



December 10, 2015

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Central Valley Regional Water Quality Control Board  
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The Sacramento Valley Water Quality Coalition (SVWQC or Coalition) and Yolo subwatershed respectfully request your determination that the diuron Management Plan for the Willow Slough Bypass be deemed complete. The primary basis for this request is that Willow Slough has been determined to meet the water quality objectives (WQOs) for diuron. Additional factors supporting the request include the extensive outreach conducted with members and non-member agencies in the subwatershed and county and focused in the represented drainage area to further augment and expand implementation of management practices to manage discharges of diuron and other agricultural pesticides.

#### **BACKGROUND FOR MANAGEMENT PLAN REQUIREMENT**

The Willow Slough Bypass monitoring location at Pole Line Road (WLSPL) is in the Willow Slough drainage and is a representative monitoring site for SVWQC. The Willow Slough drainage is 101,903 acres, approximately 66,200 irrigated acres, and currently represents a total of 618,000 acres in the Yolo subwatershed, including the North Yolo Bypass, South Yolo Bypass, Cache Creek, Foothill Cache Creek, Middle Cache Creek, Buckeye Creek, Oat Creek, Bird Creek, Smith Creek, Breton Creek, Meridian Edge, and portions of Lower Colusa Drain, Sycamore Area, and West Canal Landing drainages in Yolo County. The Management Plan requirement for diuron was originally triggered by exceedances observed in April and December of 2007, with subsequent exceedances observed in January and April 2008, and January 2010.

#### **DATA AND EXCEEDANCES**

Relevant monitoring data for diuron are provided in **Table 1**. The monitoring results indicate the following:

- A total of 33 sample events have been conducted for diuron in Willow Slough. There have been *five* (5) exceedances of the diuron trigger limit, with the last observed in January 2010 (see **Table 1**).
- A total of 49 sample events have been conducted for *Selenastrum* toxicity in Willow Slough. There have been *three* (3) exceedances of the toxicity trigger limit, with the last observed in observed in February 2009 (see **Table 1**). Two of these exceedances were determined to be caused by elevated diuron (April 2007 and January 2008), while the other exceedance did not have associated pesticide analyses (February 2009).

- There have been 16 diuron sample events conducted over the last 5 years with no exceedances since January 2010.
- There have been 38 *Selenastrum* sample events conducted over the last 6 years with no exceedances since February 2009.

Evaluations of the five observed diuron exceedances (based on a 2.0 µg/L USEPA Health Advisory Level) and reported pesticide applications indicate that in some cases agriculture was a contributing source of the observed diuron exceedances. The detected diuron concentration in the January 2008 water quality sample was sufficient to explain the observed toxicity to *Selenastrum* (based on an EC50 for *Selenastrum* of 2.4 µg/L taken from the USEPA ECOTOX Database), and occurred during the time that diuron applications were made in the Willow Slough drainage. While there were no associated pesticide analyses performed in parallel with the February 2009 toxicity testing, diuron applications were reported in the month prior to sampling and the herbicide is considered to be a probable cause or contributor of toxicity observed in the WSLPL sample. The detected diuron concentrations in the December 2007 and January 2010 samples were sufficient to cause or contribute to toxicity, although no *Selenastrum* toxicity testing was performed for these two monitoring events. Because diuron applications were reported in the Willow Slough drainage in the month prior to the sampling, it is likely that agricultural application of the herbicide caused or contributed to the observed exceedances. Pesticide use reporting (PUR) data indicate that the April 2007 diuron exceedance was likely due to the use of the herbicide for landscape maintenance and the control of weeds in rights of way. Similarly, PUR data indicate that agricultural applications of diuron likely were not the cause of the diuron exceedance observed in April 2008 as the most recent applications of the herbicide were made multiple weeks prior to the observed exceedance. Associated *Selenastrum* toxicity testing showed toxicity to be significant in the April 2007 sample and non-significant in the April 2008 sample.

