

The background features a light blue gradient with a large, faint illustration of a mosquito in the center and a palm tree on the left side. The mosquito is shown in profile, facing right, with its wings spread. The palm tree is a simple silhouette with a long trunk and a fan-shaped crown of fronds.

# Wide Area Larvicide Sprays in Coachella Valley

Jennifer A. Henke, M.S.  
Laboratory Manager

*WALS Summit  
May 21, 2020*

*Protecting Public Health Since 1928*

# Coachella Valley MVCD



- 59 full-time employees
- 22 seasonal employees
- Independent special district
  - Property taxes + benefit assessment
  - \$11 million budget

*Protecting Public Health Since 1928*



# Treatments in a desert



Very dry (less than 5 inches rain per year)

Very hot (daytime average high in August 111°F)

How will these conditions impact efficacy?

*Protecting Public Health Since 1928*



# WALS – Wide Area Larvicide System

- Applying larvicide to multiple yards from
  - Aerial sprayers
  - Truck-mounted sprayers
- Available larvicides
  - VectoBac WDG (Bti)
  - Altosid Liquid Larvicide (methoprene)

*Protecting Public Health Since 1928*



# FAA Operating Certificate

- Pesticides to be used (and why)
- Dates and hours of application – this can be more general

## Application Details:

1. Name and type of materials to be dispensed:  
Vectobac 12AS, Vectobac WDG, Altosid Liquid, Duet, Scourge 18+54
2. Type of pest control work to be accomplished:  
Mosquito Control
3. Proposed Start Date:  
1/1/2018
4. Proposed End Date:  
12/31/2018
5. Hours of Operation:  
All applications will be done in accordance to the biology of the species of mosquitoes to be controlled for the application to be most effective. If daytime applications are deemed necessary, significant additional public and official notifications will be implemented prior to the applications.

*Protecting Public Health Since 1928*



# Notification

## 48 hour Agency Pre-flight Notification

- Application area City or County Police and Fire Departments
- Agricultural Commissioner
- When in designated air space, the appropriate Air Traffic Manager

*Protecting Public Health Since 1928*



# Notification

## Public Notification

Information provided below concerns the notification venues, timelines, and advance notice that will be used by the official or governing body authorizing operations to inform the affected public of planned aerial mosquito control missions. Exact names of venues, frequency of notification, and how much prior notice the affected public is given below:

- **Local TV Stations:** KMIR, KESQ, NESQ, FOX, KUNA, Univision (KVER, KEVC)
- **Cable TV Station:** Time Warner Cable
- **Local Radio Stations:** KUUU, KPSI, KCLB, KRHQ, KPLM, KDGL, KDES, KMRJ, KEZN, KJJZ, KPSI, KNWZ, KWXY, KUNA, KLOB
- **Local Newspapers:** The Desert Sun, Press Enterprise, DesertLocalNews.com, El Informador, La Prensa Hispana
- **Flyers:** Post disease notification and aerial adult and larval mosquito control product information signs and sandwich boards at the beginning of spray routes and major intersections.
- **Email:** We send notification via an electronic mailing list to the following: City managers and PR departments; County health and environmental officials; local school boards; local water districts; Burretec Waste; Valley Sanitation; the Living Desert; local chambers of commerce; Palm Springs Cemetery; CV Recreation and Park; CV Resource Conservation; State assemblymen; Torrez Martinez Tribe; Eisenhower Medical Center, JFK, and Desert Regional Medical Center hospitals; and an additional 120 people who have signed up for alerts.
- **Website:** Post aerial application on our website on our Control Activities webpage <http://www.cvmvcd.org/controlactivities.htm> and in some instances on our homepage.
- **Telephone:** Board of Trustees, County Supervisor, and affected City Managers.

Describe how much advance notice is given to the affected public before an operation: **24-48 hours prior to event** when possible.

Describe the timeline and/or frequency public notice is posted: **Prior to each mission.**

*I agree that our agency uses the above listed venues to inform the affected public of planned aerial mosquito control missions.*

Agency Name: Coachella Valley Mosquito and Vector Control District

**CVMVCD LLEVARA A CABO CONTROL DE LARVAS DE MOSQUITO POR HELICOPTERO**

**CVMVCD TO CARRY OUT LARVAL MOSQUITO CONTROL BY HELICOPTER**

Dear Resident,  
The Coachella Valley Mosquito and Vector Control District will use a helicopter to apply mosquito larval treatments over your area, where *Aedes aegypti*, an invasive mosquito species, has been detected. Residents may choose to stay indoors during and for 30 minutes after application as a best practice to reduce exposure.

Larval control targets mosquitoes in the water using a naturally occurring bacterium to kill mosquito larvae before they emerge into biting adults. The product, VectoBac® WDG, is environmentally friendly and has no effect on people or pets at the amounts used for mosquito control. It is registered with the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation. For more information on larval control and future application dates, please visit <http://www.cvmvcd.org/controlactivities.htm>. Call the District at (760) 342-8287 to report standing water and learn how to rid your yard of standing water.

This mosquito species is not native to the U.S. and is capable of transmitting viruses including chikungunya, dengue, and Zika. While these viruses are not currently transmitted locally, we want to rid the Valley of the species to reduce the risk of transmission in the future. Once established, this mosquito species is difficult to get rid of.

PRSRST STD  
ECRWSS  
U.S. POSTAGE  
PAID  
EDDM RETAIL

Local  
Postal Customer

DATE: July 21 or 22  
TIME: 4-7 AM  
ROUTE MAP:

o 21 de Julio  
AM  
LUTA:

Indio, CA 92201

Coachella Valley Mosquito and Vector Control District | 43-420 Trader Place | Indio, CA 92201

Nextdoor

About Press Careers Blog

Nextdoor for Public Agencies

Communicate with real residents in your jurisdiction with Nextdoor's neighborhood engagement tool for local governments. [Learn about COVID-19 updates and find helpful resources.](#)

Nextdoor is free and available to use for most public agencies

GET STARTED

Reach the right audience  
Communicate with verified residents who live in your jurisdiction.

Thousands of public agencies use Nextdoor to create stronger and safer communities. With unique mapping and targeting features, public agencies can effectively communicate with real residents.

# Working with the Media

- Scouted a staging area
- Had staff on hand to answer questions
- 3 news teams with stories filed for 5 outlets – English and Spanish!





# Measuring Efficacy

- Bioassay cups
  - Results within a week
  - Determine where along a route there are issues
  - Need living mosquitoes
  - Time-consuming
- Adult mosquitoes in traps
  - Results match the goal
  - Delayed results (larvicide, not an adulticide)
  - Placement of traps within the area (edge effects)

