ng/L		2.7		2.7	2.7 Only one sample, no median calculated
			Sump 111	2009	Fenvalerate	Dry	Water	Discharge	1	1 1	1	100%	ng/L		2.4		2.4	2.4 Only one sample, no median calculated
			Sump 111 Sump 111	2009 2009	Fluvalinate L-Cvhalothrin	Dry Dry	Water Water	Discharge Discharge	1	1 1	0		ng/L na/L		0.25 3.4		0.25 3.4	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 3.4 Only one sample. no median calculated
			Sump 111	2009	Permethrin	Dry	Water	Discharge	1	1 1 1 1	1		ng/L		3.4 170.5		3.4 170.5	170.5 Only one sample, no median calculated
			Sump 111	2009	Prallethrin	Dry	Water	Discharge	1	1 1	C		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Resmethrin	Dry	Water	Discharge	1	1 1	C	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Natomas STA2	2009	Allethrin	Wet	Water	Discharge	1	1 3	0		ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Bifenthrin	Wet	Water	Discharge	1	1 3	-		ng/L		4.8333		15.2	40.7
			Natomas STA2 Natomas STA2	2009 2009	Cyfluthrin Cypermethrin	Wet Wet	Water Water	Discharge Discharge	1	1 3 1 3		67% 33%	ng/L ng/L		43.35 5.7333		0.25 0.25	124.3 ND substituted as 1/2 the reporting limit (0.5 ng/L). 16.7 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Danitol	Wet	Water	Discharge	1	1 3			ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Deltamethrin	Wet	Water	Discharge	1	1 3	C	0%			0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Esfenvalerate	Wet	Water	Discharge	1	1 3		33%	ng/L		0.4		0.25	0.7 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Fenvalerate	Wet	Water	Discharge	1	1 3			ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2 Natomas STA2	2009 2009	Fluvalinate L-Cvhalothrin	Wet Wet	Water Water	Discharge Discharge	1	1 3 1 3	-		ng/L na/L		0.25 5.25		0.25 1.1	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 14.4
			Natomas STA2	2009	Permethrin	Wet	Water	Discharge	1	1 3			ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2	2009	Prallethrin	Wet	Water	Discharge	1	1 3	C	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2009	Resmethrin	Wet	Water	Discharge	1	1 3					2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Strong Ranch Slough Strong Ranch Slough	2009 2009	Allethrin Bifenthrin	Wet Wet	Water Water	Discharge Discharge	1	1 3 1 3	-		ng/L ng/L		0.2167 04.8333		0.25 63.6	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 150.9
			Strong Ranch Slough	2009	Cyfluthrin	Wet	Water	Discharge	1	ı 3 1 3	-		ng/L		70.4		47.3	150.9
			Strong Ranch Slough	2009	Cypermethrin	Wet	Water	Discharge	1	1 3			ng/L		61.4		57.5	113.7
			Strong Ranch Slough	2009	Danitol	Wet	Water	Discharge	1	1 2	2	100%	ng/L		1.4		0.8	2.0
			Strong Ranch Slough	2009	Deltamethrin	Wet	Water	Discharge	1	1 2	C	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1	1 1	C				0.3		0.3	0.3 ND substituted as 1/2 the reporting limit (0.6 ng/L).
			Strong Ranch Slough Strong Ranch Slough	2009 2009	Esfenvalerate Esfenvalerate/Fenvalerate	Wet Wet	Water Water	Discharge Discharge	1	1 2	2	100% 100%	ng/L na/L		2.85 0.4		1.2 0.4	4.5 0.4 Only one sample, no median calculated
			Strong Ranch Slough	2009	Fenpropathrin	Wet	Water	Discharge	1	1 1 1 1	1 C		ng/L		0.4		0.4	0.15 ND substituted as 1/2 the reporting limit (0.3 ng/L).
			Strong Ranch Slough	2009	Fenvalerate	Wet	Water	Discharge	1	1 2			ng/L		1.75		0.8	2.7
			Strong Ranch Slough	2009	Fluvalinate	Wet	Water	Discharge	1	1 3	-		ng/L		0.2167		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	L-Cyhalothrin Permethrin	Wet	Water Water	Discharge	1	1 3 1 3			ng/L		7.3333		3.2 2.5	46.8 344
			Strong Ranch Slough Strong Ranch Slough	2009 2009	Permethrin Prallethrin	Wet	Water Water	Discharge Discharge	1	1 3 1 2			ng/L ng/L		130.5 0.25		2.5 0.25	344 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Resmethrin	Wet	Water	Discharge	1	1 2			ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2009	Tetramethrin	Wet	Water	Discharge	1	1 1	C		ng/L		0.15		0.15	0.15 ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Sump 111	2009	Allethrin	Wet	Water	Discharge	1	1 3	0	0,0	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111 Sump 111	2009 2009	Bifenthrin Cvfluthrin	Wet Wet	Water Water	Discharge Discharge	1	1 3 1 3	3	100%	ng/L ng/L		8.0333 45.0		21.8 31.1	46.3 96.9
			Sump 111	2009	Cypermethrin	Wet	Water	Discharge	1	1 3			ng/L		39.2		19.4	91.2
			Sump 111	2009	Danitol	Wet	Water	Discharge	1	1 2	C	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Deltamethrin	Wet	Water	Discharge	1	1 2	C	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# # Sites Samp	# les Detected	% Detected	Units	Sed. Unit Weight	Mean	Median Mir	ı	Max Notes
			Sump 111	2009	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1	1 1	100%	ng/L		2.0		2.0	2.0 Only one sample, no median calculated
			Sump 111	2009	Esfenvalerate	Wet	Water	Discharge	1	2 1	50%	ng/L		1.175		0.25	2.1 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111 Sump 111	2009 2009	Esfenvalerate/Fenvalerate	Wet Wet	Water Water	Discharge Discharge	1	1 1 1 0	100% 0%	ng/L na/L		0.2 0.15		0.2 0.15	0.2 Only one sample, no median calculated
			Sump 111	2009	Fenpropathrin Fenvalerate	Wet	Water	Discharge	1	2 0		ng/L		0.15		0.15	0.15 ND substituted as 1/2 the reporting limit (0.3 ng/L). 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	Fluvalinate	Wet	Water	Discharge	1	3 0	- /-	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2009	L-Cyhalothrin	Wet	Water	Discharge	1	3 2				10.2167		0.6	29.8
			Sump 111	2009	Permethrin	Wet Wet	Water	Discharge	1	3 1	33%	ng/L		5.6667		2.5	12.0 ND substituted as 1/2 the reporting limit (5 ng/L).
			Sump 111 Sump 111	2009 2009	Prallethrin Resmethrin	Wet	Water Water	Discharge Discharge	1	2 0		ng/L ng/L		0.25 2.5		0.25 2.5	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Sump 111	2009	Tetramethrin	Wet	Water	Discharge	1	1 0				0.15		0.15	0.15 ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2009	Allethrin	Dry	Sediment	Receiving	1	2 0	0%	µg/kg	Dry	0.0308	0.0	305	0.031 ND substituted as half the RL
			Arcade Creek at Watt Avenue	2009	Bifenthrin	Dry	Sediment	Receiving	1	2 2	100%	µg/kg	Dry	7.35		6.1	8.6
			Avenue	2009	Cvfluthrin	Dry	Sediment	Receiving	1	2 2			Dry	0.79		0.69	0.89
			Arcade Creek at Watt	2000	oyidaanii	5.9	ocument	rtooorning					2.19	0.70		0.00	0.00
			Avenue	2009	Cypermethrin	Dry	Sediment	Receiving	1	2 2	100%	µg/kg	Dry	1.865	(0.83	2.9
			Arcade Creek at Watt Avenue	2009	Deltamethrin	Dry	Sediment	Receiving	1	1 0	0%	µg/kg	Dry	0.075	0.	.075	0.075 ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Arcade Creek at Watt Avenue	2009	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1 0	0%	µg/kg	Dry	0.075	0.	.075	0.075 ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Arcade Creek at Watt Avenue	2009	Esfenvalerate	Dry	Sediment	Receiving	1	1 0			Dry	0.08		0.08	0.08 ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Arcade Creek at Watt Avenue	2009	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1 0			Dry	0.08		0.08	0.08 ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Arcade Creek at Watt Avenue	2009	Fenpropathrin	Dry	Sediment	Receiving		2 0			Dry	0.0433		.043	0.0435 ND substituted as half the RL
			Arcade Creek at Watt	2009	Fluvalinate	Dry	Sediment	Receiving	1	2 0			Dry	0.0248		1245	0.025 ND substituted as half the RI
			Arcade Creek at Watt			,	Sediment			2 0		10 0	,	0.115		0.11	0.12
			Avenue Arcade Creek at Watt Avenue	2009	L-Cyhalothrin Permethrin	Dry	Sediment	Receiving					Dry				
			Arcade Creek at Watt	2009		Dry		Receiving	1		0070		Dry	2.5825		.065	5.1 ND substituted as 1/2 the reporting limit (0.13 μg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue Laguna Creek at Hwy 99	2009 2009	Tetramethrin Allethrin	Dry Dry	Sediment Sediment	Receiving Receiving	1	2 0			Dry Dry	0.0373		.037 .033	0.0375 ND substituted as half the RL 0.044 ND substituted as half the RL
Gadramento Godinty, 2011	Discharge wontoning report	oaciamento, oA	Laguna Creek at Hwy 99	2009	Bifenthrin	Dry	Sediment	Receiving	1	2 2	- /-		Dry	2.02	-	0.64	3.4
			Laguna Creek at Hwy 99	2009	Cyfluthrin	Dry	Sediment	Receiving	1	2 0		µg/kg	Dry	0.085		.075	0.095 ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	Cypermethrin	Dry	Sediment	Receiving	1	2 0		µg/kg	Dry	0.0775		.065	0.09 ND substituted as half the RL
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	Deltamethrin Deltamethrin/Tralomethrin	Dry Dry	Sediment Sediment	Receiving Receiving	1	1 0 1 0			Dry Dry	0.105 0.08		.105 0.08	 0.105 ND substituted as 1/2 the reporting limit (0.21 μg/kg). 0.08 ND substituted as 1/2 the reporting limit (0.16 μg/kg).
			Laguna Creek at Hwy 99	2009	Esfenvalerate	Dry	Sediment	Receiving	1	1 0	0%		Dry	0.115	0	.115	0.115 ND substituted as 1/2 the reporting limit (0.23 µg/kg).
			Laguna Creek at Hwy 99	2009	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1 0			Dry	0.085		.085	0.085 ND substituted as 1/2 the reporting limit (0.17 µg/kg).
			Laguna Creek at Hwy 99	2009	Fenpropathrin	Dry	Sediment	Receiving	1	2 0				0.05325		465	0.06 ND substituted as half the RL
			Laguna Creek at Hwy 99	2009	Fluvalinate	Dry	Sediment	Receiving	1	2 0			Dry	0.03075		265	0.035 ND substituted as half the RL
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	L-Cyhalothrin Permethrin	Dry	Sediment Sediment	Receiving Receiving	1	2 0 2 1	0% 50%		Dry	0.0475 3.3975		0.04 .095	0.055 ND substituted as half the RL
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009	Tetramethrin	Dry Dry	Sediment	Receiving	1	2 1 2 0			Dry Dry	3.3975 0.0475		.095 0.04	6.7 ND substituted as 1/2 the reporting limit (0.19 µg/kg).0.055 ND substituted as half the RL
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2009	Allethrin	Dry	Sediment	Receiving	1	2 0	0%	µg/kg	Dry	0.036	0.	.035	0.037 ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Bifenthrin	Dry	Sediment	Receiving	1	2 2	100%	µg/kg	Dry	2.4		2.3	2.5
			Road	2009	Cvfluthrin	Dry	Sediment	Receiving	1	2 2	50%		Dry	0.155		2.3	0.23 ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Willow Creek at Blue Ravine Road	2003	Cypermethrin	Dry	Sediment	Receiving	1	2 0			Dry	0.073		0.00	0.075 ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2003	Deltamethrin	Dry	Sediment	Receiving	1	1 0			Dry	0.09		0.07	0.09 ND substituted as half the RL
			Willow Creek at Blue Ravine Road	2009	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1 0		10 0	Dry	0.085		.085	0.085 ND substituted as half the RL
			Willow Creek at Blue Ravine														
			Road Willow Creek at Blue Ravine	2009	Esfenvalerate	Dry	Sediment	Receiving	1	1 0			Dry	0.095		.095	0.095 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2009	Esfenvalerate/Fenvalerate	Dry	Sediment	Receiving	1	1 0		10 0	Dry	0.09		0.09	0.09 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2009	Fenpropathrin	Dry	Sediment	Receiving	1	2 0			Dry	0.049		.049	0.050 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2009	Fluvalinate	Dry	Sediment	Receiving	1	2 0		10 0	Dry	0.029	-	.028	0.030 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2009	L-Cyhalothrin	Dry	Sediment	Receiving	1	2 0		10 0	Dry	0.043)415	0.044 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2009	Permethrin	Dry	Sediment	Receiving	1	2 0			Dry	0.078		.075	0.08 ND substituted as half the RL
			Road	2009	Tetramethrin	Dry	Sediment	Receiving	1	2 0			Dry	0.043		415	0.044 ND substituted as half the RL
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue Arcade Creek at Watt	2009	Allethrin	Wet	Sediment	Receiving	1	1 0			Dry	0.031	-	.031	0.031 ND substituted as 1/2 the reporting limit ($0.18\ \mu\text{g/kg}).$
			Avenue Arcade Creek at Watt	2009	Bifenthrin	Wet	Sediment	Receiving	1	1 1	100%		Dry	1.7		1.7	1.7 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2009	Cyfluthrin	Wet	Sediment	Receiving	1	1 1	100%		Dry	0.38		0.38	0.38 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2009	Cypermethrin	Wet	Sediment	Receiving	1	1 1	100%		Dry	0.31		0.31	0.31 Only one sample, no median calculated
			Avenue	2009	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1 0	0%	µg/kg	Dry	0.075	0.	.075	0.075 ND substituted as 1/2 the reporting limit (0.15 µg/kg).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timefram	e Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites Sa	# amples [# Detected	% Detected	Units	Sed. Unit Weight	Mean Meo	ian Mir	ı	Max Notes
		_	Arcade Creek at Watt Avenue	2009	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.08		0.08	0.08 ND substituted as 1/2 the reporting limit (0.16 µg/kg).
			Arcade Creek at Watt Avenue	2009	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.0435	0 ()435	0.0435 ND substituted as 1/2 the reporting limit (0.087 µg/kg).
			Arcade Creek at Watt Avenue	2009	Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%		Drv	0.025		.025	0.025 ND substituted as 1/2 the reporting limit (0.05 µg/kg).
			Arcade Creek at Watt Avenue	2009	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	- 1	100%	µg/kg	Dry	0.077		.077	0.077
			Arcade Creek at Watt Avenue	2009	Permethrin	Wet	Sediment	Receiving	1	1	0	0%		Drv	0.07	-	0.07	0.07 ND substituted as 1/2 the reporting limit (0.14 µg/kg).
			Arcade Creek at Watt Avenue	2009	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.037		037	0.037 ND substituted as 1/2 the reporting limit (0.74 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2009	Allethrin Bifenthrin	Wet	Sediment Sediment	Receiving	1	1	0	0% 100%	µg/kg	Dry	0.025 3.5		.025 3.5	0.025 ND substituted as 1/2 the reporting limit (0.05 µg/kg).
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	Cyfluthrin	Wet Wet	Sediment	Receiving Receiving	1	1	1	100%	µg/kg µg/kg	Dry Dry	3.5 0.28		3.5 0.28	3.5 Only one sample, no median calculated 0.28 Only one sample, no median calculated
			Laguna Creek at Hwy 99	2009	Cypermethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.17		0.17	0.17 Only one sample, no median calculated
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	Deltamethrin/Tralomethrin Esfenvalerate/Fenvalerate	Wet Wet	Sediment Sediment	Receiving Receiving	1	1 1	0 0	0% 0%	µg/kg µg/kg	Dry Dry	0.06 0.065		0.06 .065	 0.06 ND substituted as 1/2 the reporting limit (0.12 μg/kg). 0.065 ND substituted as 1/2 the reporting limit (0.13 μg/kg).
			Laguna Creek at Hwy 99	2009	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.035		.035	0.035 ND substituted as 1/2 the reporting limit ($0.07 \ \mu g/kg$).
			Laguna Creek at Hwy 99	2009 2009	Fluvalinate L-Cvhalothrin	Wet Wet	Sediment Sediment	Receiving Receiving	1	1	0	0% 100%	µg/kg µa/ka	Dry	0.02		0.02 0.14	0.02 ND substituted as 1/2 the reporting limit (0.04 µg/kg). 0.14 Only one sample, no median calculated
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009	Permethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg µg/kg	Dry Dry	0.14		0.14	0.14 Only one sample, no median calculated 0.7 Only one sample, no median calculated
			Laguna Creek at Hwy 99	2009	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.03	1	0.03	0.03 ND substituted as 1/2 the reporting limit (0.06 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Road Willow Creek at Blue Ravine	2009	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.032	0.	.032	0.032 ND substituted as 1/2 the reporting limit ($0.06\ \mu\text{g/kg}\text{)}.$
			Road Willow Creek at Blue Ravine	2009	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.28	(0.28	0.28 Only one sample, no median calculated
			Road Willow Creek at Blue Ravine	2009	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.07	(0.07	$0.07~ND$ substituted as 1/2 the reporting limit ($0.14~\mu\text{g/kg}\text{)}.$
			Road Willow Creek at Blue Ravine	2009	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065	0.	.065	0.065 ND substituted as 1/2 the reporting limit ($0.13\ \mu\text{g/kg}).$
			Road Willow Creek at Blue Ravine	2009	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.075	0.	.075	$0.075~ND$ substituted as 1/2 the reporting limit ($0.15~\mu\text{g/kg}).$
			Road Willow Creek at Blue Ravine	2009	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.085	0.	.085	$0.085~ND$ substituted as 1/2 the reporting limit ($0.17~\mu\text{g/kg}\text{)}.$
			Road Willow Creek at Blue Ravine	2009	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.045	0	.045	$0.045~\text{ND}$ substituted as 1/2 the reporting limit ($0.09~\mu\text{g/kg}\text{)}.$
			Road Willow Creek at Blue Ravine	2009	Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026	0	.026	0.026 ND substituted as 1/2 the reporting limit (0.051 $\mu\text{g/kg}).$
			Road Willow Creek at Blue Ravine	2009	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.039	0	.039	0.039 ND substituted as 1/2 the reporting limit ($0.077~\mu\text{g/kg}).$
			Road Willow Creek at Blue Ravine	2009	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.07	1	0.07	$0.07~ND$ substituted as 1/2 the reporting limit ($0.14~\mu\text{g/kg}).$
0	Distance Marine David	0	Road	2009	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.039		.039	0.039 ND substituted as 1/2 the reporting limit (0.077 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Koad Willow Creek at Blue Ravine Road	2009	Allethrin Bifenthrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	•		0.25		0.25 0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Cypermethrin	Dry Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Danitol		Water	Receiving	1	1	0	0%	•		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Deltamethrin	Dry Dry	Water	Receiving	1	1	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine	2009	Detametrini	Diy	water	Receiving		1	U	0%	ng/L		0.25	,	0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 hg/c).
			Road Willow Creek at Blue Ravine	2009	Esfenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25	(0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2009	Fenvalerate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25	(0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2009	Fluvalinate	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25	(0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2009	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L		0.25	(0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Road	2009 2009	Permethrin Prallethrin	Dry Dry	Water Water	Receiving Receiving	1	1 1	0	0% 0%	ng/L ng/L		2.5 0.25		2.5 0.25	2.5 ND substituted as 1/2 the reporting limit (5 ng/L). 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Resmethrin	Dry	Water	Receiving	1	1	0	0%	ng/L		2.5		2.5	 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue	2009	Allethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
Gacianicito County, 2011	Discharge wontoning report	Gadramento, OA	Arcade Creek at Watt	2003	Bifenthrin	Wet	Water	Receiving	1	2	2	100%	0		150.6		72.2	229
			Arcade Creek at Watt Avenue	2009	Cyfluthrin	Wet	Water	Receiving	1	2	2	100%	ng/L		68.5		53.3	83.7
			Arcade Creek at Watt Avenue	2009	Cypermethrin	Wet	Water	Receiving	1	2	2	100%	ng/L		76.45		47.6	105.3
			Arcade Creek at Watt Avenue	2009	Danitol	Wet	Water	Receiving	1	2	2	100%			1.75		1.1	2.4
			Arcade Creek at Watt Avenue	2009	Deltamethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt	2003	Esfenvalerate	Wet	Water	Receiving	•	2	4	50%	ng/L		1.725		0.25	 3.2 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2009	Fenvalerate	Wet	Water	Receiving	4	2	1		ng/L		1.175		0.25	 2.1 ND substituted as 1/2 the reporting limit (0.5 ng/L). 2.1 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Archite	2009	renvalerate	wei	vvater	Receiving	1	2	1	50%	ng/L		1.1/5	(0.20	2.1 ND substituted as 1/2 the reporting limit (U.5 ng/L).

