

2025 ANNUAL REPORT

Consolidated Mosquito Abatement District
Protecting Public Health Since 1946

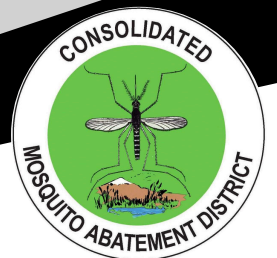


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MANAGER'S FOREWORD

While some things remain constant—such as our commitment to protecting public health—other elements of our work continue to evolve, and we must adapt with them. This year, the District wished former Vector Biologist Deegan well as she began a new career with Fresno Fire. At the same time, we were pleased to promote Associate Vector Biologist Jovana Benavides to the position of Vector Biologist. These positions rarely open up and are highly competitive when they do; it is always rewarding to recognize and promote internal talent. The District also welcomed GIS/IT Specialist Salman Sakib to the team—another highly sought-after role filled through a rigorous selection process. Once again, we are fully staffed with dedicated professionals committed to serving our residents and advancing our mission to protect public health.

Beginning the 2025 season fully staffed provided a strong foundation for achieving our goals. The District anticipated the full launch of our Unmanned Aerial Systems (UAS) program, the addition of two PacVec interns from the Pacific Southwest Center of Excellence in Vector-Borne Diseases, and the incorporation of both Sterile Insect Technique (SIT) and Wide-Area Larvicide Spray (WALS) operations into our control program.

We worked to achieve these advances while maintaining a high level of service to the public and focusing on mosquito population suppression and disease risk reduction. At the same time, the District completed an infrastructure project to install solar-covered parking with EV-charging capability. This investment supports future compliance with CARB fleet requirements, reduces our carbon footprint, and strengthens our long-term operational sustainability.

Although the season progressed successfully, the weather remains one of the few variables we cannot control—only prepare for. Late-season rains in August and September led to a significant spike in mosquito production. Previously dry or desiccation-resistant *Aedes aegypti* eggs began hatching simultaneously, resulting in increased service requests and mosquito trap counts. This served as a valuable reminder that our program must remain flexible, with the capacity to rapidly redirect staff and resources in response to changing conditions that can quickly elevate mosquito populations to intolerable levels.

Even with these unexpected challenges, our staff responded with skill, dedication, and professionalism. I continue to be impressed and grateful for their unwavering commitment to our mission. I remain deeply appreciative of our employees, partners, collaborators, and Board of Trustees, who share equally in the responsibility and purpose of protecting public health.

Sincerely,



Jodi J. Holeman, District Manager



Left to right: Manager Holeman speaking at the 2025 AMCA Annual Meeting; meeting with Dr. Andrea Joyce and UC Merced students; interview with Your Central Valley News; and participation in a Special District roundtable with Assemblyman Tangipa.



Gordon Maxwell and Jim Hough treating a pond (c.1950s)

DISTRICT HISTORY

The year 2025 marked the 79th year of service for the Consolidated Mosquito Abatement District. The District was organized on June 11, 1946, by the action of the Fresno County Board of Supervisors after petitions from residents and chambers of commerce in the cities of Fowler, Kingsburg, Sanger, and Selma. The District was formed to relieve the nuisance of biting mosquitoes and protect the public from the threat of mosquito-borne diseases, such as encephalitis and malaria. After its formation, the District encompassed about 242 square miles. Within three years, and following additional petitions, the District was expanded through annexations to include the cities of Clovis, Orange Cove, Parlier, Reedley, and adjacent areas; the communities of Caruthers, Del Rey, Friant, Laton, Riverdale, and surrounding areas; and approximately eighteen square miles in Kings County. Currently, the District covers about 1,058 square miles, including part of the City of Fresno.

Our Mission

“

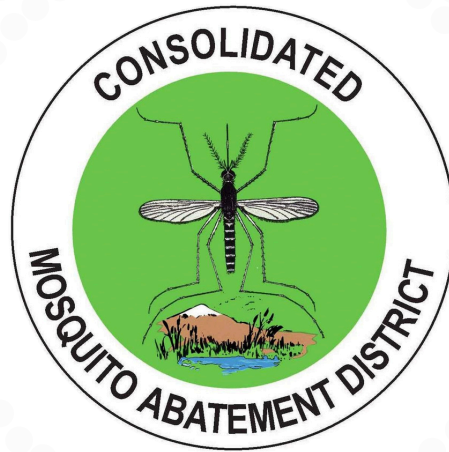
To promote community health, comfort and prosperity by the effective and continuous control of disease-carrying and pest mosquitoes. To accomplish this mission, the District conducts surveillance of mosquitoes and mosquito-borne diseases; controls mosquitoes with suitable insecticides, natural predators and the elimination of mosquito-producing sources; and promotes public awareness. Legal authority for the formation and powers of the District and its function is found in the California Health and Safety Code Sections 2000 et seq.

”



Mosquito Control Technician Robert Martinez dipping for mosquitoes.

BOARD OF TRUSTEES



Bruce Taylor
Fresno County



Mary Ann Hill
Fresno County



Charles Lockhart
City of Orange Cove
President



Jennifer Willems
City of Clovis



Craig Mellon
City of Fowler



Michelle Lopez
City of Parlier
Vice President



Ward Scheitrum
City of Fresno



Charles Smith
City of Selma



Abe Isaak
City of Reedley



Tokuo Fukuda
City of Kingsburg



Karen Steinhauer
City of Sanger

The District is governed by an eleven-member Board of Trustees, with one trustee appointed from each of the nine incorporated cities and two trustees appointed at large by the Fresno County Board of Supervisors. Trustees serve two- or four-year terms and receive no compensation, except for an allowance in lieu of travel expenses for attending monthly Board meetings. The Board's primary responsibilities are to establish District policy and provide oversight of fiscal administration.

The Board meets regularly on the third Monday of each month at 1:00 p.m. at the District office in Parlier. In 2025, the District welcomed newly appointed Trustee Craig Mellon, representing the City of Fowler. The Board thanked Trustee Willems for her service representing the City of Clovis since 2021, who stepped down at the end of 2025.

MEET OUR TEAM

In 2025, the District maintained a full staffing level of 13 full-time positions, electing not to fill the Associate Biologist position following the promotion of Jovana Benavides to Vector Biologist. Twelve of the thirteen regular staff members are certified in mosquito control by the California Department of Public Health (CDPH). Certified employees are required to complete state-approved continuing education annually to maintain their certification and professional competency in vector management, ensuring the protection of public health and safety.



ORGANIZATIONAL CHART



JODI HOLEMAN

DISTRICT MANAGER



CHRIS MONIS

RURAL PROGRAM COORDINATOR

JOSE MORENO

MECHANIC

KARAN COX

OFFICE ADMINSTRATOR

DEREK HILL

URBAN PROGRAM COORDINATOR

KATHERINE RAMIREZ

DIRECTOR OF SCIENCE AND OUTREACH



GHA VANG

AREA SUPERVISOR



DEVON CORNEL

AREA SUPERVISOR/
UAS PILOT



DON MCNIEL

AREA SUPERVISOR



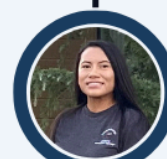
AMY GARCIA

DATA MANAGEMENT ASSOCIATE



SALMAN SAKIB

GIS/IT SPECIALIST



JOVANA BENAVIDES

VECTOR BIOLOGIST



KATHERINE BRISCO

VECTOR MANAGEMENT SPECIALIST

District Organization

MEET OUR TEAM

During the 2025 field season, the District hired 29 seasonal employees, eight of whom held limited certification in mosquito control through the California Department of Public Health. Seasonal staff play a critical role in field operations, supporting control and surveillance activities under supervisor direction and often serving as the first point of contact for residents. More than 80% of seasonal employees in 2025 were returning staff, reflecting strong retention and program continuity. Full-time and seasonal staff work collaboratively to deliver mosquito control services throughout the District.



Office/Shop

Drew Chavez, Amy Garcia, Salman Sakib, Karan Cox, Annie Munoz and Jose Moreno



Laboratory/Surveillance

Katherine Ramirez, Katherine Brisco, Clarita Ramblas, Ana Ramirez Perez, Jovana Benavides, Melissa Thies and Connor D'Souza .



Central Crew

Roger Vang, Gha Vang, Jacob Uribe, and Leng Xiong.



Urban Crew

Marty Martinez, KJ Bath, Derek Hill, Heidi Hubbard, David Rodriguez, Jorge Rivas Maya, Eric Ferguson, Joshua Cornelius and Leighton Nelson.



South Crew

Ebay Vang, Devon Cornel, and Chulong Vang.

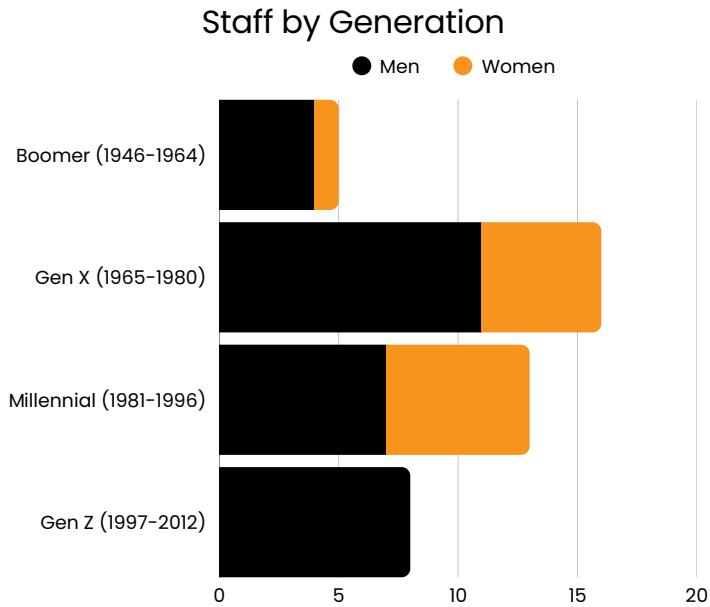
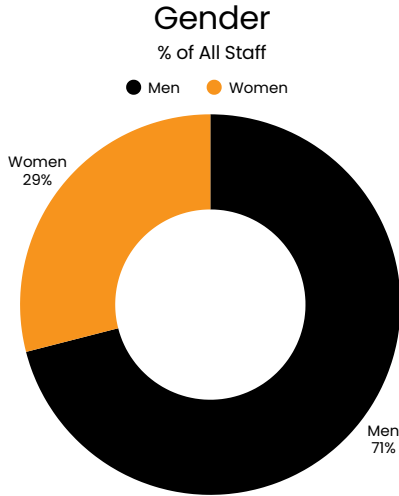


North Crew

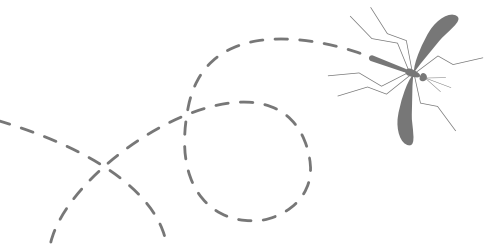
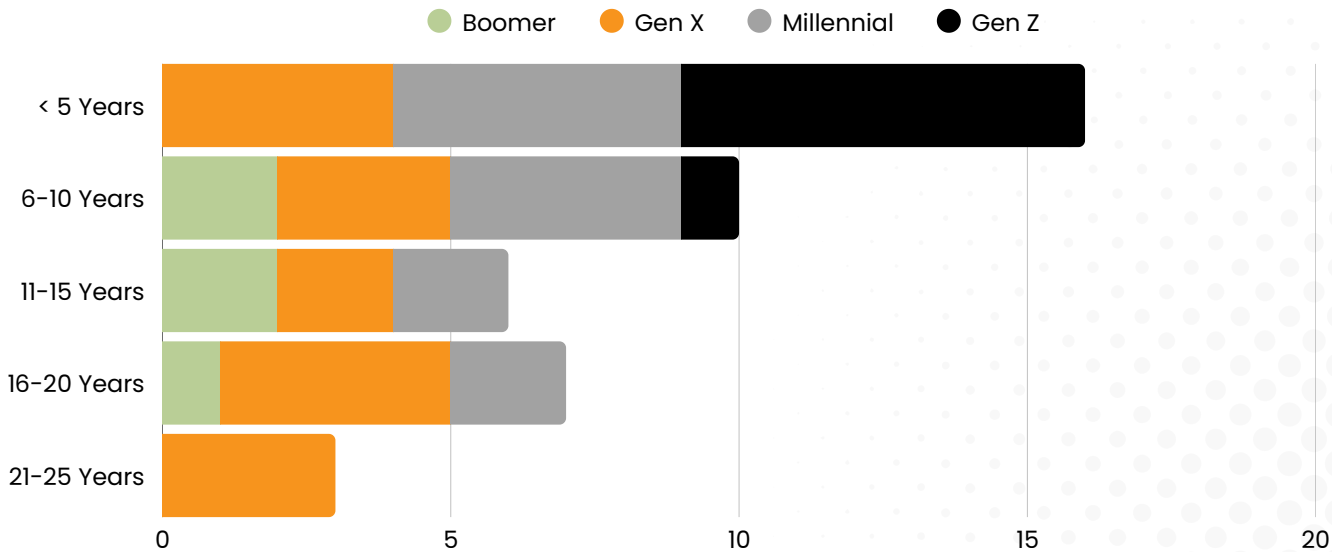
Don McNiel, Gannon Cox, Robert Martinez, Richard Gordon and Justin Lor.