*Protecting Public Health Since 1928*



# Bioassay Cups at Houses

open



25% covered



100% covered



50% covered

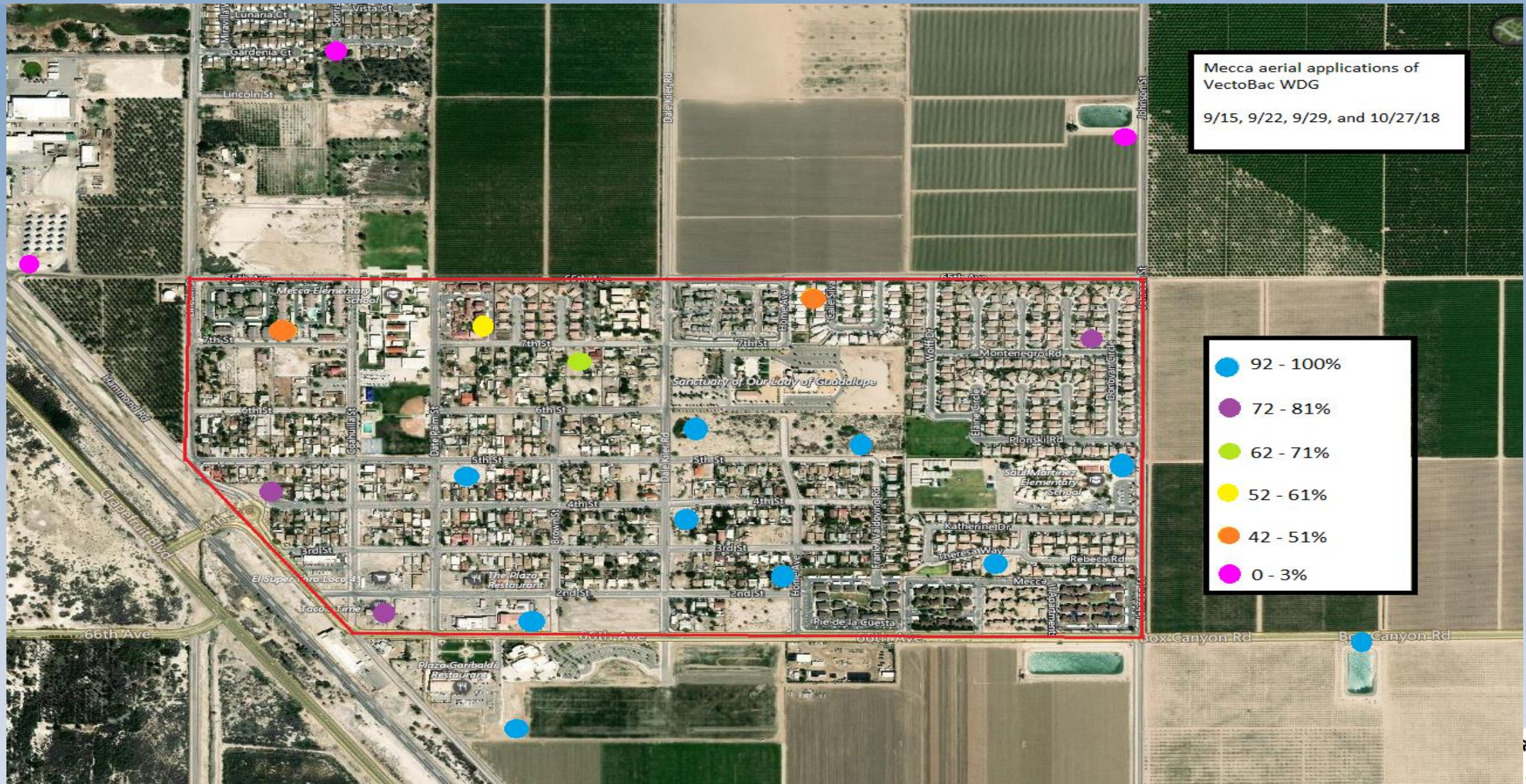


- Cups placed day prior
- Cups retrieved 1+ hours after application
- Rinsed and frozen
- ~100 mL DI water + 15 larvae; fed

*Protecting Public Health Since 1928*



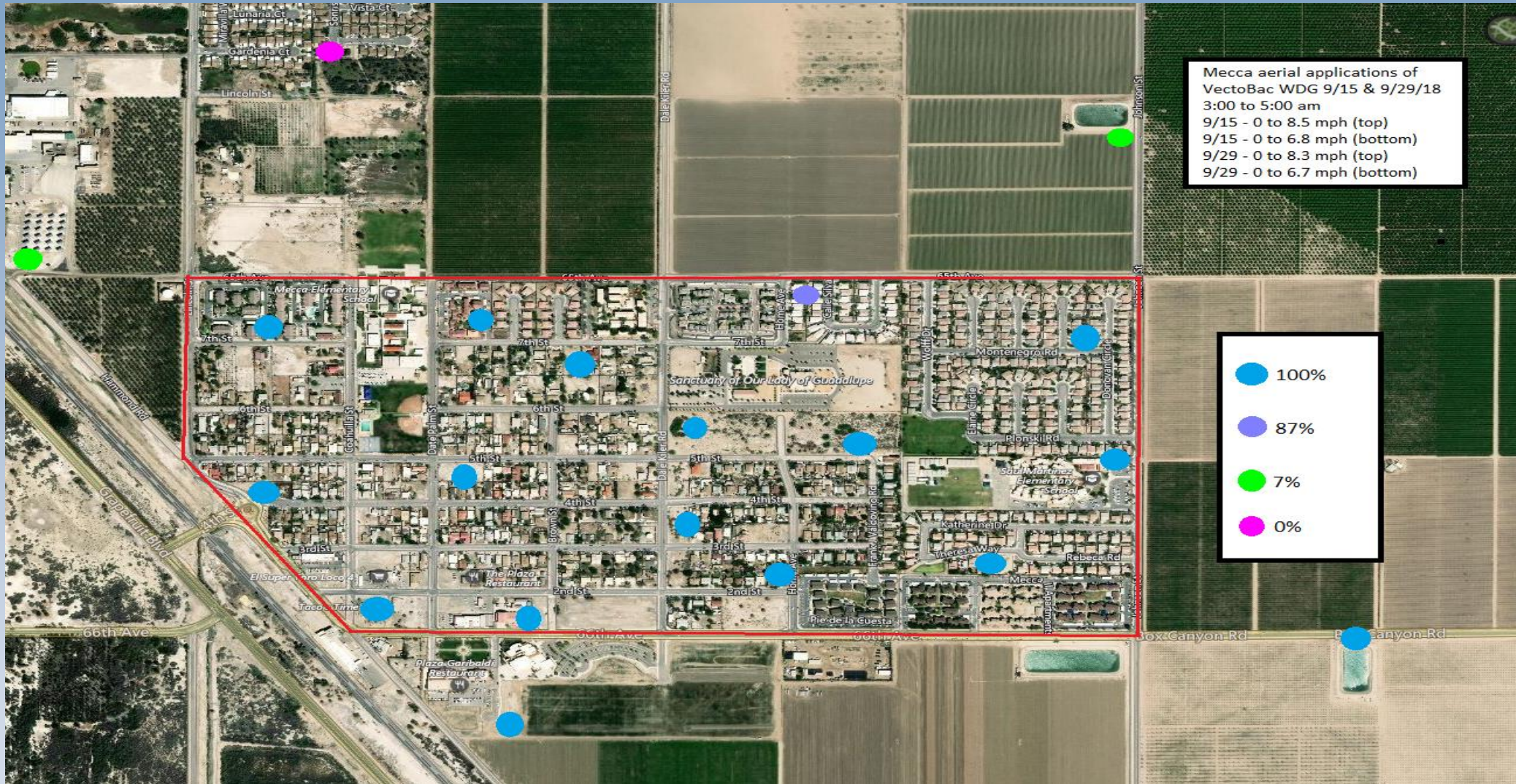
# Mecca 2018 – average of 4 applications