						Wet/Drv	Water/	Discharge/		#	#		%		Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather			r # Sites	"	s Detect	ted Dete	ected	Units		lean	Median	Min	Max Notes
			Arcade Creek at Watt Avenue	2009	Fluvalinate	Wet	Water	Receiving	1	:	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Avenue	2009	L-Cyhalothrin	Wet	Water	Receiving	1	:	2	2	100%	ng/L		31.9		29.3	34.5
			Arcade Creek at Watt Avenue	2009	Permethrin	Wet	Water	Receiving	1		2	1	50%	na/L	1	27.65		2.5	252.8 ND substituted as 1/2 the reporting limit (5 ng/L).
			Arcade Creek at Watt											5					
			Avenue Arcade Creek at Watt	2009	Prallethrin	Wet	Water	Receiving	1	3	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Avenue	2009	Resmethrin	Wet	Water	Receiving	1	1	2	0	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	Allethrin Bifenthrin	Wet Wet	Water Water	Receiving Receiving	1		2	0	0% 100%	ng/L ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 21.8
			Laguna Creek at Hwy 99	2009	Cyfluthrin	Wet	Water	Receiving	1	1	2	1	50%	ng/L		0.425		0.25	20.6 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	Cypermethrin Danitol	Wet Wet	Water Water	Receiving Receiving	1	1	2	1	50% 50%	ng/L ng/L		9.825 1.725		0.25 0.25	 19.4 ND substituted as 1/2 the reporting limit (0.5 ng/L). 3.2 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Deltamethrin	Wet	Water	Receiving	1		2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	Esfenvalerate Fenvalerate	Wet Wet	Water Water	Receiving Receiving	1	-	2	1	50% 50%	ng/L ng/L		8.175		0.25	6.1 ND substituted as 1/2 the reporting limit (0.5 ng/L). 6.5 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Fluvalinate	Wet	Water	Receiving	1		2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	L-Cyhalothrin	Wet	Water	Receiving	1	÷	2	1	50%	ng/L		5.425		0.25	10.6 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2009 2009	Permethrin Prallethrin	Wet Wet	Water Water	Receiving Receiving	1		2	0 0	0% 0%	ng/L na/L		2.5 0.25		2.5 0.25	2.5 ND substituted as 1/2 the reporting limit (5 ng/L). 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2009	Resmethrin	Wet	Water	Receiving	1	:	2	0	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento CA	Willow Creek at Blue Ravine Road	2009	Allethrin	Wet	Water	Receiving	1		2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
Castamento County, 2011	Biocharge Monitoring Report	ouddanionio, or t	Willow Creek at Blue Ravine					9			-								, , , ,
			Road Willow Creek at Blue Ravine	2009	Bifenthrin	Wet	Water	Receiving	1	1	2	1	50%	ng/L		8.175		0.25	6.1 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road	2009	Cyfluthrin	Wet	Water	Receiving	1	:	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Cvpermethrin	Wet	Water	Receiving	1		2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine					-		-	-			•					
			Road Willow Creek at Blue Ravine	2009	Danitol	Wet	Water	Receiving	1	1	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road	2009	Deltamethrin	Wet	Water	Receiving	1	:	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	Esfenvalerate	Wet	Water	Receiving	1		2	1	50%	na/L		475		0.25	0.7 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine					J			-			0					
			Road Willow Creek at Blue Ravine	2009	Fenvalerate	Wet	Water	Receiving	1	1	2	1	50%	ng/L).575		0.25	0.9 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road	2009	Fluvalinate	Wet	Water	Receiving	1	:	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009	L-Cyhalothrin	Wet	Water	Receiving	1	:	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Willow Creek at Blue Ravine Road	2009				-						•				2.5	
			Willow Creek at Blue Ravine		Permethrin	Wet	Water	Receiving	1		2	0	0%	ng/L		2.5			2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Road Willow Creek at Blue Ravine	2009	Prallethrin	Wet	Water	Receiving	1	:	2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road	2009	Resmethrin	Wet	Water	Receiving	1	:	2	0	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Natomas STA2 Natomas STA2	2010 2010	Allethrin Bifenthrin	Wet Wet	Water Water	Discharge Discharge	1	1	2	0 2	0% 100%	ng/L na/L		0.25 31.95		0.25 21.8	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 102.1
			Natomas STA2	2010	Cyfluthrin	Wet	Water	Discharge	1		2	1	50%	ng/L		2.475		0.25	4.7 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2 Natomas STA2	2010 2010	Cypermethrin Danitol	Wet	Water Water	Discharge Discharge	1	1	2	1	50% 50%	ng/L		1.175 3.425		0.25	2.1 ND substituted as 1/2 the reporting limit (0.5 ng/L). 6.6 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Deltamethrin	Wet	Water	Discharge	1			0	0%	ng/L ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2 Natomas STA2	2010 2010	Esfenvalerate Fenvalerate	Wet Wet	Water Water	Discharge Discharge	1	1	2	1	50% 50%	ng/L ng/L		.475		0.25	 2.7 ND substituted as 1/2 the reporting limit (0.5 ng/L). 2.2 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Fluvalinate	Wet	Water	Discharge	1		2	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	L-Cyhalothrin	Wet	Water	Discharge	1	:	2	1	50%	ng/L		8.025		0.25	35.8 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Natomas STA2	2010	Permethrin	Wet	Water	Discharge	1		2	0	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Natomas STA2 Natomas STA2	2010 2010	Prallethrin Resmethrin	Wet Wet	Water Water	Discharge Discharge	1		2	0 0	0% 0%	ng/L na/L		0.25 2.5		0.25 2.5	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento CA	Strong Ranch Slough	2010	Allethrin	Wet	Water	Discharge	1	:	2	0	0%	ng/L		0.2		0.15	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
,,,			Strong Ranch Slough	2010	Bifenthrin	Wet	Water	Discharge	1		2	2	100%	ng/L		38.25		74	102.5
			Strong Ranch Slough	2010	Cyfluthrin	Wet	Water	Discharge	1	2	2	2	100%	ng/L		23.45		17	29.9
			Strong Ranch Slough	2010	Cypermethrin	Wet	Water	Discharge	1	3	2	2	100%	ng/L		20		20	20
			Strong Ranch Slough	2010	Danitol	Wet	Water	Discharge	1		1	1	100%	ng/L		11.8		11.8	11.8 Only one sample, no median calculated
			Strong Ranch Slough	2010	Deltamethrin	Wet	Water	Discharge	1		1	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough	2010	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1		1	1	100%	ng/L		3		3	3 Only one sample, no median calculated
			Strong Ranch Slough Strong Ranch Slough	2010 2010	Esfenvalerate Esfenvalerate/Fenvalerate	Wet Wet	Water Water	Discharge	1		1	1	100% 100%	ng/L		1.5		1.5	 5 Only one sample, no median calculated 2 Only one sample, no median calculated
			Strong Ranch Slough Strong Ranch Slough	2010 2010	Estenvalerate/Fenvalerate Fenpropathrin	Wet	Water Water	Discharge Discharge	1		1	1	100% 0%	ng/L ng/L		2 0.15		2 0.15	 Only one sample, no median calculated ND substituted as 1/2 the reporting limit (0.3 ng/L).
			Strong Ranch Slough	2010	Fenvalerate	Wet	Water	Discharge	1		1	1	100%	ng/L		10.3		10.3	10.3 Only one sample, no median calculated
			Strong Ranch Slough	2010	Fluvalinate	Wet	Water	Discharge	1	:	2	0	0%	ng/L		0.2		0.15	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L and 0.3 ng/L).
			Strong Ranch Slough	2010	L-Cyhalothrin	Wet	Water	Discharge	1	:	2	2	100%	ng/L		8.75		1	16.5
			Strong Ranch Slough	2010	Permethrin	Wet	Water	Discharge	1	:	2	1	50%	ng/L		8.75		2.5	35 ND substituted as 1/2 the reporting limit (5 ng/L).
			Strong Ranch Slough	2010	Prallethrin	Wet	Water	Discharge	1		1	0	0%	ng/L		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Strong Ranch Slough Strong Ranch Slough	2010 2010	Resmethrin Tetramethrin	Wet Wet	Water Water	Discharge Discharge	1		1	0	0% 0%	ng/L na/L		2.5 0.15		2.5 0.15	 ND substituted as 1/2 the reporting limit (5 ng/L). ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Sump 111	2010	Allethrin	Wet	Water	Discharge	1	:	2	0	0%	ng/L		0.13		0.15	0.15 ND substituted as 1/2 the reporting limit (0.5 ng/L).
**			Sump 111	2010	Bifenthrin	Wet	Water	Discharge	1	:	2	2	100%	ng/L		9.75		25	54.5
			Sump 111	2010	Cyfluthrin	Wet	Water	Discharge	1	:	2	2	100%	ng/L		0.45		6	14.9

Citation - Abbrev.	Report/study Title	Region	Site(s) Sump 111	Timeframe 2010	Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water Discharge	# Sites	# Samples	# Detected	% Detected	Units ng/L	Sed. Unit Weight	Mean 8.95	Median	Min 7	Max Notes
			Sump 111 Sump 111 Sump 111	2010 2010 2010	Danitol Deltamethrin	Wet	Water Water	Discharge Discharge	1	1	1	100%	ng/L		6 0.25		6 0.25	 6 Only one sample, no median calculated 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2010	Deltamethrin/Tralomethrin	Wet	Water	Discharge	1	1	1	100%	ng/L ng/L		6		6	 6 Only one sample, no median calculated
			Sump 111	2010	Esfenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		4.1		4.1	4.1 Only one sample, no median calculated
			Sump 111	2010	Esfenvalerate/Fenvalerate	Wet	Water	Discharge	1	1	1	100%	ng/L		3 0.15		3	3 Only one sample, no median calculated
			Sump 111 Sump 111	2010 2010	Fenpropathrin Fenvalerate	Wet Wet	Water Water	Discharge Discharge	1	1	1	0% 100%	ng/L ng/L		8.5		0.15 8.5	0.15 ND substituted as 1/2 the reporting limit (0.3 ng/L). 8.5 Only one sample, no median calculated
			Sump 111	2010	Fluvalinate	Wet	Water	Discharge	1	2	0	0%	ng/L		0.2		0.15	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L and 0.3 ng/L).
			Sump 111	2010	L-Cyhalothrin	Wet	Water	Discharge	1	2	2	100%			11.2		0.6	21.8
			Sump 111 Sump 111	2010 2010	Permethrin Prallethrin	Wet Wet	Water Water	Discharge Discharge	1	2	0	0% 0%	ng/L ng/L		3.25 0.25		2.5 0.25	4 ND substituted as 1/2 the reporting limit (5 ng/L and 8 ng/L). 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Sump 111	2010	Resmethrin	Wet	Water	Discharge	1	1	0	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Sump 111	2010	Tetramethrin	Wet	Water	Discharge	1	1	0	0%			0.15		0.15	0.15 ND substituted as 1/2 the reporting limit (0.3 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Arcade Creek at Watt Avenue Arcade Creek at Watt	2010	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026 ND substituted as half the RL
			Avenue Arcade Creek at Watt	2010	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	1.1		1.1	1.1 Only one sample, no median calculated
			Avenue	2010	Cyfluthrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.055		0.055	0.055 ND substituted as 1/2 the reporting limit (0.11 µg/kg).
			Avenue	2010	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.05		0.05	0.05 ND substituted as 1/2 the reporting limit (0.1 µg/kg).
			Arcade Creek at Watt Avenue Arcade Creek at Watt	2010	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	$0.06~ND$ substituted as 1/2 the reporting limit ($0.12~\mu\text{g/kg}\text{)}.$
			Avenue Arcade Creek at Watt	2010	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065 ND substituted as half the RL
			Avenue Arcade Creek at Watt	2010	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.036		0.036	0.036 ND substituted as half the RL
			Avenue Arcade Creek at Watt	2010	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031 ND substituted as half the RL
			Avenue Arcade Creek at Watt	2010	Permethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.055		0.055	0.055 ND substituted as 1/2 the reporting limit ($0.11\mu g/kg).$
			Avenue Arcade Creek at Watt	2010	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.021		0.021	0.021 ND substituted as half the RL
			Avenue	2010	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031 ND substituted as half the RL
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2010 2010	Allethrin Bifenthrin	Wet Wet	Sediment Sediment	Receiving Receiving	1	1	0	0% 100%	µg/kg µg/kg	Dry Dry	0.026 4.5		0.026 4.5	0.026 ND substituted as 1/2 the reporting limit (0.052 µg/kg). 4.5 Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Cyfluthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.31		0.31	0.31 Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Cypermethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.13		0.13	0.13 Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.14		0.14	0.14 Only one sample, no median calculated
			Laguna Creek at Hwy 99	2010	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	0.065 ND substituted as 1/2 the reporting limit (0.13 µg/kg).
			Laguna Creek at Hwy 99	2010	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%		Dry	0.036		0.036	0.036 ND substituted as 1/2 the reporting limit (0.072 µg/kg).
			Laguna Creek at Hwy 99	2010	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	1	100%		Dry	0.093		0.093	0.093 Only one sample, no median calculated
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2010 2010	Permethrin Tau-Fluvalinate	Wet Wet	Sediment Sediment	Receiving Receiving	1	1	1	100% 0%	µg/kg µg/kg	Dry Dry	0.62		0.62 0.021	0.62 Only one sample, no median calculated 0.021 ND substituted as 1/2 the reporting limit (0.042 µg/kg).
			Laguna Creek at Hwy 99	2010	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031 ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine Road	2010	Allethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.026		0.026	0.026 ND substituted as 1/2 the reporting limit ($0.052\ \mu\text{g/kg}).$
			Willow Creek at Blue Ravine Road	2010	Bifenthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	1.1		1.1	1.1 Only one sample, no median calculated
			Willow Creek at Blue Ravine Road Willow Creek at Blue Ravine	2010	Cyfluthrin	Wet	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.12		0.12	0.12 Only one sample, no median calculated
			Road Willow Creek at Blue Ravine	2010	Cypermethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.05		0.05	0.05 ND substituted as 1/2 the reporting limit ($0.1\mu g/kg).$
			Road Willow Creek at Blue Ravine	2010	Deltamethrin/Tralomethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.06		0.06	$0.06~ND$ substituted as 1/2 the reporting limit ($0.12~\mu\text{g/kg}\text{)}.$
			Road Willow Creek at Blue Ravine	2010	Esfenvalerate/Fenvalerate	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.065		0.065	$0.065~ND$ substituted as 1/2 the reporting limit ($0.13~\mu\text{g/kg}\text{)}.$
			Road Willow Creek at Blue Ravine	2010	Fenpropathrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.036		0.036	0.036 ND substituted as 1/2 the reporting limit ($0.072~\mu\text{g/kg}).$
			Road Willow Creek at Blue Ravine	2010	L-Cyhalothrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031 ND substituted as 1/2 the reporting limit (0.062 $\mu g/kg).$
			Road Willow Creek at Blue Ravine	2010	Permethrin	Wet	Sediment	Receiving	1	1	1	100%		Dry	0.64		0.64	0.64 Only one sample, no median calculated
			Road Willow Creek at Blue Ravine	2010	Tau-Fluvalinate	Wet	Sediment	Receiving	1	1	0	0%		Dry	0.02		0.02	0.02 ND substituted as 1/2 the reporting limit ($0.04\ \mu g/kg).$
			Road Arcade Creek at Watt	2010	Tetramethrin	Wet	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.031		0.031	0.031 ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue Arcade Creek at Watt	2010	Allethrin	Wet	Water	Receiving	1	3	0	0%			0.117		0.05	0.25 ND substituted as half the RL
			Avenue Arcade Creek at Watt	2010	Bifenthrin	Wet	Water	Receiving	1	3	3	100%	5		26.367		27	28.1
			Avenue Arcade Creek at Watt Avenue	2010 2010	Cyfluthrin	Wet Wet	Water	Receiving	1	3	3	100%	ng/L		13.9		9.9	28.4
			Arcade Creek at Watt Avenue	2010	Cypermethrin Danitol	Wet	Water	Receiving	1	3	3	100% 100%			9.5 1.7		3.5 1.7	22.2 1.7 Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2010	Deltamethrin	Wet	Water	Receiving	1	1	0	0%	-		0.25		0.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt	_0.0	-						0	070					5.20	
			Avenue	2010	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).

Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# Sites	# Samples	# Detected	% Detected	Units	Sed. Unit Weight	Mean Me	dian Min	,	Max Notes
			Arcade Creek at Watt Avenue	2010	Esfenvalerate	Wet	Water	Receiving	1	1	1	100%	ng/L		1.3		1.3	1.3 Only one sample, no median calculated
			Arcade Creek at Watt Avenue	2010	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	2	2	50%	ng/L		0.2	ſ	D.1	0.3
			Arcade Creek at Watt Avenue	2010	Fenpropathrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1	ſ	D.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2010	Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2	.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2010	Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.3	.25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2010	L-Cyhalothrin	Wet	Water	Receiving	1	3	3	100%	ng/L		3.033	ſ	0.3	8.5
			Arcade Creek at Watt Avenue	2010	Permethrin	Wet	Water	Receiving	1	3	2	67%	ng/L		4.867	f	5.2	6.9
			Arcade Creek at Watt Avenue	2010	Prallethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Arcade Creek at Watt Avenue	2010	Resmethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		2.5	;	2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Arcade Creek at Watt Avenue	2010	Tau-Fluvalinate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1	ſ	D.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt Avenue	2010	Tetramethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1	ſ	D.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2010	Allethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.117	0.0	.05	0.25 ND substituted as half the RL
			Laguna Creek at Hwy 99	2010	Bifenthrin Cvfluthrin	Wet	Water Water	Receiving	1	3	3	100% 33%			14.033 1.15	16	6.7 .25	22
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2010 2010	Cyfluthrin Cypermethrin	Wet	Water Water	Receiving Receiving	1	3	1	33%	ng/L ng/L		1.15 0.517		.25 D.1	 3.1 ND substituted as 1/2 the reporting limit (0.5 ng/L). 1.2 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Danitol	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2		0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Deltamethrin	Wet	Water	Receiving	1	1	0	0%			0.25	0.5	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	2	0	0%			0.1	0		0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2010 2010	Esfenvalerate Esfenvalerate/Fenvalerate	Wet Wet	Water Water	Receiving Receiving	1	1	0	0% 50%	ng/L ng/L		0.25 0.3	0.1	.25 D.1	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L). 0.5 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Fenpropathrin	Wet	Water	Receiving	1	2	1	50%			0.35		D.1	0.6 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2010	Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.3	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Fluvalinate	Wet	Water	Receiving	1	1	0	0%			0.25		25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	L-Cyhalothrin Permethrin	Wet Wet	Water Water	Receiving	1	3	1	33% 0%	ng/L		0.45 1.5	0.3	.25 1	 ND substituted as 1/2 the reporting limit (0.5 ng/L). ND substituted as half the RL
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2010 2010	Permetnin Prallethrin	Wet	Water Water	Receiving Receiving	1	3	0	0%	ng/L ng/L		0.25	0.2		2.5 ND substituted as hair the RL 0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Laguna Creek at Hwy 99	2010	Resmethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		2.5		2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Laguna Creek at Hwy 99	2010	Tau-Fluvalinate	Wet	Water	Receiving	1	2	0	0%			0.1	0	D.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99 Willow Creek at Blue Ravine	2010	Tetramethrin	Wet	Water	Receiving	1	2	1	50%	ng/L		1.45	0		2.8 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Road Willow Creek at Blue Ravine	2010	Allethrin	Wet	Water	Receiving	1	3	0	0%	•		0.117	0.0	.05	0.25 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2010	Bifenthrin	Wet	Water	Receiving	1	3	2	67%			1.05		1	1.9
			Road Willow Creek at Blue Ravine	2010	Cyfluthrin	Wet	Water	Receiving	1	3	1	33%	ng/L		8.5	0		25.3 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road Willow Creek at Blue Ravine	2010	Cypermethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.15		D.1	0.25 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2010	Danitol	Wet	Water	Receiving	1	1	0	0%	-		0.25	0.2		0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2010	Deltamethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2010	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1	C	D.1	0.1 ND substituted as 1/2 the reporting limit ($0.2 \mbox{ ng/L}).$
			Road Willow Creek at Blue Ravine	2010	Esfenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2010	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1	C	D.1	0.1 ND substituted as 1/2 the reporting limit ($0.2 \mbox{ ng/L}).$
			Road Willow Creek at Blue Ravine	2010	Fenpropathrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1	C	D.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road Willow Creek at Blue Ravine	2010	Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2010	Fluvalinate	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2010	L-Cyhalothrin	Wet	Water	Receiving	1	3	0	0%	ng/L		0.15	C	D.1	0.25 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2010	Permethrin	Wet	Water	Receiving	1	3	0	0%	ng/L		1.5		1	2.5 ND substituted as half the RL
			Road Willow Creek at Blue Ravine	2010	Prallethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		0.25	0.2	25	0.25 ND substituted as 1/2 the reporting limit (0.5 ng/L).
			Road Willow Creek at Blue Ravine	2010	Resmethrin	Wet	Water	Receiving	1	1	0	0%	ng/L		2.5	2	2.5	2.5 ND substituted as 1/2 the reporting limit (5 ng/L).
			Road	2010	Tau-Fluvalinate	Wet	Water	Receiving	1	2	0	0%	•		0.1		D.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road Arcade Creek at Watt	2010	Tetramethrin	Wet	Water	Receiving	1	2	0	0%	ng/L		0.1		D.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue Arcade Creek at Watt	2011	Allethrin	Dry	Sediment	Receiving	1	1	0	0%	µg/kg	Dry	0.025	0.03		0.025 ND substituted as 1/2 the reporting limit (0.5 μg/kg).
			Avenue Arcade Creek at Watt	2011	Bifenthrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	7.1	7		7.1 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2011	Cyfluthrin	Dry	Sediment	Receiving	1	1	1	100%	Farra	Dry	0.79	0.7		0.79 Only one sample, no median calculated
			Avenue	2011	Cypermethrin	Dry	Sediment	Receiving	1	1	1	100%	µg/kg	Dry	0.97	0.9	.97	0.97 Only one sample, no median calculated