Overall, these monitoring data indicate that diuron is (1) currently meeting water quality objectives, (2) is no longer a chronic problem in Willow Slough, and (3) that agricultural management practices in the Willow Slough drainage and larger represented area are already adequate to prevent exceedances of the ILRP Trigger Limit for diuron and potential contributions to *Selenastrum* toxicity (see **Table 2**). To this end, we concluded that the practices that growers and applicators are implementing are sufficient.

**SUMMARY OF EVALUATIONS SUPPORTING REQUEST**

The following evaluations and factors support this request:

Assessment of Compliance with Water Quality Objectives	<ul style="list-style-type: none"> <li>• All detected concentrations of diuron since February 2010 have been in compliance with the 2.0 µg/L USEPA Health Advisory Level (A total of 16 diuron analyses were performed over the past 5 years).</li> </ul>
Lack of agricultural contribution to exceedances	<ul style="list-style-type: none"> <li>• Since February 2010, no agricultural applications of diuron reported in the Willow Slough drainage have resulted in the observance of diuron exceedances. Furthermore, no exceedances have been observed over the past 5 years.</li> </ul>
Lack of agricultural contribution to toxicity	<ul style="list-style-type: none"> <li>• Since February 2010, only 2 detected diuron concentrations (both well below concentrations known to cause or substantially contribute to toxicity in sensitive species) were associated with 13 toxicity analyses performed for the Willow Slough drainage over the past 5 years.</li> </ul>

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Outreach and Education	<ul style="list-style-type: none"> <li>• Extensively conducted to increase awareness of issues for this Management Plan and other Management Plans in the Willow Slough drainage (and other drainages in this subwatershed).</li> <li>• Included outreach to non-member agencies applying diuron in the County (CALTRANS and Southern Pacific Railroad) to educate and reduce potential for non-agricultural discharges.</li> </ul>
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Implemented Practices	<ul style="list-style-type: none"> <li>• Adequate to prevent diuron exceedances (based on monitoring results, survey results, and use patterns).</li> <li>• Increased implementation for other Management Plans will further reduce risks of diuron exceedances.</li> </ul>

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### SOURCE EVALUATIONS

An evaluation of potential sources contributing to diuron exceedances in the Willow Slough drainage was completed in 2010<sup>1</sup>. The source evaluation assessed the diuron applications by agriculture, which crops applied diuron prior to exceedances, irrigation patterns and methods, and environmental conditions relevant to potential discharges of diuron, and potential non-agricultural sources of diuron. The source evaluation included analysis of PUR data from the California Department of Pesticide Regulation (CDPR) and the Yolo County Agriculture Department. Conclusions of the source evaluations included:

- Based on evaluations of reported pesticide applications and predominant crops in the drainage, agriculture is a potential contributing source of some of the observed toxicity exceedances associated with elevated diuron.
- Diuron was determined to cause or contribute to the toxicity of two of the three cases of observed toxicity. The remaining case of toxicity was a follow-up sample with statistically significant toxicity that did not trigger analysis for pesticides. Based on these results, diuron should be the focus of surveys and outreach for the *Selenastrum* toxicity Management Plan for Willow Slough.
- Diuron use on alfalfa appears to account for the largest proportion of the agricultural applications of the herbicide relevant to the observed exceedances. This crop should be the priority for surveys and outreach. Other crops using diuron in Yolo County include walnuts, grapes, almonds, pears, apples, and citrus. Common non-agricultural uses consisted mainly of rights of way, but also included a small percentage applied for structural pest control, landscape maintenance, research, and uncultivated agricultural land.
- Non-agricultural uses of diuron for rights of way also have a high potential to have caused or contributed to some or all of the observed exceedances. One of the exceedances (April 17, 2007) was attributed to elevated diuron that apparently was not due to agricultural sources. Urban and rural residential acreage also represents a potentially significant non-agricultural source of diuron in the drainage. The Central Valley Water Board should consider these sources for outreach and management.