*Protecting Public Health Since 1928*



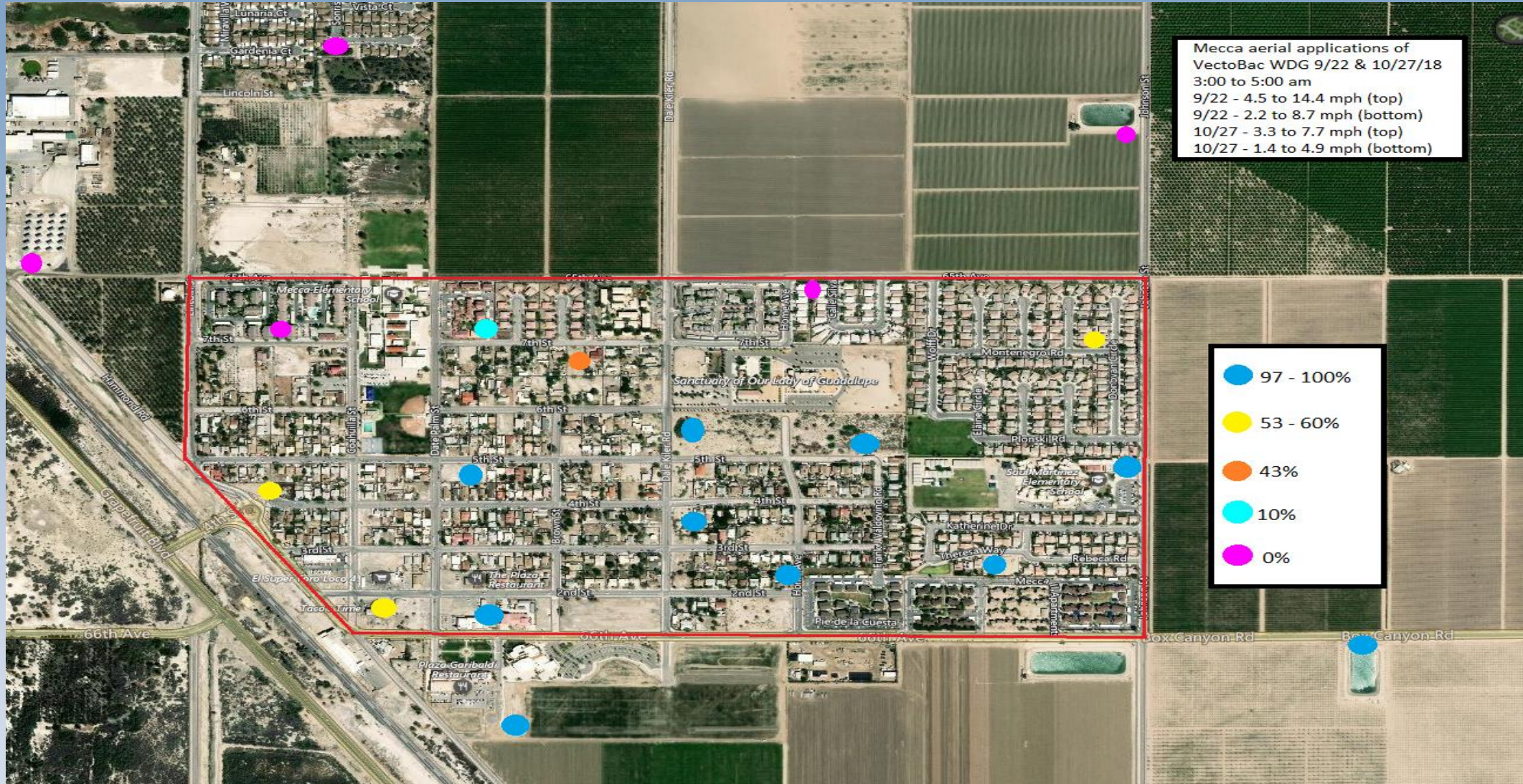
# Applications with wind < 5mph



*Protecting Public Health Since 1928*



# Applications with wind > 5mph



Protecting Public Health Since 1928



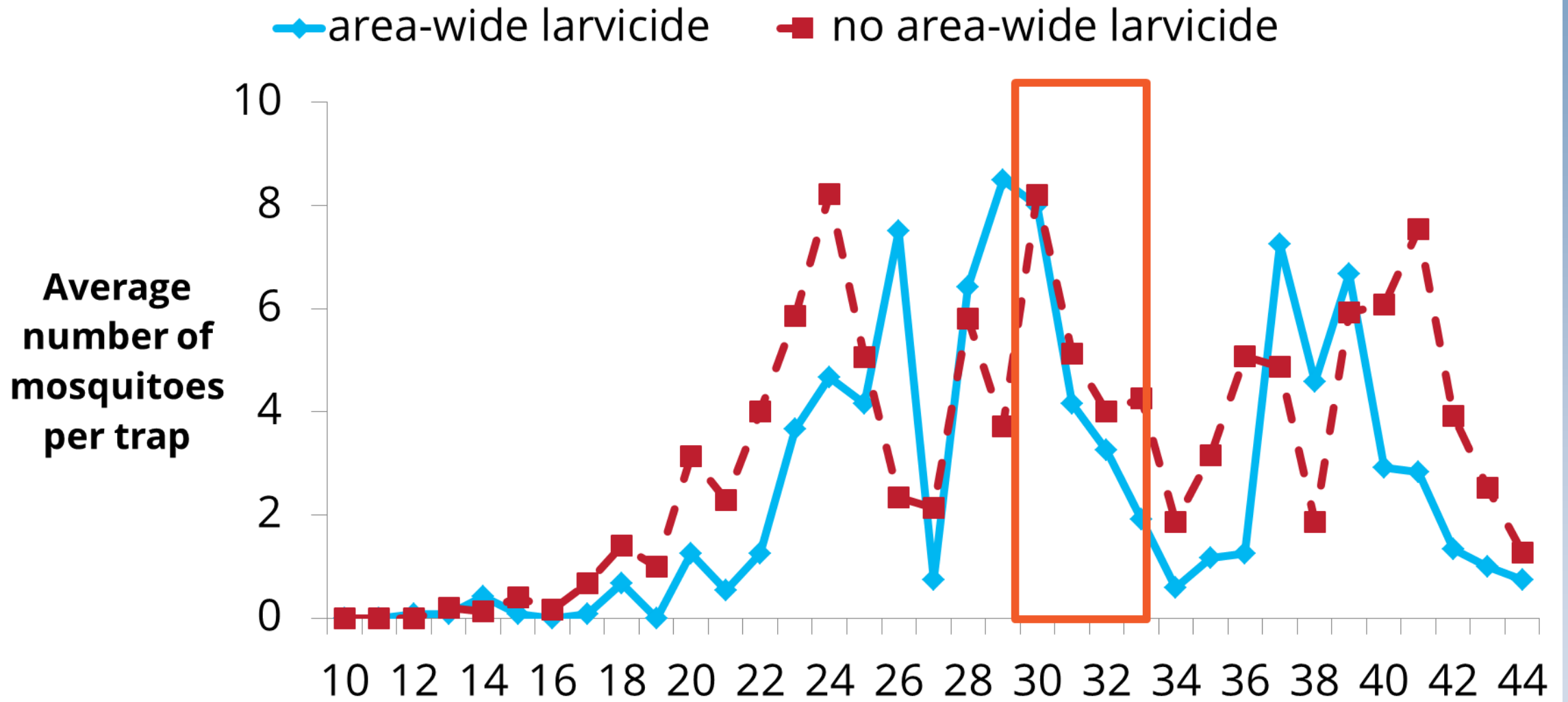
# District results

- Coachella – 10 applications in 2016 (+ 2 preliminary applications) (July – November)
  - No *Aedes* from December – April
  - Very low numbers in 2017; Resurgence in 2018
- Indio – 5 applications in Feb. – Mar. 2017
  - Less than 1 mosquito per trap until August 2017
- Palm Springs – 5 applications in Aug. – Sept. 2017
  - Less of an impact – timing between applications
  - Altosid Liquid used
- Mecca – 5 applications in Sept. – Oct. 2018
- Palm Springs – 3.5 applications in July – Aug. 2019

*Protecting Public Health Since 1928*



# Palm Springs – *Ae. aegypti* 2019



# Ground applications

- Smaller areas
- Noise concerns

## Super Duty A1 Mist Sprayer



*Protecting Public Health Since 1928*





# Determining swath width



- Sampling station every 30 feet (0-600) with the wind
- Card and cup

*Protecting Public Health Since 1928*



# Swath Width with VectoBac WDG

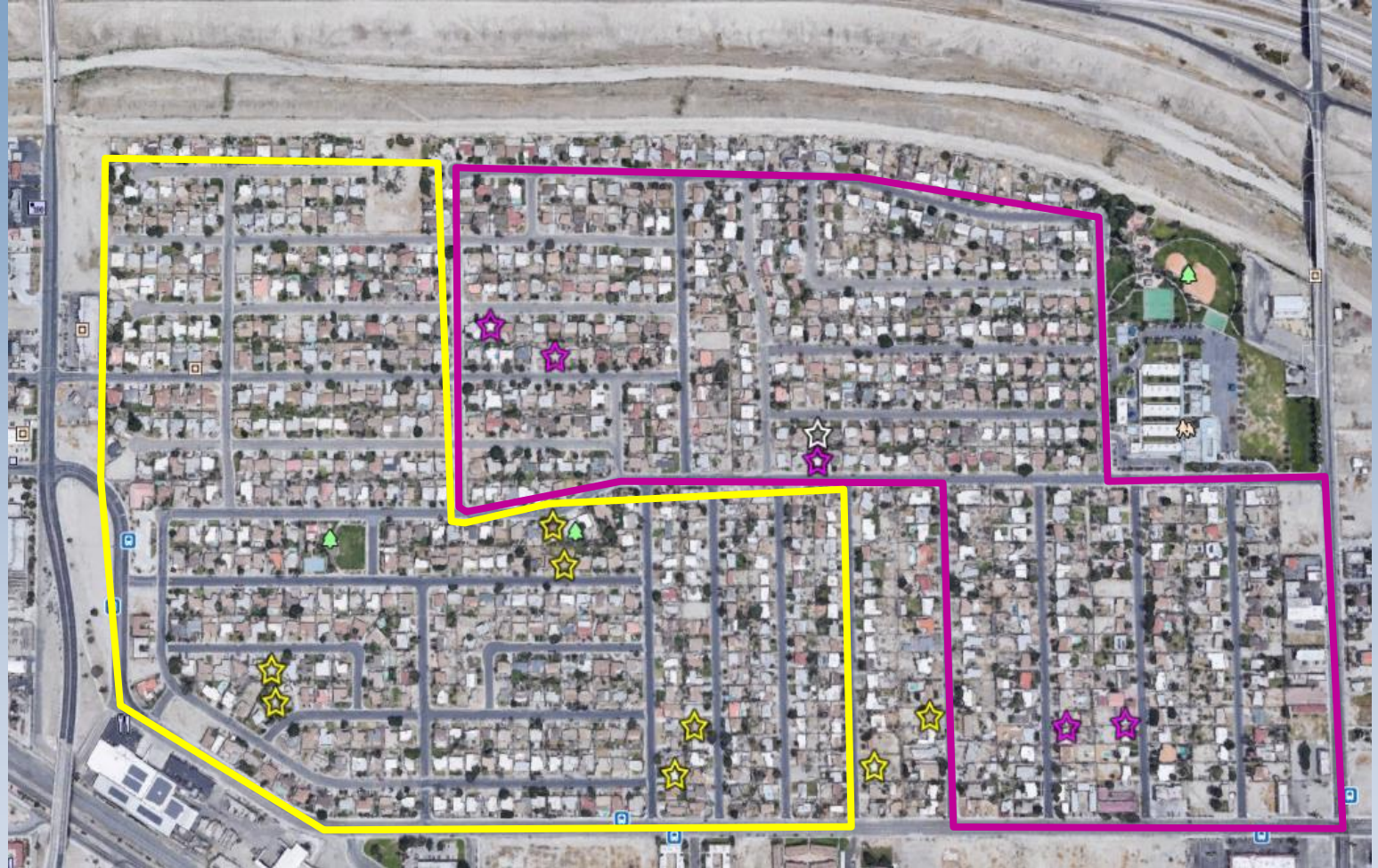
	Equipment	Angle	Temp.	Wind	Complete coverage	Partial coverage
June	<b>Guardian</b>	0 (vertical)	86.3°F	10.1 mph	240 ft.	540 ft.
		45	85.8°F	9 mph	240 ft.	600 ft.
	<b>Buffalo (San Diego)</b>	0 (vertical)	85°F	5.8 mph	240 ft.	570 ft.
		45	84.7°F	5.4 mph	210 ft.	570 ft.
	<b>Buffalo (Riverside)</b>	0 (vertical)	84.4°F	5.9 mph	390 ft.	600 ft.
		45	84.9°F	5.3 mph	150 ft.	540 ft.
September	<b>TIFA</b>	0 (vertical)	84.4°F	6.1 mph	90 ft.	210 ft.
		45	83.2°F	2.8 mph	90 ft.	270 ft.
	<b>DynaFog LV-8 (Northwest)</b>	0 (vertical)	82.6°F	4.9 mph	30 ft.	570 ft.
		45	82.7°F	4.8 mph	330 ft.	> 600 ft.
	<b>Micronair</b>	0 (vertical)	83°F	6.7 mph	300 ft.	390 ft.
		45	81.2°F	2.7 mph	570 ft.	> 600 ft.

