



# PRIORITY PESTICIDES MAPPING

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Water Quality Monitoring Council meeting  
May 2017

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# Briefly covering:

- Purpose of Priority Pesticides Map
- Design process
- Accessing the map in the Healthy Streams Portal
- Questions?

# Purpose of Map

## Strategy to Optimize Resource Management of Storm water (STORMS)

- 10-year strategy including 23 projects addressing improvements to storm water quality, permitting, data management, capture and use potential



## STORMS Urban Pesticides Amendments project

- Project Goal: Achieve water quality objectives for pesticides and pesticide-caused toxicity through a **coordinated, source control**-based program
- Goal of Map: Illustrate pesticides water quality data that conveys the **statewide scope** of pesticides issues in **urban surface waters**

# Purpose of Map

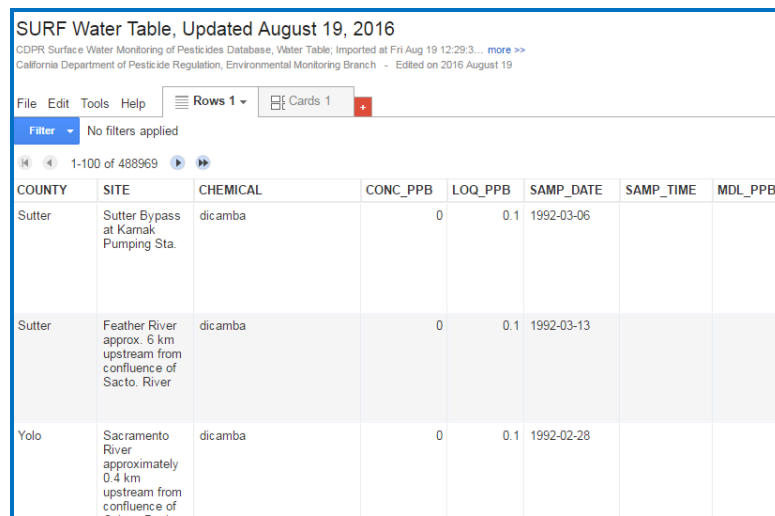
- Water Quality Monitoring Council  
December 2016 meeting
  - Introduction of STORMS source control projects
- Council expresses interest in hosting coordinated pesticides monitoring data through Water Quality Portal



# Design Process

- Data Source:

- Department of Pesticide Regulation (DPR)'s **Surface Water Database**
  - Data from DPR monitoring studies, CEDEN, other pesticides studies
  - Queried surface water data only (no sediment or toxicity data on map)



SURF Water Table, Updated August 19, 2016  
CDPR Surface Water Monitoring of Pesticides Database, Water Table; Imported at Fri Aug 19 12:29:3... more >>  
California Department of Pesticide Regulation, Environmental Monitoring Branch - Edited on 2016 August 19

File Edit Tools Help Rows 1 Cards 1

Filter No filters applied

1-100 of 488969

COUNTY	SITE	CHEMICAL	CONC_PPB	LOQ_PPB	SAMP_DATE	SAMP_TIME	MDL_PPB
Sutter	Sutter Bypass at Karnak Pumping Sta.	dicamba	0	0.1	1992-03-06		
Sutter	Feather River approx. 6 km upstream from confluence of Sacto. River	dicamba	0	0.1	1992-03-13		
Yolo	Sacramento River approximately 0.4 km upstream from confluence of Sacto. River	dicamba	0	0.1	1992-02-28		

- Pesticides Selection:

- Top 3 from DPR's Surface Water Monitoring Prioritization Model
  1. Permethrin
  2. Bifenthrin
  3. Fipronil
    - Included fipronil degradates with an Aquatic Life Benchmark: fipronil sulfide, fipronil desulfinyl, and fipronil sulfone.

