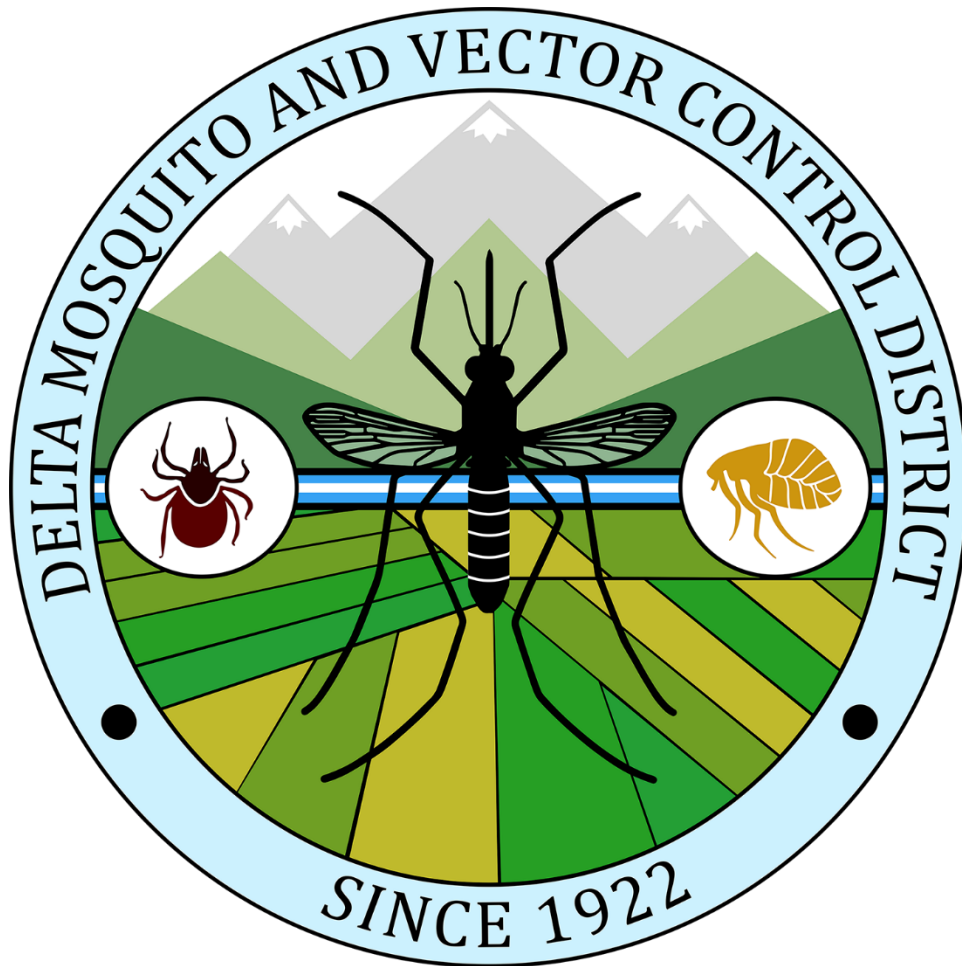


# 2023 Annual Report



**Delta Mosquito & Vector Control District**

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## 2023 AT A GLANCE



# DELTA MOSQUITO & VECTOR CONTROL DISTRICT (DMVCD) 2023 AT A GLANCE

### DMVCD STRATEGY

Protect the Public Health from mosquito bites and vector-borne diseases using Integrated Vector Management (IVM)