*Protecting Public Health Since 1928*



# Indio

- Cups
  - Front open
  - Front cover
  - Back open
  - Back cover
- 2 pieces of equipment
  - A1 Super Duty
  - Guardian 190 G4
- All cups had 100% larval mortality



*Protecting Public Health Since 1928*



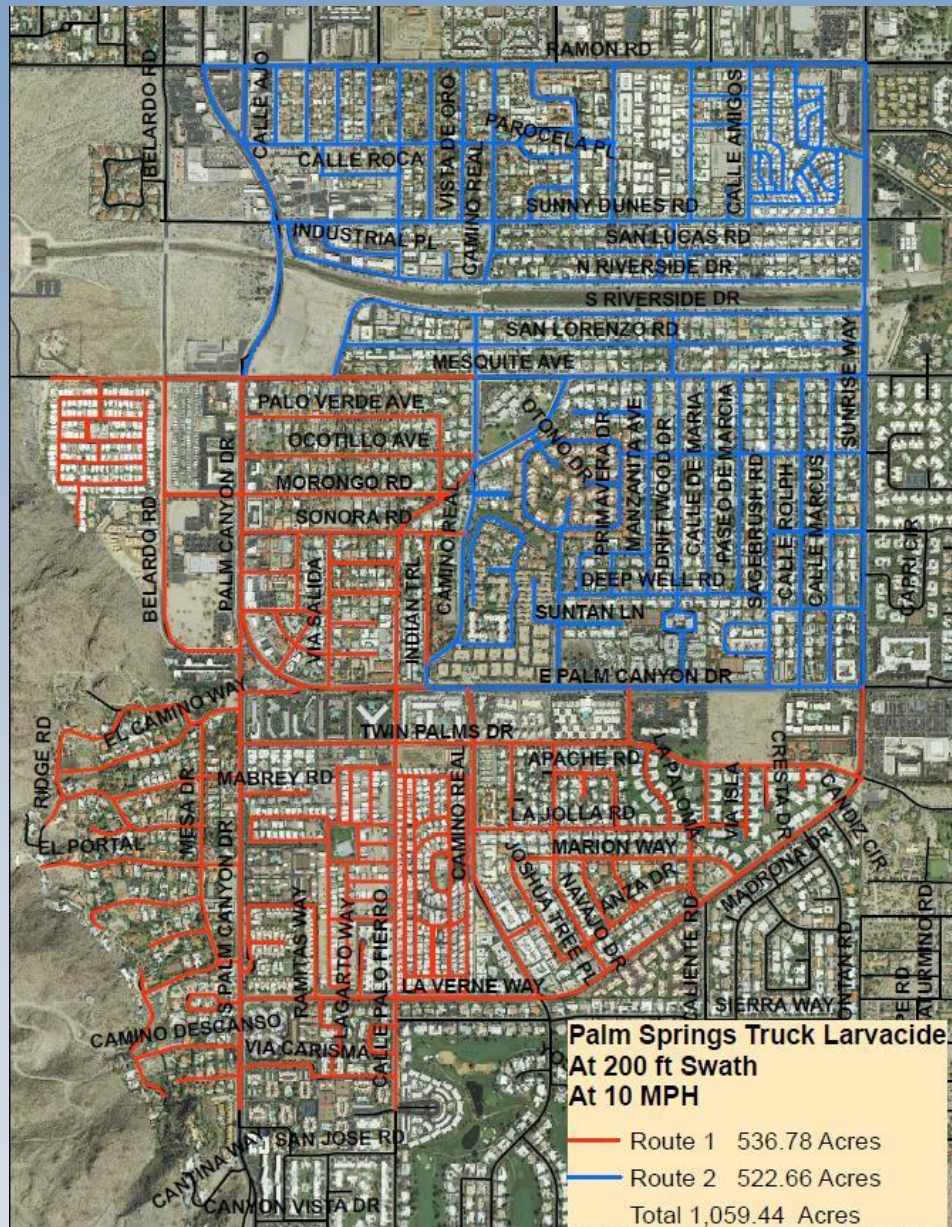
# Would residents notice droplets?



*Protecting Public Health Since 1928*

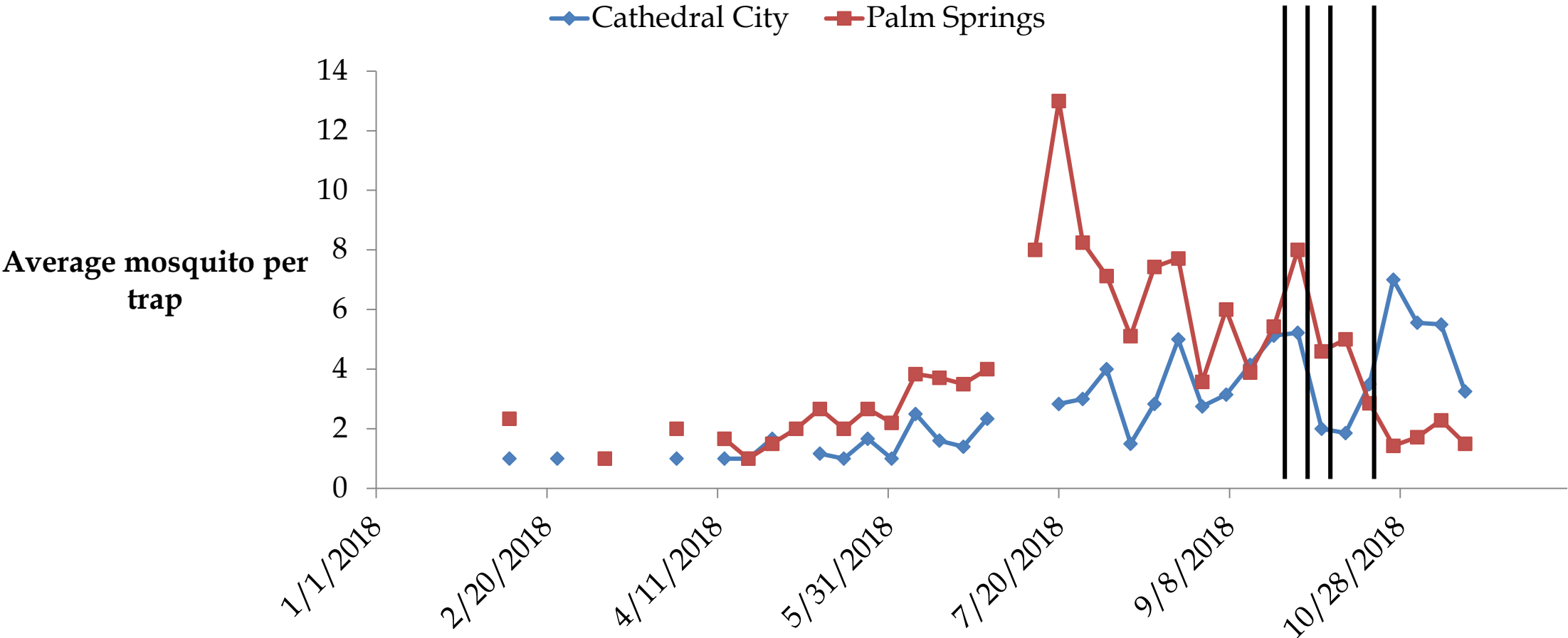


# Truck Larvicide – Palm Springs - Bti



- 2 routes
  - A1 Super Duty®
  - Dynafog LV-8
- Cups placed in
  - Front open
  - Front cover
  - Back open
  - Back cover