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<sup>1</sup> *Source Evaluation Report: Selenastrum Toxicity in Willow Slough*. Sacramento Valley Water Quality Coalition. March 2010

Based on evaluations of reported pesticide applications and predominant crops in the drainage, agriculture was determined to be the probable cause of the majority of the diuron exceedances observed during the period 2007 – 2010.

Based on a review of currently available pesticide use information in Yolo County for 1999 – 2013, the use of diuron has shown a decreasing trend in the County for irrigated agriculture since 2007 and for all other uses (primarily for landscape maintenance and weed control in rights of way) since 2000 (see **Figure 1**). Use of diuron on alfalfa, grapes, and walnut orchards during December through February remains the primary use of the herbicide in the County (~96% of diuron applications in 2011 – 2013). The primary pathways of transport in agricultural applications are storm runoff discharges and drift from applications, and managing these has been the focus of outreach to control diuron exceedances.

### **OUTREACH AND EDUCATION**

Outreach and education efforts are not specifically cited as a basis for this request. However, growers in the subwatershed have been made aware of the Diuron Management Plan, the consequences of any exceedances of diuron, transport and transfer pathways, and recommended management practices. In addition to direct communication with all 2008-2015 registered users of diuron, the Yolo County Farm Bureau Education Corporation (YCFBEC), Yolo County Agricultural Commissioner, and University of California Cooperative Extension Farm Advisor have continued to include information on the water quality risks, recommended practices, and the special circumstances regarding regulation of diuron detections in their outreach activities. Outreach specific to the Diuron Management Plan was conducted in tandem with outreach for the subwatershed's internal management goals for chlorpyrifos for the represented drainages. The combined outreach for these Management Plans has reached all of the Yolo subwatershed membership (currently 660 members) by newsletter in the represented drainages. Increased awareness by the growers and applicators has contributed to changes in practices and reduced diuron discharges from agriculture and non-agricultural users, as evidenced by the lack of diuron and *Selenastrum* toxicity exceedances since February 2010.

### **Relevant Outreach & Education Conducted from 2009 – 2015:**

- 2009 – Yolo County Farm Bureau provide pesticide education seminars.
- 2009 – 2015 – Yolo County Agricultural Commissioner's office conducted pesticide application, mix/load and equipment inspections, and provided pesticide education seminars.
- 2010 – Spray Safe program workshop provided to 225 attendees by Yolo County Farm Bureau Education Corporation (YCFBEC) and Yolo County Agriculture Department.
- 2011 – Spray Safe program workshop provided to 350 attendees by YCFBEC and Yolo Co. Ag. Dept.
- 2012 – Spray Safe program workshop provided to 327 attendees by YCFBEC and Yolo Co. Ag. Dept.
- 2012, 2013, 2014, 2015 – New and past users of diuron informed of the potential risks of diuron applications, and of the available and recommended management practices to limit this risk by Yolo Co. Ag. Dept. staff when applying for pesticide application permits.
- 2013 – Spray Safe program workshop provided to 348 attendees by YCFBEC and Yolo Co. Ag. Dept.

- 2013 – Yolo County Coalition members that used diuron from 2008 – 2010 provided the same information described above regarding potential risks of diuron and best management practices to limit risk during the annual Coalition invoicing process.
- 2014 – Spray Safe program workshop provided to 344 attendees by YCFBEC and Yolo Co. Ag. Dept.
- 2015 – Spray Safe program workshop provided to 361 attendees by YCFBEC and Yolo Co. Ag. Dept.
- Annually – Review pesticide use reports annually to incorporate any new users of diuron into the direct outreach efforts described above.
- Annually – Continue ongoing education efforts for other potential diuron uses in the Yolo County Coalition.