STAFF DEMOGRAPHICS

The District is committed to recruiting and retaining highly qualified employees, recognizing that its staff are its greatest asset. The District strives to foster a diverse, inclusive, and supportive work environment where all team members can succeed.



Years Worked per Generation



RECOGNITION



Pictured: Golden Mosquito Award recipient Annie Munoz.

The Golden Mosquito Award is reserved for an employee whose service consistently exceeds expectations and whose contributions elevate the District as a whole. Selected by her peers, this year's recipient, Annie Muñoz, exemplifies the spirit of this honor.

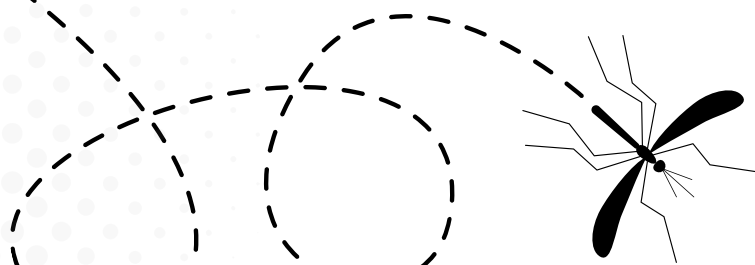
Annie is often the first point of contact for residents and approaches every interaction with patience, professionalism, and care—even in challenging situations. Her ability to communicate effectively and de-escalate concerns reflects a strong commitment to public service.

Within the organization, Annie is a consistent source of support and positivity. She is always willing to assist others and contributes to a culture of teamwork and respect. What makes Annie especially deserving of this recognition is the consistency with which she brings dedication and professionalism to her role each day. Her peers' nomination reflects the high regard she has earned across the District.



Pictured: District Manager Jodi Holeman accepts the MVCAC Presidential Citation Award from outgoing President Conlin Reis.

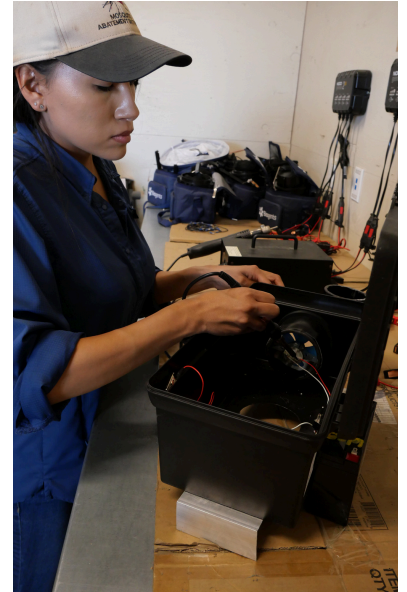
The Mosquito and Vector Control Association of California (MVCAC) Presidential Citation Award recognizes exceptional contributions that advance the Association's mission and fall outside the criteria of other awards. It is not awarded annually and is reserved for extraordinary merit. In 2025, outgoing MVCAC President Conlin Reis presented the award to District Manager Jodi Holeman for her leadership of the MVCAC Emergency Response Working Group and her key role in developing the MVCAC Emergency Preparedness Manual, which supports member agencies in disaster response and public assistance funding processes.



District Organization

RECOGNITION

In 2025, the District recognized seven employees for their outstanding contributions and years of service. Three Manager Recognition Awards were presented to Jovana Benavides for her dedication to high-quality mosquito surveillance while completing her master's degree and consistently supporting team needs; Cheng Vang for his exceptional work ethic and stewardship of the District's largest pasture areas, maintaining them to a high standard throughout the year; and Eric Ferguson for his commitment to mentoring new employees and consistently going above and beyond in his role.



Pictured clockwise: Cheng Vang, Jovana Benavides and Eric Ferguson.

The District also recognized milestone years of service, including Tracy Autrey for 20 years of service across multiple operational areas, currently in the Urban Program; Scotty Dunn for 15 years of service in the Rural Program; Derek Hill for 10 years of service and his leadership as Urban Program Coordinator; and Chulong Vang for 5 years of service as a Mosquito Control Technician in the South Zone.



Pictured clockwise: Tracy Autrey, Derek Hill, Chulong Vang and Scotty Dunn.



Staff watching the employee recognition slideshow.

ABOUT THE DISTRICT



Main office in Parlier.

Facilities: District headquarters is located in the City of Parlier, where most staff are based. While the Parlier office serves as the main facility, the District also operates satellite offices in Caruthers and Clovis to support efficient operations across its service area. In 2025, the District completed solar-covered parking and electric vehicle (EV) charging infrastructure at both the Parlier and Clovis facilities, supporting long-term efforts to transition toward an electric fleet.

Fleet: The District maintains a large and diverse fleet, including forty-three trucks, six Jeeps, three sport utility vehicles, eighteen all-terrain vehicles, two Bobcats, five amphibious vehicles, one forklift, two mist sprayers, two boats, a drone, and various handheld spray devices used for treatment applications. A full-time mechanic supports year-round maintenance of all vehicles and equipment.

Service Area: The District provides area-wide mosquito control services across 1,058 square miles, serving over half a million residents (ESRI Living Atlas) in Fresno and Kings counties.



Solar covered parking at the Parlier (above) and Clovis (below) offices.



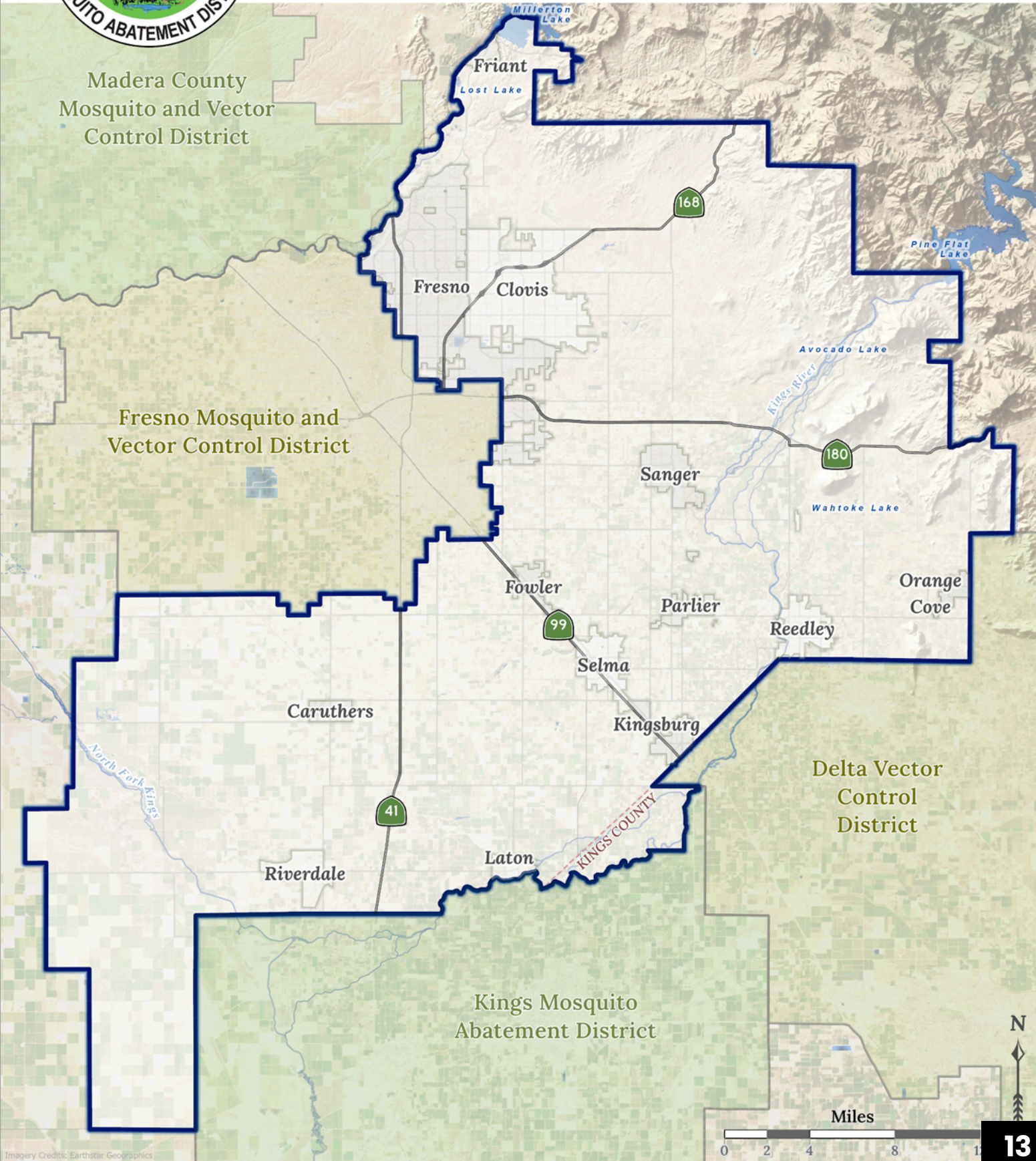
District Boundaries

Madera County
Mosquito and Vector
Control District

Fresno Mosquito and
Vector Control District

Delta Vector
Control
District

Kings Mosquito
Abatement District

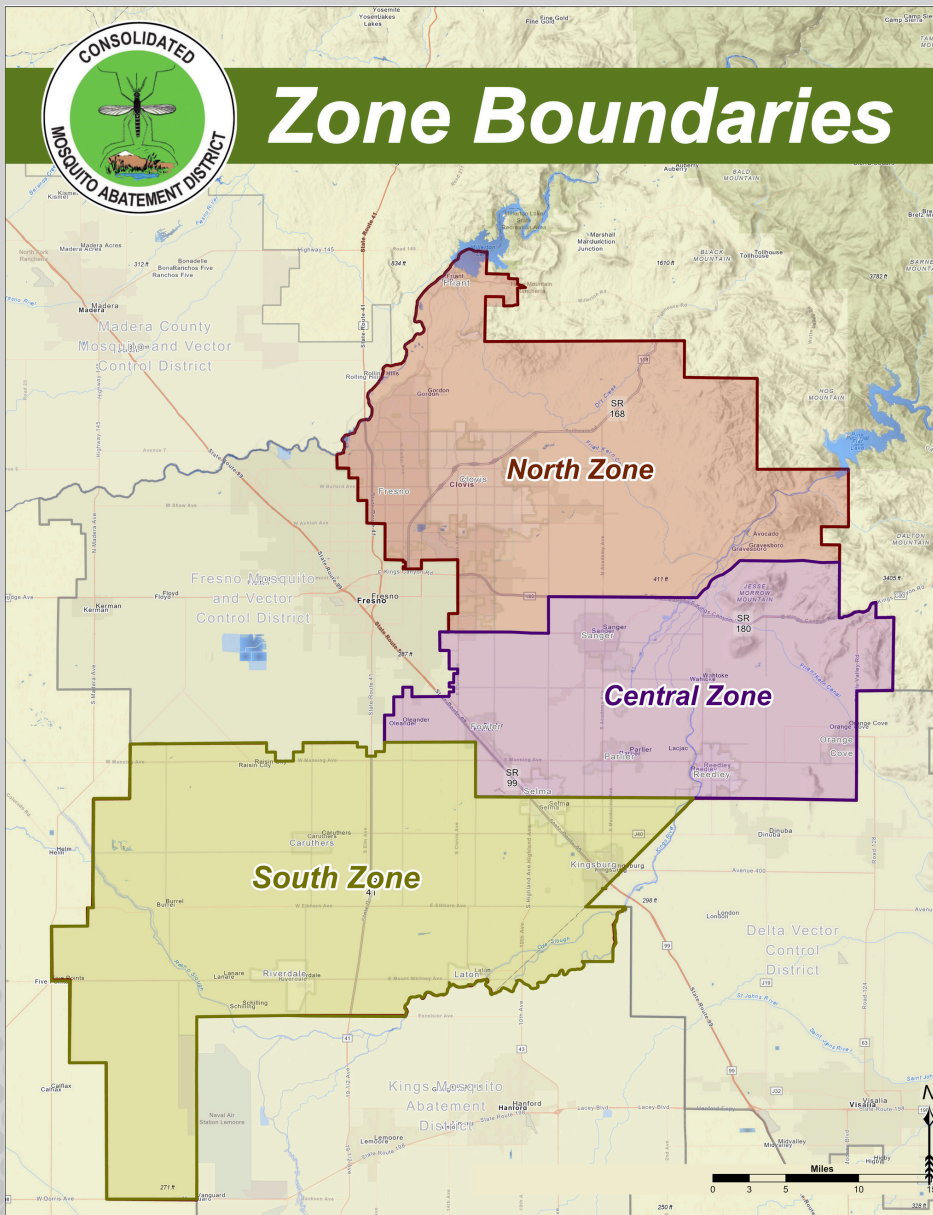


DISTRICT ZONES

To effectively manage mosquito control operations across its 1,058-square-mile service area, the District utilizes a structured, zone-based approach for large rural sources. The District is divided into three primary rural work zones—North, Central, and South—each overseen by an Area Supervisor and supported by mosquito control technicians assigned to defined subzones.