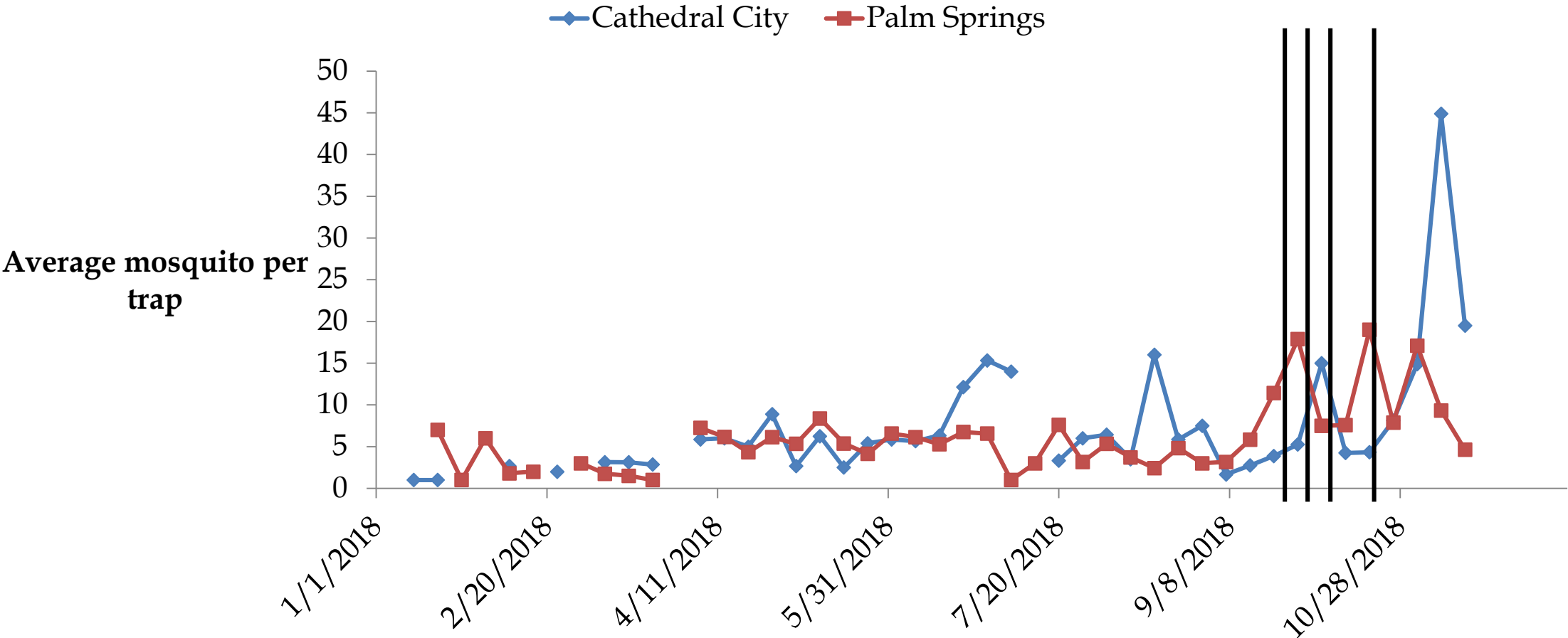
# Aedes aegypti



Protecting Public Health Since 1928



# Culex quinquefasciatus

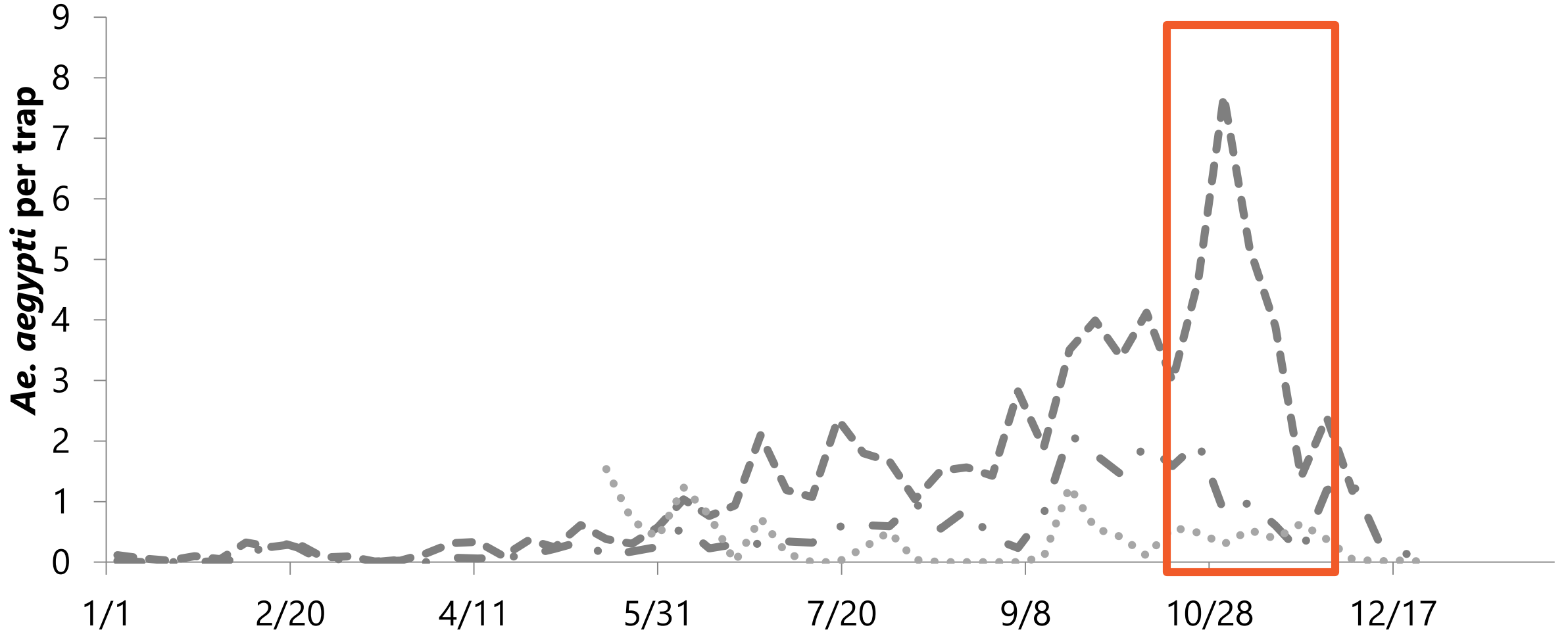


Protecting Public Health Since 1928



# Number of *Aedes aegypti* per trap

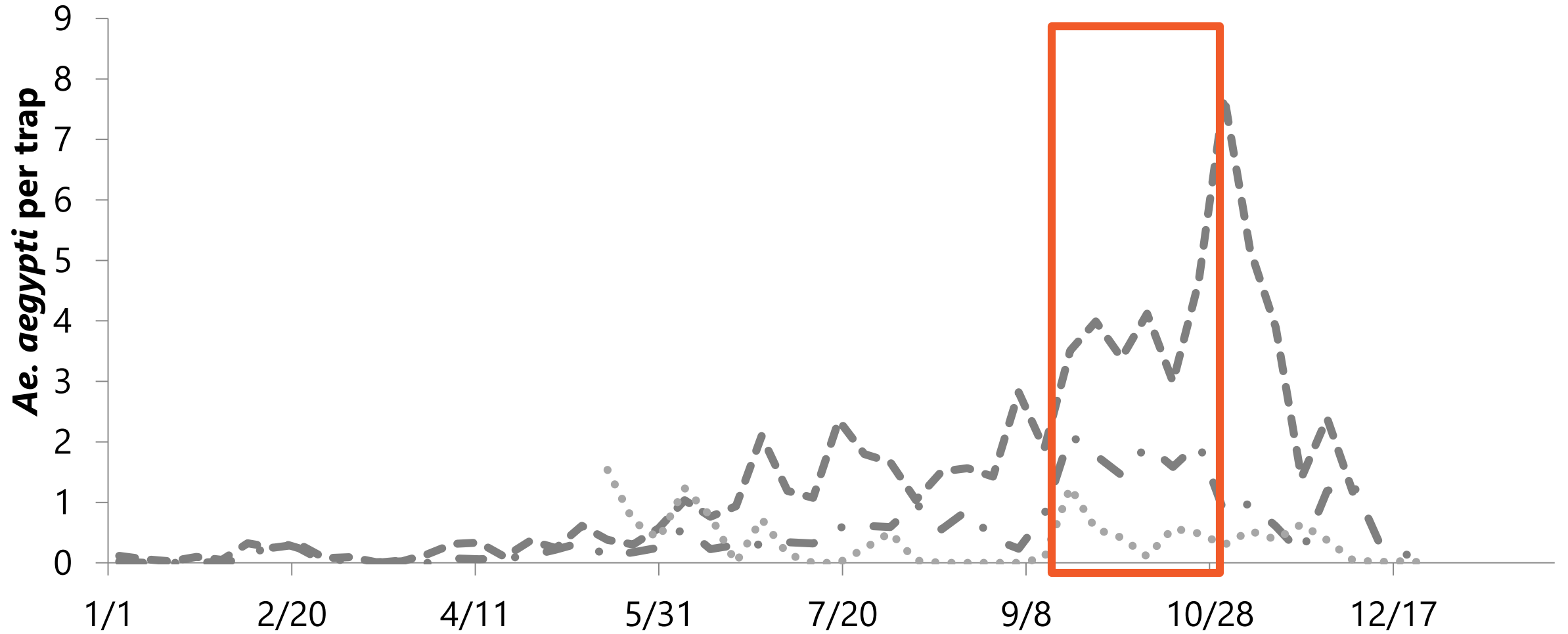