### 101 YEARS OF SERVICE

Delta MVCD was established in September 19, 1922



### TOP 3 MOSQUITO SPECIES COLLECTED



### Mosquito Samples Tested

7,028

11 Human West Nile virus Cases

Mosquito samples contain up to 50 mosquitoes

### Positive Mosquito Samples

West Nile virus (WNV) 473

St. Louis Encephalitis virus (SLEV) 172

WNV & SLEV 47

12 Dead birds tested



Birds positive for West Nile virus

5

### Mosquito Treatments

47 Ultra Low Volume (ULV) Treatments

8 Wide Area Larvicide System (WALS) Treatments

29,247 Source Treatments

### Mosquito-Breeding Sources

13,500 Catch Basins

2,465 Mosquito Sources

250 Dairy Sources

Mosquitoes Trapped 313,502

Mosquito Species 16

### Total Inspections

80,490

6 DRONE APPLICATIONS OVER AGRICULTURAL FIELDS IN THE DISTRICT



### COMMUNITY EDUCATION & OUTREACH

Events / Presentations 68

Participants 1,169

News Excerpts 10

SCIENTIFIC PUBLICATIONS 7  
POSTERS 5

2021-2023 COLLABORATION WITH **oxitec**

## PREVENT THE BITE DAY & NIGHT



### Tip

Standing Water Weekly



### Toss

Unused Open Containers



### Repel

with EPA-Registered Insect repellents



## ABOUT THE DISTRICT

The Delta Mosquito and Vector Control District (DMVCD) was established in 1922 to protect residents from malaria, a mosquito-borne disease that was common to the Central Valley then. The Visalia Women's Club played a key role in the formation of the District. Today, the District is responsible for control of mosquito vectors of West Nile virus (WNV), St. Louis encephalitis virus (SLEV), Western equine encephalitis virus (WEEV) Chikungunya, Dengue, Yellow fever, and Zika viruses. The District covers 712 square miles including the cities of Dinuba, Exeter, Farmersville, Visalia, and Woodlake, and the communities of Cutler, Orosi, Goshen, Ivanhoe, and Traver, all within Northern Tulare County.

### Our Vision

The DMVCD is the authority for vector control and vector-borne disease prevention in Northern Tulare County.

### Our Mission

The DMVCD is committed to protecting the public's health from vector-borne diseases and discomfort by delivering exceptional services which preserve and enhance the quality of life and desirability of the area to make northern Tulare County a safe place to live, work, and raise a family.

### Our Goals

1. Provide continual surveillance of mosquitoes to determine the threat of mosquito-borne disease transmission and annoyance levels.
2. Use safe, integrated vector management (IVM) methods to keep mosquito populations suppressed.
3. Promote cooperation and communication with property owners, residents, social and political groups, and governmental agencies.

### The Board of Trustees

As an independent special district, DMVCD serves its residents under the guidance of the Board of Trustees. The seven-member Board of Trustees consists of one resident from each of the incorporated cities in northern Tulare County and two representatives for the county-at-large.

Trustees are appointed by their respective City Council or the County Board of Supervisors to govern the District knowledgeably and effectively. Board members serve two or four-year terms according to the rules of their appointing body.

The regular Board meetings are held on the second Wednesday of each month at 1737 W. Houston Avenue in Visalia at 4:30 PM. The meetings are open to the public.

Board Member	Position	Representing
Greg Gomez	President	Farmersville
Belen Gomez	Secretary	Woodlake
Kevin Caskey	Trustee	County-at-large
Linda Guttierrez	Trustee	County-at-large
Larry Roberts	Trustee	Dinuba
Rosemary Hellwig	Trustee	Exeter
Lori Berger	Trustee	Visalia

## District Personnel

### Administration

Dr. Mustapha Debboun, *General Manager/Medical & Veterinary Entomologist*  
Mary Ellen Gomez, *Administrative Assistant*  
Rebecca Harlien, *Administrative Analyst I*

### Public Relations

Erick Arriaga, *Community Education and Outreach Coordinator*

### Laboratory

Andrea Troupin, *Scientific Program Manager*  
Mark Nakata, *Biologist*  
Juan Pablo Ortega, *Biologist*  
Alejandra Gill, *Laboratory Technician II*

### Operations

Paul Harlien, *Operations Program Manager*  
Bryan Ferguson, *Foreman*  
Rick Alvarez, *Vector Control Field Supervisor*  
Bryan Ruiz, *Vector Control Supervisor Assistant/Technician III*  
Mario Sanchez, *Vector Control Technician III-Mechanic*  
Landon McGill, *Vector Control Technician III-Mechanic*  
Carlos Rodriguez, *Vector Control Technician II*  
Ted McGill, *Vector Control Technician II*  
Paul Raper, *Vector Control Technician II*

## Professional Associations

Delta Mosquito and Vector Control District participates in various professional organizations that promote best practices in vector and vector-borne disease control, research, and management of special districts. The District is a member of Mosquito and Vector Control Association of California (MVCAC), American Mosquito Control Association (AMCA), Society for Vector Ecology (SOVE), Entomological Society of America (ESA), National Association of County and City Health Officials (NACCHO), California Special District Association (CSDA), and the Tulare County Health Emergency Coalition (TCHEC).