## **SURVEYS**

The degree to which management practices are implemented in the drainage was initially evaluated through surveys of selected high priority growers along Willow Slough in 2009, and a report<sup>2</sup> summarizing these results was prepared and submitted to the Water Board in 2011. Twenty-eight individual high-priority parcels (20 members with 2,866 total acres) were identified representing the acreage with the highest potential to contribute to observed exceedances in this initial survey. Based on the responses from the initial targeted survey, it was concluded that most growers in the Willow Slough drainage are implementing adequate best management practices to protect surface water quality.

- Awareness of IPM pesticide management practices, use of PCAs, and appropriate training were universally high, as was implementation of practices to control and minimize overspray and drift.
- Most growers implemented at least one type of relevant irrigation management and drainage practice and projected installing more within two years. The majority of growers indicated having storm runoff from their fields only in heavy rainstorms.
- Most operations also implemented additional practices to minimize discharge of pesticides in irrigation and storm runoff (e.g., sediment traps, vegetated ditches, tailwater returns systems).

A second survey consisting of the Farm Evaluations for all agricultural operations in the represented drainages was completed in March 2015 and has been compiled for the evaluation of implementation of a wide range of management practices, including irrigation, pesticide, and sediment management practices relevant to the diuron Management Plan. Preliminary results confirm high levels of awareness of issues related to pesticide exceedances, as well as high levels of implementation of management practices to reduce and eliminate pesticide and toxicity exceedances.

## **MANAGEMENT PRACTICES**

Based on the monitoring results, management practices in the drainage appear adequate to prevent discharges of diuron to surface waters, and the implementation of practices is part of the basis for this request. Diuron is a federally restricted material and requires a user to obtain one of the following certifications: Private Applicator Certificate (PAC), Qualified Applicator License (QAL), or Qualified

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<sup>2</sup> *Grower Survey Report: Willow Slough*. Prepared for Sacramento Valley Water Quality Coalition By The Coalition for Urban/Rural Environmental Stewardship. 2011.

Applicator Certificate (QAC). Additionally, diuron is identified as a Groundwater Protection Material and its use in Groundwater Protection Areas (GWPA) is restricted to prevent potential pollution of groundwater. The Yolo Co. Ag. Dept. provides growers in GWPA with educational materials that specify the method in which diuron must be used and practices for preventing the pesticide from being transported from its site of application. We believe that the lack of diuron exceedances related to agricultural applications can be attributed largely to changes in practices as a result of increased awareness of the growers and applicators, and that this resulted from the consistent and intensive outreach efforts of the YCFBEC and Yolo Co. Ag. Dept. The specific implementation goals documented in the diuron Management Plan have been achieved for the represented area.

Implementation Goal	Percent Implementation
95% of Yolo County growers are aware of and consider IPM practices and choices before deciding to apply pesticides	95% <sup>(1)</sup>
95% of growers consider runoff or leaching potential when selecting specific pesticide for application	95% <sup>(1)</sup>
95% of growers consider alternative products and lowest risk pesticide choice needed to accomplish pest management	95% <sup>(1)</sup>
95% of growers applying diuron consider precipitation forecast and soil saturation conditions and DO NOT apply when ground is near field capacity <i>and</i> significant rainfall is expected (i.e., when runoff is most likely)	89.9% <sup>(2)</sup>
95% of growers applying diuron should implement one or more of the following optional practices (if appropriate):	95.9% <sup>(2)</sup>
	<i>Individual Practice Percent Implementation</i>
Apply to level vegetated ground (all alfalfa applications qualify for this)	>54.4% <sup>(3)</sup>
In bare ground applications incorporate within 48 hours of application	<10% <sup>(4)</sup>
Direct post-application runoff through filtering vegetation	26.7% <sup>(2)</sup>
Direct runoff and tailwater to settling ponds	19.3% <sup>(2)</sup>
Direct runoff and tailwater to sediment basin	19.3% <sup>(2)</sup>
Direct irrigation tailwater to tailwater return system	21.8% <sup>(2)</sup>
Direct runoff and tailwater to wetlands	--- <sup>(5)</sup>
Cover crops (orchards only)	52.3% <sup>(2)</sup>
Vegetated filter strips (orchards and row crops)	26.7% <sup>(2)</sup>
Vegetated drainage ditches	38.9% <sup>(2)</sup>
Other appropriate practices	2.4% <sup>(2)</sup>