--- 2018    - - 2017    ... 2016





# Number of *Aedes aegypti* per trap

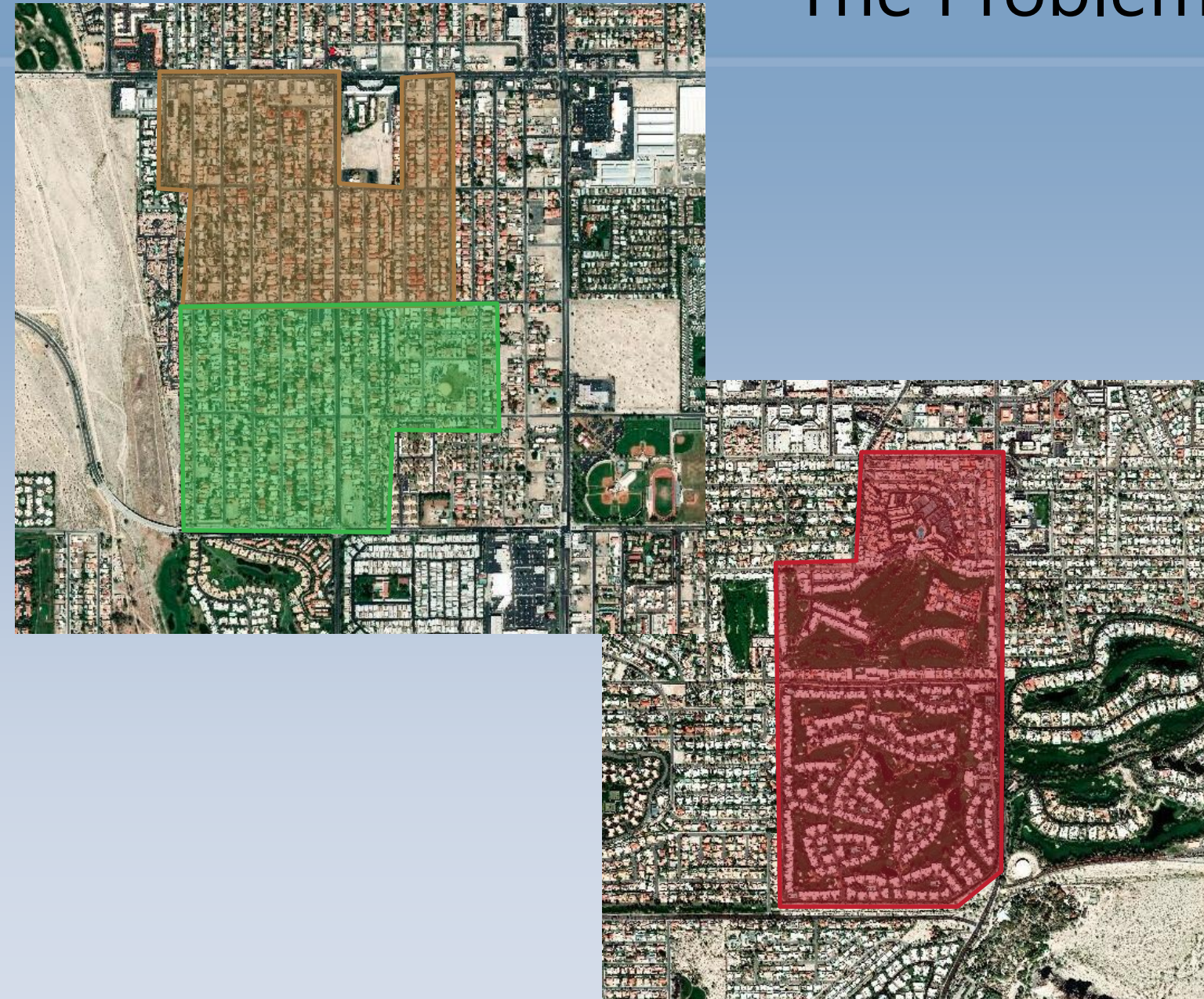
--- 2018    - - 2017    ... 2016



# The Problem

## *Aedes aegypti*

- BG trap counts above average
- Service requests increased