# Design Process

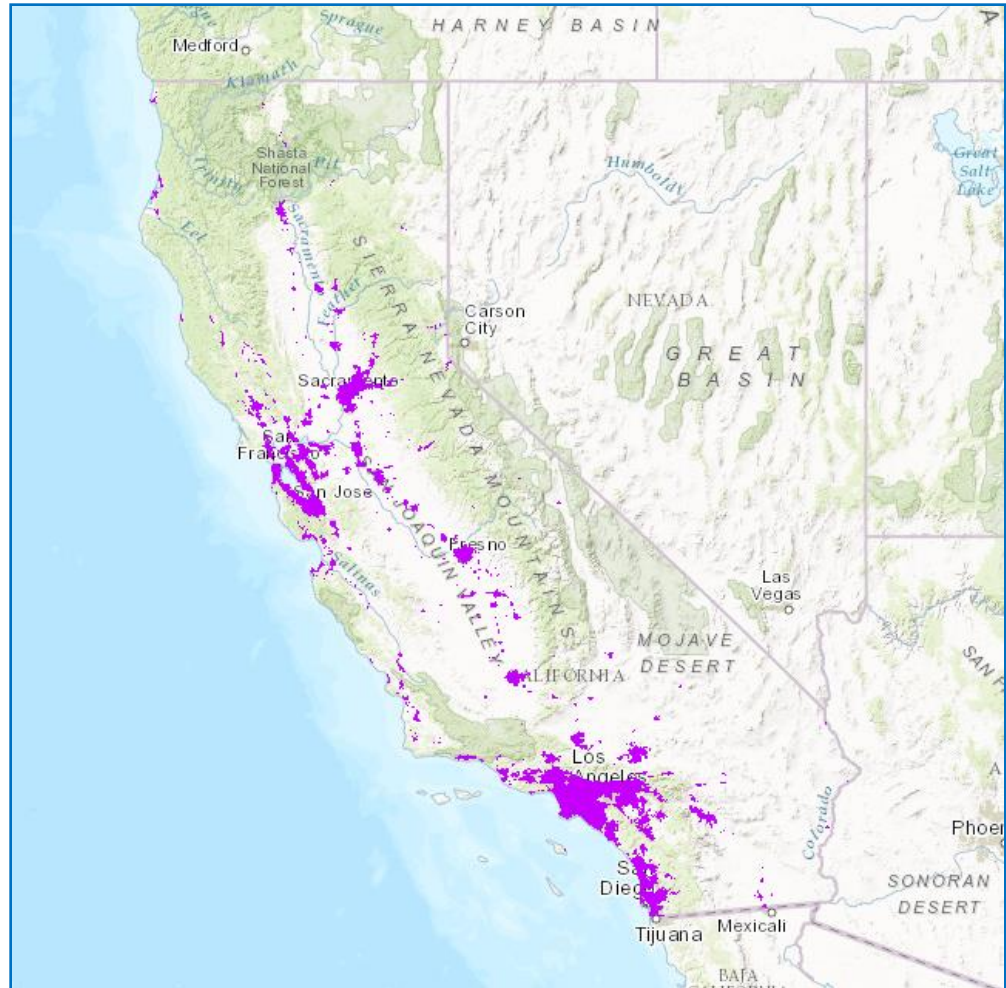
- “Exceedance” thresholds:
  - U.S. EPA Aquatic Life Benchmarks
  - Used lowest applicable benchmark for each pesticide
    - Usually the aquatic invertebrates chronic benchmark
  - Aquatic Life Benchmarks only developed for water toxicity (not sediment toxicity)