## Publications, Presentations, and Posters

First report of *eratyrus cuspidatus* (Hemiptera: Reduviidae) infected with *Trypanosoma cruzi* in peridomestic environment in Chiapas, Mexico. 2023. D.D. Velazquez-Ramires, J.A. De Fuentes – Vicente, **Mustapha Debboun**, A.A. Perez de Leon, C. Irecta-Najera, L. Cruz-Mendez, E.E. Espinoza-Medinilla, and H. Ochoa-Diaz-Lopez. Vector-Borne and Zoonotic Diseases, 23(11): 583-587.

Larvicidal impact of fifteen plant essential oils against *Culex pipiens* L. mosquitoes in Egypt. 2023. H.F. Khater, D.E. Soliman, A. Slim, I.T. Radwan, M.M. Baz, and **Mustapha Debboun**. Egyptian Journal of Veterinary Sciences, 54(1): 183-192

Cross-infectivity of *Vorticella* sp. across genera of mosquitoes for development of biological mosquito control strategies. 2023. S.A. Duran, A. Cruz, W.B. Hunter, **Mustapha Debboun**, and D. Duguma. Journal of Invertebrate Pathology.

Control of adult *Culex quinquefasciatus* mosquito populations in catch basins in Houston, Texas using the ProVector military camouflage tube with an attractant toxic sugar bait incorporating *Bacillus thuringiensis israelensis* and methoprene. 2023. T.M. Kollars, D. Duguma, **Mustapha Debboun**, and L.P. McPhatter. The Medical Journal.

Seasonal activity and mutagenomic analysis of the introduced Asian Longhorn Tick, *Haemaphysalis longiconis* at the United States Military Academy in West Point, New York. 2023. A.M. Burgess, D.J. Nun, A.H. Chellraj, J.Y. Johnson, B.M. Millican, **Mustapha Debboun**, and S.A. Davidson. The Medical Journal.

Designing and building a modern aquaculture system for mosquitofish at Delta Mosquito and Vector Control District. 2023. **Mark Nakata**. Wing Beats of the Florida Mosquito Control Association, 34(2): 40-42.

Collaborative efforts with Oxitec and Delta Mosquito & Vector Control District in the Central Valley of California. 2023. Presenter/Author: **Mustapha Debboun**, Delta MVCD. MVCAC and AMCA Conferences.

Mind the gap: lessons learned from an expanded mosquito surveillance program. 2023. Presenter: **Crystal Grippin**, Delta MVCD. Crystal Grippin, Andrea Troupin, Mark Nakata and Javier Valdivias, Delta MVCD. MVCAC Conference.

Taking flight: Utilizing unmanned aircraft systems in Delta Mosquito and Vector Control District. 2023. Presenter **Hector Cardenas**, Delta MVCD. Hector Cardenas and Mustapha Debboun, Delta MVCD. MVCAC and AMCA Conferences.

Finding the right mix: A comparison of yeast fermentation solutions as an alternative carbon dioxide source for BG-Sentinel traps. 2023. Presenter: **Mark Nakata**, Delta MVCD. Mark Nakata, Andrea Troupin, Javier Valdivias, and Crystal Grippin, Delta MVCD. MVCAC and AMCA Conferences.



Truck-mounted wide area larviciding treatments for *Aedes aegypti* control in Northern Tulare County. 2023. Presenter: **Javier Valdivias**, Delta MVCD. Javier Valdivias, Mark Nakata, Andrea Troupin, and Crystal Grippin, Delta MVCD. MVCAC Conference.

A valiant attempt at surveying mosquito district practices of California. 2023. Presenter: **Andrea Troupin**, Delta MVCD; Author(s): Andrea Troupin, Mark Nakata, Javier Valdivias, and Crystal Grippin, Delta MVCD. MVCAC and AMCA Conferences.

Evaluation of adulticide application in vegetation dense areas using an unmanned aerial system. 2023. Presenter: **Crystal Grippin**, Delta MVCD. Crystal Grippin, Hector Cardenas, Mark Nakata, Javier Valdivias, and Andrea Troupin, Delta MVCD. MVCAC Conference.

Tailoring communication strategies to respective communities within Delta Mosquito and Vector Control District. 2023. Presenter: **Erick Arriaga**, Delta MVCD. Erick Arriaga, and Crystal Grippin, Delta MVCD. MVCAC Conference.