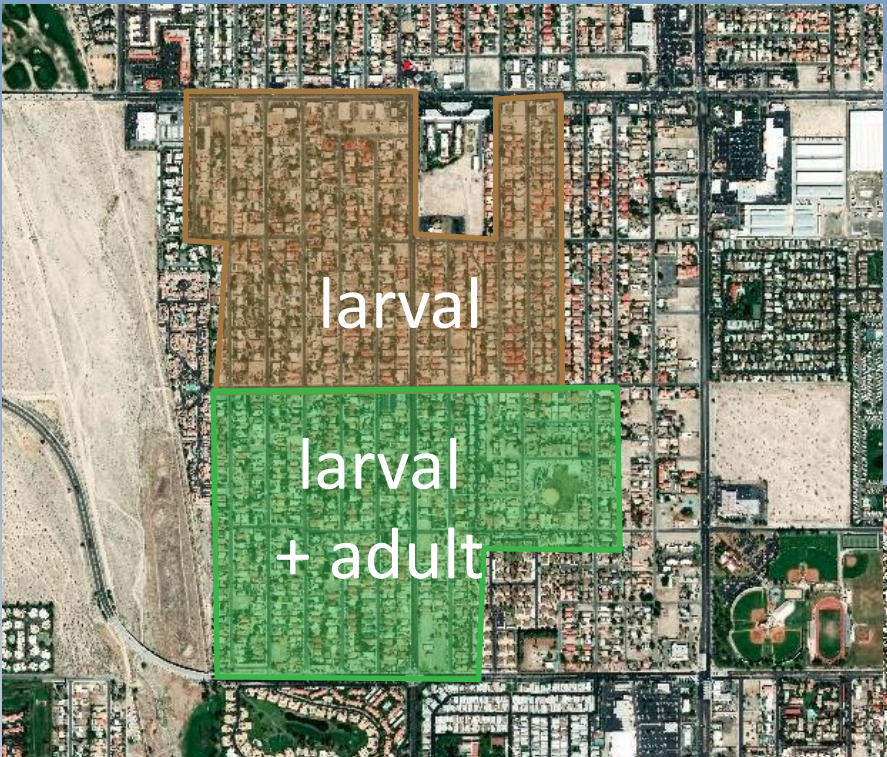


# The Plan

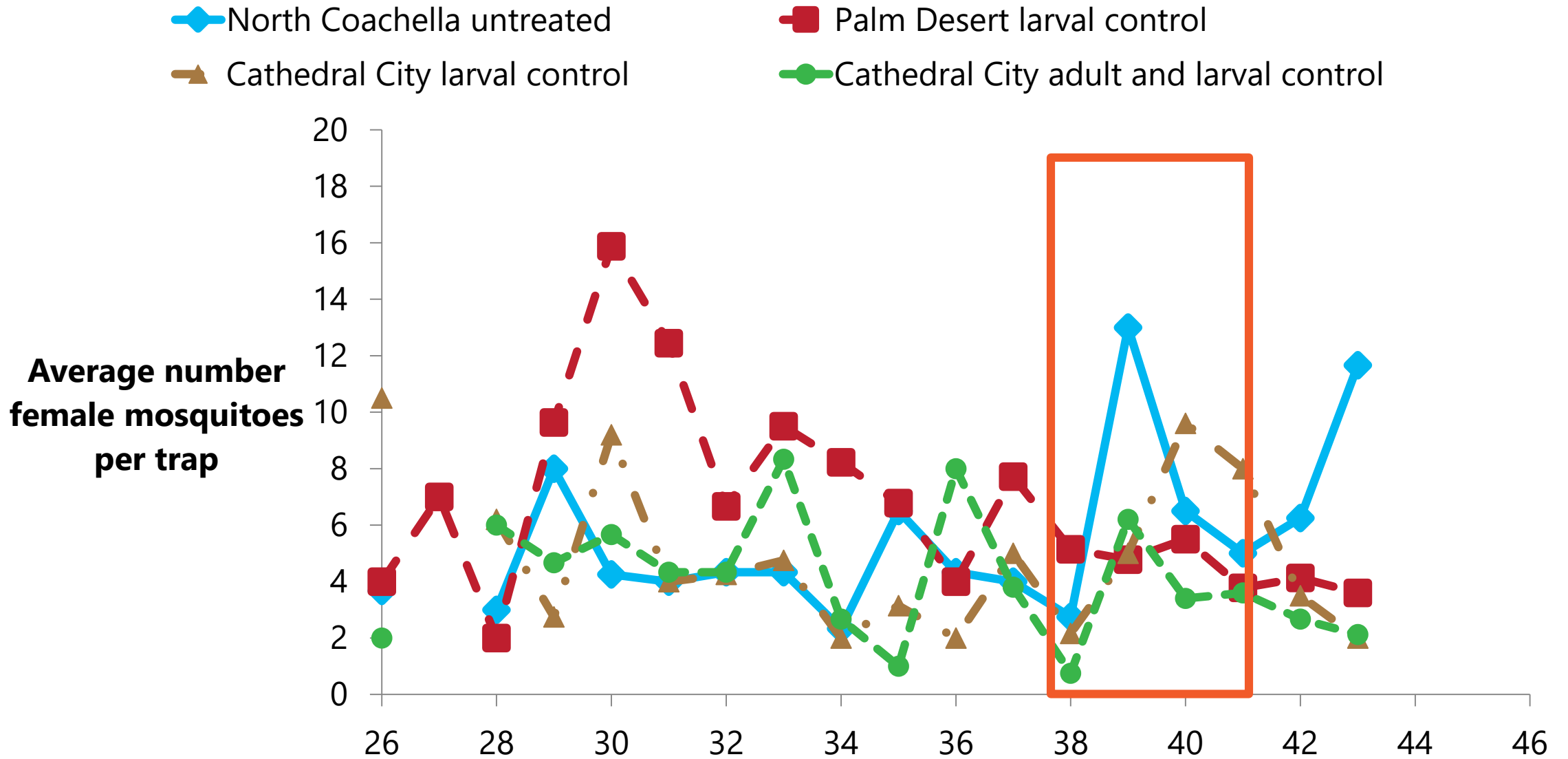
Weekly applications  
Altosid Liquid Larvicide  
@ 4 oz./acre

DeltaGard  
@ 0.59 oz./acre

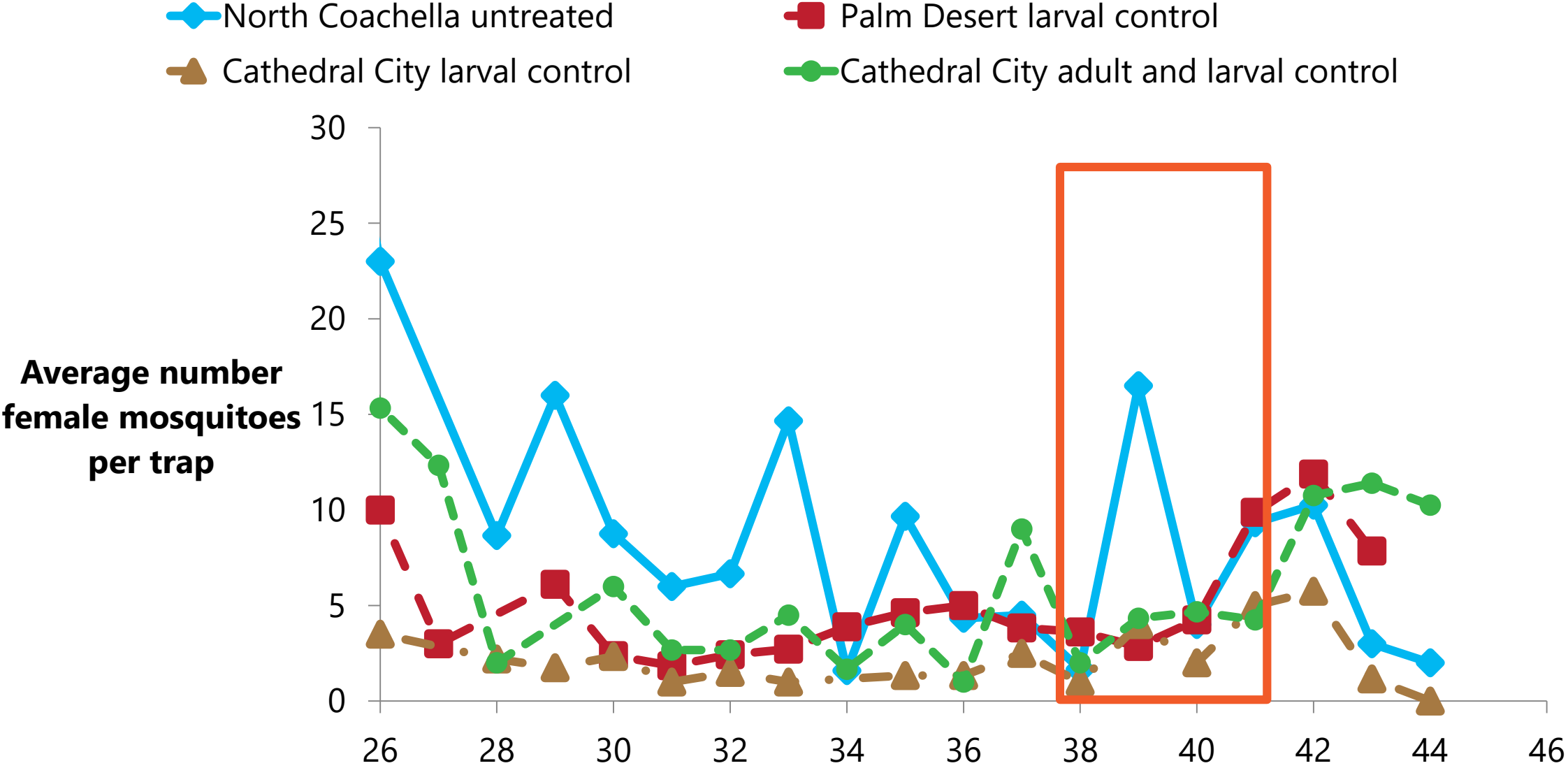
Applications at 2-5 am  
on Saturday mornings