<http://cfb.unh.edu/cfbkey/html/index.html>

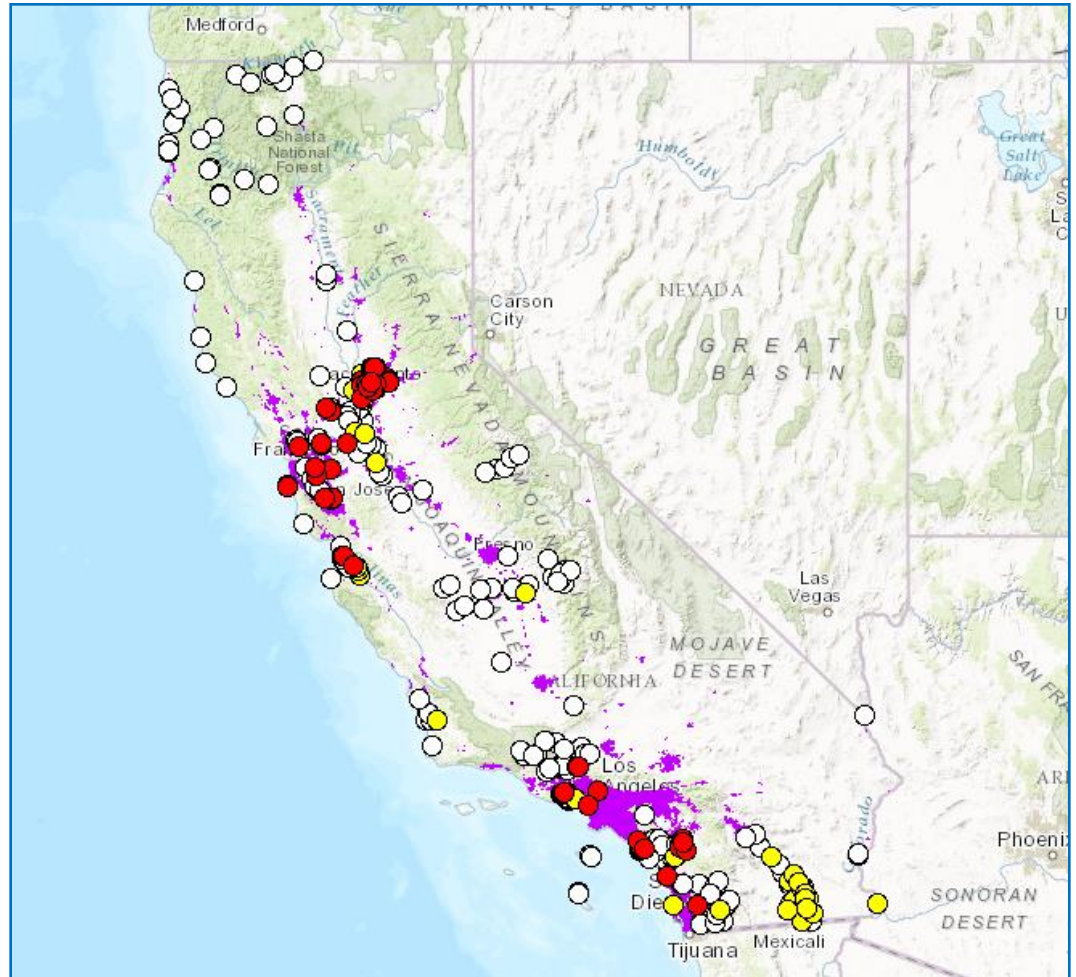
# Design Process

- Layer pesticide data with urban land use
  - 2010 US Census shapefiles for urbanized areas and urban clusters