Urban sources are organized separately by city, allowing for more targeted and efficient response within incorporated areas. Urban and rural sources often require different treatment approaches, including specialized equipment and, in some cases, different products based on site conditions.

This dual structure enables the District to allocate staff, time, and resources based on the District's operational needs of rural and urban environments, ensuring consistent surveillance, timely response, and comprehensive coverage throughout the District.



Above: District rural crew preparing to launch a boat for mosquito control operations in a pond.

Below: The District's urban crew treats sources such as gutters that consistently hold standing water.

MOSQUITO CONTROL

The District's mosquito control program emphasizes an integrated approach to effectively manage mosquito populations while minimizing environmental impacts. This approach combines source reduction with the strategic use of biological and chemical control methods, based on site conditions and surveillance data.

To control immature and adult mosquitoes, the District uses a range of registered insecticides. Adulticides include pyrethrins, various pyrethroid compounds, and malathion. Larvicides include insect growth regulators such as methoprene and pyriproxyfen; bacterial insecticides including *Bacillus thuringiensis israelensis* (Bti) and *B. sphaericus* (Bs); spinosad; and larvicidal oils such as BVA and CocoBear.

Methoprene and pyriproxyfen disrupt mosquito development and prevent successful emergence to adulthood. Bti and Bs act as stomach toxins that specifically target mosquito larvae, while spinosad, derived from the bacterium *Saccharopolyspora spinosa*, affects the nervous system of immature mosquitoes. When applied according to label directions, these products provide effective control and can be used in environmentally sensitive habitats.



Mosquito larvae and pupae in a pond.

MOSQUITO CONTROL

TRAINING

“Tell me and I forget, teach me and I may remember, involve me and I learn.”
~Benjamin Franklin

Training Topics

Policies

Work Day Basics

Operations

Resident Communication

FieldSeeker Use

Mosquito Biology & Control

Pesticide Safety Handling

Illness & Injury Prevention

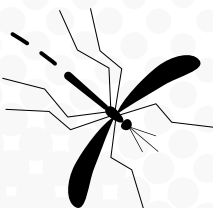
New and returning seasonals attend a two to three-day training workshop to cover a variety of topics that are critical to success in the field. Training is conducted by the Director of Science and Outreach, Vector Biologist, Vector Management Specialist, and District Manager.



Left: Staff participating in first aid training. Right: Staff attending driver safety training.

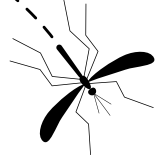


Rural Program Coordinator, Chris Monis conducting certified ATV safety training.



MOSQUITO CONTROL

OPERATIONS



Activity	Count
Inspection	26,538
Larvicide Treatment	10,983
First Notice	1,046
Second Notice	834
Pre-treatment	812
Assisted	542
Verification Complete	521
Voicemail	429
Spoke to Resident	425
Fish Plant	420
Treat/Fish	300
Final Notice	280
Adulticide Treatment	246
Physical Control	238
Warrant Inspection	133
Warrant Assist	119
Warrant Larvicide	78
No Contact	71
Barrier Treatment	53
Warrant Larvicide and Fish	32
Warrant Fish Plant	6
Seining/Transport	5
Warrant Physical Control	2

In 2025, the District conducted 73,449 treatments targeting mosquito development sites, including 7,607 acres of larval control and 6,390 acres of adult mosquito treatments. In addition, 529 sources were stocked with mosquitofish as part of the District’s biological control efforts.

Operational activities were largely driven by inspections and larvicide applications, reflecting the District’s emphasis on early detection and prevention of mosquito development. Supporting efforts—including public outreach through notices and resident contact, adulticide applications, physical control measures, and warrant-related inspections—demonstrate a comprehensive, integrated approach to mosquito management and the District’s ability to address both routine and complex field conditions.

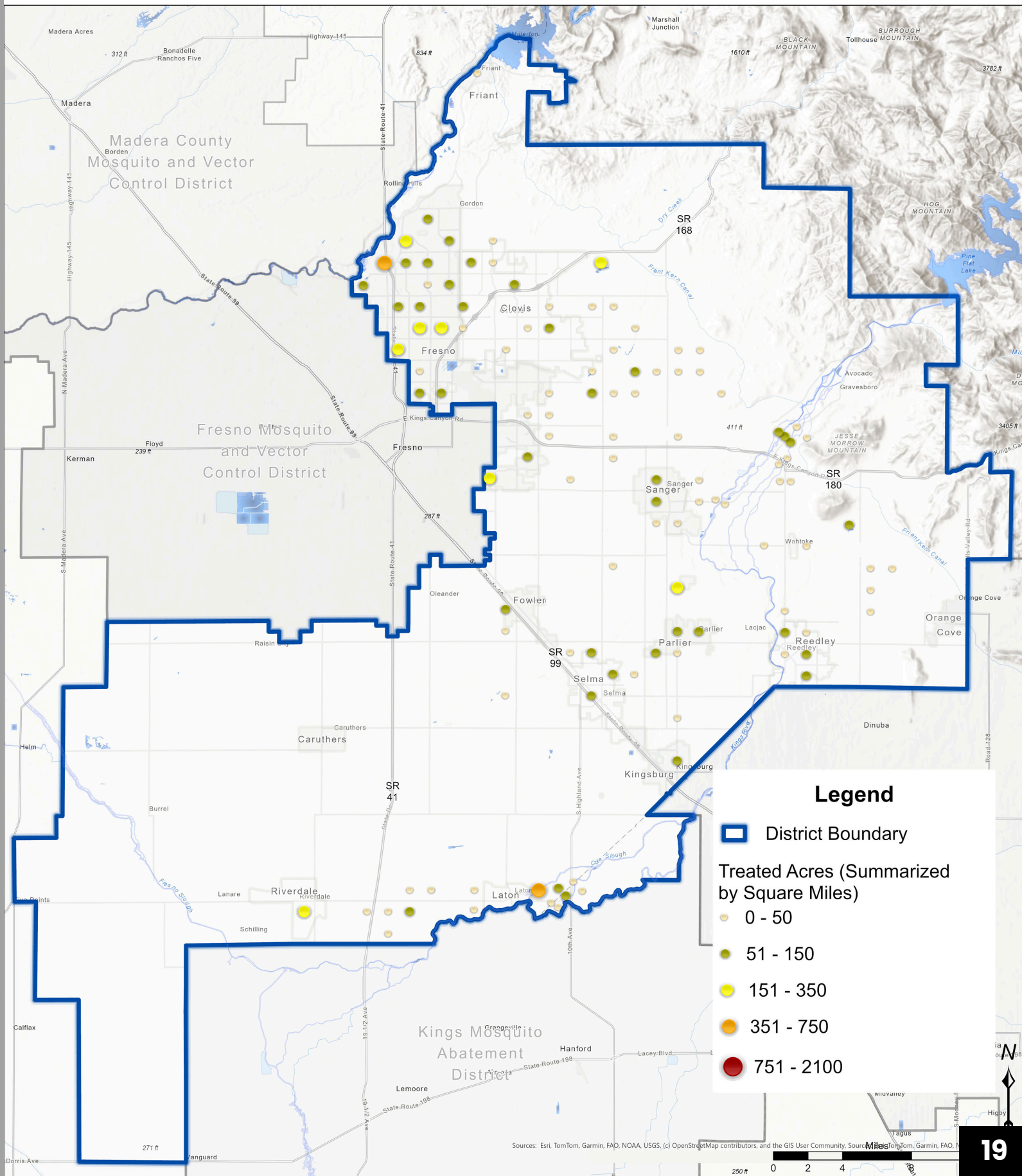
By the end of 2025, the District was actively monitoring 9,186 mosquito sources (excluding storm drains and utility enclosures) across its service area. These sources include flood control facilities, ponds, pastures, canals, orchards, agricultural fields, and wastewater ponds, all of which require ongoing surveillance and treatment as needed.



Ornamental pond with mosquito development due to a failed circulation pump.

Adulticide Applications

- 2025 -



MOSQUITO CONTROL

UNDERGROUND

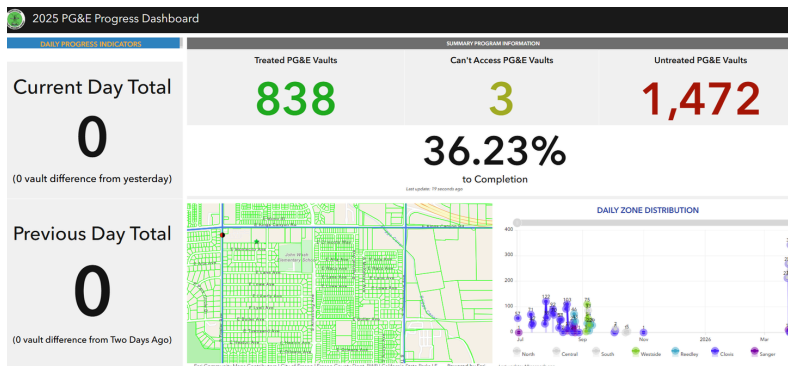
Underground Program

The District routinely treats over 12,000 underground structures and enclosures that can hold standing water and produce mosquitoes. While many of these sources are located in dense urban areas, they are found throughout the District and include both storm drains and utility enclosures. Water accumulation in these structures commonly results from rainfall events as well as landscape irrigation runoff, creating ideal conditions for mosquito development. In 2025, the District conducted 52,609 treatments in storm drains and utility enclosures to prevent mosquito emergence.

Utility Enclosure Program: Underground utility enclosures are a significant source of mosquito production in residential neighborhoods, particularly for *Culex* species and the invasive *Aedes aegypti*. These structures can retain water for extended periods due to limited drainage and ongoing inputs from irrigation systems. The District continues its partnership with Pacific Gas and Electric Company (PG&E) to access and treat these subsurface enclosures. In collaboration with PG&E staff, District personnel successfully accessed and treated over 1,800 underground enclosures throughout the season.



A utility enclosure requiring mosquito control treatment holding water.



District dashboard tracking the progress of the underground utility treatment program during the season.



Catch Basin Crew making a treatment to a storm drain/catch basin.

MOSQUITO CONTROL

New Programs

Drone

In 2024, the District invested in a PrecisionVision 40X Unmanned Aircraft System (UAS) to enhance operational efficiency, safety, and precision in mosquito control activities.

The District's UAS program became operational in 2025. This advanced system supports aerial inspections, flight planning, and targeted applications, particularly in challenging or inaccessible areas where traditional methods are less effective. Equipped with RTK centimeter-level precision, LiDAR-based obstacle avoidance, and terrain-following radar, the UAS enables highly accurate larvicide and adulticide applications while improving staff safety in the field. Its interchangeable payload systems and autonomous flight capabilities allow for flexible deployment across a range of treatment scenarios, while integrated GIS-compatible data collection enhances tracking and reporting of field activities.

In 2025, the District conducted 33 operational flights, treating 114.62 acres using both granular and liquid products. The District currently has one certified pilot to conduct UAS operations.



Above: UAS Pilot Devon Cornel conducting a pre-flight safety briefing. Below: Mosquito control application using the PrecisionVision 40X.

Wide Area Larvicide Spray (WALS)



A-1 mist sprayer used for WALS applications.

In 2025, the District conducted its first Wide Area Larvicide Spray (WALS) applications within the City of Parlier as part of an operational evaluation. WALS is a truck- or aerial-based application method that disperses larvicide over large areas to target mosquito larvae in standing water that may be widespread, difficult to locate, or inaccessible following storm events.

Two applications were completed in September, strategically timed immediately before and after a significant rainfall event on September 19. Preliminary findings indicate that WALS applications were effective in reducing mosquito development following the storm event. The District will continue to evaluate results to inform future use of WALS as part of its integrated mosquito management program.

MOSQUITO CONTROL

YEARLY COMPARISON

Larvicides	2020	2021	2022	2023	2024	5 YR AVG	2025
IDI Liquid (gals)	0.4	0	0	0	0.6	0.2	2
IDI Dry (lbs)	3,178	1,806	1,934	1,799	1,638	2,071	1,883
Bacterial Liquid (gals)	221	194	242	437	561	331	554
Bacterial Dry (lbs)	14,221	13,066	12,168	21,788	14,126	15,073	16,790
Oil (gals)	3,629	2,967	4,973	5,242	4,703	4,303	9,407

Adulticide	2020	2021	2022	2023	2024	5YR AVG	2025
Total Amount (gal)	126	33	89	185	91	105	57

Acres Treated	2020	2021	2022	2023	2024	5YR AVG	2025
Adulticide	22,266	6,451	11,934	23,268	9,916	14,767	6,390
Larvicide	4,867	3,609	4,874	6,842	5,434	5,125	7482
Fish	57	23	23	42	104	50	76

IDI: Insect development inhibitor, also known as an insect growth regulator (IGR).