Clation - Abbrev. Report/study Title Region Ste(s) Timefram Pericicle (Analy) Weath Section Receiving West \$1000 <th>Mean Median Min Max Notes</th>	Mean Median Min Max Notes
Accade Creek at Watt Avenue 2011 Ederwalerate/Fervalerate	
Arcade Creek at Watt Arcade Creek at Watt Brain Creek at Hwy 90 2011 Det Mainter Arcade Creek at Watt Dry Sediment Receiving Arcade Arcade Arceeving Arcade Arcade Arbey Brain Creek at Hwy 90 2011 Det Mainter Arcade Creek At Watt Dry Sediment Receiving Arcade Arcade Arbey Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Arcade Arcade Arbey Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Arcaeving Arcaeving Arbey Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Arbey Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Brain Creek At Hwy 90 2011 Dry Sediment Arcaeving Brain Creek At H	
Arcade Creek at Watt 2011 L-Cyhalothrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Arcade Creek at Watt Arcade Creek at Watt 2011 L-Cyhalothrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Arcade Creek at Watt Dry Sediment Receiving 1 1 0 0% µg/kg Dry Arcade Creek at Watt Avenue 2011 Tau-Fluvalinate Dry Sediment Receiving 1 1 0 0% µg/kg Dry Avenue 2011 Tetramethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Githurin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Cyhathrin Dry Sediment Recei	0.17 0.17 0.17 Only one sample, no median calculated
Avenue 2011 L-Cyhalothrin Dry Sediment Receiving 1 1 100% µg/kg Dry Avenue 2011 Permethrin Dry Sediment Receiving 1 1 100% µg/kg Dry Avenue 2011 Permethrin Dry Sediment Receiving 1 1 100% µg/kg Dry Avenue 2011 Tetramethrin Dry Sediment Receiving 1 1 00% µg/kg Dry Avenue 2011 Tetramethrin Dry Sediment Receiving 1 1 00% µg/kg Dry Avenue 2011 Tetramethrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy99 2011 Opermethrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy99 2011 Esterwakeratel/Ferwakerate <t< td=""><td>0.035 0.035 0.035 ND substituted as 1/2 the reporting limit (0.07 μg/kg).</td></t<>	0.035 0.035 0.035 ND substituted as 1/2 the reporting limit (0.07 μg/kg).
Avenue 2011 Permethrin Dry Sediment Receiving 1 1 100% µg/kg Dry Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA 2011 Tetramethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Sacramento, CA 1 Tetramethrin Dry Sediment Receiving 1 1 00 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Idelthrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Greet nethrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 CydettrinTrahomethrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Esterakatrate/Fere	0.11 0.11 0.11 Only one sample, no median calculated
Avenue 2011 Tau-Fluvalinate Dry Sediment Receiving 1 1 0 0% µg/kg Dry Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Avenue 2011 Tetramethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Sagramento, CA Identification Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Bifenttrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Cypermethrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Cypermethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Estervalarate/Fervalarate Dry Sediment Receiving<	4.7 4.7 Only one sample, no median calculated
Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Laguna Creek at Hwy 99 2011 Allethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Bifenttrinin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Cypermethrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Cypermethrin Dry Sediment Receiving 1 1 1 00% µg/kg Dry Laguna Creek at Hwy 99 2011 Cypermethrin Dry Sediment Receiving 1 1 00% µg/kg Dry Laguna Creek at Hwy 99 2011 Esterwalerate/Ferwalerate Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Esterwalerate/Ferwalerate Dry Sediment Receiving 1 1 0%	0.02 0.02 ND substituted as 1/2 the reporting limit (0.04 µg/kg).
Laguna Creek at Hwy 99 2011 Bifenthrin Dry Sediment Receiving 1 1 100% up/kg Dry Laguna Creek at Hwy 99 2011 Cryemethrin Dry Sediment Receiving 1 1 100% up/kg Dry Laguna Creek at Hwy 99 2011 Cryemethrin Dry Sediment Receiving 1 1 100% up/kg Dry Laguna Creek at Hwy 99 2011 Cryemethrin Dry Sediment Receiving 1 1 0 0% up/kg Dry Laguna Creek at Hwy 99 2011 DetametrininTraiometrini Dry Sediment Receiving 1 1 0 0% up/kg Dry Laguna Creek at Hwy 99 2011 Fenryaterate Dry Sediment Receiving 1 1 0 0% up/kg Dry Laguna Creek at Hwy 99 2011 Fenryateratirin Dry Sediment Receiving 1 1 100% up	0.03 0.03 0.03 ND substituted as $1/2$ the reporting limit (0.06 µg/kg).
Laguna Creek at Hwy 99 2011 Cyfluthrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Cybernethrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Detamethrin/Tratomethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Esternvalerate/Fervalerate Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 Esternvalerate/Fervalerate Dry Sediment Receiving 1 1 0 0% µg/kg Dry Laguna Creek at Hwy 99 2011 L-Cyhalothrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 L-Cyhalothrin Dry Sediment Receiving 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 </td <td>0.026 0.026 0.026 ND substituted as 1/2 the reporting limit (0.052 µg/kg). 3.9 3.9 0.10 one sample, no median calculated</td>	0.026 0.026 0.026 ND substituted as 1/2 the reporting limit (0.052 µg/kg). 3.9 3.9 0.10 one sample, no median calculated
Laguna Creek at Hwy 992011Deltamethrin/Tralomethrin DryDrySedimentReceiving1100%µg/kgDryLaguna Creek at Hwy 992011Esfenvalerate/FervalerateDrySedimentReceiving1100%µg/kgDryLaguna Creek at Hwy 992011FenpropathrinDrySedimentReceiving1100%µg/kgDryLaguna Creek at Hwy 992011L-CyhalothrinDrySedimentReceiving11100%µg/kgDryLaguna Creek at Hwy 992011L-CyhalothrinDrySedimentReceiving111100% <ty>µg/kgDryLaguna Creek at Hwy 992011DrySedimentReceiving111100%<ty>µg/kgDryLaguna Creek at Hwy 992011Tau-FluvalinateDrySedimentReceiving1110%µg/kgDryLaguna Creek at Hwy 992011Tau-FluvalinateDrySedimentReceiving1100%µg/kgDry</ty></ty>	0.75 0.75 0.75 Only one sample, no median calculated
Laguna Creek at Hwy 992011Esfenvalerate/FervalerateDrySedimentReceiving1100%µg/kgDryLaguna Creek at Hwy 992011FenpropathrinDrySedimentReceiving1100%µg/kgDryLaguna Creek at Hwy 992011L-CyhaiolthinDrySedimentReceiving11110%µg/kgDryLaguna Creek at Hwy 992011L-CyhaiolthinDrySedimentReceiving1110%µg/kgDryLaguna Creek at Hwy 992011Tau-FluvalinateDrySedimentReceiving110%µg/kgDryLaguna Creek at Hwy 992011Tau-FluvalinateDrySedimentReceiving110%µg/kgDry	0.21 0.21 0.21 Only one sample, no median calculated
Laguna Creek at Hwy 992011FenpropathrinDrySedimentReceiving1100%µg/kgDryLaguna Creek at Hwy 992011L-CyhalothrinDrySedimentReceiving111100%µg/kgDryLaguna Creek at Hwy 992011PemettrinDrySedimentReceiving111100%µg/kgDryLaguna Creek at Hwy 992011Tau-FluvalinateDrySedimentReceiving111100%µg/kgDryLaguna Creek at Hwy 992011Tau-FluvalinateDrySedimentReceiving1100%µg/kgDry	0.06 0.06 0.06 ND substituted as 1/2 the reporting limit (0.12 µg/kg). 0.065 0.065 0.065 ND substituted as 1/2 the reporting limit (0.06 µg/kg).
Laguna Creek at Hwy 99 2011 L-Cyhalothrin Dry Sediment Receiving 1 1 100% μg/kg Dry Laguna Creek at Hwy 99 2011 Permethrin Dry Sediment Receiving 1 1 100% μg/kg Dry Laguna Creek at Hwy 99 2011 Tau-Fluvalinate Dry Sediment Receiving 1 1 0 0% μg/kg Dry	0.005 0.005 0.005 ND substituted as 1/2 the reporting infit (0.00 µg/kg).
Laguna Creek at Hwy 99 2011 Permethrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Laguna Creek at Hwy 99 2011 Tau-Fluvalinate Dry Sediment Receiving 1 1 0 0% µg/kg Dry	0.036 0.036 ND substituted as 1/2 the reporting limit (0.072 μg/kg).
Laguna Creek at Hwy 99 2011 Tau-Fluvalinate Dry Sediment Receiving 1 1 0 0% µg/kg Dry	0.15 0.15 0.15 Only one sample, no median calculated 0.42 0.42 0.42 Only one sample, no median calculated
	0.021 0.021 0.021 ND substituted as 1/2 the reporting limit (0.042 μg/kg).
Light of the big	0.031 0.031 0.031 ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Willow Creek at Blue Ravine Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Road 2011 Allethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry	0.026 0.026 ND substituted as 1/2 the reporting limit (0.052 µg/kg).
Willow Creek at Blue Ravine	
Road 2011 Bifenthrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Willow Creek at Blue Ravine	2.9 2.9 2.9 Only one sample, no median calculated
Road 2011 Cyfluthrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry Willow Creek at Blue Ravine	0.31 0.31 0.31 Only one sample, no median calculated
Road 2011 Cypermethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Willow Creek at Blue Ravine	0.05 0.05 ND substituted as 1/2 the reporting limit (0.1 µg/kg).
Road 2011 Deltamethrin/Tralomethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Willow Creek at Blue Ravine	$0.06 \qquad 0.06 \qquad 0.06 \ \text{ND substituted as 1/2 the reporting limit (} 0.12 \mu\text{g/kg}\text{)}.$
Road 2011 Esfenvalerate/Fervalerate Dry Sediment Receiving 1 1 0 0% µg/kg Dry Willow Creek at Blue Ravine	$0.065 \qquad \qquad 0.065 \ \ \text{ND substituted as 1/2 the reporting limit (} 0.06 \ \mu\text{g/kg}\text{)}.$
	$0.036 \qquad \qquad 0.036 \qquad 0.036 \ \text{ND substituted as 1/2 the reporting limit (} 0.072 \ \mu\text{g/kg}\text{)}.$
Road 2011 L-Cyhalothrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry	0.031 0.031 0.031 ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Willow Creek at Blue Ravine Road 2011 Permethrin Dry Sediment Receiving 1 1 1 100% µg/kg Dry	0.12 0.12 0.12 Only one sample, no median calculated
Willow Creek at Blue Ravine Road 2011 Tau-Fluvalinate Dry Sediment Receiving 1 1 0 0% µg/kg Dry	0.021 0.021 ND substituted as 1/2 the reporting limit (0.042 µg/kg).
Road 2011 Tetramethrin Dry Sediment Receiving 1 1 0 0% µg/kg Dry Arcade Creek at Watt	0.031 0.031 0.031 ND substituted as 1/2 the reporting limit (0.062 µg/kg).
Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Avenue 2011 Allethrin Dry Water Receiving 1 1 0 0% ng/L Arcade Creek at Watt	0.05 0.05 0.05 ND substituted as 1/2 the reporting limit (0.1 ng/L).
Avenue 2011 Bifenthrin Dry Water Receiving 1 1 1 100% ng/L Arcade Creek at Watt	1.0 1.0 Only one sample, no median calculated
Avenue 2011 Cyfluthrin Dry Water Receiving 1 1 0 0% ng/L Arcade Creek at Watt	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Avenue 2011 Cypermethrin Dry Water Receiving 1 1 0 0% ng/L Arcade Creek at Watt	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Avenue 2011 Deltamethrin/Tralomethrin Dry Water Receiving 1 1 0 0% ng/L Arcade Creek at Watt	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Avenue 2011 Esferivalerate/Ferivalerate Dry Water Receiving 1 1 0 0% ng/L Arcade Creek at Watt	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Avenue 2011 Fenpropathrin Dry Water Receiving 1 1 0 0% ng/L Avenue 2011 Fenpropathrin Dry Water Receiving 1 1 0 0% ng/L	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Avcade Creek at Watt Avenue 2011 L-Cyhalothrin Dry Water Receiving 1 1 0 0% ng/L Arcade Creek at Watt	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Arcade Creek at Watt Avenue 2011 Permethrin Dry Water Receiving 1 1 0 0% ng/L Arcade Creek at Watt	1.0 1.0 ND substituted as 1/2 the reporting limit (2 ng/L).
Avenue 2011 Tau-Fluvalinate Dry Water Receiving 1 1 0 0% ng/L	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Avenue 2011 Tetramethrin Dry Water Receiving 1 1 0 0% ng/L	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Laguna Creek at Hwy 99 2011 Allethrin Dry Water Receiving 1 1 0 0% ng/L	0.05 0.05 ND substituted as 1/2 the reporting limit (0.1 ng/L).
Laguna Creek at Hwy 99 2011 Bifenthrin Dry Water Receiving 1 1 1 100% ng/L Laguna Creek at Hwy 99 2011 Cyfluthrin Dry Water Receiving 1 1 0 0% ng/L	1.1 1.1 Only one sample, no median calculated 0.1 0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Laguna Creak at Hwy 39 2011 Cynaithin Dry Wrater Receiving 1 1 0 0% ng/L	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Laguna Creek at Hwy 99 2011 Deltamethrin/Tralomethrin Dry Water Receiving 1 1 0 0% ng/L	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Laguna Creek at Hwy 99 2011 Esferivalerate/Ferivalerate Dry Water Receiving 1 1 0 0% ng/L	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Laguna Creek at Hwy 99 2011 Fenpropathrin Dry Water Receiving 1 1 0 0% ng/L	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Laguna Creek at Hwy 99 2011 L-Cyhalothrin Dry Water Receiving 1 1 0 0% ng/L Laguna Creek at Hwy 99 2011 Permethrin Dry Water Receiving 1 1 0 0% ng/L	0.1 0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Laguna Creek at Hwy 99 2011 Permethrin Dry Water Receiving 1 1 0 0% ng/L Laguna Creek at Hwy 99 2011 Tau-Fluxalinate Dry Water Receiving 1 1 0 0% ng/L	1 1 ND substituted as 1/2 the reporting limit (2 ng/L). 0.1 0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Laguna Creek at Hwy 99 2011 Tetramethrin Dry Water Receiving 1 1 0 0% ng/L Willow Creek at Blue Ravine	0.1 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Willow Creek at Blue Ravine Sacramento County, 2011 Discharge Monitoring Report Sacramento, CA Road 2011 Allethrin Dry Water Receiving 1 1 0 0% ng/L Willow Creek at Blue Ravine	0.05 0.05 ND substituted as 1/2 the reporting limit (0.1 ng/L).
Willow Creek at Blue Kavine Road 2011 Bifenthrin Dry Water Receiving 1 1 0 0% ng/L	0.05 0.05 ND substituted as 1/2 the reporting limit (0.1 ng/L).