# Adding pesticides data

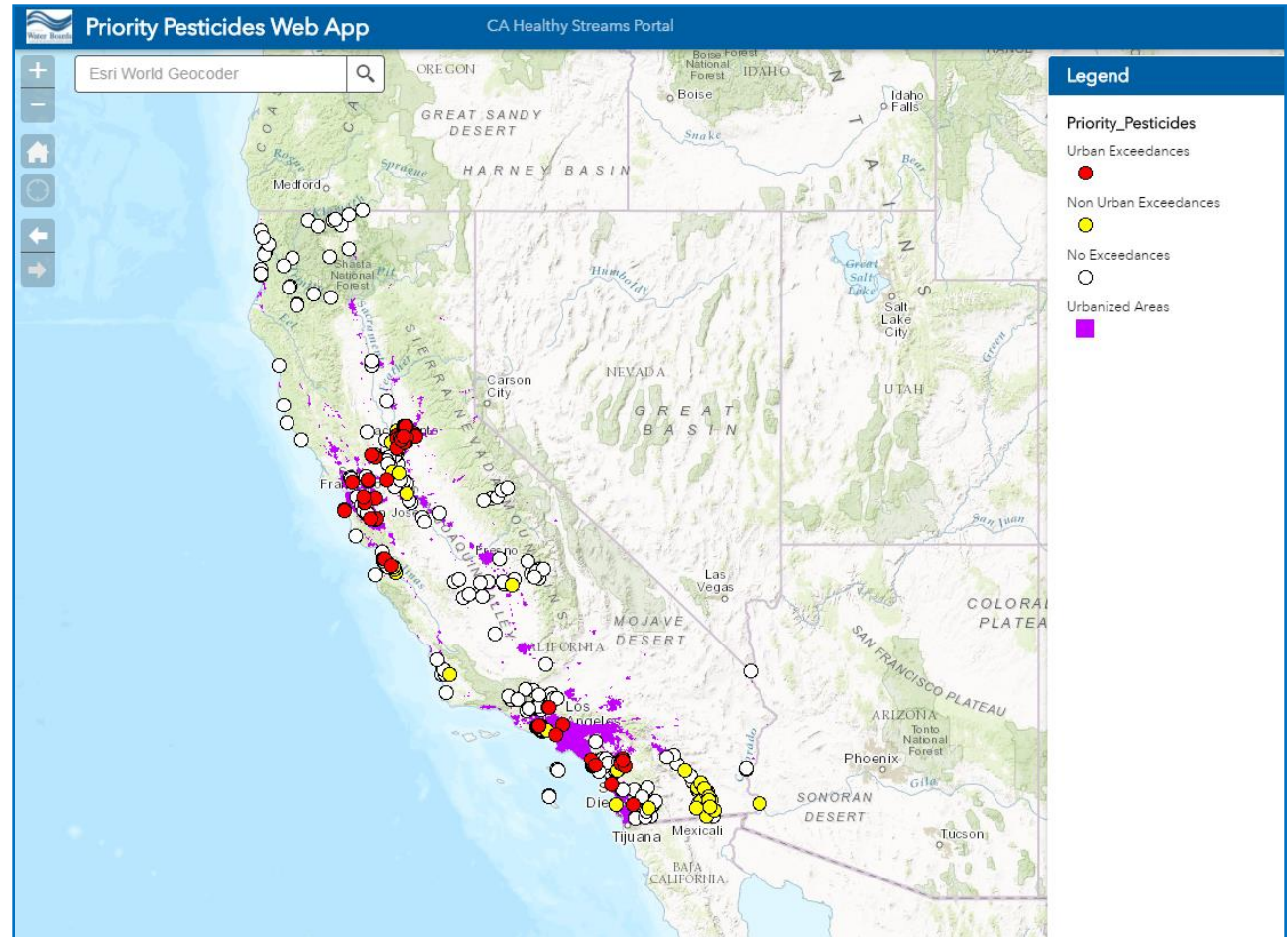
- White: monitoring locations without Benchmark exceedances
- **Colors**: monitoring locations with *at least one Benchmark exceedance* (of any of the 3 pesticides)
  - **Red**: Exceedance location within urban area
  - **Yellow**: Exceedance location outside of urban area