1. Percent implementation provided by Yolo County Farm Bureau.
2. Percent implementation calculated from 2015 Farm Evaluation Survey results. Reported percentages represent practices reported by the entire Yolo Subwatershed membership, and it is anticipated that percent implementation of practices by diuron users is higher than shown above.
3. Minimum percent implementation based on 2013 CDPR PUR data.
4. Label requirement for areas classified as vulnerable to runoff. Overall percentage implementation in Yolo County unspecified, but expected to be <10%.
5. Percent implementation of goal indeterminate based on available information.

**OTHER RELEVANT INFORMATION**

Implementation of additional practices continues to be pursued as part of the Management Plan for malathion and the subwatershed’s internal management goals for chlorpyrifos in the same represented drainages. Although it does not appear necessary to further control and prevent diuron exceedances, the additional awareness and implementation of practices will further reduce the risks of diuron use in the represented drainages.

**CONCLUSIONS**

Based on the monitoring results summarized above, Willow Slough is meeting the ILRP water quality Trigger Limit for diuron and has done so for the last 5 years. Outreach and education efforts and implemented practices have achieved the goals of the Management Plan and resulted in meeting water quality objectives. Based on the findings presented in this request, we conclude that agricultural practices implemented in the Willow Slough drainage and represented area have been and continue to be sufficient to prevent agricultural contributions to exceedances of diuron in the area represented by Willow Slough. Additionally, the ongoing Management Plan for malathion and the internal management goals for chlorpyrifos will further reduce the risk of diuron discharges and exceedances in regional surface waters.

As specified in the Management Plan Completion section of the MRP-1: Management Plan Requirements for Surface Water and Groundwater (Waste Discharge Requirements General Order for Growers within the Sacramento River Watershed that are Members of a Third Party Group; Order R5-2014-0030-R1), we respectfully request that you make a determination of the completeness of this Management Plan.

Sincerely,



David J. Guy  
President  
Northern California Water Association

Cc: Sue McConnell  
Susan Fregien  
Denise Sagara  
Bruce Houdesheldt  
Claus Suverkropp

**TABLES AND FIGURES**

**Table 1: Monitoring results for diuron in Willow Slough Bypass water quality samples.**

Event	Sample Date	Diuron (µg/L)	<i>Selenastrum</i> growth (% of control)	Notes
17	02/10/2007	0.2	---	
19	04/17/2007	<b>3.7</b>	<b>76.4</b>	1, 2
20	05/15/2007	0.69	---	
21	06/19/2007	0.4	---	
22	07/17/2007	0.28	---	
23	08/21/2007	<0.2	---	
24	09/19/2007	<0.2	---	
25	12/19/2007	<b>4.7</b>	---	2
26	01/28/2008	<b>3.7</b>	<b>54.1</b>	1, 2
26.1	02/05/2008	---	97.5	
27	02/21/2008	0.23	115.6	
28	04/21/2008	<b>5.8</b>	90.5	2
29	05/19/2008	1.4	377	
30	06/17/2008	0.24	279.2	
31	07/14/2008	0.25	129.3	
32	08/18/2008	<0.2	151.4	
33	09/15/2008	<0.2	418	
35	01/26/2009	---	163.9	
36	02/16/2009	---	<b>52.9</b>	1
37	03/19/2009	---	255.4	
38	04/23/2009	---	106.3	
47	01/19/2010	<b>9.5</b>	---	2
48	02/16/2010	0.4	---	
50	04/20/2010	<0.2	---	
58	12/07/2010	<0.2	---	
59	01/18/2011	<0.2	288.6	
60	02/15/2011	<0.2	195.4	
61	03/15/2011	---	193	
62	04/20/2011	---	178	
63	05/17/2011	---	221	
64	06/21/2011	---	218	
65	07/19/2011	---	255	
69	11/08/2001	---	155	
70	12/07/2011	<0.2	181	
71	01/23/2012	0.36	153	
72	02/21/2012	<0.2	190	
73	03/14/2012	---	159	
74	04/17/2012	---	368	
75	05/15/2012	---	200	
76	06/19/2012	---	198	
77	07/18/2012	---	244	
81	11/13/2012	---	229	
82	12/11/2012	<0.2	187	
83	01/22/2013	<0.2	189	
84	02/19/2013	<0.2	210	