## Service Requests

The DMVCD provides services directly to residents in addition to routine surveillance and control efforts. Services include inspecting properties for mosquito-breeding sources, providing mosquitofish for front and backyard water features, and investigating reports of increased mosquito activity or standing water.

There were 1,152 service requests in 2023 (Table 1). This was a 6.6% increase over the previous five-year average and a 55.1% increase from 2022. This increase was reflected in all categories of service requests. *Aedes aegypti* are aggressive, day-biting mosquitoes that prefer to lay their eggs in small, man-made containers, allowing them to thrive in residents' front and backyard environments. The number of mosquitofish requests increased by 55.84% compared to 2022. This indicates an increase in the awareness of their use as an important biological control method for front and backyard water features. The number of requests for inspections and other service requests were higher than the 2022 numbers.

*Table 1. Number of service requests by category in 2022 compared to 2021 and the previous five-year average.*

Category	2023	2022	5-Year Average
Mosquito	485	431	476.2
Source	400	229	265.6
Mosquitofish	120	77	71.4
Inspection	137	3	245.4
Other	10	3	13
<b>TOTAL</b>	<b>1,152</b>	<b>743</b>	<b>1,080.8</b>

Although service requests were received every month, the majority were between June and August (Figure 1). This corresponds to the warmest summer temperatures of the year in the District. Warm weather increases mosquito abundance, leading to an increase in service requests during the hot summer months. The majority of households who requested services found our services through a web search. This was closely followed by households who had used DMVCD services before. (Figure 2).