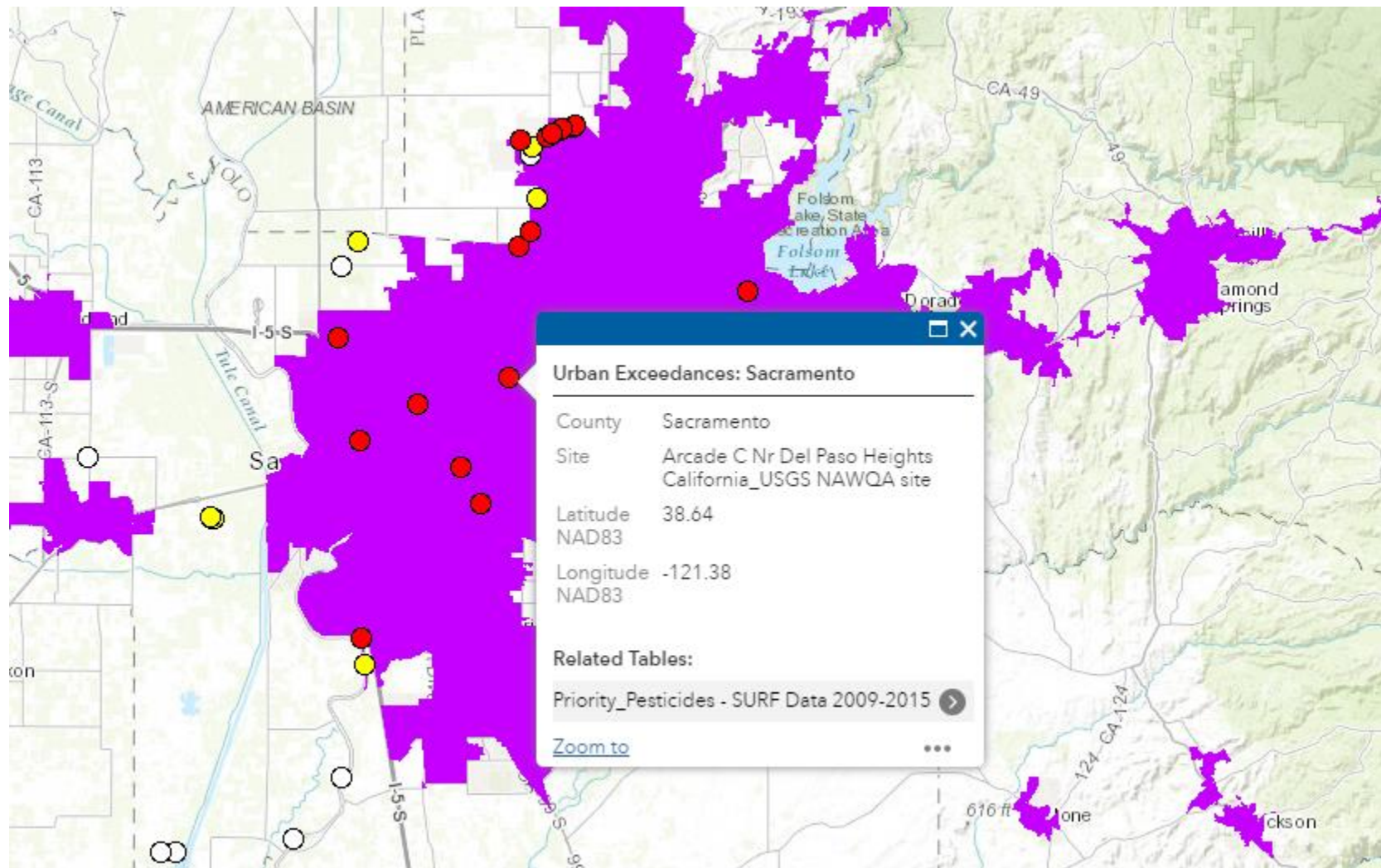


# ArcGIS Online platform

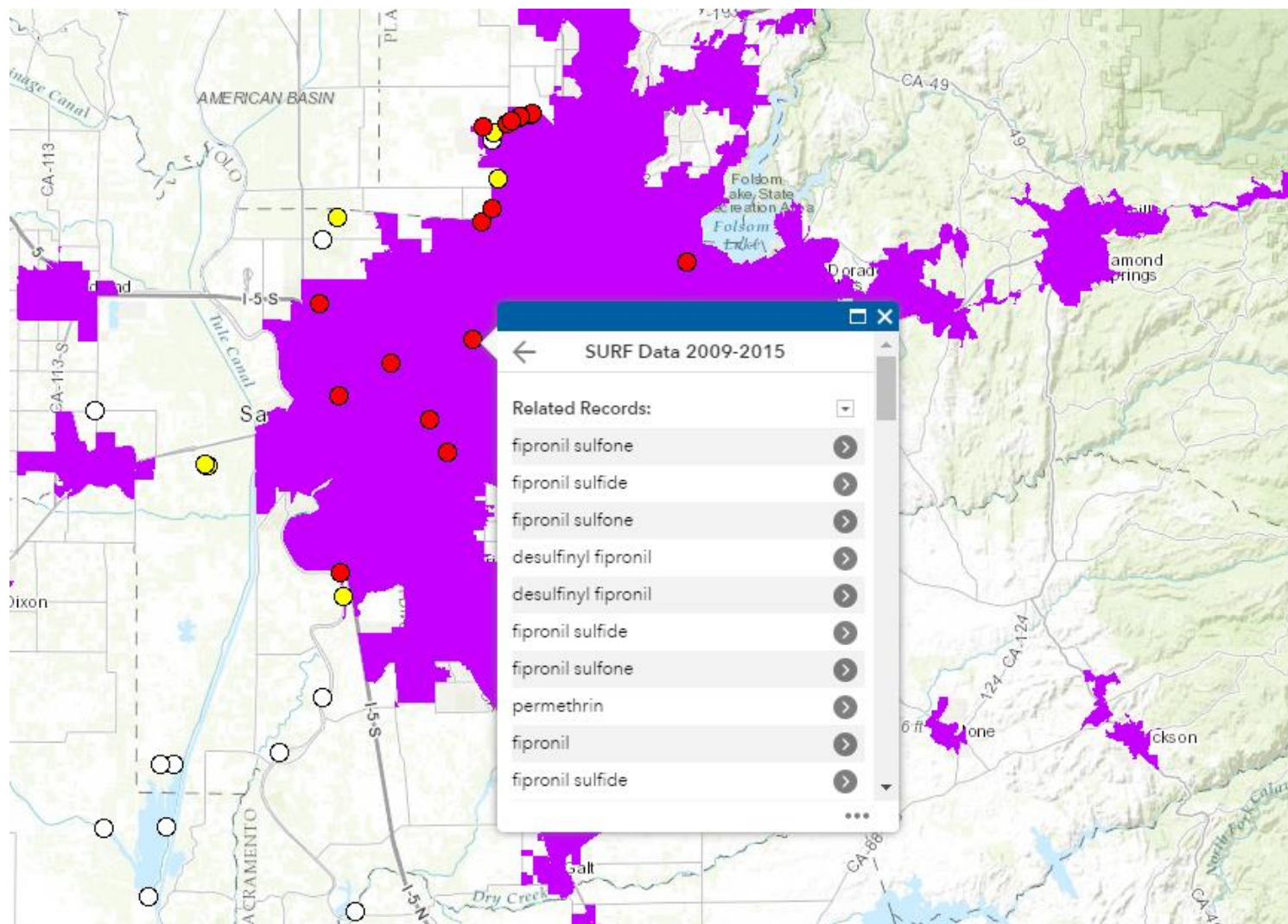
- Creates interactive map available to the public
- Available at Water Board's Healthy Streams Portal