MOSQUITO CONTROL

SWIMMING POOL PROGRAM

In 2025, the District identified 1,553 properties with unmaintained swimming pools or spas, which continue to represent significant mosquito development sites in urban and suburban areas. These backyard sources are often difficult to locate, access, and treat, and can produce *Culex quinquefasciatus*, a primary vector of West Nile virus.

To address access challenges, the District obtained an Area Inspection and Abatement Warrant from the Fresno County Superior Court, authorizing entry onto private property when access is denied or unavailable. In 2025, the warrant was used at 98 properties, resulting in 220 inspection visits; 70 of those properties required treatment.

Prior to utilizing the warrant, the District provides multiple opportunities for cooperation, including site visits and photo verification of properly maintained pools.

Aerial imagery remains an important tool for identifying problem properties. In 2025, aerial surveys identified 591 new suspect properties, all of which were inspected.

Although annual totals fluctuate, neglected swimming pools remain a persistent source of mosquito production. The District continues to prioritize the identification and treatment of these sites, particularly in densely populated residential areas.



Consolidated Mosquito Abatement District
13151 E. Industrial Drive
Parlier, CA 93648

Date/Time: _____ Technician: _____
ID Number: _____ Action Required Within: **5 days**

We are trying to reach you in order to confirm the condition of your swimming pool or other source (see below). We need to verify that mosquitoes are not developing on your property.

- Swimming pool/Spa Miscellaneous Containers
 Fish Pond/Fountain Other: _____

FOR CLEAN OR DRY SWIMMING POOLS AND SPAS ONLY:
Swimming pools are some of the most common breeding sites for mosquitoes in suburban neighborhoods. The District needs to confirm that the condition of your pool will not allow mosquitoes to grow.

Choose one of three ways to confirm:

1. Text us a photo: (559) 217-7901
2. Email us a photo: swimmingpool@mosquitobuzz.net
3. Schedule an inspection: Call (559) 896-1085. A Mosquito Control Technician can come out to the property for a visual confirmation.

Take a photo of your swimming pool with this notice in the foreground. See example on the right.



This notice **MUST** be in the SA!

DO NOT WAIT: If repairs are needed to comply, call the District immediately to confirm notice and provide an estimated time for completion.

See below for a description of acceptable conditions.

Clean and Functional



A **Clean and Functional** pool has a working pump and filtration system, and a regular chemical treatment schedule. Water must be clear, with little to no algae or debris.

A clean and functional pool is the **BEST** way to stay mosquito-free.

Mosquito Fish



Mosquito Fish offer year round mosquito control in non-functional pools. The District will provide mosquito fish and delivery free of charge. Not all pools are eligible.

Empty and Dry



An **Empty and Dry** pool is completely empty. Mosquitoes will continue to lay eggs in mild winters so the pool will need to be emptied and treated with a mosquito net. Standing water should not be left for more than 14 days. Empty pools need regular maintenance, mosquito-free and will require multiple treatments throughout the year.

To avoid the inconvenience of regular about text confirmation for empty pools, visit www.mosquitobuzz.net for a full

*Swimming pools without water are prone to costly repairs. We do not recommend that anyone empty their pool or neglect the negative impact of removing the water.



NearMap imagery of an unmaintained pool (not Fresno County).



Mosquito Control Technician Leighton inspecting an unmaintained swimming pool.

Swimming pool first notice.

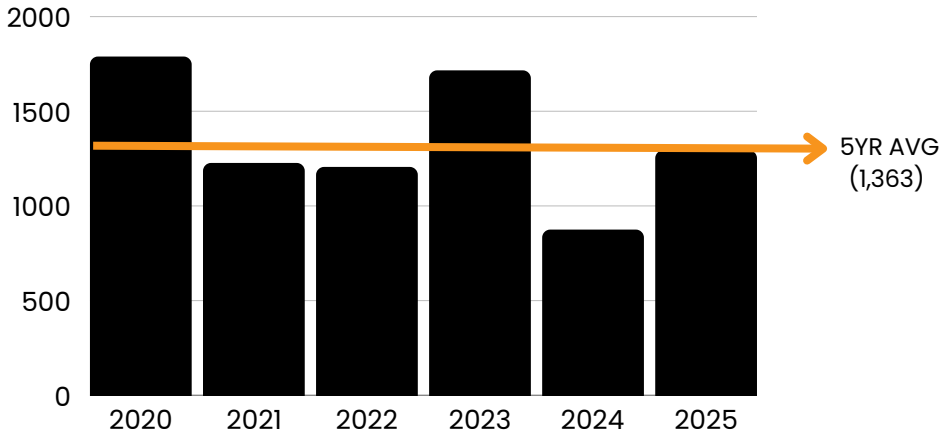
In 2025, the District verified the condition of 492 swimming pools or spas through photo submissions received via text or email.

REQUESTS FOR SERVICE

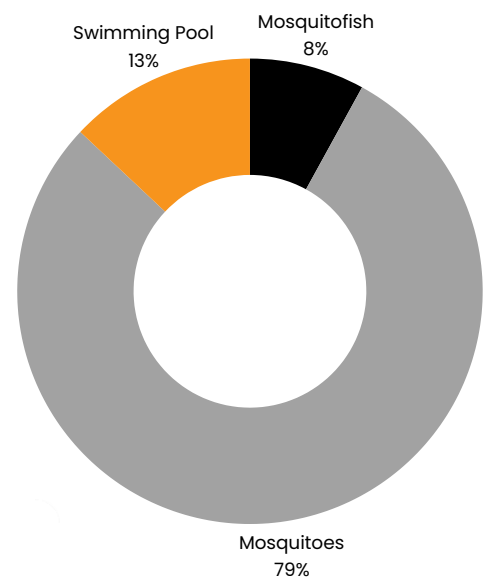
District clerical staff responded to 1,294 public service requests in 2025, received via telephone and the District website. Requests originated from residents, businesses, property managers, and schools seeking assistance with mosquito-related concerns. The District's target response time is within 48 hours, either through a site visit or a follow-up call to schedule service. All requests are tracked and categorized into three primary groups: swimming pools, mosquitofish, and general mosquito issues.

Since 2020, service request volumes have fluctuated. However, despite above-average call volumes late in the season over the past two years, the total annual volume has remained below the five-year cumulative average. A notable spike occurred in October, driven by heavy rainfall in September, which resulted in increased mosquito activity and a corresponding rise in service requests.

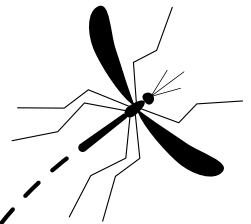
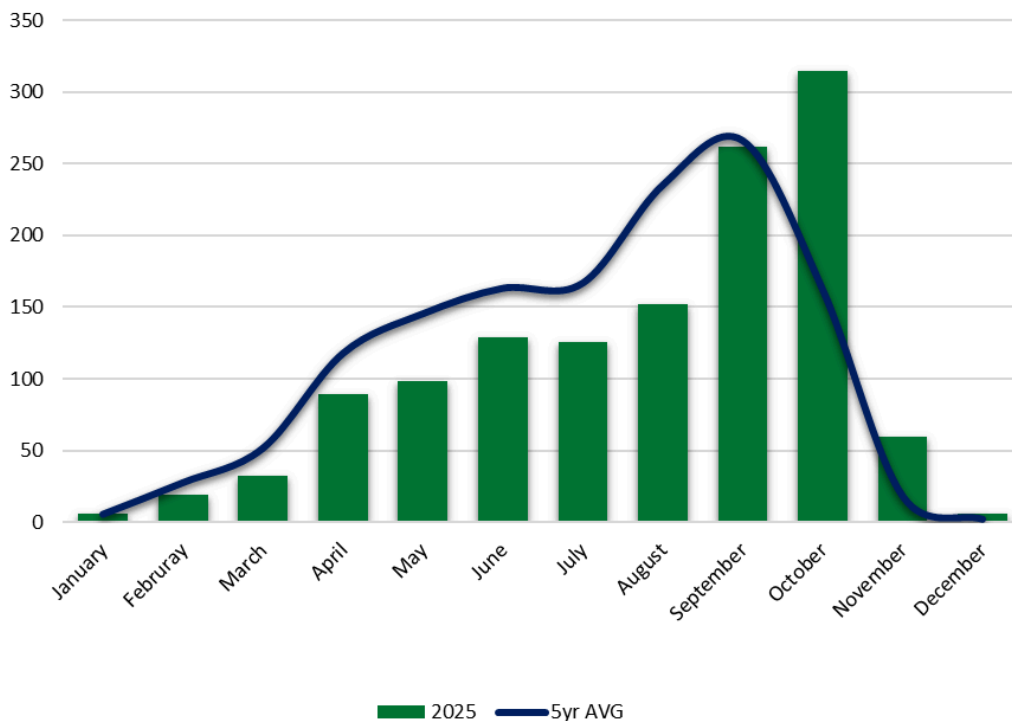
Service Requests 2020-2025
with 5YR AVG



2025 Service Request Type



2025 Service Requests per Month



REQUESTS FOR SERVICE

The majority of requests for service (67%) came from the cities of Fresno and Clovis, our most populated urban residential cities.

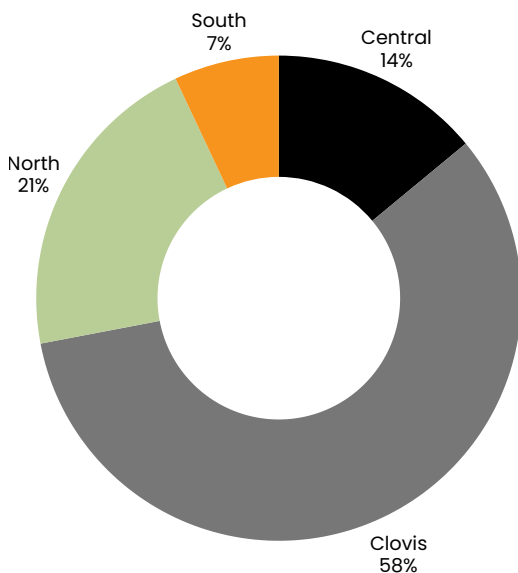


Yard drains that are not properly screened and capped are among the most frequently identified sources during service requests.

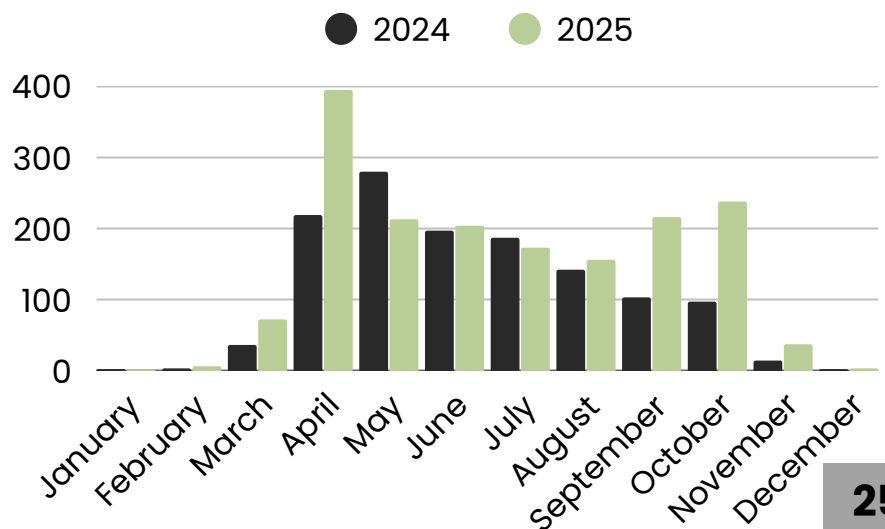
City	Service Requests (+/- from 2024)	% of Service Requests
Clovis	388 (+105) ↑	30%
Fresno	484 (+231) ↑	37%
Sanger	166 (-8) ↓	13%
Riverdale	9 (-3) ↓	1%
Reedley	69 (+19) ↑	5%
Laton	33 (+16) ↑	3%
Selma	46 (+18) ↑	4%
Kingsburg	49 (+20) ↑	3.8%
Fowler	16 (+8) ↑	1%
Friant	4 (+1) ↑	0.3%
Parlier	16 (+5) ↑	1%
Caruthers	9 (+6) ↑	0.7%
Orange Cove	3 (+0) ○	0.2%

Service requests can be accommodated by the scheduling of an appointment for a specific date and time to conduct an inspection. The majority of appointments are scheduled in urban residential areas; however, some types of services allow residents to give anytime access to inspect their property and do not require an appointment such as swimming pool inspections.

2025 Appointments by Zone



2024/2025 Inspection Appointments Scheduled





A female *Culex* mosquito resting on skin.

SURVEILLANCE

ADULT MOSQUITOES

The District has a comprehensive adult mosquito surveillance program. The program aims to investigate mosquito populations and mosquito-borne disease prevalence across the District. Surveillance traps are used to measure the mosquito population, identify species and inform control operations where to direct efforts.

The District utilizes three primary trap types for surveillance: encephalitis virus surveillance (EVS) traps, gravid (GRVD) traps, and BG-Sentinel (BGS) traps. Each trap targets adult female mosquitoes at different physiological stages. EVS and BGS traps are designed to capture host-seeking females, whereas GRVD traps target gravid females, those that have already taken a blood meal and are seeking a site to lay eggs.