Event	Sample Date	Diuron ( $\mu\text{g/L}$ )	<i>Selenastrum</i> growth (% of control)	Notes
85	03/20/2013	---	214	
86	04/17/2013	---	223	
87	05/21/2013	---	218	
88	06/18/2013	---	258	
95	01/14/2014	<0.2	362	
96	02/11/2014	0.7	222	
97	03/18/2014	---	173.5	
98	04/17/2014	---	264	
99	05/21/2014	---	147.4	
100	06/18/2014	---	174	
101	07/15/2014	---	174	
103	09/16/2014	---	246.7	
105	11/18/2014	---	213	
106	12/02/2014	<0.2	145	
107	01/20/2015	<0.2	151	
108	02/07/2015	<0.2	228	

1. Significant toxicity.

2. Exceedance of diuron trigger limit (2.0  $\mu\text{g/L}$ , USEPA Health Advisory Level).

**Table 2: Summary of Agricultural Practices Implemented in Willow Slough and Represented Drainages (Source: 2015 Farm Evaluation Survey).**

<i>PRACTICE CATEGORY</i>	Acres Reported	Percent of Total Acres Reported (218,129 acres)
Individual Practice		
<b><i>PESTICIDE APPLICATION PRACTICES</i></b>		
Monitor Wind Conditions	196,055	89.9
Follow Label Restrictions	195,630	89.7
County Permit Followed	195,380	89.6
Avoid Surface Water When Spraying	193,787	88.8
Monitor Rain Forecasts	190,985	87.6
Use PCA Recommendations	190,428	87.3
Attend Trainings	181,106	83.0
End of Row Shutoff When Spraying	180,825	82.9
Use Drift Control Agents	178,065	81.6
Use Appropriate Buffer Zones	177,511	81.4
Sensitive Areas Mapped	120,121	55.1
Reapply Rinsate to Treated Field	108,738	49.9
Use Vegetated Drain Ditches	97,348	44.6
Chemigation	81,860	37.5
Target Sensing Sprayer used	52,844	24.2
Other1	20,119	9.2
No Pesticides Applied	4,235	1.9
Other2	1,566	0.7
No Selection	83	0.04
<b><i>WHO DO YOU HAVE HELP DEVELOP YOUR CROP FERTILITY PLAN?</i></b>		
Pest Control Advisor (PCA)	191,747	87.9
Certified Crop Advisor (CCA)	107,850	49.4
Professional Soil Scientist	57,532	25.9
Independently Prepared by Member	55,373	25.4
UC Farm Advisor	52,855	24.2
Professional Agronomist	49,865	22.9
Certified Technical Service Providers by NRCS	3,836	1.8
None of the above	3,708	1.7
<b><i>DOES YOUR FARM HAVE THE POTENTIAL TO DISCHARGE SEDIMENT TO OFF-FARM SURFACE WATERS?</i></b>		
No	114,246	52.4
Yes	99,619	45.7
No Selection	4,264	2.0
<b><i>IRRIGATION PRACTICES</i></b>		
Drip	87,870	40.3
Furrow	37,794	17.3
Flood	35,640	16.3
Micro Sprinkler	16,230	7.4
Sprinkler	15,322	7.0
Border Strip	4,184	1.9