Citation - Abbrev.	Report/study Title	Region		limeframe	e Pesticide (Analyte)	Wet/Dry Weather	Water/ Sediment	Discharge/ Receiving Water	# Sites Sam		% ted Dete		Sed. Unit nits Weight	Mean Media	n Min	Max Notes
			Willow Creek at Blue Ravine Road	2011	Cyfluthrin	Dry	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Cypermethrin	Dry	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine Road	2011	Esfenvalerate/Fenvalerate	Dry	Water	Receiving	1	1	0		ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Willow Creek at Blue Ravine					Ū.					•			
			Road Willow Creek at Blue Ravine	2011	Fenpropathrin	Dry	Water	Receiving	1	1	0		ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road Willow Creek at Blue Ravine	2011	L-Cyhalothrin	Dry	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road Willow Creek at Blue Ravine	2011	Permethrin	Dry	Water	Receiving	1	1	0	0%	ng/L	1	1	1 ND substituted as 1/2 the reporting limit (2 ng/L).
			Road	2011	Tau-Fluvalinate	Dry	Water	Receiving	1	1	0		ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Arcade Creek at Watt	2011	Tetramethrin	Dry	Water	Receiving	1	1	0		ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue Arcade Creek at Watt	2011	Allethrin	Wet	Water	Receiving	1	1	0		ng/L	0.05	0.05	0.05 ND substituted as 1/2 the reporting limit (0.1 ng/L).
			Avenue Arcade Creek at Watt	2011	Bifenthrin	Wet	Water	Receiving	1	1			ng/L	79	79	79 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2011	Cyfluthrin	Wet	Water	Receiving	1	1	1	100%	ng/L	6.7	6.7	6.7 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2011	Cypermethrin	Wet	Water	Receiving	1	1	1	100%	ng/L	6.1	6.1	6.1 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2011	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	1	1	100%	ng/L	0.7	0.7	0.7 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2011	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	1	1	100%	ng/L	0.6	0.6	0.6 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2011	Fenpropathrin	Wet	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Avenue Arcade Creek at Watt	2011	L-Cyhalothrin	Wet	Water	Receiving	1	1	1	100%	ng/L	0.4	0.4	0.4 Only one sample, no median calculated
			Avenue Arcade Creek at Watt	2011	Permethrin	Wet	Water	Receiving	1	1	1	100%	ng/L	17	17	17 Only one sample, no median calculated
			Avenue	2011	Tau-Fluvalinate	Wet	Water	Receiving	1	1	0		ng/L	0.1	0.1	
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Avenue Laguna Creek at Hwy 99	2011 2011	Tetramethrin Allethrin	Wet Wet	Water Water	Receiving Receiving	1	1	0		ng/L na/L	0.1 0.05	0.1 0.05	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L). 0.05 ND substituted as 1/2 the reporting limit (0.1 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Laguna Creek at Hwy 99	2011	Bifenthrin	Wet	Water	Receiving	1	1			ig/L	8.5	8.5	8.5 Only one sample, no median calculated
			Laguna Creek at Hwy 99	2011	Cyfluthrin	Wet	Water	Receiving	1	1	0		ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2011 2011	Cypermethrin Deltamethrin/Tralomethrin	Wet Wet	Water Water	Receiving Receiving	1	1	1		ng/L ng/L	1.7 0.1	1.7 0.1	 1.7 Only one sample, no median calculated 0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	1	0		ig/L ig/L	0.1	0.1	
			Laguna Creek at Hwy 99	2011	Fenpropathrin	Wet	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Laguna Creek at Hwy 99	2011	L-Cyhalothrin	Wet	Water	Receiving	1	1	1		ng/L	0.3	0.3	
			Laguna Creek at Hwy 99	2011	Permethrin	Wet	Water	Receiving	1	1			ng/L	3.4	3.4	3.4 Only one sample, no median calculated
			Laguna Creek at Hwy 99 Laguna Creek at Hwy 99	2011 2011	Tau-Fluvalinate Tetramethrin	Wet Wet	Water Water	Receiving Receiving	1	1	0 0		ng/L ng/L	0.1 0.1	0.1 0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
0	Discharge Monitoring Report	Sacramento CA	Willow Creek at Blue Ravine Road	2011	Allethrin	Wet	Water	Receiving	1		0		-	0.05	0.05	0.05 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Sacramento County, 2011	Discharge Monitoring Report	Sacramento, CA	Willow Creek at Blue Ravine	2011	Bifenthrin				1	1	-	• / •	ng/L			
			Road Willow Creek at Blue Ravine			Wet	Water	Receiving	1	1			ng/L	7.4	7.4	
			Road Willow Creek at Blue Ravine	2011	Cyfluthrin	Wet	Water	Receiving	1	1			ng/L	0.3	0.3	0.3 Only one sample, no median calculated
			Road Willow Creek at Blue Ravine	2011	Cypermethrin	Wet	Water	Receiving	1	1			ng/L	0.3	0.3	
			Road Willow Creek at Blue Ravine	2011	Deltamethrin/Tralomethrin	Wet	Water	Receiving	1	1	0		ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road Willow Creek at Blue Ravine	2011	Esfenvalerate/Fenvalerate	Wet	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
			Road Willow Creek at Blue Ravine	2011	Fenpropathrin	Wet	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit ($0.2 \ \text{ng/L}).$
			Road Willow Creek at Blue Ravine	2011	L-Cyhalothrin	Wet	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit ($0.2 \ \text{ng/L}).$
			Road Willow Creek at Blue Ravine	2011	Permethrin	Wet	Water	Receiving	1	1	0	0%	ng/L	1.0	1.0	1.0 ND substituted as 1/2 the reporting limit (2 ng/L).
			Road	2011	Tau-Fluvalinate	Wet	Water	Receiving	1	1	0		ng/L	0.1	0.1	
			Road	2011	Tetramethrin	Wet	Water	Receiving	1	1	0	0%	ng/L	0.1	0.1	0.1 ND substituted as 1/2 the reporting limit (0.2 ng/L).
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Urban Land Use Outfalls	2008	Allethrin		Water	Discharge	5	20	0		ıg/L	0.0003	0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls Urban Land Use Outfalls	2008 2008	Bifenthrin Cvfluthrin		Water Water	Discharge Discharge	5	20 20	13 4		ıg/L ıg/L	0.0414 0.0025	0.0003	0.2732 ND substituted as half the RL (0.0005 µg/L) 0.0255 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Cyfluthrin, beta		Water	Discharge	5	20	2	10%	ig/L	0.0064	0.005	0.0223 ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls	2008	Cypermethrin		Water	Discharge	5	20	5	25%	Jg/L	0.0014	0.0003	0.0087 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2008	Danitol		Water	Discharge	5	20	2	10%	ıg/L	0.0008	0.0003	0.0087 ND substituted as half the RL (0.0005 $\mu g/L)$
			Urban Land Use Outfalls	2008	Deltamethrin		Water	Discharge	5	20	1		ıg/L	0.0004	0.0003	
			Urban Land Use Outfalls	2008	Esfenvalerate/Fenvalerate, tota	al	Water	Discharge	5	20	1		ıg/L	0.0003	0.0003	0.0005 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls Urban Land Use Outfalls	2008 2008	Fenvalerate Fluvalinate		Water Water	Discharge Discharge	5 5	20 20	1 0		ıg/L Jg/L	0.0003	0.0003	
			Urban Land Use Outfalls	2008	L-Cyhalothrin		Water	Discharge	5	20	3		ig/L	0.0003	0.0003	
								-								and the second sec

						Wet/Dry	Water/	Discharge/		#	#	%		Sed.				
Citation - Abbrev.	Report/study Title	Region	Site(s) Urban Land Use Outfalls	Timeframe 2008	Pesticide (Analyte) Permethrin	Weather	Sediment Water	Receiving Water Discharge	# Sites	Samples		d Dete 3		nits We g/∟	ght Me 0.1		n Min 0.0025	Max Notes 2.0615 ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls	2008	Prallethrin		Water	Discharge	5			0		g/L	0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Creek Sites	2008	Resmethrin		Water	Discharge	5	5 20)	0	0% µ	g/L	0.0	25	0.0025	$0.0025~\text{ND}$ substituted as half the RL (0.005 $\mu\text{g/L})$
			Creek Sites	2008	Allethrin		Sediment	Receiving	4			0		g/g D	,		0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Allethrin		Water	Receiving	7	2		0		g/L	0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Creek Sites Creek Sites	2008 2008	Bifenthrin Bifenthrin		Sediment Water	Receiving	4	11 7 2		4 9	33% n 33% µ		ry 5.2 0.0		0.25	 ND substituted as half the RL (0.5 ng/g) 0.2185 ND substituted as half the RL (0.0005 μg/L)
			Creek Sites	2008	Cvfluthrin		vvater Sediment	Receiving	1			9	0% n	g/L 1/a D			0.0003	0.2185 ND substituted as half the RL (0.0005 µg/L) 0.25 ND substituted as half the RL (0.5 ng/g)
				2000	Cynddinn		ocument	Receiving			-	0	0/0 1	yg L	,y 0.	.0	0.20	
			Creek Sites	2008	Cyfluthrin		Water	Receiving	7	2		2		g/L	0.0		0.0003	0.0226 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Creek Sites	2008	Cyfluthrin, beta		Sediment	Receiving	4	11		0		g/g D	,		5	5 ND substituted as half the RL (10 ng/g)
			Creek Sites Creek Sites	2008 2008	Cyfluthrin, beta Cvpermethrin		Water Sediment	Receiving	7	7 21 L 11		1		g/L g/g D	0.0 rv 0.6		0.005	0.0226 ND substituted as half the RL (0.01 µg/L) 3 ND substituted as half the RL (0.005 ng/g)
			Creek Sites	2008	Cypermethrin		Water	Receiving	7	7 2	-	1		уд L g/L	0.000		0.0003	0.0024 ND substituted as half the RL (0.005 µg/L)
			Creek Sites	2008	Danitol		Sediment	Receiving	4	+ 1:		3		у- ј/g С			0.25	8.8 ND substituted as half the RL (0.005 ng/g)
			Creek Sites	2008	Danitol		Water	Receiving	7	2	7	5		g/L	0.0		0.0003	0.4399 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Deltamethrin		Sediment	Receiving	4			0		g/g D			0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Deltamethrin		Water	Receiving	7	2	7	0	0% µ	g/L	0.0	103	0.0003	0.0003 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Creek Sites	2008	Esfenvalerate/Fenvalerate, total		Sediment	Receiving	4	↓ 1:	2	0	0% n	g/g D	ry 0.	5	0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2008	Esfenvalerate/Fenvalerate, total		Water	Receiving	7	2		0		g/L	0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	Fenvalerate		Sediment	Receiving	4	12		0		g/g □			0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites Creek Sites	2008 2008	Fenvalerate Fluvalinate		Water Sediment	Receiving Receiving	4			0		g/L 1/g D	0.0 rv 0.1		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L) 0.25 ND substituted as half the RL (0.5 µg/g)
			Creek Sites	2008	Fluvalinate		Water	Receiving	7	2	7	0		g/L	0.0	103	0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2008	L-Cyhalothrin		Sediment	Receiving	4			0	0% n				0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites Creek Sites	2008 2008	L-Cyhalothrin Permethrin		Water Sediment	Receiving Receiving	4	7 21 L 11		1		g/L g/g D	0.0 rv 3.1		0.0003	0.001 ND substituted as half the RL (0.0005 μg/L) 10 ND substituted as half the RL (0.5 μg/g)
			Creek Sites	2008	Permethrin		Water	Receiving	7	2	7	0	0% µ	g/L	0.0	25	0.0025	0.0025 ND substituted as half the RL (0.005 µg/L)
			Creek Sites	2008	Prallethrin		Sediment	Receiving	4			0		g/g D			0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites Creek Sites	2008 2008	Prallethrin Resmethrin		Water Sediment	Receiving Receiving	7	7 21 1 12		0		g/L g/g D	0.0 ry 2		0.0003 2.5	0.0003 ND substituted as half the RL (0.0005 μg/L) 2.5 ND substituted as half the RL (5 ng/g)
			Creek Sites	2008	Resmethrin		Water	Receiving	7	2		0		99 C g/L	0.0		0.002	0.003 ND substituted as half the RL
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Mugu Lagoon	2008	Allethrin		Sediment	Receiving		5 10		0	0% n	g/g D	ry 0.:	-	0.25	0.25 ND substituted as half the RL (0.5 ng/g)
Ventura County, 2011	Calleguas creek watershed finible monitoring Program Ventura		Mugu Lagoon	2008	Allethrin		Water	Receiving	1) I	-	0		ј/д L g/L	iy U. 0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Bifenthrin		Sediment	Receiving	5	5 10	5	12	75% n	, j/g D			0.25	17.3 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Bifenthrin		Water	Receiving	1	.		2		g/L	0.0		0.0003	0.1079 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon Mugu Lagoon	2008 2008	Cyfluthrin Cyfluthrin		Sediment Water	Receiving Receiving	1	5 10 I		0		g/g D g/L	ry 0.: 0.0		0.25	0.25 ND substituted as half the RL (0.5 ng/g) 0.0003 ND substituted as half the RL (0.0005 ug/L)
														_				
			Mugu Lagoon	2008	Cyfluthrin, beta		Sediment	Receiving	5	5 10	5	0	0% n	g/g D	rv !		5	5 ND substituted as half the RL (10 ng/g)
			Mugu Lagoon	2008	Cyfluthrin, beta		Water	Receiving	1			0		g/L =	0.0	05	0.005	0.005 ND substituted as half the RL (0.01 µg/L)
			Mugu Lagoon	2008	Cypermethrin		Sediment	Receiving	5	5 10		0		g/g D			0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Cypermethrin		Water	Receiving	1	4		0		g/L	0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon Mugu Lagoon	2008	Danitol		Sediment	Receiving	5			11		g/g D			0.25	8.2 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008 2008	Danitol Deltamethrin		Water Sediment	Receiving Receiving	1	1 4 5 16		2 0		g/L g/g D	0.0 rv 0.1		0.0003	0.157 ND substituted as half the RL (0.0005 μg/L) 0.25 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Deltamethrin		Water	Receiving	1	, ii		0		µg ⊏ q/L	0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
								-	_									
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Mugu Lagoon Mugu Lagoon	2008 2008	Esfenvalerate/Fenvalerate, total Esfenvalerate/Fenvalerate, total		Sediment Water	Receiving Receiving	5	5 10		0	0% п 0% г	g/g D g/L	ry 0.1 0.0		0.25	0.25 ND substituted as half the RL (0.5 ng/g) 0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Fenvalerate		Sediment	Receiving		5 10		0		у/L]/g D			0.0003	0.25 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Fenvalerate		Water	Receiving	1	/ i		0		уд С g/L	0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Fluvalinate		Sediment	Receiving	5	5 10		0		у- ј/g С			0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Fluvalinate		Water	Receiving	1	<u>،</u> ا	1	0		g/L	0.0	103	0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	L-Cyhalothrin		Sediment	Receiving	5			1	6% r		· ·		0.25	0.5 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	L-Cyhalothrin		Water	Receiving	1	4		0		g/L	0.0		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Permethrin		Sediment	Receiving	5	· ··		0		g/g □			2.5	2.5 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon Mugu Lagoon	2008 2008	Permethrin Prallethrin		Water Sediment	Receiving Receiving	1	1 4 5 10		0		g/L g/g D	0.0 ry 0.1		0.0025	0.0025 ND substituted as half the RL (0.005 µg/L) 0.25 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Prallethrin		Water	Receiving	1			0		µу с g/L	iy U. 0.0		0.25	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2008	Resmethrin		Sediment	Receiving	5			0		g/⊑ g/g ⊡			2.5	2.5 ND substituted as half the RL (0.5 ng/g)
			Mugu Lagoon	2008	Resmethrin		Water	Receiving	1	1 4		0		g/L =	0.0		0.0025	0.0025 ND substituted as half the RL (0.005 μg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Urban Land Use Outfalls	2009	Allethrin		Water	Discharge	5	5 3!		1	3% µ	7/1	0.0	105	0.0003	0.0095 ND substituted as half the RL (0.0005 µg/L)
ventura County, 2011			Urban Land Use Outfalls	2009	Bifenthrin		Water	Discharge	5			32		g/L g/L	0.0		0.0003	0.0095 ND substituted as half the RL (0.0005 µg/L) 0.2764 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Cyfluthrin		Water	Discharge	5			26		g/L	0.0		0.0003	0.1816 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Cyfluthrin, beta		Water	Discharge	5	5 14		0		g/L	0.0	05	0.005	0.005 ND substituted as half the RL (0.01 µg/L)
			Urban Land Use Outfalls	2009	Cypermethrin		Water	Discharge	5			16		g/L	0.0		0.0003	0.0325 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Urban Land Use Outfalls	2009	Danitol		Water	Discharge	5	5 39	9	7	18%	g/L	0.0	104	0.0003	0.0013 ND substituted as half the RL (0.0005 $\mu\text{g/L})$

						Wet/Dry	Water/	Discharge/		#	#	%		Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s) Urban Land Use Outfalls	Timeframe 2009	Pesticide (Analyte) Deltamethrin	Weather	Sediment Water	Receiving Water Discharge	# Sites	Samples 39	Detecte		ed Units D% μg/L	Weight	Mean 0.0003	Median	Min 0.0003	Max Notes 0.0003 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Esfenvalerate		Water	Discharge	5	35		-	л‰ µg/∟ 0% µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L) 0.0003 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Esfenvalerate/Fenvalerate, tota	al	Water	Discharge	5	34		-	9% µg/L		0.0003		0.0003	0.0012 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Fenvalerate		Water	Discharge	5	39			0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2009	Fluvalinate		Water	Discharge	5	39			0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Urban Land Use Outfalls	2009	L-Cyhalothrin		Water	Discharge	5	39			8% μg/L		0.0024		0.0003	0.02 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Urban Land Use Outfalls	2009	Permethrin		Water	Discharge	5	39			3% µg/L		0.0108		0.0025	0.084 ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls Urban Land Use Outfalls	2009 2009	Prallethrin Resmethrin		Water Water	Discharge Discharge	5	39			0% μg/L 0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L) 0.0025 ND substituted as half the RL (0.005 µg/L)
				2009	Resmennin		water	Discharge	5	35		0	J‰ µg/L		0.0025		0.0025	0.0025 ND substituted as hair the RE (0.005 µg/E)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Creek Sites	2009	Allethrin		Sediment	Receiving	4	13			0% ng/g	Dry	0.25		0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Allethrin		Water	Receiving	7	47			0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Creek Sites Creek Sites	2009 2009	Bifenthrin		Sediment Water	Receiving	4	13 47			9% ng/g 9% µg/L	Dry	10.585 0.0220		0.25 0.0003	34 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Bifenthrin Cvfluthrin		vvater Sediment	Receiving Receiving	4	47				Der	0.0220		0.0003	0.2873 ND substituted as half the RL (0.0005 μg/L) 0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Cyfluthrin		Water	Receiving	7	47			0% ng/g 3% μg/L	Dry	0.25		0.0003	0.0329 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Cyfluthrin, beta		Sediment	Receiving	4	13			0% ng/g	Dry	5		5	5 ND substituted as half the RL (10 ng/g)
			Creek Sites	2009	Cyfluthrin, beta		Water	Receiving	7	13			0% μg/L	,	0.005		0.005	0.005 ND substituted as half the RL (0.01 µg/L)
			Creek Sites	2009	Cypermethrin		Sediment	Receiving	4	13		6 4	6% ng/g	Dry	1.9269		0.25	5.2 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Cypermethrin		Water	Receiving	7	47			7% µg/L		0.0053		0.0003	0.0354 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Creek Sites	2009	Danitol		Sediment	Receiving	4	13			6% ng/g	Dry	1.25		0.25	3.3 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Danitol		Water	Receiving	7	47			2% µg/L	_	0.0061		0.0003	0.2014 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Creek Sites Creek Sites	2009 2009	Deltamethrin		Sediment	Receiving	4	13 47			0% ng/g	Dry	0.25		0.25	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Deltamethrin Esfenvalerate		Water Sediment	Receiving Receiving	4	4/ 13			2% µg/L 3% ng/g	Dry	0.0005		0.0003	0.0098 ND substituted as half the RL (0.5 ng/g) 0.8 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Esfenvalerate		Water	Receiving	4	7			5% ng/g 0% μg/L	Diy	0.2923		0.23	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Esfenvalerate/Fenvalerate, tota	al	Water	Receiving	. 7	40			0% μg/L		0.0009		0.0003	0.0052 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Fenvalerate		Sediment	Receiving	4	13			3% ng/g	Dry	0.3538		0.25	1.6 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Fenvalerate		Water	Receiving	7	47	· 1	11 2	3% µg/L		0.0004		0.0003	0.0027 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Fluvalinate		Sediment	Receiving	4	13		2 1	5% ng/g	Dry	0.6654		0.25	3.6 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Fluvalinate		Water	Receiving	7	47			9% μg/L		0.0024		0.0003	0.0896 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Creek Sites	2009	L-Cyhalothrin		Sediment	Receiving	4	13			8% ng/g	Dry	0.6		0.25	4.8 ND substituted as half the RL (0.5 ng/g)
			Creek Sites Creek Sites	2009 2009	L-Cyhalothrin		Water Sediment	Receiving	7	47			6% μg/L 0% na/a		0.0043 2.5		0.0003 2.5	0.0715 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Permethrin Permethrin		Water	Receiving Receiving	4	47			0% ng/g 3% μg/L	Dry	2.5 0.0145		0.0025	 2.5 ND substituted as half the RL (5 ng/g) 0.4214 ND substituted as half the RL (0.005 µg/L)
			Creek Sites	2009	Prallethrin		Sediment	Receiving	1	47			5% µg/∟ 0% ng/g	Dry	0.25		0.0025	0.25 ND substituted as half the RL (0.5 ng/g)
			Creek Sites	2009	Prallethrin		Water	Receiving	7	47			0% μg/L	5.9	0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2009	Resmethrin		Sediment	Receiving	4	13			0% ng/g	Dry	2.5		2.5	2.5 ND substituted as half the RL (5 ng/g)
			Creek Sites	2009	Resmethrin		Water	Receiving	7	47			0% μg/L		0.0025		0.0025	0.0025 ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Mugu Lagoon	2009	Allethrin		Water	Receiving	1	-		0)% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TWDL Monitoring Program Ventura		Mugu Lagoon	2009	Bifenthrin		Water	Receiving	1	7			5% μg/L 5% μg/L		0.0003		0.0003	0.1546 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Cyfluthrin		Water	Receiving	1	7			4% μg/L		0.0023		0.0003	0.0143 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Cyfluthrin, beta		Water	Receiving	1	2			0% μg/L		0.005		0.005	0.005 ND substituted as half the RL (0.01 µg/L)
			Mugu Lagoon	2009	Cypermethrin		Water	Receiving	1	7		2 2	9% µg/L		0.0054		0.0003	0.0266 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Danitol		Water	Receiving	1	7			7% µg/L		0.0675		0.0003	0.4599 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Mugu Lagoon	2009	Deltamethrin		Water	Receiving	1	7			0% µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Mugu Lagoon	2009	Esfenvalerate		Water	Receiving	1	1			0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 μ g/L)
			Mugu Lagoon	2009	Esfenvalerate/Fenvalerate, tota	al	Water	Receiving	1	6			7% µg/L		0.0003		0.0003	0.0008 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon Mugu Lagoon	2009 2009	Fenvalerate Fluvalinate		Water Water	Receiving	1	-)% µg/L)% µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L) 0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	L-Cvhalothrin		Water	Receiving	1	7			1% µg/L 4% µg/L		0.0003		0.0003	0.0011 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Permethrin		Water	Receiving	1	7			4% μg/L		0.0196		0.0025	0.1225 ND substituted as half the RL (0.005 µg/L)
			Mugu Lagoon	2009	Prallethrin		Water	Receiving	1	7			0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2009	Resmethrin		Water	Receiving	1	7		0	0% μg/L		0.0025		0.0025	0.0025 ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Urban Land Use Outfalls	2010	Allethrin		Water	Discharge	5	15		0	0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
Ventura County, 2011	Calleguas Oreck Watershed TWDE Monitoring Trogram Ventura		Urban Land Use Outfalls	2010	Bifenthrin		Water	Discharge	5	15			3% µg/L 3% µg/L		0.0003		0.0003	0.1503 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Cyfluthrin		Water	Discharge	5	15			5% µg/∟ 7% µg/L		0.0473		0.0003	0.316 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Cypermethrin		Water	Discharge	5	15			3% μg/L		0.0126		0.0003	0.1469 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Danitol		Water	Discharge	5	15)% μg/L		0.0013		0.0003	0.0054 ND substituted as half the RL (0.0005 µg/L)
			Urban Land Use Outfalls	2010	Deltamethrin		Water	Discharge	5	15			0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Urban Land Use Outfalls	2010	Esfenvalerate/Fenvalerate, tota	al	Water	Discharge	5	15			7% µg/L		0.0034		0.0003	0.0278 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Urban Land Use Outfalls	2010	Fenvalerate		Water	Discharge	5	15			7% µg/L		0.0042		0.0003	0.0368 ND substituted as half the RL (0.0005 μ g/L)
			Urban Land Use Outfalls Urban Land Use Outfalls	2010	Fluvalinate		Water	Discharge	5	15			0% μg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 μg/L)
			Urban Land Use Outfalls Urban Land Use Outfalls	2010 2010	L-Cyhalothrin Permethrin		Water Water	Discharge Discharge	5 5				0% μg/L 7% μg/L		0.0234 0.0073		0.0003	0.243 ND substituted as half the RL (0.0005 µg/L) 0.0742 ND substituted as half the RL (0.005 µg/L)
			Urban Land Use Outfalls	2010	Permetnrin Prallethrin		Water	Discharge	5	15			7% μg/L 0% μg/L		0.0073		0.0025	0.0042 ND substituted as half the RL (0.005 µg/L) 0.0003 ND substituted as half the RL (0.0005 µg/L)
													10					
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program Ventura		Creek Sites	2010	Allethrin		Water	Receiving	7	19			0% µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 $\mu\text{g/L})$
			Creek Sites	2010	Bifenthrin		Water	Receiving	7	19		8 4	2% µg/L		0.0334		0.0003	0.1433 ND substituted as half the RL (0.0005 $\mu\text{g/L})$