BG-Sentinel (BGS)

BG-Sentinel traps are designed to attract and collect host-seeking and gravid adult female mosquitoes.



Encephalitis Virus Surveillance (EVS)

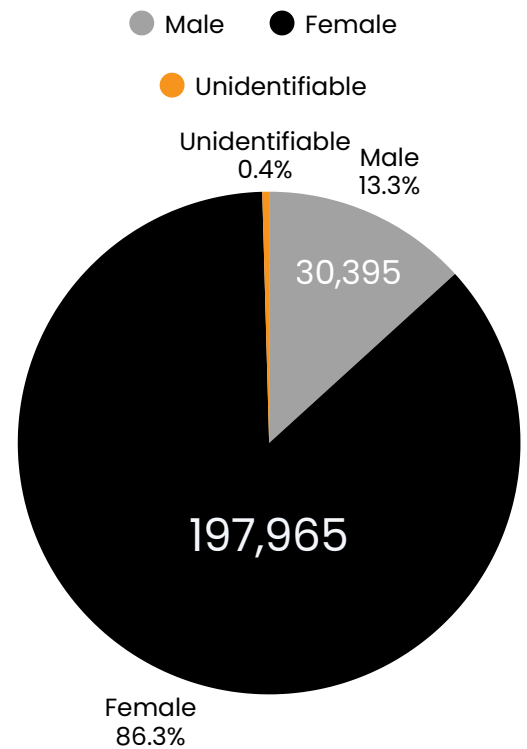
EVS traps are designed to attract and collect host-seeking female mosquitoes.



Gravid (GRVD)

Gravid traps are designed to attract and collect gravid adult female mosquitoes.

2025 Mosquitoes Collected



Total mosquitoes collected 229,360*

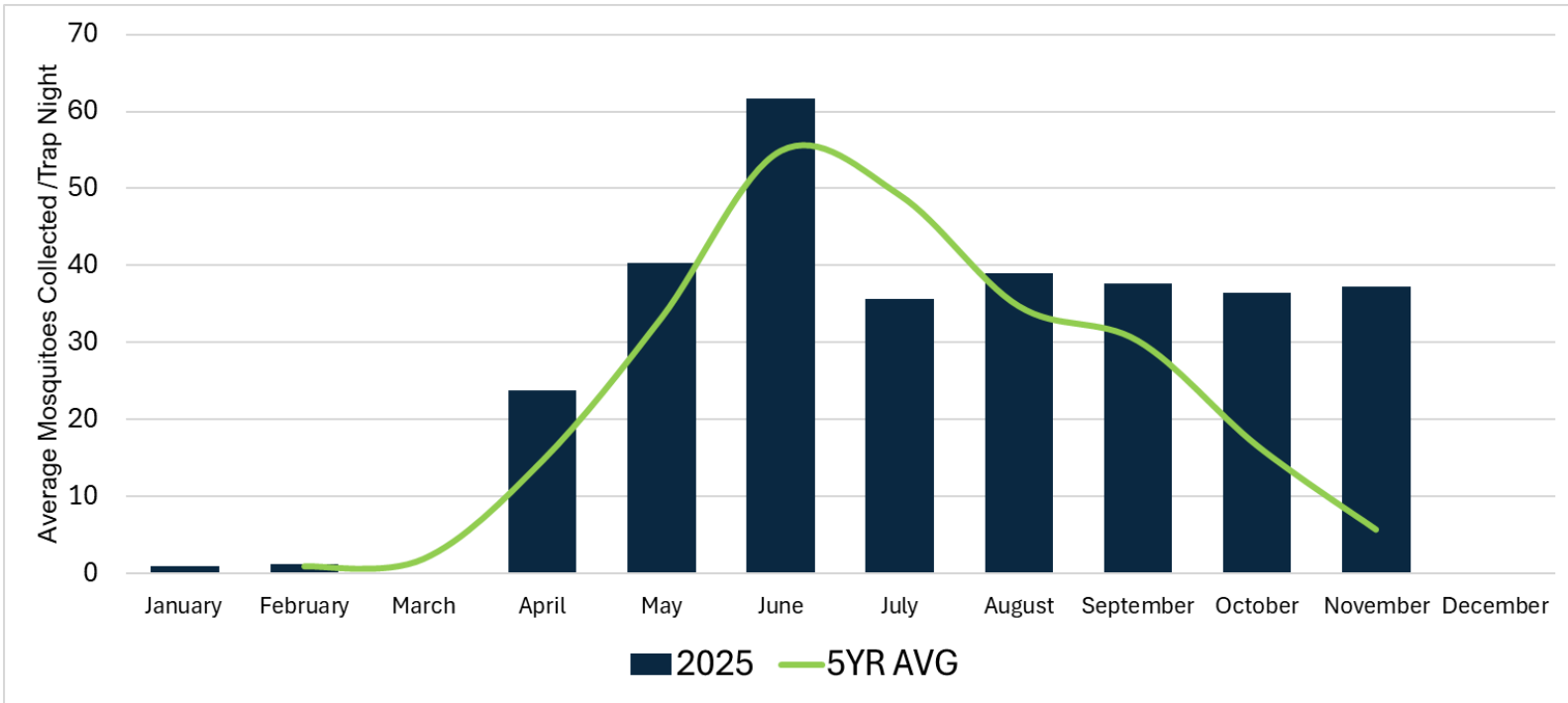
*Not all mosquitoes can be sex sorted.



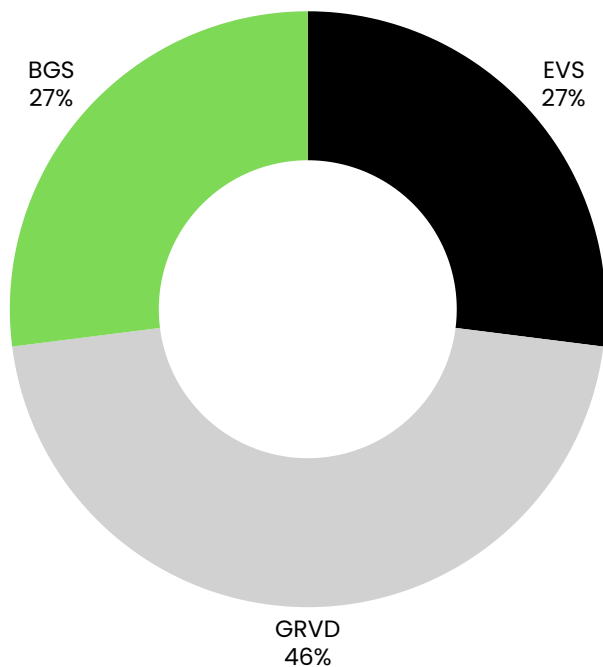
SURVEILLANCE

ADULT MOSQUITOES

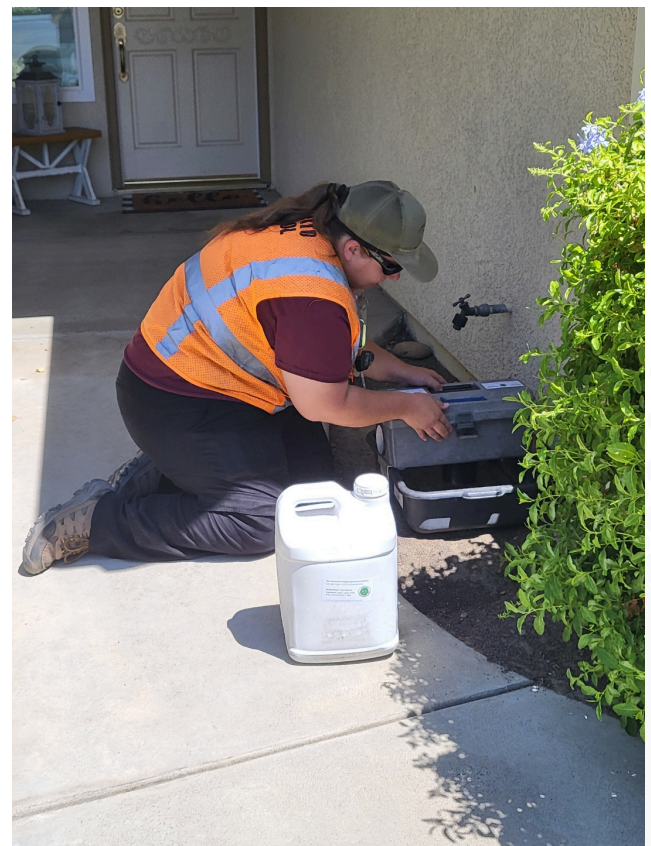
2025 Adult Mosquito Collections by Month



2025 Mosquitoes Collected by Type



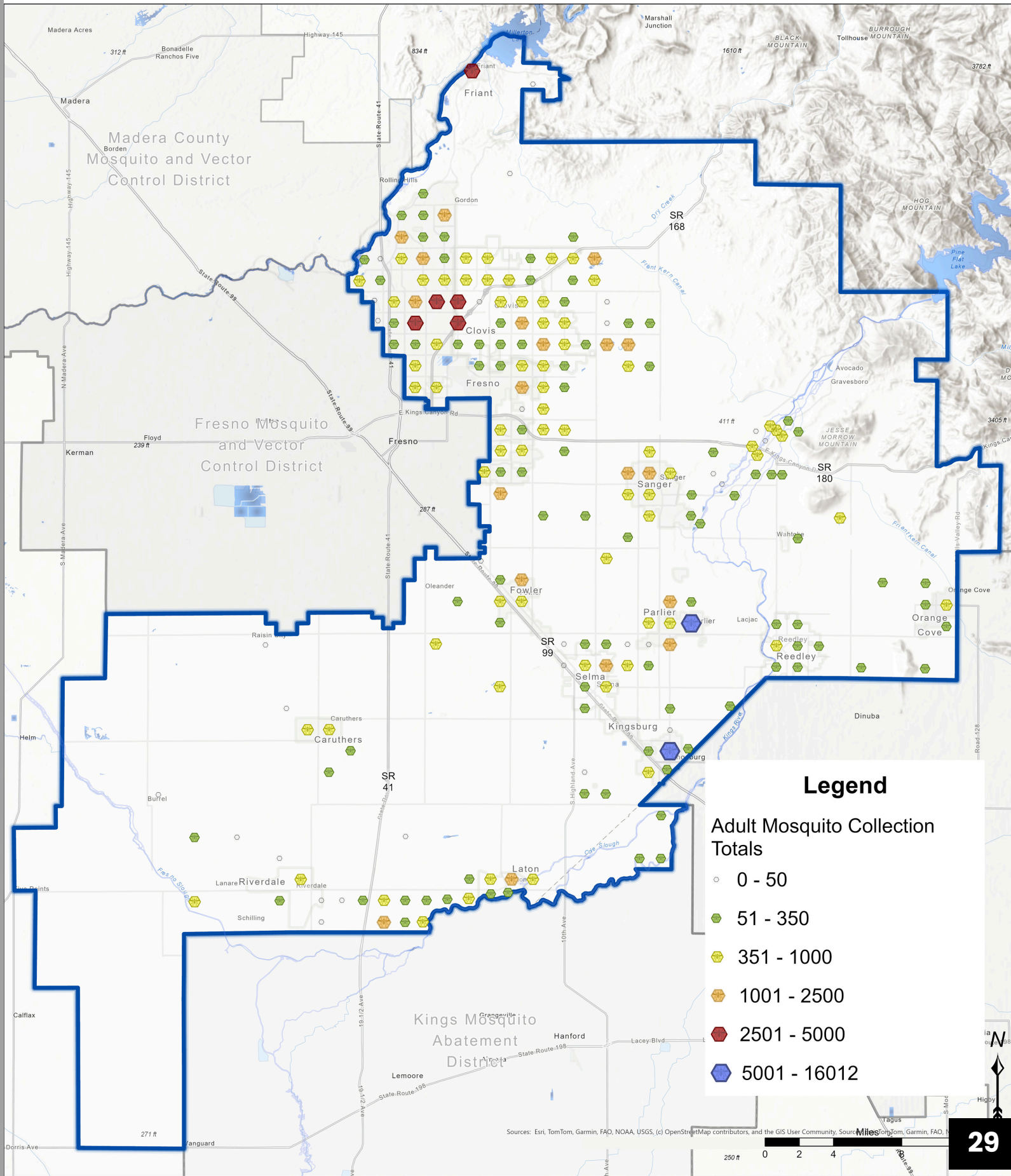
Total Trap Nights
3,115



Mosquito Trapping Assistant Melissa setting a gravid (GRVD) trap.