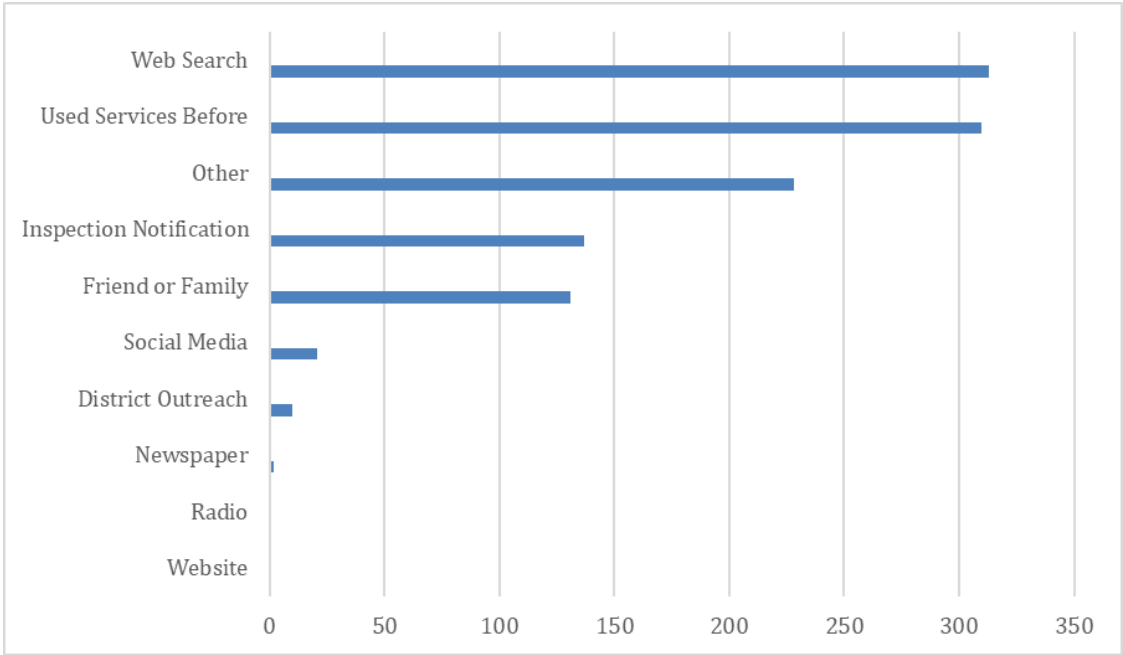


Figure 1. Number of monthly service requests in 2023

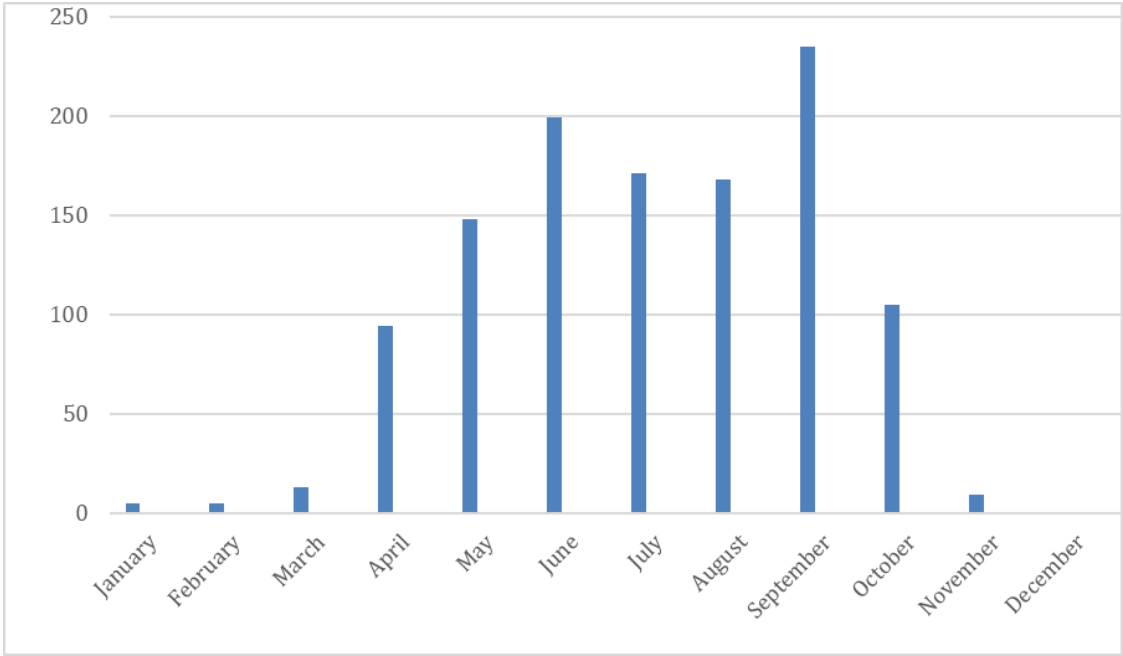


Figure 2. Individuals who requested services learned about DMVCD through a variety of ways.



## INTEGRATED VECTOR MANAGEMENT (IVM)

The DMVCD uses evidence-based IVM principles to protect residents from vectors and vector-borne diseases. The IVM combines surveillance, control, and community education and outreach techniques to improve the effectiveness, ecological soundness, and sustainability of vector control programs.

### Surveillance

The DMVCD monitors vector abundance and arbovirus activity through a variety of adult mosquito traps and by testing mosquitoes and dead birds for WNV, SLEV, and WEEV. Human cases are also reported and investigated alongside the Tulare County Public Health Department.

Districtwide, the average number of mosquitoes during this season was 33.6, with an average of 30.4 female mosquitoes per trap night, for the 2023 mosquito season. Only female mosquitoes can transmit diseases of public health concern because they require a blood meal to lay eggs. During 9,330 collections, the DMVCD caught a total of 313,502 mosquitoes, of which 90.3% were females (Table 2). Of the 16 mosquito species represented, *Culex quinquefasciatus* contributed the most to total mosquito abundance at 61.8% followed by *Aedes aegypti* at 19.3% and *Culex tarsalis* at 15.6%.

Table 2. Adult mosquito abundance by sex and species during the mosquito season in 2023.

Species	Males	Females	Total	Percent Abundance
<i>Cx. quinquefasciatus</i>	8,358	185,413	193,771	61.8%
<i>Cx. tarsalis</i>	1,442	59,042	60,484	19.3%
<i>Ae. aegypti</i>	20,080	28,867	48,947	15.6%
<i>Cx. stigmatosoma</i>	294	8329	8623	2.8%
<i>Ae. melanimon</i>	0	698	698	0.2%
<i>Cx. erythrothorax</i>	9	341	350	0.1%
<i>An. freeborni</i>	2	228	230	0.1%
<i>Cs. inornata</i>	1	117	118	0.0%
<i>Ae. nigromaculis</i>	0	115	115	0.0%
<i>Ae. vexans</i>	0	86	86	0.0%
<i>An. franciscanus</i>	1	32	33	0.0%
<i>Cs. incidens</i>	0	23	23	0.0%
<i>Cx. thriambus</i>	0	15	15	0.0%
<i>Ae. sierrensis</i>	0	4	4	0.0%
<i>Cx. restuans</i>	0	3	3	0.0%
<i>Cs. particeps</i>	0	2	2	0.0%
<b>Grand Total</b>	<b>30,187</b>	<b>283,315</b>	<b>313,502</b>	