						Wet/Drv	Water/	Discharge/		# #	#	%		Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather		Receiving Water #	# Sites San	nples Dete	ected I	Detected	Units	Weight	Mean	Median	Min	Max Notes
			Creek Sites	2010	Cyfluthrin		Water	Receiving	7	19	7	37%	µg/L		0.0477		0.0003	0.4226 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Cypermethrin		Water	Receiving	7	19	6	32%	µg/L		0.0213		0.0003	0.1709 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Danitol		Water	Receiving	7	19	6	32%	µg/L		0.0046		0.0003	0.0233 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites Creek Sites	2010	Deltamethrin		Water	Receiving	7	19	0	0%	µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010 2010	Esfenvalerate/Fenvalerate, tota Fenvalerate	al	Water	Receiving	7	19 19	8 8	42% 42%	µg/L		0.0055		0.0003	0.0263 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Fluvalinate		Water Water	Receiving Receiving	7	19	0 1	42%	μg/L μg/L		0.0041		0.0003	0.0234 ND substituted as half the RL (0.0005 µg/L) 0.1548 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	L-Cvhalothrin		Water	Receiving	7	19	7	37%	μg/L		0.0084		0.0003	0.0334 ND substituted as half the RL (0.0005 µg/L)
			Creek Sites	2010	Permethrin		Water	Receiving	7	19	1	5%	µg/L		0.0647		0.0025	1.1852 ND substituted as half the RL (0.005 µg/L)
Ventura County, 2011	Calleguas Creek Watershed TMDL Monitoring Program	Ventura	Mugu Lagoon	2010	Prallethrin		Water	Receiving	7	19	0	0%	µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Allethrin		Water	Receiving	1	3	0	0%	µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Bifenthrin		Water	Receiving	1	3 3	2	67% 33%	µg/L		0.0479		0.0003	0.1018 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon Mugu Lagoon	2010 2010	Cyfluthrin Cypermethrin		Water Water	Receiving Receiving	1	3	1 1	33%	µg/L		0.0005		0.0003	0.0011 ND substituted as half the RL (0.0005 µg/L) 0.1137 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Danitol		Water	Receiving	1	3	1	33%	µg/L µg/L		0.0381		0.0003	0.0386 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Deltamethrin		Water	Receiving	1	3	0	0%	µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Esfenvalerate/Fenvalerate. tota	al	Water	Receiving	1	3	1	33%	µg/L		0.0028		0.0003	0.0078 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Fenvalerate		Water	Receiving	1	3	1	33%	μg/L		0.0025		0.0003	0.007 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Fluvalinate		Water	Receiving	1	3	1	33%	μg/L		0.0008		0.0003	0.0019 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	L-Cyhalothrin		Water	Receiving	1	3	1	33%	µg/L		0.0045		0.0003	0.013 ND substituted as half the RL (0.0005 µg/L)
			Mugu Lagoon	2010	Permethrin		Water	Receiving	1	3	1	33%	µg/L		0.1701		0.0025	0.5052 ND substituted as half the RL (0.005 µg/L)
			Mugu Lagoon	2010	Prallethrin		Water	Receiving	1	3	0	0%	µg/L		0.0003		0.0003	0.0003 ND substituted as half the RL (0.0005 µg/L)
	Pelagic Organism Decline: Acute and Invertebrate and Fish Toxicity testing in the Sacramento San Joaquin		Sacramento-San Joaquin															
Werner et al., 2010a	Delta	Northern California	Delta	2008-2010	Bifenthrin		Water	Receiving	16	113	24	21%	ng/L					117.0 Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin										Ū.					
			Delta Sacramento-San Joaquin	2008-2010	Cyfluthrin		Water	Receiving	16	113	24	21%	ng/L					20.0 Additional site-specific data available through link and supplemental data
			Delta	2008-2010	Lambda-cyhalothrin		Water	Receiving	16	113	24	21%	ng/L					1.5 Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin					5										
			Delta Sacramento-San Joaquin	2008-2010	Cypermethrin		Water	Receiving	16	113	24	21%	ng/L					16.0 Additional site-specific data available through link and supplemental data
			Delta	2008-2010	Esfenvalerate		Water	Receiving	16	113	24	21%	na/l					9.0 Additional site-specific data available through link and supplemental data
			Sacramento-San Joaquin										•					
			Delta	2008-2010	Permethrin		Water	Receiving	16	113	24	21%	ng/L					35.0 Additional site-specific data available through link and supplemental data
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid Pesticides	Roseville, CA	Pleasant Grove Creek	2004	Bifenthrin	Dry	Sediment	Receiving	8	9	9	100%	ng/kg	Dry	18.3	9	1.2	77
			Pleasant Grove Creek	2004		Dry	Sediment	Receiving	8	9	4		ng/kg		9.9444444	0.5	0.5	70 ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek	2004		Dry	Sediment	Receiving	8	9	4	44%	ng/kg	=.,	4.3888889	0.5	0.5	18 ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek Pleasant Grove Creek	2004 2004	Deltamethrin Esfenvalerate	Dry Dry	Sediment Sediment	Receiving Receiving	8	9	4	44% 0%	ng/kg ng/kg	Dry Dry	1.9444444	0.5	0.5	5.1 ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek	2004	L-Cyhalothrin	Dry	Sediment	Receiving	8	9	3		ng/kg		1.0111111	0.5	0.5	2.5 ND substituted as half the RL (1 ng/g)
			Pleasant Grove Creek	2004		Dry	Sediment	Receiving	8	9	9	100%	ng/kg		13.377778	14	2.1	24
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid	Roseville, CA	South Branch of Pleasant	2004	D7	D	Sediment	Receiving	5		6	100%			58.466667	55	5.8	146
Weston et al., 2005	Pesticides	Roseville, CA	Grove Creek	2004		Dry Dry	Sediment	Receiving	5	6	ь 4	67%	ng/kg ng/kg	Dry Dry	16.5	11.5	5.8	146 48 ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Cynutrini	Dry	Sediment	Receiving	5	6	4 5	83%	ng/kg	Dry	13.2	6	0.5	40 ND substituted as half the RL (1 ng/g) 40 ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Deltamethrin	Dry	Sediment	Receiving	5	6	3	50%	ng/kg	,	3.0333333	1.8	0.5	8.7 ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Esfenvalerate	Dry	Sediment	Receiving	5	6	2	33%	ng/kg	Dry	1.0166667	0.5	0.5	2.5 ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	L-Cyhalothrin	Dry	Sediment	Receiving	5	6	4		ng/kg	Dry	1.8333333	1.6	0.5	3.4 ND substituted as half the RL (1 ng/g)
			Grove Creek	2004	Permethrin	Dry	Sediment	Receiving	5	6	5	83%	ng/kg	Dry	50.316667	41.5	0.5	154 ND substituted as half the RL (1 ng/g)
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid Pesticides	Roseville, CA	Kaseberg Creek	2004	Bifenthrin	Dry	Sediment	Receiving	8	9	9	100%	ng/kg	Drv	184.94444	201	6.1	437
			Kaseberg Creek	2004	Cyfluthrin	Dry	Sediment	Receiving	8	9	7	78%	ng/kg	Dry	76.4	90	0.5	169 ND substituted as half the RL (1 ng/g)
			Kaseberg Creek	2004	Cypermethrin	Dry	Sediment	Receiving	8	9	6	67%	ng/kg		100.75556	33	0.5	736 ND substituted as half the RL (1 ng/g)
			Kaseberg Creek Kaseberg Creek	2004 2004	Deltamethrin Esfenvalerate	Dry Dry	Sediment Sediment	Receiving Receiving	8	9	7	78% 33%	ng/kg ng/kg	Dry Dry	10.53125 2.2111111	3.75 0.5	0.5 0.5	46 ND substituted as half the RL (1 ng/g) 5.8 ND substituted as half the RL (1 ng/g)
			Kaseberg Creek	2004	L-Cyhalothrin	Dry	Sediment	Receiving	8	9	9	100%	ng/kg		5.7555556	3.5	1.2	13
			Kaseberg Creek	2004		Dry	Sediment	Receiving	8	9	7	78%	ng/kg		110.27778	100	0.5	335 ND substituted as half the RL (1 ng/g)
	Use of Engineered Enzymes to Identify Organophosphate and Pyrethroid Related Toxicity in																	
Weston and Jackson, 2009	Toxicity Identification Evaluations	Northern California	Alamo Creek	2008-2009	Bifenthrin	Dry	Water	Receiving	1	1	1	100%	ng/L		12.4		12.4	12.4 Only one sample, no median calculated
			Alamo Creek	2008-2009		Dry	Water	Receiving	1	1	1	100%	ng/L		9.6		9.6	9.6 Only one sample, no median calculated
			Alamo Creek Alamo Creek	2008-2009 2008-2009	Lambda-cyhalothrin	Dry	Water Water	Receiving Receiving	1	1	1 1	100% 100%	ng/L		1.0 10.9		1.0 10.9	1.0 Only one sample, no median calculated
			Sump 28, Sacramento	2000-2009	GANGUIN	Dry	**8101	Receiving	1	'		100%	ng/L		10.9		10.9	10.9 Only one sample, no median calculated
			(Storm Drain Site SA-28)	2008-2009	Bifenthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		2.3		2.3	2.3 Only one sample, no median calculated
			Sump 28, Sacramento															
			(Storm Drain Site SA-28) Weston Ranch Pump Station.	2008-2009	Lambda-cyhalothrin	Dry	Water	Discharge	1	1	1	100%	ng/L		6.2		6.2	6.2 Only one sample, no median calculated
			Stockton (Storm Drain Site															
			"WR")	2008-2009	Cyfluthrin	Dry	Water	Discharge	1	1	1	100%	ng/L		3.5		3.5	3.5 Only one sample, no median calculated
			Weston Ranch Pump Station, Stockton (Storm Drain Site															
			"WR")	2008-2009	Lambda-cyhalothrin	Dry	Water	Discharge	1	1	1	100%	ng/L		2.0		2.0	2.0 Only one sample, no median calculated
			Weston Ranch Pump Station,															
			Stockton (Storm Drain Site "WR")	2008-2009	Permethrin	Dry	Water	Discharge	1	1	1	100%	ng/L		5.6		5.6	5.6 Only one sample, no median calculated
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Citation - Abbrev.	Report/study Title	Region	Site(s) Sump 28, Sacramento;	Timeframe	Pesticide (Analyte)	Wet/Dry Weather		Discharge/ Receiving Water	# Sites S	# amples	# Detected	% Detected	I Units	Sed. Unit Weight	Mean	Median	Min	Max Notes
	Urban and Agricultural Sources of Pyrethroid		Sump 104, Sacramento; Legion Park pump station, Stockton; Weston Ranch pump station, Stockton; Moraga Lane pump station, Stockton; Concrete drain															
Weston and Lydy, 2010b	Insecticides to the Sacramento-San Joaquin Delta of California	Northern California	pipe, North West Rd., Vacaville	2009	Bifenthrin	Wet & Dry	Water	Discharge	6	33	26	799	% ng/L		8.6	3.8	0.5	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at 29.8 Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Cyfluthrin	Wet & Dry	Water	Discharge	6	33	18	55	% ng/L		4.8	3.1	0.5	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at 17.8 Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Cypermethrin	Wet & Dry	Water	Discharge	6	33	12	369	% ng/L		2.4	0.5	0.05	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at 12.3 Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Deltamethrin	Wet & Dry	Water	Discharge	6	33	4	12	% ng/L		0.7	0.5	0.5	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at 3.5 Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Esfenvalerate	Wet & Dry	Water	Discharge	6	33	2	6	% ng/L		0.7	0.5	0.5	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at 4.3 Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
			[as above]	2009	Fenpropathrin	Wet & Dry	Water	Discharge	6	33	1	39	% ng/L		0.7	0.5	0.5	······································
			[as above]	2009	Lambda-cyhalothrin	Wet & Dry	Water	Discharge	6	33	15	45	% ng/L		1.4	0.5	0.5	
			[as above]	2009	Permethrin	Wet & Dry	Water	Discharge	6	33	20	619	% ng/L		8.7	5.6	0.5	3 wet weather & 3 dry weather events for each of 5 sites; 3 wet events only at 45.8 Vacaville site. Non-detects substituted as 1/2 the detection limit (1 ng/L)
Weston and Lydy, 2010b	Urban and Agricultural Sources of Pyrethroid Insecticides to the Sacramento-San Joaquin Delta of California	Northern California	Ulatis Creek, Alamo Creek, San Joaquin River, Americar River, Sacramento River	2009	Bifenthrin	Wet	Water	Receiving	12	22	10	459	% ng/L					
			Ulatis Creek, Alamo Creek, San Joaquin River, Americar River, Sacramento River		Cyfluthrin	Wet	Water	Receiving	12	22	2	99	% ng/L					
			Ulatis Creek, Alamo Creek, San Joaquin River, Americar River, Sacramento River	2009	Cypermethrin	Wet	Water	Receiving	12	22	0	0	% ng/L					
			Ulatis Creek, Alamo Creek, San Joaquin River, Americar River, Sacramento River		Deltamethrin	Wet	Water	Receiving	12	22	0	0	% na/L					
			Ulatis Creek, Alamo Creek, San Joaquin River, Americar	1		WEL	water	Receiving			U							
			River, Sacramento River Ulatis Creek, Alamo Creek,		Esfenvalerate	Wet	Water	Receiving	12	22	0	0	% ng/L					
			San Joaquin River, Americar River, Sacramento River		Fenpropathrin	Wet	Water	Receiving	12	22	0	0	% ng/L					
			Ulatis Creek, Alamo Creek, San Joaquin River, Americar River, Sacramento River		Lambda-cyhalothrin	Wet	Water	Receiving	12	22	2	9	% ng/L					
			Ulatis Creek, Alamo Creek, San Joaquin River, Americar River, Sacramento River		Permethrin	Wet	Water	Receiving	12	22	4	189	% ng/L					
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Hinkle Creek Hinkle Creek	2009-2010	Bifenthrin Cyfluthrin	Wet Wet	Water Water	Receiving Receiving	1 1	4 4	4	50	% ng/L		24.575 6.7		1.0 0.5	
	Charman land of a settler id in a stiridae to an action		Hinkle Creek Hinkle Creek		Cypermethrin Permethrin	Wet Wet	Water Water	Receiving Receiving	1 1	4 4	0 1				5.9	5.9	0.5	11.3 Non-detects substituted with 1/2 the detection limit (<1 $\mbox{ng/L})$
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Willow Creek Willow Creek Willow Creek	2009-2010	Bifenthrin Cyfluthrin Cypermethrin	Wet Wet Wet	Water Water Water	Receiving Receiving Receiving	1 1 1	2 2 2	1 0 0	0	% ng/L		4.9	4.9	0.5	9.3 Non-detects substituted with 1/2 the detection limit (<1 $\mbox{ng/L})$
	Stormwater input of pyrethroid insecticides to an urban		Willow Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	2	0	0	% ng/L					
Weston and Lydy, 2012	river	Sacramento	Alder Creek Alder Creek Alder Creek Alder Creek	2009-2010 2009-2010	Bifenthrin Cyfluthrin Cypermethrin	Wet Wet Wet Wet	Water Water Water Water	Receiving Receiving Receiving	1 1 1	2 2 2	0 0 0 0	0	% ng/L % ng/L					
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Buffalo Creek	2009-2010	Permethrin Bifenthrin Cyfluthrin	Wet Wet	Water Water Water	Receiving Receiving Receiving	1	2 6 6	5	83	% ng/L		12.2	9.0	0.5	28.9 Non-detects substituted with 1/2 the detection limit (<1 ng/L) $% \left(1-\frac{1}{2}\right) =0$
	Stormuster input of protherid inserticides to service		Buffalo Creek Buffalo Creek Buffalo Creek	2009-2010	Cypermethrin Permethrin	Wet Wet Wet	Water Water Water	Receiving Receiving Receiving	1 1	6 6	0	0	% ng/L					
Weston and Lydy, 2012	Stormwater input of pyrethroid insecticides to an urban river	Sacramento	Minnesota Creek Minnesota Creek Minnesota Creek	2009-2010	Bifenthrin Cyfluthrin Cypermethrin	Wet Wet Wet	Water Water Water	Receiving Receiving Receiving	1 1 1	5 5 5	5 0 0	0	% ng/L		13.82	20.7	1.3	*******