Mosquito Abundance Distribution

- 2 0 2 5 -



Legend

Adult Mosquito Collection Totals

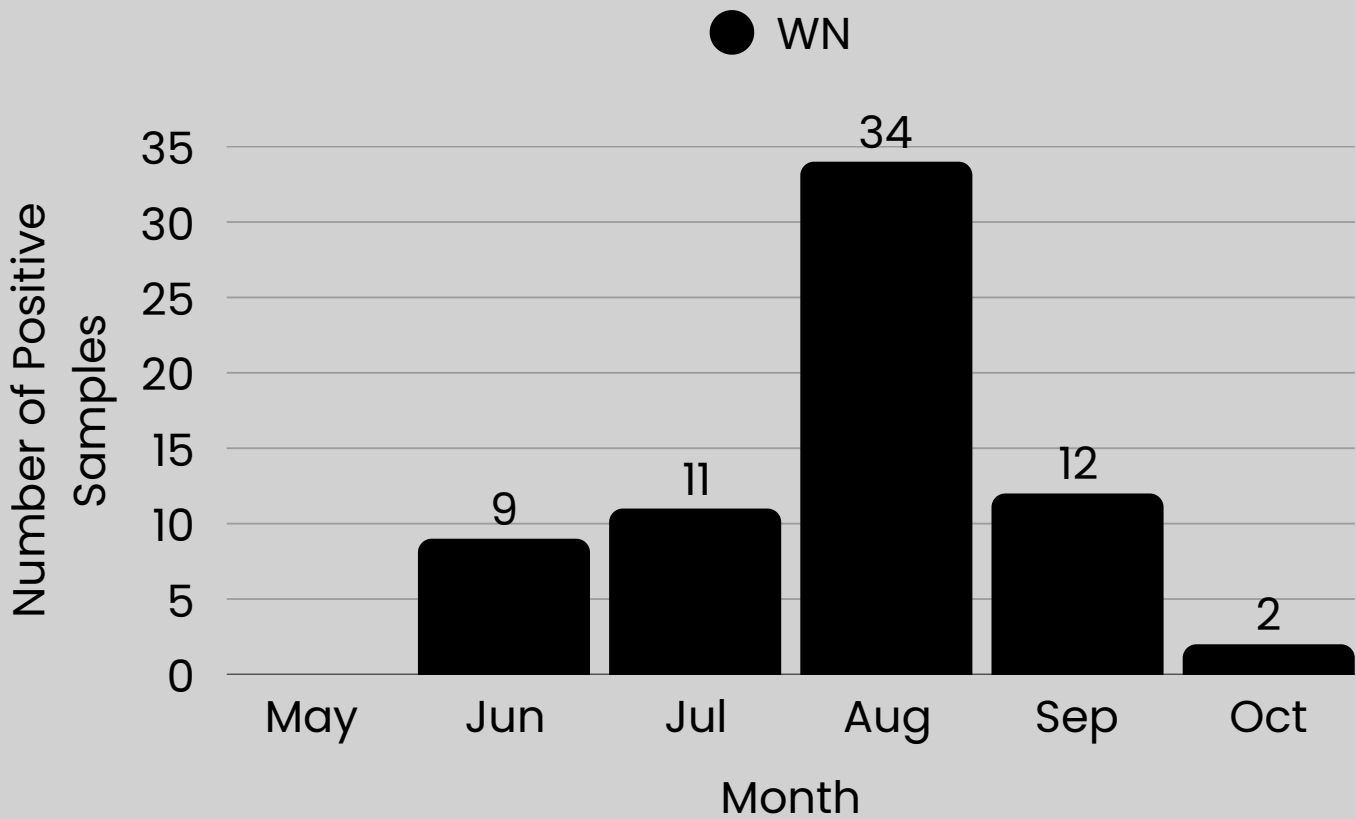
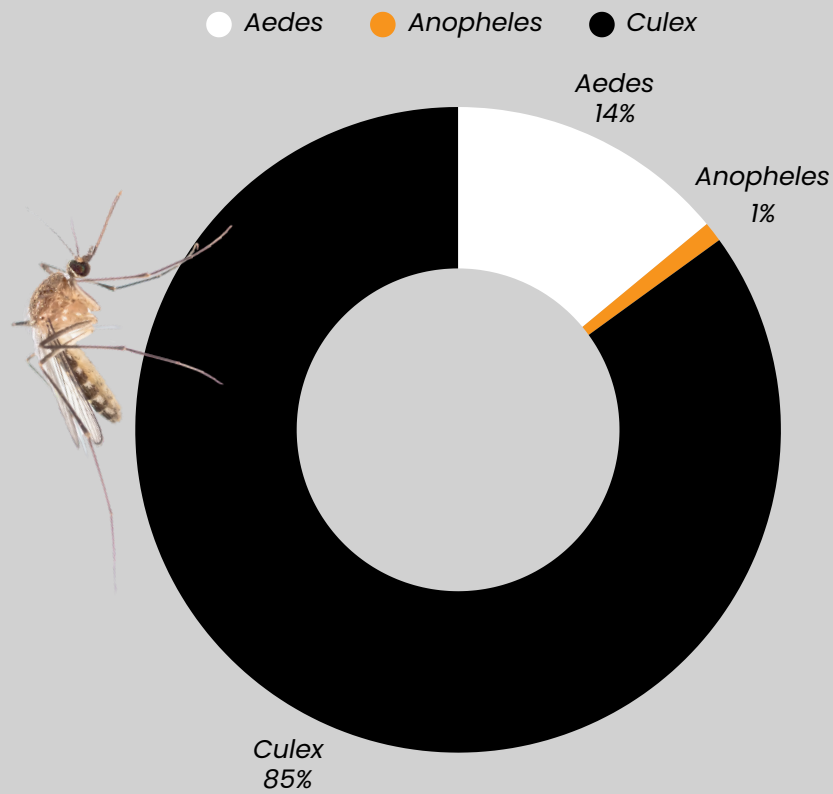
- 0 - 50
- 51 - 350
- 351 - 1000
- 1001 - 2500
- 2501 - 5000
- 5001 - 16012

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Source: TomTom, Garmin, FAO, NOAA, USGS



SURVEILLANCE

ADULT MOSQUITOES



SURVEILLANCE

ARBOVIRUS ACTIVITY

The District participates in a statewide system to monitor for the presence of West Nile virus (WN) and other mosquito-borne viruses, such as St. Louis encephalitis (SLE), and western equine encephalitis (WEE). This statewide system monitors mosquito-borne viruses in populations of humans, birds, chickens, horses, and mosquitoes. The District focuses on monitoring the mosquito population by submitting samples* of adult female mosquitoes to the Davis Arbovirus Research and Training (DART) laboratory at the University of California, Davis. Submitted samples are tested for the presence of these viruses. A total of 465 (28,334 female) mosquito samples were submitted for testing.

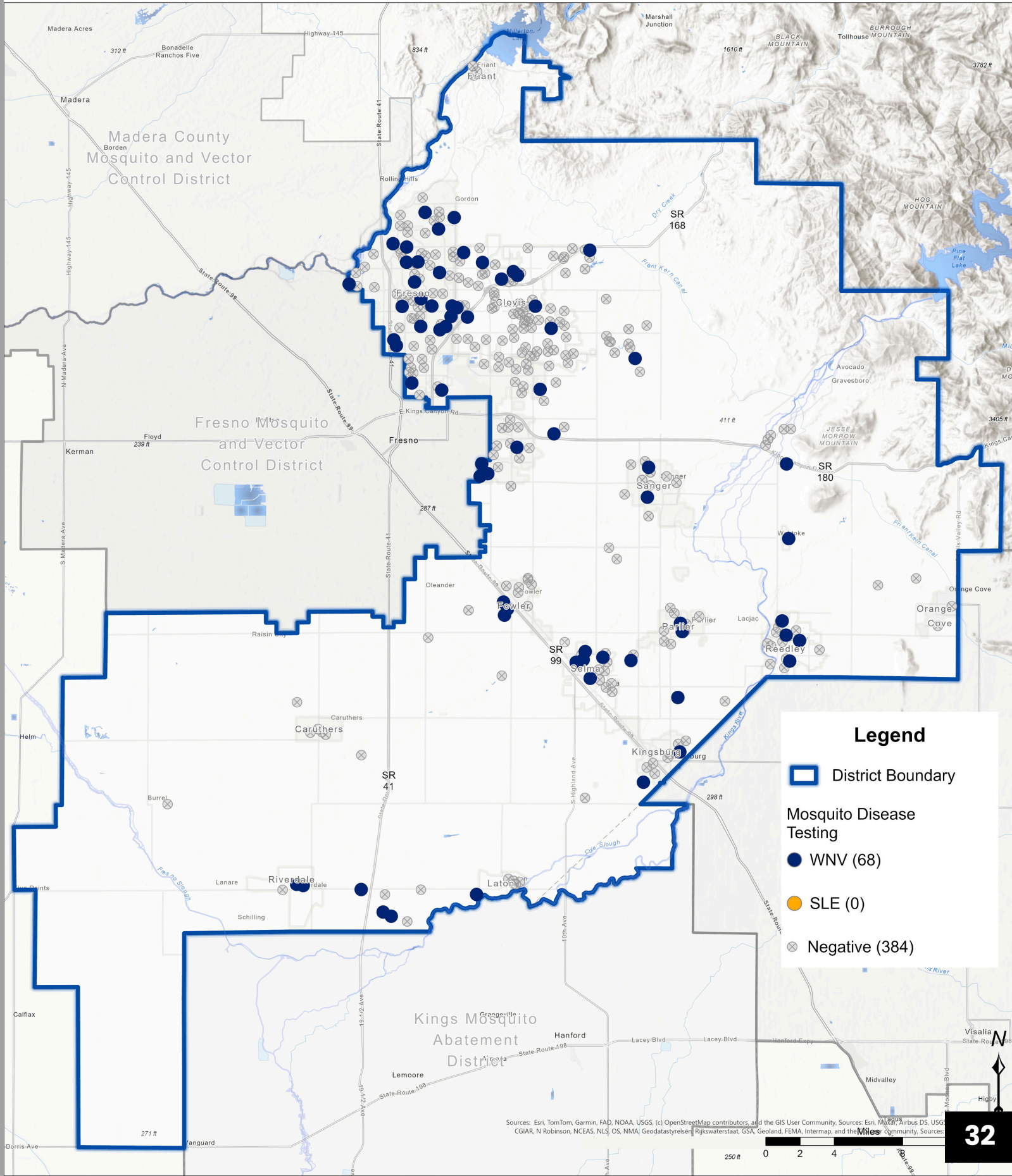
Mosquito Samples Submitted By City/Community

City/Community	Samples	Total Mosquitoes Tested	WN	SLE	WEE
Caruthers	7	304	0	0	0
Clovis	132	5,236	10	0	0
Del Rey	2	100	0	0	0
Easton	1	37	0	0	0
Fowler	17	554	3	0	0
Fresno	160	6,409	29	0	0
Friant	9	397	0	0	0
Kingsburg	16	662	3	0	0
Laton	12	473	3	0	0
Orange Cove	4	135	0	0	0
Parlier	15	724	2	0	0
Reedley	21	630	5	0	0
Riverdale	8	311	3	0	0
Sanger	32	1,325	4	0	0
Selma	29	1,236	6	0	0

*A sample is 12-50 female mosquitoes of the same species collected from a single trap type in a single night. One sample tested positive for both WN and SLE.