# *Aedes aegypti*



# *Culex quinquefasciatus*



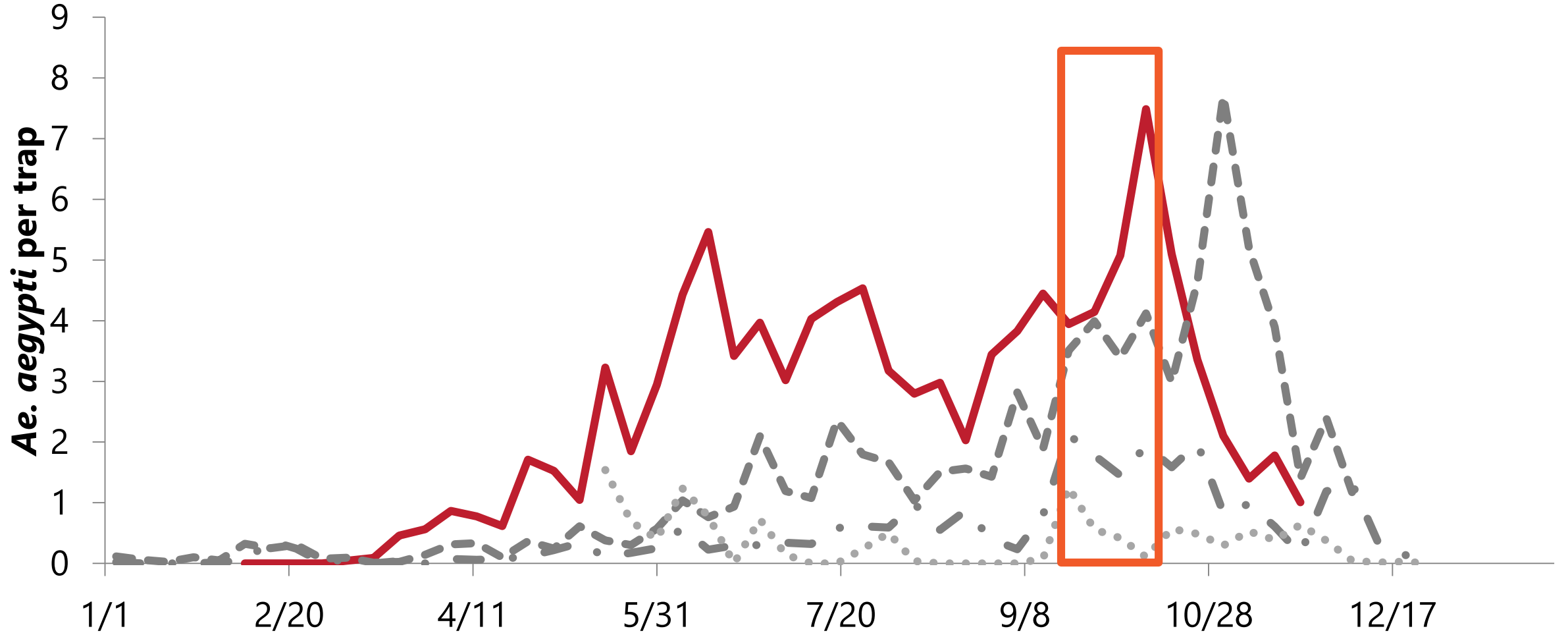
# Results

- Adult control not very effective
  - Lower numbers than in untreated, but that trend preceded the treatments
- All larval control did have fewer *Aedes* adults after the treatments
  - Downward trend had started; applications helped the decline
- No clear impact on *Culex* mosquitoes
  - Very low collections in all traps in September and October



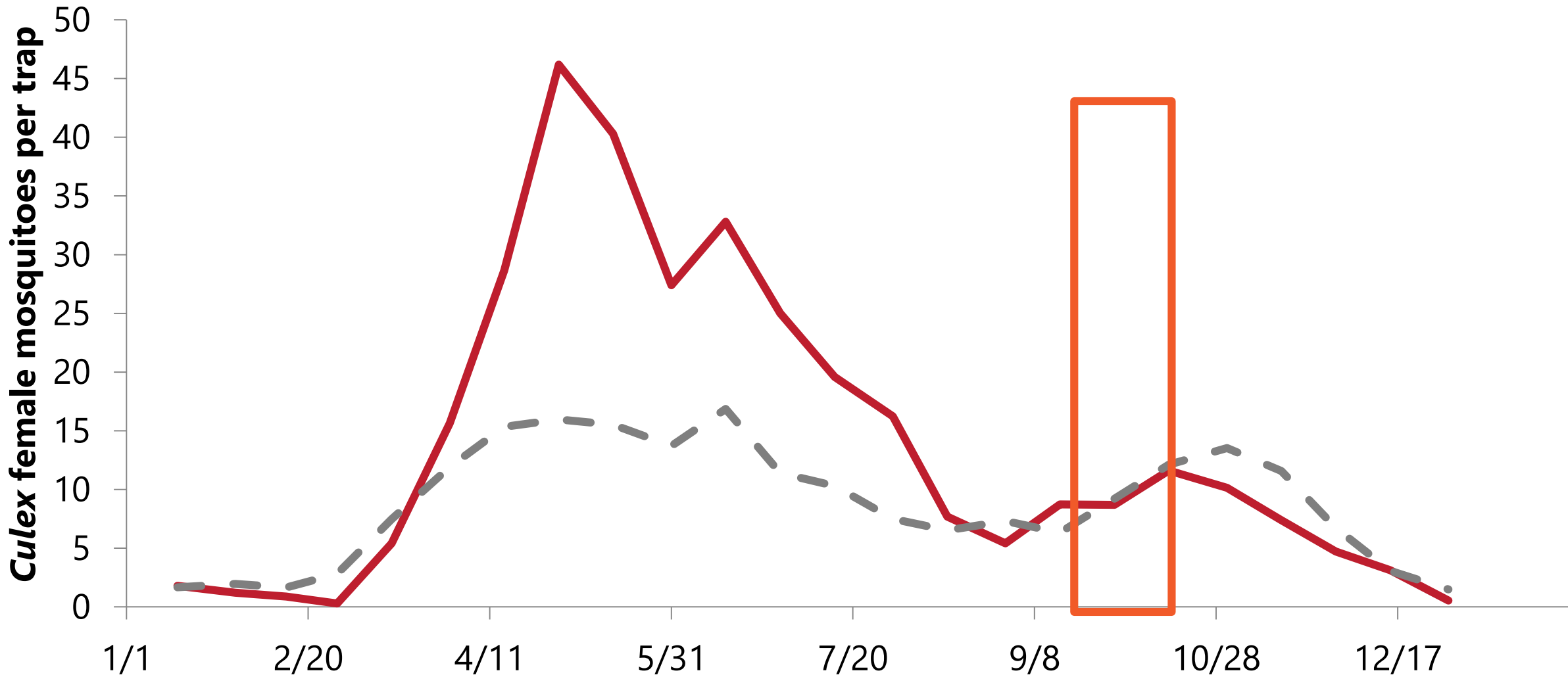
# Number of *Aedes aegypti* per trap

— 2019    - - 2018    - - 2017    ··· 2016



# Urban Mosquito Traps

— 2019 — 5-year average





# Plans for 2020

- Aerial applications
  - Will a lower rate (0.25 lbs./acre) be as effective as the 0.5 lbs./acre?
- Truck applications
  - Direct comparison of two rates A1 Super Duty

<b>Rate (with wind 1-5 mph)</b>	<b>Swath in open field – April 2020</b>
0.25 lbs.	180 ft
0.35 lbs.	225 ft
0.5 lbs.	375 ft

*Protecting Public Health Since 1928*



# Summary

- Area wide larviciding is a useful tool for getting into hard to reach locations
- Impacts on *Culex* mosquitoes were difficult to discern
  - Role of routine treatments
  - Ability for products to drift in storm water structures
- Lots of outreach and teamwork led to successful applications



# Items to consider

- When does it make sense to make area wide applications?
- Who will do this? What will they not be able to do instead?
- How will you define success?
- Who will have questions? How do they best receive information?



# Thank You!



## Other Government Agencies

- Greater Los Angeles VCD
- Riverside Co. DEH
- San Diego Co. DEH
- San Gabriel Valley MVCD
- Northwest MVCD

## Partners

- Salton Sea Air Service
- Hummingbird, Inc.
- Valent BioSciences
- Adapco
- Central Life Sciences

Jennifer A. Henke

[JHenke@cvmvcd.org](mailto:JHenke@cvmvcd.org)

760-342-8287 ext. 506

*Protecting Public Health Since 1928*



# The Response?



**Correcaminitos** shared City of Coachella's post.

June 28 at 4:44pm · 🌐

For those in the area of Coachella. How does this affect those with asthma or those with compromised immune systems or the elderly or pets?

cting  
ig the  
cres  
eet.



**City of Coachella** For more information, please contact Coachella Valley Mosquito & Vector Control District directly at (760) 342-8287.

Like · Reply · June 28 at 4:58pm



**Coachella Valley Mosquito & Vector Control District** Apologies for the late response. The product, VectoBac® WDG, is environmentally friendly, approved for application on organic crops, and registered with the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation. The active ingredient in this product is *Bacillus thuringiensis israelensis* (Bti), a microbe found naturally in soil. Risk to the general public from the use of Bti is minimal. It has no effect on people, pets, plants, or wildlife at the amounts used for mosquito control. People with pre-existing allergies may want to avoid exposure during and immediately after the application as a best practice. Please visit the District website to check out our FAQ and let us know if you have more questions. <http://www.cvmvcd.org/press/aeriallarvalcontrolIFS.pdf>



**Jessi Goodman** I just talked to my friend who works for vector control in Florida, they've been doing the aerial applications for awhile there and haven't had any adverse events reported.

Like · Reply · 👍 1 · June 28 at 5:28pm



**Correcaminitos** Thanks for that piece of information. I just feel we need to be critical of whatever is going to be released into the air. Asthma is so bad here already so air quality concerns me.

Like · Reply · 👍 1 · June 28 at 5:48pm