Citation - Abbrev.	Report/study Title	Region	Site(s) Minnesota Creek	Timeframe 2009-2010	Pesticide (Analyte) Permethrin	Wet/Dry Weather Wet	Water/ Sediment	Discharge/ Receiving Water Receiving	# Sites S	# Samples	# Detected	% Detected 0%		Sed. Unit Weight	Mean M	Median	Min	Max Notes
	Stormwater input of pyrethroid insecticides to an urban			2000 2010			Trato.	recouring	·	0	Ũ	0,0	- apre					
Weston and Lydy, 2012	river	Sacramento	Carmichael Creek	2009-2010	Bifenthrin	Wet	Water	Receiving	1	5	5		ng/L		40.88	37.3	6.2	106.4
			Carmichael Creek	2009-2010	Cyfluthrin	Wet	Water	Receiving	1	5	5		ng/L		8.46	8.7	2.0	20.5
			Carmichael Creek	2009-2010	Cypermethrin	Wet	Water	Receiving	1	5	1	20%	ng/L		2.28	0.5	0.5	9.4 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
	Stormwater input of pyrethroid insecticides to an urban		Carmichael Creek	2009-2010	Permethrin	Wet	Water	Receiving	1	5	2	40%	ng/L		8.72	8.1	0.5	21.1 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
Weston and Lydy, 2012	river	Sacramento	Mather Drain	2009-2010	Bifenthrin	Wet	Water	Discharge	1	6	4	67%	ng/L		14.55	13.25	0.5	31.7 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Mather Drain	2009-2010	Cvfluthrin	Wet	Water	Discharge	1	6	1		ng/L		4.85	0.5	0.5	26.6 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Mather Drain	2009-2010	Cypermethrin	Wet	Water	Discharge	1	6	0		ng/L					
			Mather Drain	2009-2010	Permethrin		Water	Discharge	1	6	0		ng/L					
	Stormwater input of pyrethroid insecticides to an urban																	
Weston and Lydy, 2012	river	Sacramento	Mayhew Drain	2009-2010	Bifenthrin	Wet	Water	Discharge	1	4	4		ng/L		20.675	19.0	10.1	34.6
			Mayhew Drain	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	4	0	- / -	ng/L					
			Mayhew Drain Mayhew Drain	2009-2010 2009-2010	Cypermethrin Permethrin	Wet Wet	Water Water	Discharge Discharge	1	4	0		ng/L ng/L					
	Stormwater input of pyrethroid insecticides to an urban		waynew Drain	2009-2010	Femleului	Wei	water	Discharge		-	0	0 /6	ng/L					
Weston and Lydy, 2012	river	Sacramento	Sump 92	2009-2010	Bifenthrin	Wet	Water	Discharge	1	4	4	100%	na/L		22.125	21.05	12.4	34.0
			Sump 92	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	4	2		ng/L		1.525	0.9	0.5	11.4 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Sump 92	2009-2010	Cypermethrin	Wet	Water	Discharge	1	4	2	50%	ng/L		5.575	5.2	0.5	3.9 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Sump 92	2009-2010	Permethrin	Wet	Water	Discharge	1	4	4	100%	ng/L		16.2	13.3	8.4	29.8
	Stormwater input of pyrethroid insecticides to an urban		Chicken/Strong Ranch															
Weston and Lydy, 2012	river	Sacramento	Slough	2009-2010	Bifenthrin	Wet	Water	Discharge	1	6	6	100%	ng/L		38.3	35.8	17.4	83.4
			Chicken/Strong Ranch Slough	2009-2010	Cyfluthrin	Wet	Water	Discharge		6	2	33%	na/L		1.2	0.5	0.5	3.2 Non-detects substituted with 1/2 the detection limit (<1 na/L)
			Chicken/Strong Ranch	2009-2010	Cyllutrini	wei	water	Discharge		0	2	33%	ng/L		1.2	0.5	0.5	3.2 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Slough	2009-2010	Cypermethrin	Wet	Water	Discharge	1	6	2	33%	na/L		1.55	0.5	0.5	4.3 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Chicken/Strong Ranch	2000 2010	oyponnounni		mater	Bibbilaige		Ū	-	0070	ngre		1.00	0.0	0.0	
			Slough	2009-2010	Permethrin	Wet	Water	Discharge	1	6	4	67%	ng/L	:	27.533333	13.6	0.5	110.5 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
	Stormwater input of pyrethroid insecticides to an urban							-					-					
Weston and Lydy, 2012	river	Sacramento	Sump 152	2009-2010	Bifenthrin	Wet	Water	Discharge	1	4	4	10070	ng/L		12.3	11.9	4.5	21
			Sump 152	2009-2010	Cyfluthrin	Wet	Water	Discharge	1	4	1	25%	ng/L		4.025	0.5	0.5	14.6 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
			Sump 152	2009-2010	Cypermethrin	Wet	Water	Discharge	1	4	0	- / -	ng/L					
			Sump 152	2009-2010	Permethrin	Wet	Water	Discharge	1	4	2	50%	ng/L		5.8	3.5	0.5	15.2 Non-detects substituted with 1/2 the detection limit (<1 ng/L)
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Roseville Drain	2006-2007	Difection	Dev	Mater	Discharge				100%				4.6		14.2 (anti-man-and median data are ideal)
Weston et al., 2009a	to orban creeks	Northern California	Roseville Drain	2006-2007	Bifenthrin	Dry Dry	Water Water	Discharge Discharge	1	4	4		ng/L			4.6		14.2 (only max and median data provided)3.0 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Cypermethrin	Dry	Water	Discharge	1	4	- 1	25%	ng/L ng/L			1.25		10.20 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Deltamethrin	Dry	Water	Discharge	1	4	0		ng/L			1.20		10.20 ND substituted as 1/2 the detection limit (2.5 hg/c), only max and median provided
			Roseville Drain	2006-2007	Esfenvalerate	Dry	Water	Discharge	1	4	0	0%	ng/L					
			Roseville Drain		Lambda-cyhalothrin		Water	Discharge	1	4	0		na/L					
			Roseville Drain	2006-2007	Permethrin	Dry	Water	Discharge	1	4	- 1	25%	na/L			1.25		3.6 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
	Residential Runoff as a Source of Pyrethroid Pesticides												5					
Weston et al., 2009a	to Urban Creeks	Northern California	Roseville Drain	2006-2007	Bifenthrin	Wet	Water	Discharge	1	8	8	100%	ng/L			17.3		29.7
			Roseville Drain	2006-2007	Cyfluthrin	Wet	Water	Discharge	1	8	8	100%	ng/L			8.7		22.6
			Roseville Drain	2006-2007	Cypermethrin	Wet	Water	Discharge	1	8	7	88%	ng/L			8.50		25.90 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain		Deltamethrin	Wet	Water	Discharge	1	8	2		ng/L			1.25		3.5 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain		Esfenvalerate	Wet	Water	Discharge	1	8	0		ng/L					
			Roseville Drain Roseville Drain	2006-2007 2006-2007	Lambda-cyhalothrin	Wet Wet	Water Water	Discharge Discharge	1	8	2	25% 88%	ng/L ng/L			1.25 16.8		7.0 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided 66.1 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Roseville Drain	2006-2007	Permeurin	wei	water	Discharge		0	1	00%	ng/L			10.0		66.1 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Elk Grove drain discharge	2006-2007	Pifonthrin	Dry	Water	Discharge	1	4	2	75%	ng/L			8.7		72.7 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
Weston et al., 2003a	to orban ordera	Northern Galifornia	Elk Grove drain discharge		Cyfluthrin	Dry	Water	Discharge	1	4	2	50%	ng/L			3.8		13.8 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Cypermethrin	Dry	Water	Discharge	1	4	2	0%	ng/L			5.0		13.5 No substituted as the detection time (2.5 hgre), only max and median provided
			Elk Grove drain discharge	2006-2007	Deltamethrin	Dry	Water	Discharge	1	4	0		ng/L					
			Elk Grove drain discharge	2006-2007	Esfenvalerate	Dry	Water	Discharge	1	4	ő	- / -	ng/L					
			Elk Grove drain discharge		Lambda-cyhalothrin	Drv	Water	Discharge	1	4	0		na/L					
			Elk Grove drain discharge	2006-2007	Permethrin	Dry	Water	Discharge	1	4	3	75%	ng/L			5.7		11.0 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
	Residential Runoff as a Source of Pyrethroid Pesticides																	
Weston et al., 2009a	to Urban Creeks	Northern California	Elk Grove drain discharge	2006-2007		Wet	Water	Discharge	1	8	8	100%	ng/L			7.1		34.0
			Elk Grove drain discharge	2006-2007		Wet	Water	Discharge	1	8	5		ng/L			3.2		8.8 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Cypermethrin	Wet	Water	Discharge	1	8	1	13%	ng/L			1.25		4.20 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge	2006-2007	Deltamethrin	Wet	Water	Discharge	1	8	2		ng/L			1.25		252.0 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
			Elk Grove drain discharge		Esfenvalerate	Wet	Water	Discharge	1	8	0	0%	ng/L					
			Elk Grove drain discharge		Lambda-cyhalothrin	Wet	Water	Discharge	1	8	0		ng/L					
	Residential Runoff as a Source of Pyrethroid Pesticides		Elk Grove drain discharge	2006-2007	Permethrin	Wet	Water	Discharge	1	8	/	88%	ng/L			21.6		125.0 ND substituted as 1/2 the detection limit (2.5 ng/L); only max and median provided
Weston et al., 2009a	to Urban Creeks	Northern California	Pleasant Grove Creek	2006-2007	Bifenthrin	Drv	Sediment	Receiving	1	3	3	100%	na/a	Drv	11.1	12.0	12.0	15.0
Weston et al., 2003a	to orban ordera	Northern Galifornia	Pleasant Grove Creek	2006-2007	Cvfluthrin	Dry	Sediment	Receiving	1	3	2		ng/g	Dry	2.3	2.7	0.5	3.8 ND substituted as 1/2 the detection limit (1 ng/g)
			Pleasant Grove Creek	2006-2007	Cypermethrin	Dry	Sediment	Receiving	1	3	2		ng/g	Drv	2.5	2.20	0.5	4.70 ND substituted as 1/2 the detection limit (1 ng/g)
			Pleasant Grove Creek		Deltamethrin	Dry	Sediment	Receiving	1	3	0		ng/g	Dry				
			Pleasant Grove Creek	2006-2007	Esfenvalerate	Dry	Sediment	Receiving	1	3	0		ng/g	Dry				
			Pleasant Grove Creek		Lambda-cyhalothrin	Dry	Sediment	Receiving	1	3	0		ng/g	Dry				
			Pleasant Grove Creek	2006-2007		Dry	Sediment	Receiving	1	3	1	33%	ng/g	Dry	2.8	0.5	0.5	7.4 ND substituted as 1/2 the detection limit (1 ng/g)
	Residential Runoff as a Source of Pyrethroid Pesticides													-				
Weston et al., 2009a	to Urban Creeks	Northern California	Roseville Drain	2006-2007	Bifenthrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	238		238	238 Only one sample, no median calculated
			Roseville Drain	2006-2007	Cyfluthrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	55.0		55.0	55.0 Only one sample, no median calculated
			Roseville Drain	2006-2007	Cypermethrin	Dry	Sediment	Discharge	1	1	1	10070	ng/g	Dry	17.00		17.00	17.00 Only one sample, no median calculated
			Roseville Drain	2006-2007	Deltamethrin	Dry	Sediment	Discharge	1	1	1	100%	ng/g	Dry	19.0		19.0	19.0 Only one sample, no median calculated
			Roseville Drain Roseville Drain		Esfenvalerate	Dry	Sediment	Discharge	1	1	0	- / -	ng/g	Dry	~ -		~ -	6.1. Only one complete as modion coloridate "
			Roseville Drain Roseville Drain	2006-2007 2006-2007	Lambda-cyhalothrin Permethrin	Dry	Sediment Sediment	Discharge Discharge	1	1	1	100% 100%	ng/g	Dry	6.1 56.0		6.1 56.0	6.1 Only one sample, no median calculated 56.0 Only one sample, no median calculated
	Residential Runoff as a Source of Pvrethroid Pesticides		Roseville Drain	2000-2007	r culleullui	Dry	Seament	Discharge	1	1	1	100%	ng/g	Dry	0.0C		0.00	50.0 Only one sample, no median calculated
Weston et al., 2009a	to Urban Creeks	Northern California	Elk Grove drain discharge	2006-2007	Bifenthrin	Drv	Sediment	Discharge	1	1	1	100%	ng/g	Dry	744.0		744.0	744.0 Only one sample, no median calculated
			Elk Grove drain discharge	2006-2007		Dry	Sediment	Discharge	1	1	. 1		ng/g	Dry	187.0		187.0	187.0 Only one sample, no median calculated

						Wet/Dry	/ Water/	Discharge/		#	#	%		Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather			r # Sites	" Samples	" Detected		ed Units	Weight	Mean	Median	Min	Max Notes
		-	Elk Grove drain discharge	2006-2007		Dry	Sediment	Discharge	1	1	1	10	00% ng/g	Dry	66.00		66.00	66.00 Only one sample, no median calculated
			Elk Grove drain discharge		Deltamethrin	Dry	Sediment	Discharge	1	1	1		00% ng/g	Dry	78.0		78.0	78.0 Only one sample, no median calculated
			Elk Grove drain discharge Elk Grove drain discharge		Esfenvalerate Lambda-cvhalothrin	Dry Dry	Sediment Sediment	Discharge Discharge	1	1	1	10	00% ng/g 00% ng/g	Dry Dry	4.6 31.0		4.6 31.0	4.6 Only one sample, no median calculated 31.0 Only one sample, no median calculated
			Elk Grove drain discharge		Permethrin	Dry	Sediment	Discharge	1		1		0% ng/g	Dry	539.0		539.0	539.0 Only one sample, no median calculated
	Response to Monitoring in Chollas Creek, Investigation																	
Weston Solutions Inc., 2008c	Order No. R9-2004-0277	Southern California	Chollas Creek Chollas Creek		Allethrin Bifenthrin	Wet Wet	Water Water	Receiving Receiving	2		0		0% ng/L)0% ng/L		156.4	73.5	7.2	398
			Chollas Creek		Cyfluthrin	Wet	Water	Receiving	2		6		0% ng/L		137.2	126	5.48	354
			Chollas Creek		Cypermethrin	Wet	Water	Receiving	2	2 6	6		00% ng/L		139.0	104.75	10.6	451
			Chollas Creek		Danitol	Wet	Water	Receiving	2	2 6			17% ng/L		1.5	0.25	0.25	7.9 ND substituted as 1/2 the detection limit (0.5 ng/L)
			Chollas Creek Chollas Creek		Deltamethrin Esfenvalerate	Wet Wet	Water Water	Receiving Receiving	2	0 <u>2</u>	0		0% ng/L 0% ng/L					
			Chollas Creek		Fenvalerate	Wet	Water	Receiving	2	2 6	2		33% ng/L		1.3	0.25	0.25	3.9 ND substituted as 1/2 the detection limit (0.5 ng/L)
			Chollas Creek		Lambda-cyhalothrin	Wet	Water	Receiving	2	2 6	3		50% ng/L		8.6	0.28	0.25	42.1 ND and trace detections substituted as 1/2 the detection limit (0.5 ng/L)
			Chollas Creek		Permethrin	Wet	Water	Receiving	2				0% ng/L					
			Chollas Creek		Prallethrin	Wet	Water	Receiving	2	2 6	4	6	37% ng/L		51.0	3.8	0.25	287 ND and trace detections substituted as 1/2 the detection limit (0.5 $\mbox{ng/L})$
	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-																	
Westerland Over 2000	Resolution Gas Chromatography/High-Resolution Mass Spectrometry	San Francisco Bay Tributaries	Counto Crook	0005	A.H., 11,	Des		Development					00/					
Woudneh and Oros, 2006a	Specifonetry	San Francisco Bay Tribularies		2005	Allethrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Coyote Creek Coyote Creek	2005 2005	Bifenthrin	Dry	Water Water	Receiving	1	1	0		0% ng/L					
			Coyote Creek	2005	Cyfluthrin Cypermethrin	Dry Dry	Water	Receiving Receiving	1	1	0		0% ng/L 0% ng/L					
			Coyote Creek		Deltamethrin/Tralomethrin		Water	-			1		-		0.063			0.063 Only one sample, no median calculated
			Coyote Creek	2005 2005	Fenpropathrin	Dry	Water	Receiving Receiving	1	1	1		0% ng/L 0% ng/L		0.063		0.063	0.063 Only one sample, no median calculated
			Coyote Creek			Dry		•	1	1			•					
			Coyote Creek	2005	Fenvalerate	Dry	Water	Receiving	1	1	0		0% ng/L 0% ng/L					
			Coyote Creek	2005 2005	L-Cyhalothrin Permethrin	Dry Dry	Water Water	Receiving Receiving	1	1	1		0% ng/L 10% ng/L		0.258		0.258	0.258 Only one sample, no median calculated
			Coyote Creek	2005	Phenothrin	Dry	Water	Receiving	1	. 1	0		0% ng/L		0.230		0.230	0.258 Only one sample, no median calculated
			Coyote Creek	2005	Prallethrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Coyote Creek	2005	Pyrethrin	Dry	Water	Receiving	1				0% ng/L					
			Coyote Creek	2005	Resmethrin	Dry	Water	Receiving	1	1			0% ng/L					
	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High- Resolution Gas Chromatography/High-Resolution Mass					,												
Woudneh and Oros, 2006a	Spectrometry	San Francisco Bay Tributaries	Petaluma River	2005	Allethrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River	2005	Bifenthrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River	2005	Cyfluthrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River	2005	Cypermethrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	1	10	00% ng/L		0.008		0.008	0.008 Only one sample, no median calculated
			Petaluma River	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River	2005	Fenvalerate	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River	2005	L-Cyhalothrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River	2005	Permethrin	Dry	Water	Receiving	1	1 1	1		00% ng/L		0.036		0.036	0.036 Only one sample, no median calculated
			Petaluma River	2005	Phenothrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			Petaluma River Petaluma River	2005	Prallethrin	Dry	Water	Receiving	1		0		0% ng/L					
			Petaluma River	2005	Pyrethrin	Dry	Water	Receiving	1		0		0% ng/L 0% ng/L					
	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-			2005	Resmethrin	Dry	Water	Receiving	1	1 1	U		0% ng/L					
Woudneh and Oros, 2006a	Resolution Gas Chromatography/High-Resolution Mass Spectrometry	San Francisco Bay Tributaries	San Mateo Creek	2005	Allethrin	Dry	Water	Receiving			0		0% ng/L					
Woddhen and Glos, 2000a	openionery	can handloo bay mbalanco	San Mateo Creek	2005	Bifenthrin	Dry	Water	Receiving	1	1			0% ng/L					
			San Mateo Creek	2005	Cyfluthrin	Dry	Water	Receiving	1		0		0% ng/L					
			San Mateo Creek	2005	Cypermethrin	Dry	Water	Receiving	1		0		0% ng/L					
			San Mateo Creek	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1	1	- 1		0% ng/L		0.042		0.042	0.042 Only one sample, no median calculated
			San Mateo Creek	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			San Mateo Creek	2005	Fenvalerate	Dry	Water	Receiving	1	1	0		0% ng/L					
			San Mateo Creek	2005	L-Cyhalothrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			San Mateo Creek	2005	Permethrin	Dry	Water	Receiving	1	1	1	10	0% ng/L		0.077		0.077	0.077 Only one sample, no median calculated
			San Mateo Creek	2005	Phenothrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			San Mateo Creek	2005	Prallethrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			San Mateo Creek	2005	Pyrethrin	Dry	Water	Receiving	1	1	0		0% ng/L					
			San Mateo Creek	2005	Resmethrin	Dry	Water	Receiving	1	1	0		0% ng/L					
	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High- Resolution Gas Chromatography/High-Resolution Mass																	
Woudneh and Oros, 2006a	Spectrometry	San Francisco Bay Tributaries		2005	Allethrin	Dry	Water	Receiving	1	1	-		0% ng/L					
			San Lorenzo Creek	2005	Bifenthrin	Dry	Water	Receiving	1	1	-		0% ng/L					
			San Lorenzo Creek	2005	Cyfluthrin	Dry	Water	Receiving	1	1	•		0% ng/L					
			San Lorenzo Creek	2005	Cypermethrin	Dry	Water	Receiving	1		-		0% ng/L					
			San Lorenzo Creek	2005	Deltamethrin/Tralomethrin	Dry	Water	Receiving	1				00% ng/L		0.001		0.001	0.001 Only one sample, no median calculated
			San Lorenzo Creek	2005	Fenpropathrin	Dry	Water	Receiving	1	1	0		0% ng/L					