Mosquito Disease Testing

- 2025 -



Legend

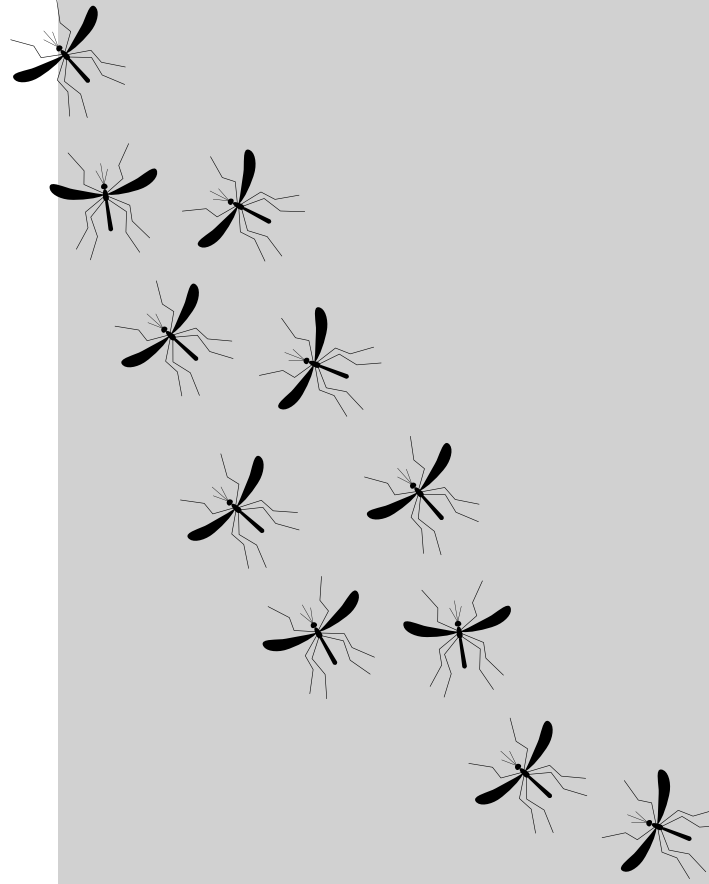
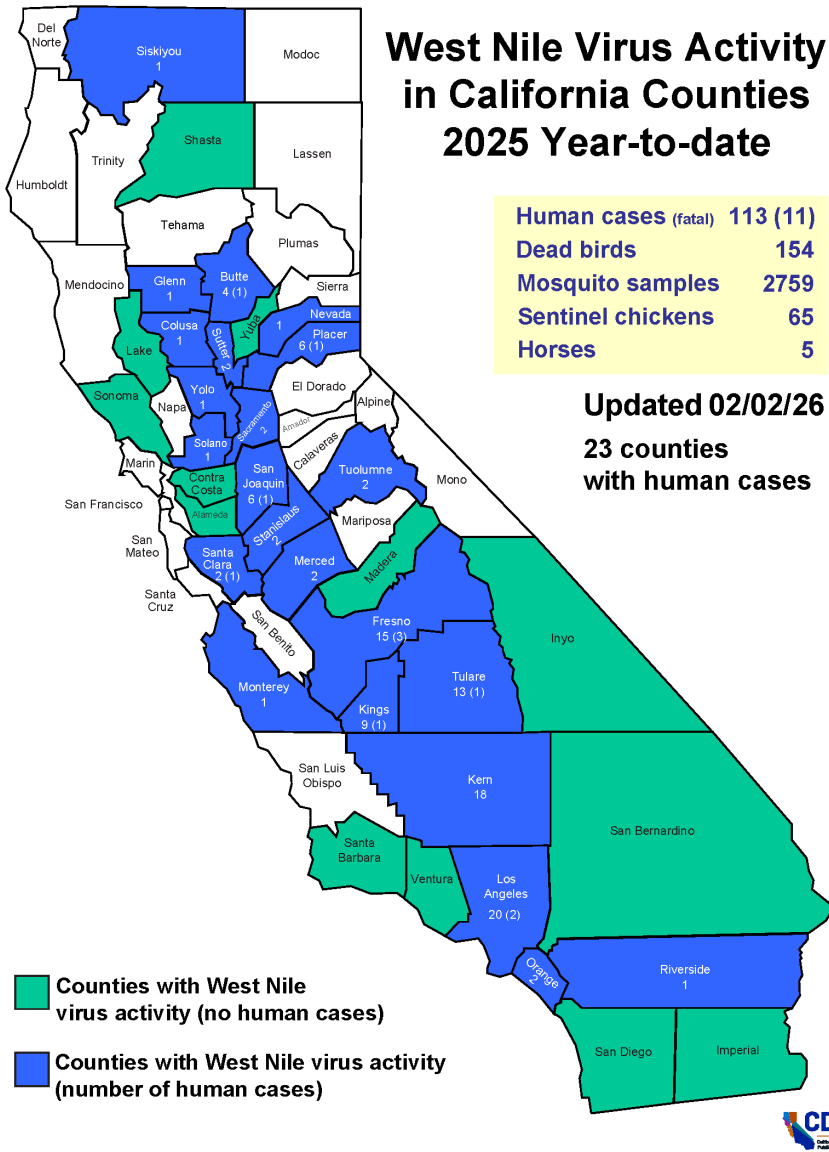
- District Boundary
- Mosquito Disease Testing**
 - WNV (68)
 - SLE (0)
 - Negative (384)

Sources: Esri, TomTom, Garmin, FAD, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community. Sources: Esri, Maxar, Airbus DS, USGS, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasyste.nl, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS User Community.

SURVEILLANCE

ARBOVIRUS ACTIVITY

West Nile Virus Activity in California Counties 2025 Year-to-date



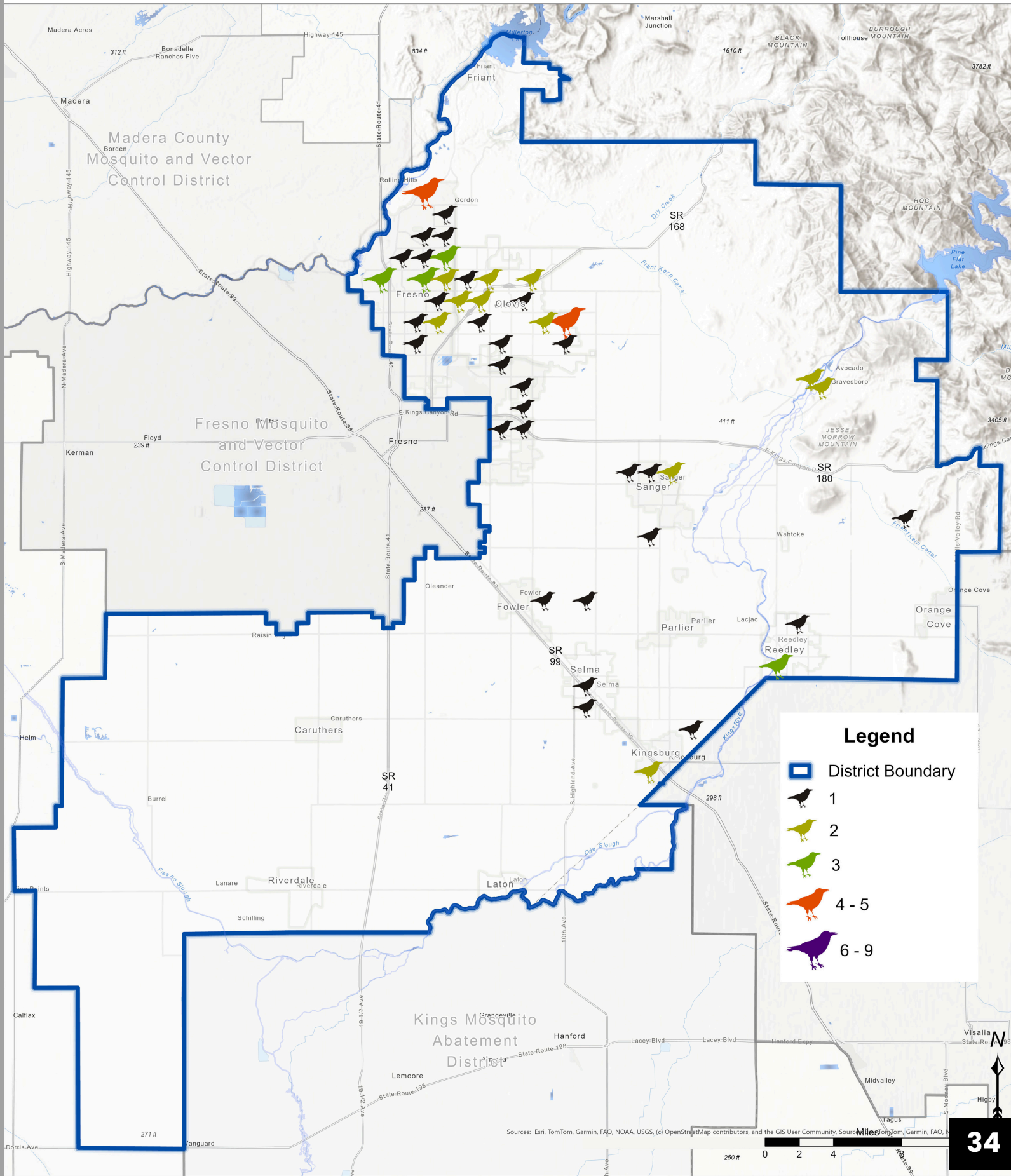
The California Department of Public Health (CDPH) publishes a weekly West Nile virus activity map during mosquito season at westnile.ca.gov. Above is the final map published for 2025. The state tracks arbovirus activity in dead birds, mosquitoes, sentinel chickens, horses, and humans.

Arbovirus Activity in the District, County, and State

	District	County	State
Human cases (Fatalities)	6 WN	15 (3) WN	113 (11) WN
Birds	N/A	11 WN	154 WN
Mosquitoes	68 WN	132 WN 1 SLE	2,759 WN 34 SLE 1 DENV
Sentinel Chickens	N/A	N/A	65 WN
Horses	0	0	5 WN

CDPH Bird Reporting

- 2025 -



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Source: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community.

APPLIED RESEARCH AND OPERATIONAL EVALUATIONS

In 2025, District staff conducted and participated in several applied research and operational evaluation projects aimed at improving mosquito surveillance, control strategies, and emerging vector response capabilities. These efforts reflect the District's continued commitment to science-based decision-making and innovation in vector control.



Above: PacVec Intern Ana Ramirez Perez releasing male mosquitoes. Below: Director of Science and Outreach Katherine Ramirez demonstrating that male mosquitoes do not bite to students in Parlier.

***Wolbachia*-Based *Aedes aegypti* Suppression Operational Evaluation (Parlier)**

District staff conducted an operational field evaluation of *Wolbachia*-infected male *Aedes aegypti* mosquitoes as a control strategy in an approximately 25-acre neighborhood in Parlier. Releases were conducted twice weekly at approximately 30,000 mosquitoes per week across 25 release points, with a structured monitoring program using BG-Sentinel traps in both treatment and control areas. This project was monitored by PacVec Intern Ana Ramirez Perez with oversight by District staff.

Results demonstrated meaningful suppression of *Aedes aegypti* populations, with reductions ranging from approximately 21% to 82% and sustained lower abundance compared to the control site for several weeks following release initiation.

This project provided valuable operational insight into release logistics, environmental considerations, and the effectiveness of *Wolbachia*-based incompatible insect technique (IIT) strategies under real-world conditions.

***Culicoides* (Biting Midge) Surveillance and Identification Study**

Through collaboration with CDPH and academic partners, PacVec Intern Connor D'Souza supported a surveillance study focused on *Culicoides* species (biting midges), which are vectors of diseases such as Bluetongue virus.

The project involved:

- Development and modification of specialized trapping equipment to improve collection efficiency
- Weekly field surveillance across multiple sites in Fresno County
- Laboratory identification using taxonomic keys and expert consultation

Trap modifications significantly improved collection success, increasing specimen counts by up to 5–9 times compared to initial designs. The study improved understanding of species distribution and abundance in the District's service area and strengthened regional capacity for monitoring emerging vector threats.



PacVec Intern Connor D'Souza modifying *Culicoides* traps.

APPLIED RESEARCH AND OPERATIONAL EVALUATIONS

Gravid *Aedes aegypti* Attractant Research (Geosmin/Bacterial Lures)

District Vector Biologist Jovana Benavides conducted a research project evaluating bacteria-derived compounds (geosmin-producing *Streptomycetaceae*) as potential attractants for gravid *Aedes aegypti* in urban environments.

The study included both laboratory and field components, including controlled trials comparing bacterial lures to standard attractants, large-scale urban field deployment across approximately 160 locations, and statistical modeling to assess environmental and treatment effects.

Findings indicated that while bacterial-derived lures showed some promise under laboratory conditions, field results were highly influenced by environmental factors, and no consistent increase in *Aedes aegypti* attraction was observed. This work contributes to ongoing efforts to improve surveillance and control tools targeting gravid mosquito populations and is being prepared for publication in a peer-reviewed scientific journal.



Left to right: Vector Biologist Jovana Benavides inspecting an AGO trap; AGO trap with mosquito and other dipteran collections; AGO trap with bacterial lure; AGO collections on a paper towel.

Methoprene Formulation Evaluations Across Multiple Habitats

Vector Management Specialist, Katherine Brisco, conducted extensive evaluations of methoprene-based larvicides across diverse habitat types, including flood-irrigated pastures, orchards, and leaky drip-irrigated systems.

Key findings include:

- Pastures: Methoprene formulations performed poorly, with frequent control failures and limited effectiveness, leading to a recommendation against use in these environments.
- Walnut Orchards: Altosid P35 provided consistent control (>90%) for extended periods (up to 40+ days), outperforming other formulations.
- Drip-Irrigated Systems: Product performance varied with water conditions; Altosid XRG performed better in continuously wet environments.

These evaluations directly informed operational recommendations, product selection, and resistance management considerations, improving treatment effectiveness across the District.

OUTREACH & EDUCATION

PUBLIC AWARENESS

The District provides a comprehensive public information program to educate residents on preventing mosquito development and protecting themselves from mosquito bites. Information is delivered through both in-person and virtual platforms, including local health fairs, festivals, parades, small-group presentations, and virtual presentations. Organizations, schools, and businesses may also request presentations or staff participation at educational events.

In 2025, District staff participated in twenty-five in-person outreach events throughout the community, and eleven small group education presentations.



Director of Science and Outreach, Katherine Ramirez, and Kayla Holt from KSEE 24.



Director of Science and Outreach Katherine Ramirez and Outreach Assistant Drew Chavez educating students at the Burrell Park Career Day.



Area Supervisor/UAS Pilot Devon Cornel showing students how to dip for larvae at the Reagan Safety Day.

OUTREACH & EDUCATION

SOCIAL MEDIA

The District maintains an active presence on Facebook, Instagram, and Nextdoor, using these platforms to educate the community and share important information. Social media has been an effective outreach tool for several years and remains a key component of the District's communication strategy. In 2025, the District published 358 posts across all platforms and experienced a combined increase of 116 direct subscribers.*

Platform	Number of subscribers (change from 2024)	Number of posts
Facebook	500 (↑ 9)	107
Instagram	318 (↑ 27)	108
Nextdoor	160,359* (↑ 11,967)	59

*Nextdoor users are not direct subscribers. They are not subscribing specifically to CMAD content but are new users to the platform.