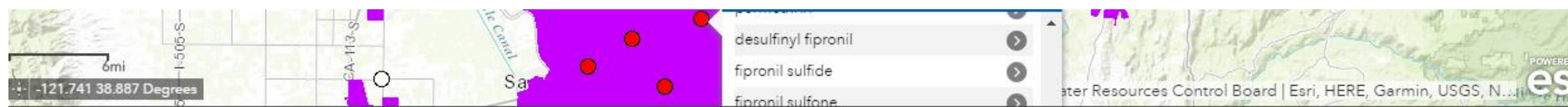
# Explore the Data



# Explore the Data



# Explore the Data

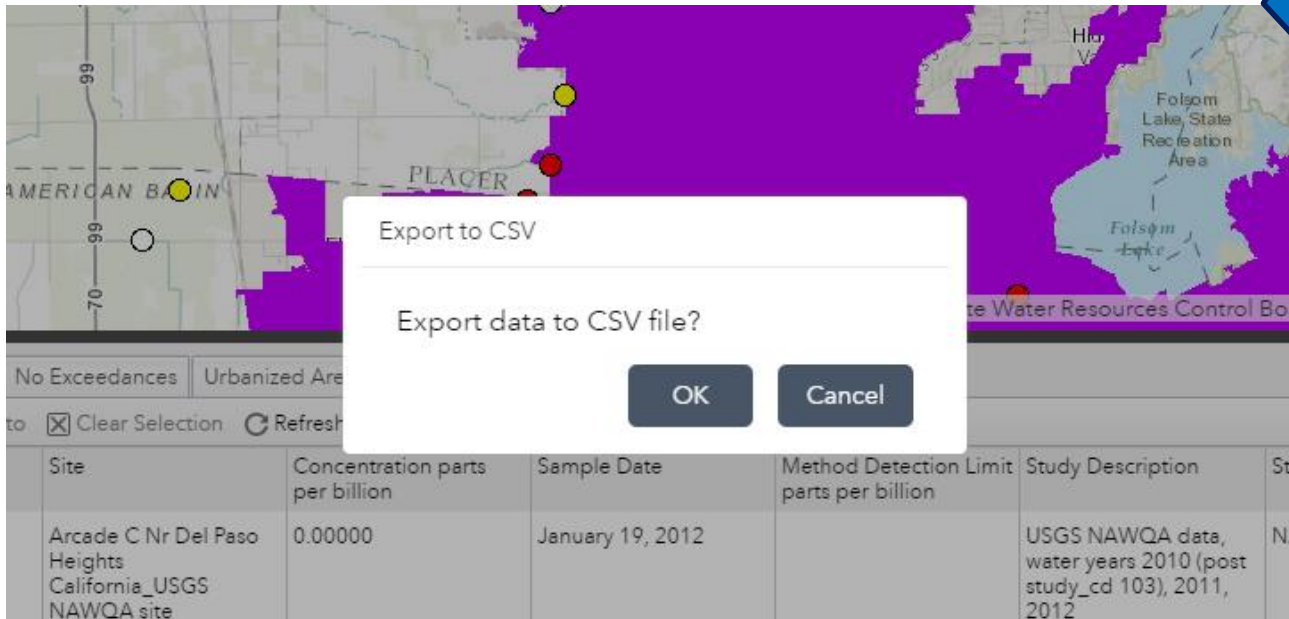


Urban Exceedances | Non Urban Exceedances | No Exceedances | Urbanized Areas | Priority\_Pesticides - SURF Data 2009-2015 x

Options Filter by Map Extent Zoom to Clear Selection Refresh

County	Chemical	Site	Concentration parts per billion	Sample Date	Method Detection Limit parts per billion	Study Description	Study Weblink	EPA Benchmark Exceedance?
		Heights California_USGS NAWQA site				water years 2010 (post study_cd 103), 2011, 2012		
Sacramento	fipronil sulfone	Arcade C Nr Del Paso Heights California_USGS NAWQA site	0.04180	February 28, 2012		USGS NAWQA data, water years 2010 (post study_cd 103), 2011, 2012	NA	YES
Sacramento	fipronil sulfone	Arcade C Nr Del Paso Heights California_USGS NAWQA site	0.05390	March 13, 2012		USGS NAWQA data, water years 2010 (post study_cd 103), 2011, 2012	NA	YES
Sacramento	permethrin	Arcade C Nr Del Paso Heights California_USGS NAWQA site	0.00000	April 1, 2012		USGS NAWQA data, water years 2010 (post study_cd 103), 2011, 2012	NA	NO
Sacramento	permethrin	Arcade C Nr Del Paso Heights California_USGS NAWQA site	0.00000	November 19, 2011		USGS NAWQA data, water years 2010 (post study_cd 103), 2011, 2012	NA	NO
Sacramento	permethrin	Arcade C Nr Del Paso Heights California_USGS NAWQA site	0.00000	January 22, 2012		USGS NAWQA data, water years 2010 (post study_cd 103), 2011, 2012	NA	NO

# Explore the Data



The screenshot shows a web application interface. At the top, there is a map of Folsom Lake and surrounding areas, including labels for 'AMERICAN BAY', 'PLACER', and 'Folsom Lake State Recreation Area'. Below the map is a data table with columns: Site, Concentration parts per billion, Sample Date, Method Detection Limit parts per billion, Study Description, and Stu. The table contains one row of data for 'Arcade C Nr Del Paso Heights California\_USGS NAWQA site' with a concentration of 0.00000 and a sample date of January 19, 2012. A dialog box is overlaid on the table, titled 'Export to CSV', with the text 'Export data to CSV file?' and two buttons: 'OK' and 'Cancel'. A blue curved arrow points from the map area to a green square icon containing the Microsoft Excel logo.

Site	Concentration parts per billion	Sample Date	Method Detection Limit parts per billion	Study Description	Stu
Arcade C Nr Del Paso Heights California_USGS NAWQA site	0.00000	January 19, 2012		USGS NAWQA data, water years 2010 (post study_cd 103), 2011, 2012	NA

- 80 water quality records total for monitoring location
- USGS Natl. Water Quality Assessment Program, 2011-2012
- Exceedance rates (above US EPA A.L. Benchmark)
  - Permethrin: 0%
  - Fipronil: 0%
  - Fipronil sulfone: 12.5%
  - Fipronil sulfide: 0%
  - Desulfinyl fipronil: 0%

# Future Considerations

- Include sediment toxicity data
- Add additional priority pesticides
- Create filtering functions in the online map
- Others?

# Thank you!

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