<b>PRACTICE CATEGORY</b>	<b>Acres Reported</b>	<b>Percent of Total Acres Reported (218,129 acres)</b>
<b>Individual Practice</b>		
No Selection	3,524	1.6
<b>SECONDARY IRRIGATION</b>		
No Selection	145,415	66.7
Sprinkler	26,844	12.3
Micro Sprinkler	10,633	4.9
Furrow	7,071	3.2
Border Strip	3,699	1.7
Drip	3,557	1.6
Flood	3,345	1.5
<b>NITROGEN MANGEMENT METHODS TO MINIMIZE LEACHING PAST THE ROOT ZONE</b>		
Split Fertilizer Applications	159,252	73.0
Soil Testing	148,121	67.9
Tissue/Petiole Testing	119,406	54.7
Fertigation	87,803	40.3
Cover Crops	86,995	39.9
Irrigation Water N Testing	78,951	36.2
Foliar N Application	66,482	30.5
Variable Rate Applications using GPS	22,364	10.3
Do Not Apply Nitrogen	11,467	5.3
Other	5,051	2.3
No Selection	4,780	2.2
Other2	20	0.01
<b>IRRIGATION PRACTICES FOR MANAGING SEDIMENT AND EROSION</b>		
The time between pesticide applications and the next irrigation is lengthened as much as possible to mitigate runoff of pesticide residue.	125,378	57.5
Use drip or micro-irrigation to eliminate irrigation drainage.	113,659	52.1
Shorter irrigation runs are used with checks to manage and capture flows.	85,136	39.0
No irrigation drainage due to field or soil conditions.	54,625	25.0
In-furrow dams are used to increase infiltration and settling out of sediment prior to entering the tail ditch.	53,898	24.7
Tailwater Return System.	47,563	21.8
Catchment Basin.	31,902	14.6
Use of flow dissipaters to minimize erosion at discharge point.	22,430	10.3
Other	10,033	4.6
PAM (polyacrylamide) used in furrow and flood irrigated fields to help bind sediment and increase infiltration.	9,178	4.2
No Selection	7,358	3.4
<b>CULTURAL PRACTICES TO MANAGE SEDIMENT AND EROSION</b>		
Soil water penetration has been increased through the use of amendments, deep ripping and/or aeration.	138,603	63.5
Crop rows are graded, directed and at a length that will optimize the use of rain and irrigation water.	119,374	54.7

<b>PRACTICE CATEGORY</b>	<b>Acres Reported</b>	<b>Percent of Total Acres Reported (218,129 acres)</b>
<b>Individual Practice</b>		
Minimum tillage incorporated to minimize erosion.	114,716	52.6
Cover crops or native vegetation are used to reduce erosion.	114,101	52.3
Vegetated ditches are used to remove sediment as well as water soluble pesticides, phosphate fertilizers and some forms of nitrogen.	84,752	38.9
Berms are constructed at low ends of fields to capture runoff and trap sediment.	66,274	30.4
Storm water is captured using field borders.	66,179	30.3
Creek banks and stream banks have been stabilized.	61,349	28.1
Hedgerows or trees are used to help stabilize soils and trap sediment movement.	60,784	27.9
Vegetative filter strips and buffers are used to capture flows.	58,243	26.7
Subsurface pipelines are used to channel runoff water.	43,540	20.0
Sediment basins / holding ponds are used to settle out sediment and hydrophobic pesticides such as pyrethroids from irrigation and storm runoff.	42,117	19.3
No storm drainage due to field or soil conditions.	22,650	10.4
Field is lower than surrounding terrain.	19,273	8.8
No Selection	8,921	4.1
Other	5,274	2.4