2025 Social media posts focused on source reduction, personal protection and District programs.



Platform	Engagement Rate
Facebook	8.23%
Instagram	5.31%
Nextdoor	4.8%

The engagement rate is a metric that will track how actively involved the audience is with social media content. Engagement is seen when people interact with the platform through likes, comments, shares, or replies.

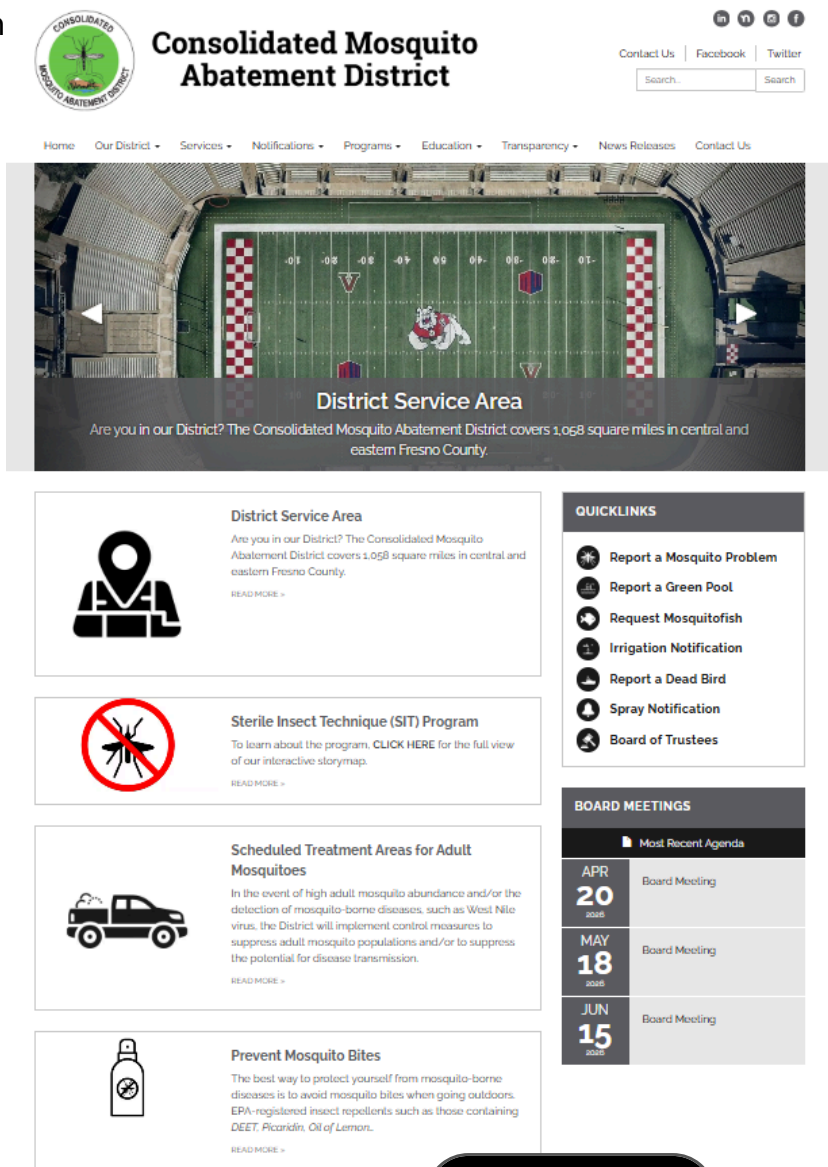


INFORMATION TECHNOLOGY/GIS

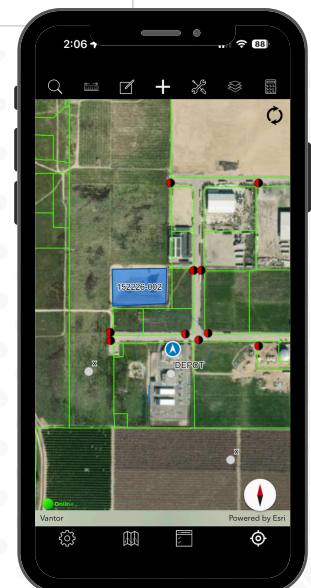
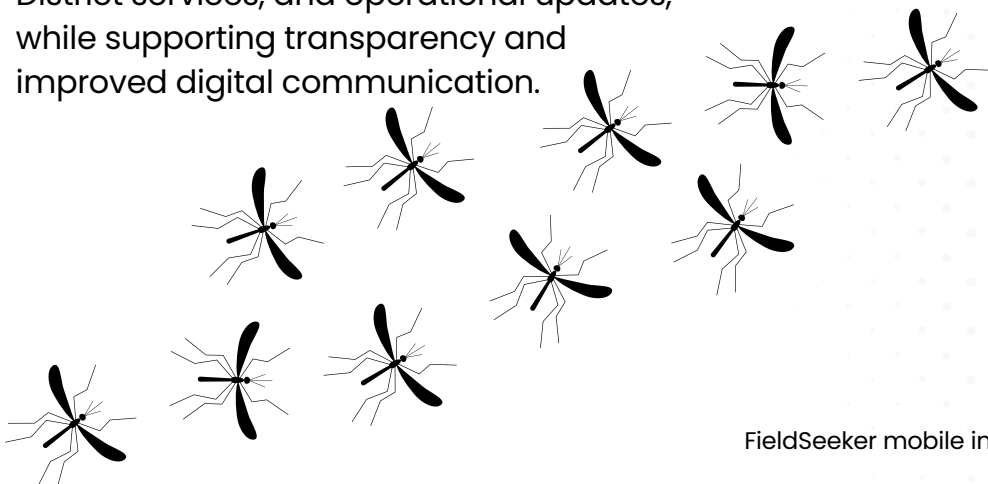
The District utilizes a Geographic Information System (GIS) to manage field records and support data-driven decision-making across all operational activities. This integrated system allows staff to monitor work in real time, evaluate program effectiveness and efficiency, and cross-reference records to reduce redundant inspections and treatments.

Field staff use a mobile application, FieldSeeker, to capture inspection, treatment, and mosquito surveillance data directly in the field. In 2025, this system supported the management of 21,353 actively monitored mosquito development sites (including storm drains and utility enclosures) and 124,783 associated records, including 51,334 activity records and 73,449 treatment records.

In 2025, the District transitioned its website to consolidatedmadca.gov, enhancing security and credibility while maintaining public accessibility. The website serves as an extension of the District's technology infrastructure, providing residents with access to mosquito prevention information, District services, and operational updates, while supporting transparency and improved digital communication.



District website homepage.



FieldSeeker mobile interface.

PARTNERSHIPS & COLLABORATION

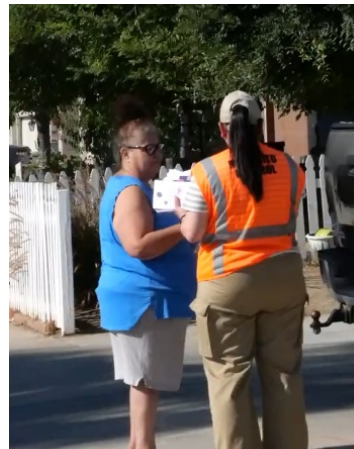
The District remains an active participant in the Central Valley Emerging Issues in Public Health Consortium, collaborating with the Fresno County Department of Public Health and neighboring vector control agencies on regional public health issues, including West Nile virus (WN). The District utilizes the Davis Arbovirus Research and Training (DART) Laboratory for mosquito testing and coordinates with the California Department of Public Health on surveillance data exchange and disease response.

In 2025, the District contributed mosquito samples to the California All-Taxa Biodiversity Inventory (CaIATBI), a statewide, DNA-based initiative to document and catalog California's biodiversity, supporting broader research and surveillance efforts. The District also partnered with the Pacific Southwest Center of Excellence in Vector-Borne Disease (PACVec) to support workforce development through its internship program. Although initially planning to host one intern, the District expanded to two due to the strength of applicants. Both contributed to applied research and operational evaluations highlighted elsewhere in this report. Connor will return to California State University, Fresno to pursue a master's degree in biology, and Ana will continue her academic career pursuing a Ph.D. at the University of California, Davis.

The District is a sustaining member of the American Mosquito Control Association (AMCA) and maintains corporate membership with the Mosquito and Vector Control Association of California (MVCAC), as well as memberships with the Society for Vector Ecology (SOVE) and the California Special Districts Association (CSDA). These organizations provide essential training, education, and legislative support. The District Manager completed her final year on the MVCAC Board of Directors as the South San Joaquin Valley Regional Representative and continues to serve on the CSDA Central Valley Local Chapter Board. Staff also contribute through active participation on MVCAC committees.

In 2025, the District partnered with Dr. Samer Elkashef and Central Life Sciences to conduct field evaluations of ultra-low volume (ULV) adulticide applications targeting *Aedes aegypti* and *Culex* species. These trials assessed product performance and application efficacy under operational conditions to inform future control strategies, product selection, and resistance management.

The District remains committed to advancing mosquito control through applied research, collaboration, and the evaluation of innovative tools and strategies.



Left: PacVec Intern Ana Ramirez Perez speaking with a Parlier resident about male mosquito releases. Right: Vector Biologist Jovana Benavides and Central Life Sciences' Dr. Elkashef checking cages during a ULV application evaluation.



FINANCIALS

Fiscal Year 2024/2025

Consolidated Mosquito Abatement District
Budgetary Comparison Schedule – General Fund, continued
For the Fiscal Year Ended June 30, 2025

	<u>Adopted Original Budget</u>	<u>Board Approved Changes</u>	<u>Revised Budget</u>	<u>Actual Budgetary Basis</u>	<u>Variance Positive (Negative)</u>
Expenditures/Expenses:					
Mosquito and vector control operations:					
Salaries, wages and employee benefits	\$ 2,764,000	(3,000)	2,761,000	2,393,107	367,893
Operating and maintenance	578,000	-	578,000	551,820	26,180
Motor vehicle	360,000	-	360,000	166,601	193,399
Utilities and communication	129,000	(5,000)	124,000	112,306	11,694
Office supplies and expense	36,000	-	36,000	21,830	14,170
Insurance	205,000	-	205,000	186,912	18,088
Travel & subsistence	81,000	-	81,000	53,927	27,073
Debt Service Payment	290,000	-	290,000	286,296	3,704
Capital outlay	1,240,000	20,000	1,260,000	1,010,682	249,318
Other	371,395	(27,395)	344,000	319,923	24,077
Total expenditures	<u>6,054,395</u>	<u>(15,395)</u>	<u>6,039,000</u>	<u>5,103,404</u>	<u>935,596</u>
Program revenues:					
Charges for services	10,000	-	10,000	30,268	20,268
Intergovernmental revenues	116,412	-	116,412	104,645	(11,767)
Total program revenues	<u>126,412</u>	<u>-</u>	<u>126,412</u>	<u>134,913</u>	<u>8,501</u>
General revenues:					
Property taxes	3,795,447	-	3,795,447	5,331,446	1,535,999
Investment earnings	-	-	-	886,398	886,398
Gain on sale of capital assets	-	-	-	42,576	42,576
Grant revenues	-	-	-	248,524	248,524
Other	-	-	-	9,165	9,165
Total general revenues	<u>3,795,447</u>	<u>-</u>	<u>3,795,447</u>	<u>6,518,109</u>	<u>2,722,662</u>
Total revenues	<u>3,921,859</u>	<u>-</u>	<u>3,921,859</u>	<u>6,653,022</u>	<u>2,731,163</u>
Excess(Deficiency) of revenues over expenditures	<u>(2,132,536)</u>	<u>15,395</u>	<u>(2,117,141)</u>	<u>1,549,618</u>	<u>3,666,759</u>
Fund balance – beginning of year	<u>9,433,570</u>		<u>9,433,570</u>	<u>9,433,570</u>	
Fund balance – end of year	<u>\$ 7,301,034</u>		<u>7,316,429</u>	<u>10,983,188</u>	

Notes to Required Supplementary Information

(1) Budgets and Budgetary Data

Per Government Code Section 61110, on or before July 1 of each year, an annual nonappropriated budget, which establishes the total spending authority for the District's General Fund is adopted by the Board of Trustees. The Board of Trustees may authorize amendments to the budget during the year as deemed necessary. Budgeted amounts are reported as amended, or the board of directors may adopt a preliminary budget that conforms to generally accepted accounting and budgeting procedures for special districts.

The budgetary basis of accounting is consistent with generally accepted accounting principles applicable to the District's financial statements.



DISTRICT HEADQUARTERS

13151 E. Industrial Drive
Parlier, CA 93648
559-896-1085

www.consolidatedmadca.gov

Substations

Caruthers
16800 S Marks Avenue
Caruthers, CA 93609

Clovis
3555 Lind Avenue
Clovis, CA 93612

Sanger
1717 Academy Avenue
Sanger, CA 93657

Selma
2425 Floral Avenue
Selma, CA 93662