Vector control technicians collected 297 larval samples. Of these, 255 were collected to identify the species present and 42 to monitor control efforts. *Aedes aegypti* species were identified in 57.9% of samples followed by *Cx. quinquefasciatus* at 16.1%, *Cx. tarsalis* at

11.8%, and *Cx. stigmatosoma* at 8.4% (Table 3). Forty samples out of the 47 mosquito larvae samples collected showed resistance to the treatment.

Table 3. Mosquito species identified in larval samples in 2023.

Larval Species	Samples	Percent of Samples
<i>Aedes aegypti</i>	172	57.9
<i>Culex quinquefasciatus</i>	48	16.1
<i>Culex tarsalis</i>	35	11.8
<i>Culex stigmatosoma</i>	25	8.4

Every mosquito sample contains 10 to 50 female mosquitoes of a single species that were caught in the same trap. The six *Culex* species tested were *Cx. quinquefasciatus*, *Cx. tarsalis*, *Cx. stigmatosoma*, *Cx. thriambus*, *Cx. erythrothorax*, and *Cx. restuans*. A total of 7,028 mosquito samples comprised of 167,013 individual mosquitoes were tested in 2023. While no samples were positive for WEEV, 473 tested positive for WNV (Figure 3), 172 for SLEV (Figure 4), and 47 for both WNV and SLEV (Figure 5).

In 2023, 37 dead birds were reported to the District directly or through the California Department of Public Health WNV Call Center. Of these, 12 were viable for mosquito-borne disease testing. Dead bird carcasses are considered testable only if they have died within the past 48 hours, have no obvious physical trauma that led to death, and are of an accepted species for testing. Of the 12 birds tested, 5 were positive for WNV (Figure 6).

The Tulare County Public Health Department (TCPHD) reported 11 human arbovirus infections to the DMVCD in 2023. Of these, 4 had antibodies to both WNV and SLEV.

### WNV Mosquito Positive Pools per Year

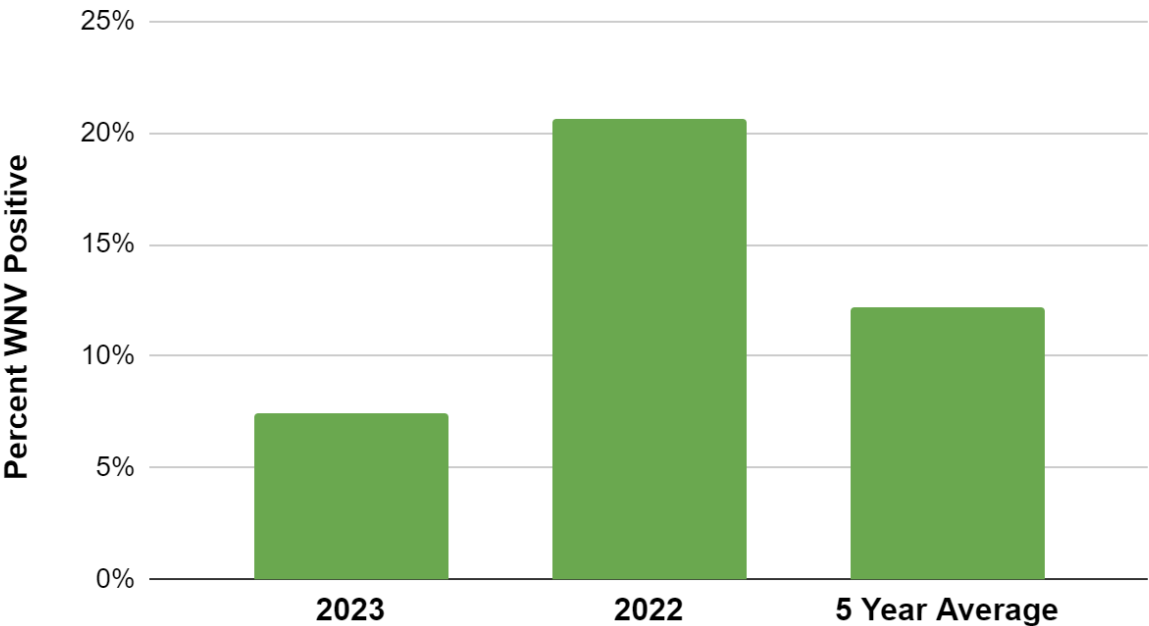


Figure 3. WNV percent positive mosquito samples in 2023 compared to 2022 and the previous 5-year average.