Citation - Abbrev.						Wet/Dry	Water/	Discharge/		#	#	%		Sed. Unit			
	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather	Sediment	Receiving Wate	er # Sites	Samples	Detected	Detecte		Weight	Mean Media	n Min	Max Notes
			San Lorenzo Creek		Fenvalerate	Dry	Water	Receiving	1	1			0% ng/L				
			San Lorenzo Creek		L-Cyhalothrin	Dry	Water	Receiving	1	1	(0% ng/L				
			San Lorenzo Creek		Permethrin	Dry	Water	Receiving	1	1		1 10	-		0.018	0.01	0.018 Only one sample, no median calculated
			San Lorenzo Creek		Phenothrin	Dry	Water	Receiving	1	1	(0% ng/L				
			San Lorenzo Creek		Prallethrin	Dry	Water	Receiving	1	1			0% ng/L				
			San Lorenzo Creek		Pyrethrin	Dry	Water	Receiving	1	1	(0% ng/L				
			San Lorenzo Creek	2005	Resmethrin	Dry	Water	Receiving	1	1) (0% ng/L				
	Quantitative Determination of Pyrethroids, Pyrethrins, and Piperonyl Butoxide in Surface Water by High-																
	Resolution Gas Chromatography/High-Resolution Mas	85															
Woudneh and Oros, 2006a	Spectrometry	San Francisco Bay Tributaries	Suisun Creek	2005	Allethrin	Dry	Water	Receiving	1	1	() (0% ng/L				
			Suisun Creek	2005	Bifenthrin	Dry	Water	Receiving	1	1			0% ng/L				
			Suisun Creek	2005	Cvfluthrin	Dry	Water	Receiving	1	1			0% ng/L				
			Suisun Creek	2005	Cypermethrin	Dry	Water	Receiving	1	1			0% ng/L				
			Suisun Creek		Deltamethrin/Tralomethrin	Dry	Water	Receiving	. 1	1	,		0% ng/L				
			Suisun Creek		Fenpropathrin	Dry	Water	Receiving	1	1			0% ng/L				
			Suisun Creek						1								
			Suisun Creek		Fenvalerate	Dry	Water	Receiving									
			Sulsun Creek		L-Cyhalothrin	Dry	Water	Receiving	1	1			0% ng/L				
					Permethrin	Dry	Water	Receiving	1	1	(0% ng/L				
			Suisun Creek		Phenothrin	Dry	Water	Receiving	1	1	(0% ng/L				
			Suisun Creek		Prallethrin	Dry	Water	Receiving	1	1			0% ng/L				
			Suisun Creek		Pyrethrin	Dry	Water	Receiving	1	1			0% ng/L				
			Suisun Creek	2005	Resmethrin	Dry	Water	Receiving	1	1) (0% ng/L				
	.																
	Pyrethroids, pyrethrins, and piperonyl butoxide in and imports by bish resolution and phromatography/bish	h															
oudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high resolution mass spectrometry	n- San Francisco Bay Tributaries	Covote Creek	2005	Allethrin	Dry	Sediment	Receiving	4	4) ⁴	0% ng/g	Dry			
500000 BING 0103, 20000		carriences bay mouldles	Coyote Creek		Bifenthrin	Dry	Sediment	Receiving	1	1				Dry	1.48	1.4	3 1.48 Only one sample, no median calculated
			Coyote Creek		Cyfluthrin	Dry		-	1	1					1.70	1.4	
							Sediment	Receiving	1	1				Dry			
			Coyote Creek		Cypermethrin	Dry	Sediment	Receiving	1	1	(0% ng/g	Dry			
			Coyote Creek		Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1			0% ng/g	Dry	0.370	0.37	0.370 Only one sample, no median calculated
			Coyote Creek		Fenpropathrin	Dry	Sediment	Receiving	1	1			0% ng/g	Dry			
			Coyote Creek		Fenvalerate	Dry	Sediment	Receiving	1	1			0% ng/g	Dry			
			Coyote Creek		Flucythrinate	Dry	Sediment	Receiving	1	1			0% ng/g	Dry	0.347	0.34	
			Coyote Creek	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1		I 10	0% ng/g	Dry	0.454	0.45	4 0.454 Only one sample, no median calculated
			Coyote Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1		1 10	0% ng/g	Dry	2.06	2.0	5 2.06 Only one sample, no median calculated
			Coyote Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	() (0% ng/g	Dry			
			Coyote Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1			0% ng/g	Dry			
			Coyote Creek		Pyrethrin	Dry	Sediment	Receiving	1	1			0% ng/g	Dry			
			Coyote Creek		Resmethrin	Dry	Sediment	Receiving	1	1			0% ng/g	Dry			
			Coyote Creek					5	1								
					Tetramethrin	Dry	Sediment	Receiving					0% ng/g	Dry	0.400	0.10	a 100 Only and complete as median coloulated
			Coyote Creek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1		1 100	0% ng/g	Dry	0.102	0.10	2 0.102 Only one sample, no median calculated
	Pyrethroids, pyrethrins, and piperonyl butoxide in																
	sediments by high-resolution gas chromatography/high	h-															
oudneh and Oros, 2006b	resolution mass spectrometry	San Francisco Bay Tributaries	Petaluma River	2005	Allethrin	Dry	Sediment	Receiving	1	1	() (0% ng/g	Dry			
			Petaluma River		Bifenthrin			-									
						Drv	Sediment	Receiving	1	1) ()% na/a	Drv			
			Petaluma River			Dry Dry		5	1	1	(0% ng/g 0% na/a	Dry Dry			
			Petaluma River	2005	Cyfluthrin	Dry	Sediment	Receiving	1	1) (0% ng/g	Dry			
			Petaluma River	2005 2005	Cyfluthrin Cypermethrin	Dry Dry	Sediment Sediment	Receiving Receiving	1 1 1	1 1 1	() () (0% ng/g 0% ng/g	Dry Dry	0.146		o 146 Only one sample no median calculated
			Petaluma River Petaluma River	2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin	Dry Dry Dry	Sediment Sediment Sediment	Receiving Receiving Receiving	1 1 1	1 1 1) () (I 10	0% ng/g 0% ng/g 0% ng/g	Dry Dry Dry	0.146	0.14	5 0.146 Only one sample, no median calculated
			Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin	Dry Dry Dry Dry	Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving	1 1 1 1	1 1 1 1) () (1 10() (0% ng/g 0% ng/g 0% ng/g 0% ng/g	Dry Dry Dry Dry	0.146	0.14	5 0.146 Only one sample, no median calculated
			Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate	Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1	1 1 1 1 1) () (1 10)) (D% ng/g	Dry Dry Dry Dry Dry	0.146	0.14	5 0,146 Only one sample, no median calculated
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Flucythrinate	Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1	1 1 1 1 1 1 1			D% ng/g	Dry Dry Dry Dry Dry Dry	0.146	0.14	5 0.146 Only one sample, no median calculated
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate	Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1	1 1 1 1 1 1 1 1			D% ng/g	Dry Dry Dry Dry Dry Dry Dry			
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Flucythrinate	Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1			D% ng/g	Dry Dry Dry Dry Dry Dry	0.146 0.94	0.14	
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Flucythrinate L-Cyhalothrin	Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1			D% ng/g	Dry Dry Dry Dry Dry Dry Dry			
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Flucythrinate L-Cyhalothrin Permethrin	Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1) () () () () () () () () () (D% ng/g	Dry Dry Dry Dry Dry Dry Dry Dry			
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenpropathrin Fenvalerate L-Cyhalothrin Phemethrin Phenothrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1			D% ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry			
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenyalerate Fenyalerate Flucythrinate L-Cyhalothrin Permethrin Phenothrin Pyrelthrin Pyrethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1			ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry			
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenycopathrin Fenycopathrin Fucythrinate L-Cyhalothrin Phenothrin Prallethrin Prallethrin Resmethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1			ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry			
			Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Fucythrinate L-Cyhalothrin Permethrin Prallethrin Pyrethrin Resmethrin Tetramethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1) ()) ()) ()) ()) ()) ()) ()) () () () () () () () () () () () () () () ()	ng/g 0% ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94	0.9	4 0.94 Only one sample, no median calculated
			Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenycopathrin Fenycopathrin Fucythrinate L-Cyhalothrin Phenothrin Prallethrin Prallethrin Resmethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1) ()) ()) ()) ()) ()) ()) ()) () () () () () () () () () () () () () () ()	ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry			4 0.94 Only one sample, no median calculated
	Purethrolds purethrips and piceronul hutwide in		Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Fucythrinate L-Cyhalothrin Permethrin Prallethrin Pyrethrin Resmethrin Tetramethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1) ()) ()) ()) ()) ()) ()) ()) () () () () () () () () () () () () () () ()	ng/g 0% ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94	0.9	4 0.94 Only one sample, no median calculated
	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/higi	ħ	Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Fucythrinate L-Cyhalothrin Permethrin Prallethrin Pyrethrin Resmethrin Tetramethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1) ()) ()) ()) ()) ()) ()) ()) () () () () () () () () () () () () () () ()	ng/g 0% ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94	0.9	4 0.94 Only one sample, no median calculated
Youdneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Fucythrinate L-Cyhalothrin Permethrin Prallethrin Pyrethrin Resmethrin Tetramethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 0) (1) 100 (1)	ŋg/g ŋg/g ŋ% ŋg/g ŋ%	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94	0.9	4 0.94 Only one sample, no median calculated
Youdneh and Oros, 2006b		h- San Francisco Bay Tributaries	Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenvalerate Flucythrinate L-Cyhałothrin Permethrin Prenethrin Pyrethrin Resemethrin Tetramethrin Piperonyl butoxide	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			D% ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94	0.9	 0.94 Only one sample, no median calculated 0.035 Only one sample, no median calculated
/oudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma River	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenycopathrin Fenycopathrin Fenyclerate Flucythrinate L-Cyhalothrin Permethrin Phenothrin Pyrethrin Resmethrin Piperonyl butoxide Allethrin Bifenthrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		b) (1) b) (1) c) (1)	D% ng/g 0% ng/g	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94 0.035 9.24	0.9	4 0.94 Only one sample, no median calculated 5 0.035 Only one sample, no median calculated 4 9.24 Only one sample, no median calculated
roudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma Creek San Mateo Creek	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenyathrin Fenyaterate Flucythrinate L-Cyhalothrin Permethrin Prenethrin Prallethrin Resmethrin Tetramethrin Piperonyl butoxide	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		b) (i) c) (i)	D% ng/g 1% ng/g 0% ng/g 0%	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94 0.035 9.24 17.6	0.9 0.03 9.2 17	 0.94 Only one sample, no median calculated 0.035 Only one sample, no median calculated 9.24 Only one sample, no median calculated 17.6 Only one sample, no median calculated
Woudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma River San Mateo Creek San Mateo Creek	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenvalerate Flucythrinate L-Cyhalothrin Permethrin Phenothrin Prallethrin Pyrethrin Resmethrin Piperonyl butoxide Allethrin Bifenthrin Cyfluthrin Cyfluthrin Cyfluthrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving	1				D% ng/g D%	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94 0.035 9.24 17.6 4.57	0.9 0.03 9.2 17	 0.94 Only one sample, no median calculated 0.035 Only one sample, no median calculated 9.24 Only one sample, no median calculated 17.6 Only one sample, no median calculated 4.57 Only one sample, no median calculated
Voudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma River San Mateo Creek San Mateo Creek San Mateo Creek	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenpropathrin Fenpropathrin Fenpropathrin Ferwalterate L-Cyhaldthrin Permethrin Prenethrin Pyrethrin Resmethrin Piperonyl butoxide Allethrin Bifenthrin Cyfluthrin Cyfluthrin Cyfluthrin Deltamethrin/Tralomethrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving	1 1 1 1			b) (1)	D% ng/g D%	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94 0.035 9.24 17.6	0.9 0.03 9.2 17	 0.94 Only one sample, no median calculated 0.035 Only one sample, no median calculated 9.24 Only one sample, no median calculated 17.6 Only one sample, no median calculated 4.57 Only one sample, no median calculated
Voudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma River San Mateo Creek San Mateo Creek San Mateo Creek San Mateo Creek	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenyapathrin Fenyapathrin Fenyapathrin Permethrin Permethrin Pyrethrin Pyrethrin Resmethrin Tetramethrin Piperonyl butoxide Allethrin Biflenthrin Cyfluthrin Cyfluthrin Copermethrin Deltamethrin/Tralomethrin Fenpropathrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving	1 1 1 1 1 1 1 1			b) (1) c) (1)	D% ng/g D%	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94 0.035 9.24 17.6 4.57	0.9 0.03 9.2 17	 0.94 Only one sample, no median calculated 0.035 Only one sample, no median calculated 9.24 Only one sample, no median calculated 17.6 Only one sample, no median calculated 4.57 Only one sample, no median calculated
Voudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma River Petalu	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenyapathrin Fenyapathrin Fenyapathrin Permethrin Phenothrin Phenothrin Prallettrin Pyrethrin Resmethrin Piperonyl butoxide Allethrin Bifenthrin Cyfluthrin Cyfluthrin Cyfluthrin Deltamethrin/Tralomethrin Fenyapathe	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving	1 1 1 1			b) (1) (1)	D% ng/g p% ng/g p%	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94 0.035 9.24 17.6 4.57	0.9 0.03 9.2 17	 0.94 Only one sample, no median calculated 0.035 Only one sample, no median calculated 9.24 Only one sample, no median calculated 17.6 Only one sample, no median calculated 4.57 Only one sample, no median calculated
/oudneh and Oros, 2006b	sediments by high-resolution gas chromatography/high	h- San Francisco Bay Tributaries	Petaluma River Petaluma River San Mateo Creek San Mateo Creek San Mateo Creek San Mateo Creek	2005 2005 2005 2005 2005 2005 2005 2005	Cyfluthrin Cypermethrin Deltamethrin/Tralomethrin Fenyapathrin Fenyapathrin Fenyapathrin Permethrin Permethrin Pyrethrin Pyrethrin Resmethrin Tetramethrin Piperonyl butoxide Allethrin Biflenthrin Cyfluthrin Cyfluthrin Copermethrin Deltamethrin/Tralomethrin Fenpropathrin	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment Sediment	Receiving Receiving	1 1 1 1 1 1 1 1			b) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	D% ng/g D%	Dry Dry Dry Dry Dry Dry Dry Dry Dry Dry	0.94 0.035 9.24 17.6 4.57	0.9 0.03 9.2 17	 0.94 Only one sample, no median calculated 0.035 Only one sample, no median calculated 9.24 Only one sample, no median calculated 17.6 Only one sample, no median calculated 4.57 Only one sample, no median calculated

						Wet/Drv	Water/	Discharge/		#	#	%		Sed. Unit				
Citation - Abbrev.	Report/study Title	Region	Site(s)	Timeframe	Pesticide (Analyte)	Weather	Sediment	Receiving Wate	r # Sites S	amples D	etected	Detected	Units	Weight	Mean N	ledian	Min	Max Notes
			San Mateo Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%	6 ng/g	Dry	9.12		9.12	9.12 Only one sample, no median calculated
			San Mateo Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	0			Dry				
			San Mateo Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0			Dry				
			San Mateo Creek	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0			Dry				
			San Mateo Creek	2005	Resmethrin	Dry	Sediment	Receiving	1	1	0			Dry				
			San Mateo Creek San Mateo Creek	2005	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0% 100%		Dry	0.215		0.015	0.215 Only one sample, no median calculated
			Sall Waleo Cleek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%	6 ng/g	Dry	0.215		0.215	0.215 Only one sample, no median calculated
	Pyrethroids, pyrethrins, and piperonyl butoxide in																	
	sediments by high-resolution gas chromatography/high-																	
Woudneh and Oros, 2006b	resolution mass spectrometry	San Francisco Bay Tributaries		2005	Allethrin	Dry	Sediment	Receiving	1	1	0	0%		Dry				
			San Lorenzo Creek	2005	Bifenthrin	Dry	Sediment	Receiving	1	1	1	1009		Dry	3.99		3.99	3.99 Only one sample, no median calculated
			San Lorenzo Creek San Lorenzo Creek	2005 2005	Cyfluthrin	Dry	Sediment Sediment	Receiving	1	1	0			Dry				
			San Lorenzo Creek	2005	Cypermethrin Deltamethrin/Tralomethrin	Dry Dry	Sediment	Receiving	1	1	1	09 1009		Dry Dry	0.725		0.725	0.725 Only one sample, no median calculated
			San Lorenzo Creek	2005	Fenpropathrin	Dry	Sediment	Receiving Receiving	1	1	0			Dry	0.725		0.725	0.725 Only one sample, no median calculated
			San Lorenzo Creek	2005	Fenvalerate	Dry	Sediment	Receiving	1	1	0			Dry				
			San Lorenzo Creek	2005	Flucythrinate	Dry	Sediment	Receiving	1	1	0			Dry				
			San Lorenzo Creek	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	1	100%		Dry	0.221		0.221	0.221 Only one sample, no median calculated
			San Lorenzo Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1	1	100%		Dry	2.9		2.9	2.9 Only one sample, no median calculated
			San Lorenzo Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	1	100%		Dry	0.395		0.395	0.395 Only one sample, no median calculated
			San Lorenzo Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0	09		Dry				
			San Lorenzo Creek	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0			Dry				
			San Lorenzo Creek	2005	Resmethrin	Dry	Sediment	Receiving	1	1	0	09		Dry				
			San Lorenzo Creek	2005	Tetramethrin	Dry	Sediment	Receiving	1	1	0	0%		Dry				
			San Lorenzo Creek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%	6 ng/g	Dry	0.056		0.056	0.056 Only one sample, no median calculated
	Duratherida suspherics and since and hubblide is																	
	Pyrethroids, pyrethrins, and piperonyl butoxide in sediments by high-resolution gas chromatography/high-																	
Woudneh and Oros, 2006b	resolution mass spectrometry	San Francisco Bay Tributaries	Suisun Creek	2005	Allethrin	Dry	Sediment	Receiving	1	1	0	09	6 ng/g	Dry				
			Suisun Creek	2005	Bifenthrin	Dry	Sediment	Receiving	1	1	0	0%	6 ng/g	Dry				
			Suisun Creek	2005	Cyfluthrin	Dry	Sediment	Receiving	1	1	0	0%	6 ng/g	Dry				
			Suisun Creek	2005	Cypermethrin	Dry	Sediment	Receiving	1	1	0	09	6 ng/g	Dry				
			Suisun Creek	2005	Deltamethrin/Tralomethrin	Dry	Sediment	Receiving	1	1	0	09	6 ng/g	Dry				
			Suisun Creek	2005	Fenpropathrin	Dry	Sediment	Receiving	1	1	0			Dry				
			Suisun Creek	2005	Fenvalerate	Dry	Sediment	Receiving	1	1	0			Dry				
			Suisun Creek	2005	Flucythrinate	Dry	Sediment	Receiving	1	1	0			Dry				
			Suisun Creek	2005	L-Cyhalothrin	Dry	Sediment	Receiving	1	1	0			Dry				
			Suisun Creek	2005	Permethrin	Dry	Sediment	Receiving	1	1	0			Dry				
			Suisun Creek	2005	Phenothrin	Dry	Sediment	Receiving	1	1	0	0%		Dry				
			Suisun Creek	2005	Prallethrin	Dry	Sediment	Receiving	1	1	0			Dry				
			Suisun Creek Suisun Creek	2005	Pyrethrin	Dry	Sediment	Receiving	1	1	0			Dry				
			Suisun Creek	2005 2005	Resmethrin Tetramethrin	Dry Dry	Sediment Sediment	Receiving Receiving	1	1	0	0%		Dry Dry				
			Suisun Creek	2005	Piperonyl butoxide	Dry	Sediment	Receiving	1	1	1	100%		Dry	0.010		0.010	0.010 Only one sample, no median calculated
				2005	r iperonyi batoxide	Diy	ocument	receiving				1007	0 119/9	Diy	0.010		0.010	0.010 only one cample, no median calculated
	Chemical Availability and Sediment Toxicity of Pyrethroic insecticides to Hyalella Azteca: Application to Field	1	Gilsier Slough, Elk Bayou, Owens Creek, Del Puerto Creek, Spring Creek, Chicken Ranch Slough, Lauterwasser Creek, Morrison Creek, Kirker Creek, Strong Ranch Slough, Arcade Creek, Reclamation															
You et al., 2008	Sediment With Unexpectedly Low Toxicity	Northern California		2004-2008	Bifenthrin		Sediment	Receiving	17	17	16	94%	6 μg/kg	Dry	8.20	3.92	0.13	52.5 ND substituted as 1/2 the detection limit (0.26 µg/kg)
,					Lambda-cyhalothrin		Sediment	Receiving	17	17	9			Dry	1.20	1.02	0.15	6.55 ND substituted as 1/2 the detection limit (0.30 µg/kg)
			[as above]		Esfenvalerate		Sediment	Receiving	17	17	7			Dry	1.08	0.22	0.22	5.56 ND substituted as 1/2 the detection limit (0.43 µg/kg)
					Deltamethrin		Sediment	Receiving	17	17	6			Dry	1.55	0.25	0.25	7.86 ND substituted as 1/2 the detection limit (0.50 μg/kg)
			[as above]		Permethrin		Sediment	Receiving	17	17	13			Dry	14.14	4.26	0.31	107.0 ND substituted as 1/2 the detection limit (0.62 µg/kg)
			[as above]	2004-2008			Sediment	Receiving	17	17	8	479		Dry	4.88	0.12	0.12	38.5 ND substituted as 1/2 the detection limit (0.23 µg/kg)
					Cypermethrin		Sediment	Receiving	17	17	8	479		Dry	4.59	0.12	0.12	33.0 ND substituted as 1/2 the detection limit (0.62 µg/kg)
								-										