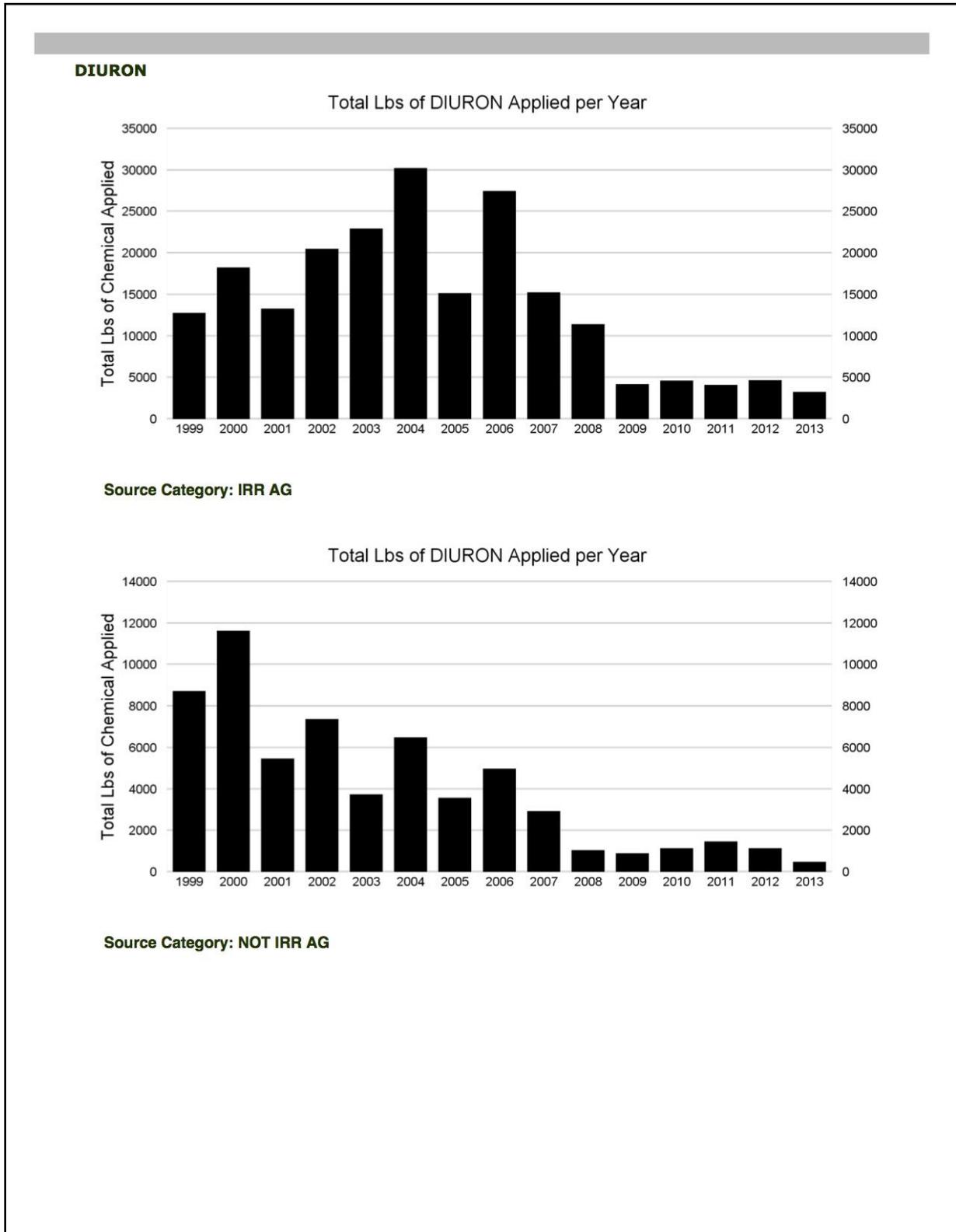


Figure 1: Annual Diuron Use (lbs/year) for Irrigated Agriculture and All Other Uses in Yolo County: 1999 – 2013.