### SLEV Mosquito Positive Pools per Year

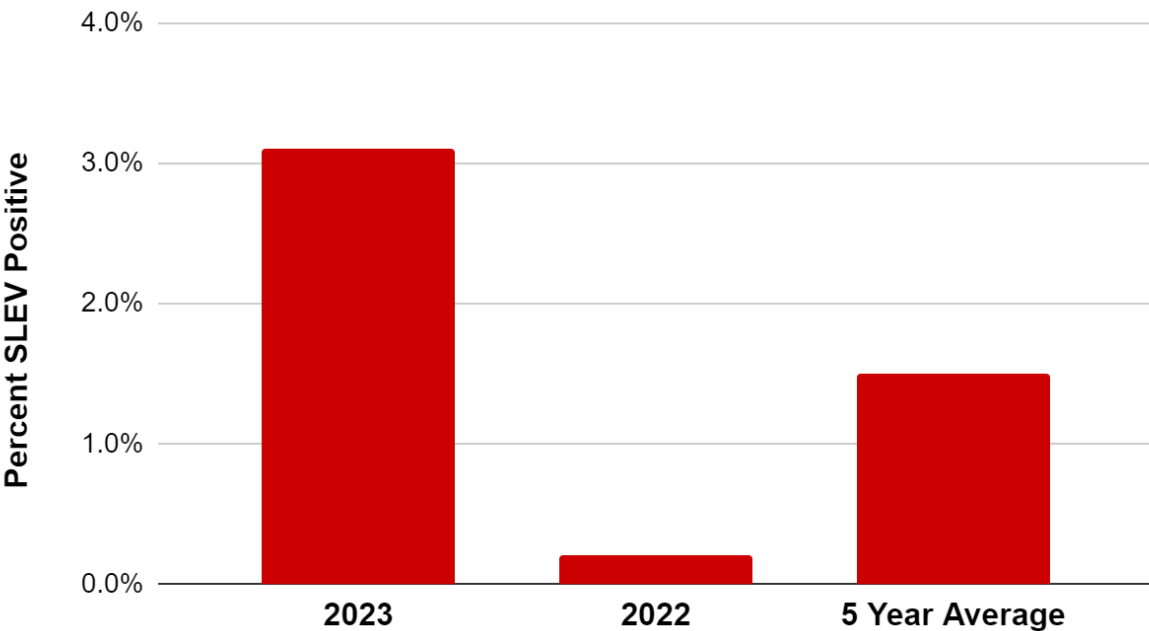


Figure 4. SLEV percent positive mosquito samples in 2023 compared to 2022 and the previous 5-year average.