Appendix D: "Toxicity Results Summary" Table

Citation - Abbrev.	Report/study Title	Region	Site(s)	Study Timeframe	Wet/Dry Weather	Water/Sediment	Discharge/Receiving Water	Organism tested	Number of Sites	Number of Samples Tested		Number of Non-toxic Samples S	6 Toxic	% Non- toxic amples	%	Acute or	Notes
Amweg et al., 2005	Use and Toxicity of Pyrethroid Pesticides in Co the Central Valley, California, USA.	-	South Fork American River, Pacheco Creek, Del Puerto Creek	2003	Dry	Sediment	Receiving	Hyalella Azteca	3	80	23	57	29%	71%		Acute	
Amweg et al., 2006	Pyrethroid Insecticides and Sediment Toxicity Sa in Urban Creeks from California and Tennessee	acramento	Arcade Creek site 1 and 2, Chicken Ranch Slough, Curry Creek, Elder Creek, Laguna site 1, 2, and 3, Morrison Creek, Willow Creek	2004-2005	Dry	Sediment	Receiving	Hyalella Azteca	11	33	22	11	67%	33%		Acute	
	E	ast SF Bay	Glen Echo Creek, Kirker Creek, Lauterwasser Creek, Lion Creek, Pine Creek, San Leandro Creek, San Pablo Creek	2004-2005	Dry	Sediment	Receiving	Hyalella Azteca	7	15	8	7	53%	47%		Acute	
Anderson et al., 2010	Evaluation of methods to determine causes of Sa sediment toxicity in San Diego Bay, California USA	an Diego Harbor	Switzer Creek, San Diego Harbor	2004	Dry	Sediment	Receiving	Eohaustorius estuarius	1	1	1	0	100%	0%	7%	Acute	
Anderson et al., 2011	Toxicity in California Waters Al	I 9 CA Water Board regions	North Coast to Mexico border	2001-2010	Wet & Dry	Water	Receiving	C. dubia, S. capricornutum, and P. promelas	617	76805	40706	36098	53%	47%		Acute	Of the 617 sites monitored statewide for water toxicity, 327 (53%) had at least one sample in which toxicity to at least one test species was observed. Of these, 65 (10.5% of the total) were classified as high toxicity sites. Compliation of state-sponsored toxicity testing performed from 2001-2010; results are reported separately in other studies
				2001-2010	Wet & Dry	Sediment	Receiving	Hyalella azteca	521	29620	13329	16291	45%	55%		Acute	Of 521 freshwater sites monitored statewide for sediment toxicity, 235 (45.1%) demonstrated some toxicity, and 88 (16.9%) were classified as high toxicity sites. Compilation of state-sponsored toxicity testing performed from 2001-2010; results are reported separately in other studies. Authors indicate that 10 day H. azteca tests may underestimate toxic effects (28 day tests are preferred), and tests conducted at 23 °C also underestimate pyrethroid pesticide toxicity because pyrethroids are more toxic at colder temperatures (15 °C preferred).
Bay et al., 2011	Southern California Bight 2008 Regional So Monitoring Program: Sediment Toxicity	C Bight	Ballona Creek, Marina del Rey, Mugu Lagoon	2008	Dry	Sediment	Receiving (Marinas)	Eohaustorius estuarius	3	44	12	32	27%	73%			
				2008	Dry	Sediment	Receiving (Estuaries)	Eohaustorius estuarius	3	64	29	35	45%	55%			
				2008	Dry	Sediment	Receiving (Shelf)	Eohaustorius estuarius Eohaustorius estuarius	3	30 46	7 12	23	23%	77% 74%			
				2008 2008	Dry Dry	Sediment Sediment	Receiving (Ports) Receiving (Bays)	Eohaustorius estuarius	3	40 38	20	34 18	26% 53%	47%			
Brown et al., 2010	Sediment Contaminant and Toxicity of St	puthern California	Arrovo Seco Channel. Ballona	2007	Dry	Sediment	Receiving	Hyalella Azteca	23	21	10	13	38%	62%		Acute	
urum a al, 2010	Freshwater Urban Wetlands in Southern California		Freihwater Marsh. Big Canyon Marsh. Brayke Wellands, Camino Real, Crown Valley, Dairy Mart Ponds, IRWD Pond S, Lewis Center Marsh, Madrona Marsh, Mojave River Marsh, Old Mission Crack, San Elijo Marsh, Seepe Creek, Sims Pond UCI Pond 11, UCI Pond 3, Waleta Street Marsh, Wet CAT East, Wet CAT North	2007	U,y	Gouineit	Recording		23	21			30 A	02.78		Acute	
Delgado-Moreno et al., 2011	Occurrence and Toxicity of Three Classes of Se Insecticides in Water and Sediment in Two Southern California Coastal Watersheds	outhern California	Santa Clara River Watershed and Calleguas Creek Watershed	2009	Wet	Water	Receiving	Ceriodaphnia dubia	4	8	0	8	0%	100%		Acute	
				2009	Dry	Water	Receiving	Ceriodaphnia dubia	4	8	3	5	37.5%	62.5%		Acute	
Domagalski et al., 2010	Pyrethroid Insecticide Concentration and No Toxicity in Streambed Sediments and Loads in Surface Waters of the San Joaquin Valley California USA	orthern California	Hospital Creek	2007	Dry	Sediment	Receiving	Hyalella Azteca	2	6	3	3	50%	50%	11%	Acute	
			Ingram Creek	2007	Dry	Sediment	Receiving	Hyalella Azteca	2	6	4	2	67%	33%	15.5%	Acute	
			Stanislaus River Tuolumne River	2007 2007	Dry Dry	Sediment Sediment	Receiving Receiving	Hyalella Azteca Hyalella Azteca	2	5	5	0	100% 100%	0% 0%	93% 96%	Acute Acute	
			Merced River	2007 2007	Dry	Sediment	Receiving	Hyalella Azteca Hyalella Azteca	3	9	9	0	100%	0%	96%	Acute	
			San Joaquin River	2007	Dry	Sediment	Receiving	Hyalella Azteca	2	6	6	0	100%	0%	93%	Acute	
Hladik and Kuivila, 2012	Pyrethroid insecticides in bed sediments from Co urban and agricultural streams across the United States	entral Valley, CA	Arcade Creek near Del Paso Heights	2009		Sediment	Receiving	Hyalella Azteca	1	1	1	0	100%	0%		Acute	
Holmes et al., 2008	Pyrethroid Pesticides in Sediment Toxicity in (o	D Sites on 63 urban Waterways in California nly 30 sites with sediment analytical nemistry)	Statewide (North Coast, Bay Area and Central Coast, Southern California, and San Diego)	2006-2007	Dry	Sediment	Receiving	Hyalella Azteca	30	30	25	5	83%	17%	31%	Acute	
Lao et al., 2010	Analysis Occurrence and Toxic Potential of Ba Pyrethroids, and Fipronil in Sediments from an Urban Estuary	allona Creek, Southern California	Six stations along a 4-km tidally influenced stretch of this waterway were selected for the present study	2007-2008	Dry	Sediment	Receiving	E. estuarius	6	18	13	7	61%	39%		Acute	

Citation - Abbrev. Lowe et al., 2007	Report/study Title Final Projet Report: Investigations of Sources and Effects of Pyrethroid Pesticides in Watersheds of the San Francisco Estuary	Region SF Bay Area Estuaries	Site(s) Two stations in each of the six tributaries	Study Timeframe 2004-2005	Wet/Dry Weather Dry	Water/Sediment Sediment	Discharge/Receiving Water Receiving	Organism tested Hyalella Azteca and E. estuarius	Number of Sites 6	Number of Samples Tested 24	Number of Toxic Samples 6	Number of Non-toxic Samples 18	% Toxic	toxic	Average % Survival 77%	Acute or Chronic tes Acute	
Ng et al., 2008	Patterns of Pyrethroid Contamination and Toxicity in Agricultural and Urban Stream Segments	Central California	Salinas	2005	Dry	Water	Receiving (Background area)	Hyalella Azteca	2	2	0	2	0%	100%		Acute	Urban sites are downstream of agricultural areas and mixed urban use areas Urban sites are downstream of agricultural areas and mixed urban use areas
			Salinas Salinas	2005 2005		Water Water		Hyalella Azteca Hyalella Azteca	2 3	2 3	2 3	0 0	100% 100%	0% 0%		Acute Acute	
Phillips et al., 2010	The contribution of pyrethroid pesticides to sediment toxicity in four urban creeks in California, USA.	Central and Southern California	Bouquet Canyon Creek, Cottonwood creek, Marsh Creek, and Peters Canyon Wash	2008-2010	Dry	Sediment	Receiving (Urban creeks)	Hyalella Azteca	4	4	4	0	100%	0%	11%	Acute	
Werner et al., 2006	Toxicity Testing and Toxicity Identification Evaluation Final Report April 10, 2006	Southern California	Region 4	2005	Dry	Water	Receiving	Ceriodaphnia dubia	43	21	7	14	33%	67%		Acute	
		Southern California	Region 7	2004-2005	Dry	Water	Receiving	Ceriodaphnia dubia	15	10	1	9	10%	90%		Acute	
		Southern California	Region 7	2004-2005	Dry	Water	Receiving	Hyalella Azteca	15	9	4	5	44%	56%		Acute	
		Southern California Southern California	Region 9	2004-2005	Dry	Water		Ceriodaphnia dubia	22	24	5	19 7	21%	79%		Acute	
		Southern California	Region 9	2004-2005	Dry	Water	Receiving	Hyalella Azteca	22	8	1	/	13%	88%		Acute	
Werner et al., 2010a	Pelagic Organism Decline: Acute and Invertebrate and Fish Toxicity testing in the Sacramento San Joaquin Delta	Northern California	Sacramento-San Joaquin Delta	2008-2009	Dry	Water	Receiving	Hyalella Azteca	16	752	4	748	0.5%	99.5%		Acute	
				2008-2009	Dry	Water	Receiving	Hyalella Azteca	16	752	7	745	0.9%	99.1%		Chronic	
Werner et al., 2010b	Monitoring Acute and Chronic Water Column Toxicity in the Northern Sacramento-San Joaquin Estuary, California, USA, Using the Euryhaline Amphipod, H. Azteca: 2006 to 2007	Northern California	15-16 sites located in large channels and main-stem rivers.	2006-2007	Dry	Water	Receiving	Hyalella Azteca	16	623	35	588	5.62%	94.38%	21.34%	Acute	
Weston et al., 2005	Aquatic Toxicity Due to Residential Use of Pyrethroid Insecticides	Sacramento/Roseville	22 creek and drainage sites throughout the greater Sacramento area	2004	Dry	Sediment	Receiving	Hyalella Azteca	22	24	13	11	54%	45.83%		Acute	Average survival from 3 tests
Weston et al., 2009a	Residential Runoff as a Source of Pyrethroid Pesticides to Urban Creeks	Northern California	Pleasant Grove Creek	2006-2007	Dry	Sediment	Discharge (storm drain)	Hyalella Azteca	1	3	3	0	100.00%	0.00%	45%	Acute	
Weston and Lydy, 2010b	Urban and Agricultural Sources of Pyrethroid Insecticides to the Sacrament-San Joaquin Detta of California	Northern California	Sump 28, Sacramento; Sump 104, Sacramento; Legion Park pump station, Stockton; Weston Ranch pump station, Stockton; Moraga Lane pump station, Stockton; Concrete drain pipe, North West Rd., Vacaville Ulatis Creek, Alamo Creek, San	2009 2009	Wet and Dry (3 events each) Wet	Water	Discharge (Urban Runoff) Receiving	Hyalella Azteca	6 19	33	29 19	4 16	88%	12% 46%		Acute	
			Joaquin River, American River, Sacramento River														
Weston and Lydy, 2012	Stormwater Input of Pyrethroid Insecticides to an Urban River	Sacramento County	Alder Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	1	0	1	0%	100.00%	100%	Acute	
	an orban River		Buffalo Creek	2009	Wet	Water	Receiving	Hvalella Azteca	1	2	2	0	100%	0.00%		Acute	
			Carmichael Creek	2009	Wet	Water		Hyalella Azteca	1	1	1	ō	100%	0.00%		Acute	
			Chicken/Strong Ranch Slough	2009	Wet	Water	Discharge	Hyalella Azteca	1	2	2	0	100%	0.00%		Acute	
			Hinkle Creek Minnesota Creek	2009 2009	Wet	Water Water	Receiving Receiving	Hyalella Azteca Hyalella Azteca	1	1	1	0	100%	0.00%		Acute Acute	Includes motility (swimming) endpoint
			Willow Creek	2009	Wet	Water	Receiving	Hyalella Azteca	1	1	0	1	0%	100.00%		Acute	includes motility (swimming) endpoint
			American R. Stations 3 and 4	Mar-09	Wet	Water	Receiving	Hyalella Azteca	2	23	12	11	52%	47.83%	65%	Acute	
			American River Station 1	2009-2010	Wet	Water	Receiving	Hyalella Azteca	1	7	0	7	0%	100.00%		Acute	Includes motility (swimming) endpoint
			American River Station 2	2009-2010	Wet	Water	Receiving	Hyalella Azteca	1	11	1	10	9%	90.91%		Acute	Includes motility (swimming) endpoint
			American River Station 3 American River Station 3	Jan-10 Jan-10	Wet Wet	Water	Receiving	Hyalella Azteca Hyalella Azteca	1	1	1	0	100% 100%	0.00%	34% 86%	Acute Acute	Includes motility (swimming) endpoint Includes motility (swimming) endpoint
			American River Station 3	Jan-10	Wet	Water	Receiving	Hyalella Azteca	1	1	1	0	100%	0.00%	00% 74%	Acute	includes motility (swimming) endpoint
			American River Station 4	Jan-10	Wet	Water		Hyalella Azteca	1	1	1	ő	100%	0.00%	88%	Acute	
Weston Solutions Inc., 2006a	San Diego County Municipal Copermittees 2004-2005 Urban Runoff Monitoring Report	Southern California		2004-2005	Dry	Water	Receiving	Hyalella Azteca	1	3	1	2	33%	66.67%		Acute	
			Agua Hedionda Creek		_												
			San Dieguito Chollas Creek	2004-2005 2004-2005	Dry Dry	Water Water	Receiving Receiving	Ceriodaphnia dubia Hvalella Azteca	1	3	1	2	33% 33%	66.67% 66.67%		Acute Acute	
			Chollas Creek	2004-2005	Dry	Water		Hyalella Azteca Ceriodanhnia dubia	1	3	1	2	33%	66.67%		Acute	
			Tijuana River	2004-2005	Dry	Water		Ceriodaphnia dubia	1	3	3	0	100%	0.00%		Acute	
Weston Solutions Inc., 2007a	San Diego County Municipal Copermittees 2005-2006 Urban Runoff Monitoring Report	Southern California		2005-2006	Dry	Water		Hyalella Azteca	1	3	2	1	67%	33.33%		Acute	
			Agua Hedionda Creek														
			San Dieguito River	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	2	1	67%	33.33%		Chronic	
			San Dieguito River Tecolote Creek	2005-2006 2005-2006	Dry Dry	Water	Receiving	Selenastrum Hvalella Azteca	1	3	2	1	67% 33%	33.33% 66.67%		Chronic Acute	
			Tecolote Creek	2005-2006	Dry	Water	Receiving	Hyalella Azteca Ceriodanhnia dubia	1	3	1	2	33%	66.67%		Chronic	
			San Diego River	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic	
			Chollas Creek	2005-2006	Dry	Water	Receiving	Hyalella Azteca	1	3	3	ō	100%	0.00%		Acute	
			Chollas Creek	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Acute	
			Sweetwater River	2005-2006	Dry	Water	Receiving	Selenastrum	1	3	1	2	33%	66.67%		Chronic	
			Tijuana River	2005-2006	Dry	Water	Receiving	Hyalella Azteca	1	3	2	1	67%	33.33%		Acute	_
			Tijuana River	2005-2006	Dry	Water	Receiving	Ceriodaphnia dubia	1	3	1	2	33%	66.67%		Chronic/acute	e

Citation - Abbrev.	Report/study Title	Region	Site(s)	Study Timeframe	Wet/Dry Weather	Water/Sediment	Discharge/Receiving Water	Organism tested	Number of Sites	Number of Samples Tested	Number of Toxic Samples	Number of Non-toxic Samples	% Toxic Samples	toxic	Average % Survival	Acute or Chronic test	Notes
Weston Solutions Inc., 2008c	Response to Monitoring in Chollas Creek, Investigation Order No. R9-2004-0277	San Diego County	Chollas Creek - South Fork	2006-2007	Wet	Water	Receiving	Ceriodaphnia dubia	1	3	0	3	0%	100.00%	100%	Acute	
			Cholias Creek - North Fork Cholias Creek - South Fork Cholias Creek - North Fork Cholias Creek - North Fork Agua Hedionda Creek San Dieguito River San Dieguito River San Dieguito River Los Peñasautios Creek San Diego River Tijuana River	2006-2007 2006-2007 2006-2007 2006-2007 2006-2007 2006-2007 2006-2007 2006-2007 2006-2007 2006-2007 2006-2007 2006-2007	Wet Wet Wet Wet Wet Wet Wet Wet Wet Wet	Water Water Water Water Water Water Water Water Water Water Water Water Water Water	Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving Receiving	Ceriodaphnia dubia Ceriodaphnia dubia Ceriodaphnia dubia Hvalella Azteca Hvalella Azteca Ceriodaphnia dubia Vavialla Azteca Ceriodaphnia dubia Hvalella Azteca Hvalella Azteca Ceriodaphnia dubia	1 1 1 1 1 1 1 1 1 1 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 1 3 3 1 2 1 1 1 3 3 3	3 2 2 0 0 2 1 2 2 2 2 0 0	0% 33% 33% 100% 100% 33% 33% 33% 33% 100%	100.00% 66.67% 66.67% 0.00% 66.67% 66.67% 66.67% 66.67% 66.67% 0.00%	100% 92% 94% 90% 46%	Acute Chronic Chronic Acute Chronic Acute Chronic Chronic Chronic Chronic Acute Acute	
You et al., 2008	Chemical Availability and Sediment Toxicity or Pyrethroid Insecticides to Hyalella Azteca: Application to Field Sediment With Unexpectedly Low Toxicity	f Northern California	Santa Margarita River San Luis Rey River American River, Weber Creek near Folsom Lake, CA	2006-2007 2006-2007 2004-2008	Wet Wet Dry	Water Water Sediment	Receiving Receiving Receiving	Hyalella Azteca Hyalella Azteca Hyalella Azteca	1 1 3	1 3 3	1 1 3	0 2 0	100% 33% 100%	0.00% 66.67% 0.00%		Acute Chronic Chronic	Note: Only those sites determined to be "urban" were reported in this table.