### WNV and SLEV Positive Pools per Year

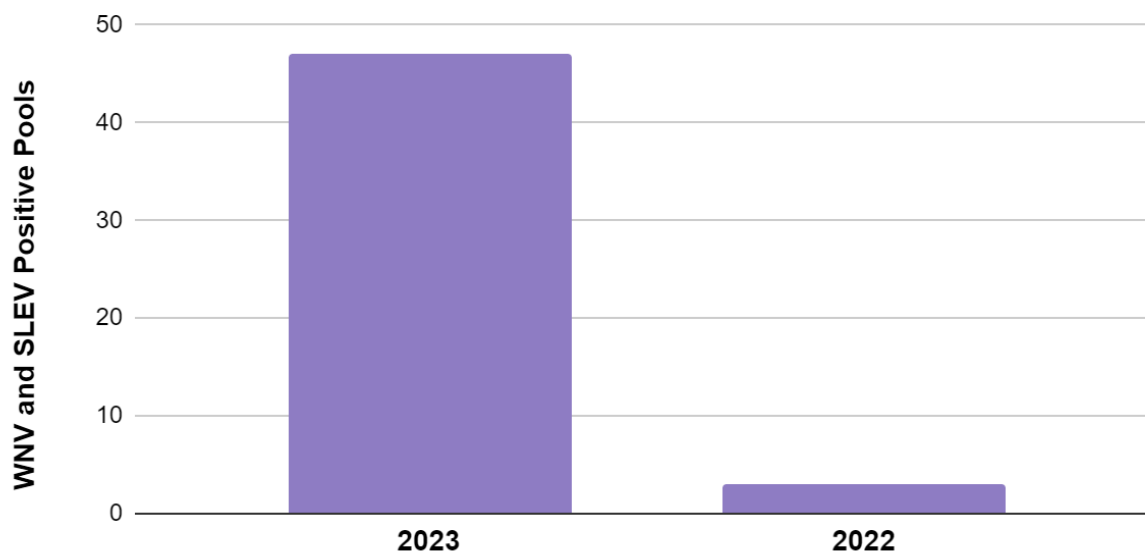


Figure 5. WNV and SLEV combined positive mosquito samples in 2023 compared to 2022. These pools had at least one positive WNV mosquito and one positive SLEV mosquito sample

### Percent Positive Birds per Year

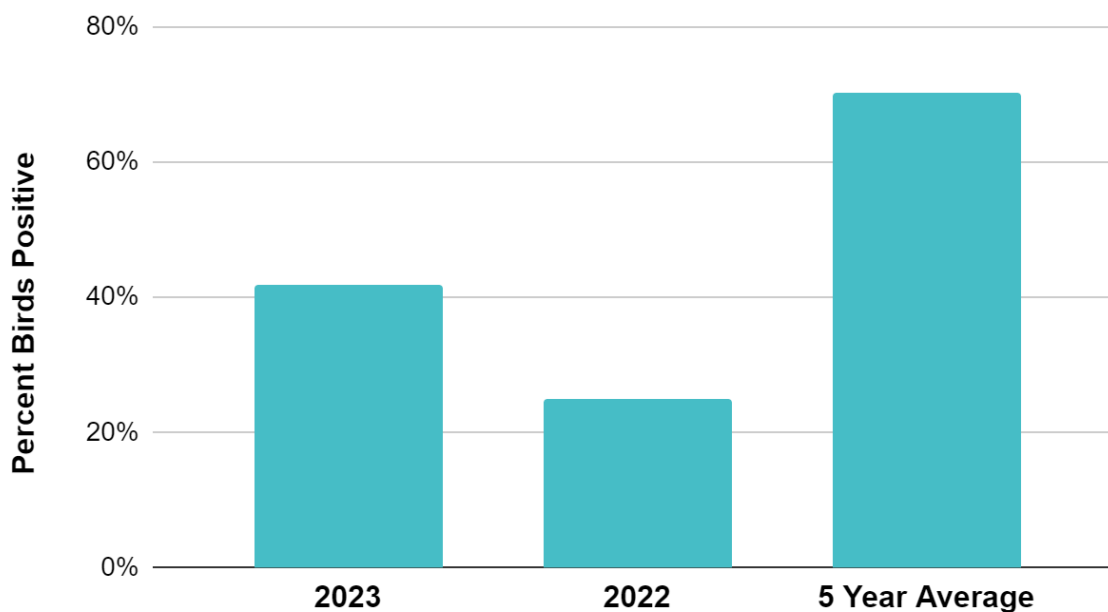


Figure 6. WNV percent positive dead birds in 2023 compared to 2022 and the 5-year average.

Laboratory staff conducted tick flagging at the rock plant in Woodlake (formerly known as Santa Fe Aggregates), which is a private land, and found 33 *Dermacentor occidentalis* ticks. These ticks are also known as the Pacific Coast ticks and can spread Rocky Mountain spotted fever, Pacific Coast tick fever, tularemia, and tick-bite paralysis. These ticks were sent to the California Department of Public Health for rickettsial testing.

## Control

Delta Mosquito and Vector Control District's mosquito control program is prevention focused, relying on the early identification and control of larval mosquito sources to reduce the biting adult mosquito populations. Physical, biological, and chemical control methods are used to control larval sources, allowing for mosquito-specific control. The vast majority of the DMVCD's mosquito control program consists of larval-based control. Mosquito larviciding is both efficient and cost effective. Larval based control eliminates mosquito larvae before they develop into mosquitoes that are capable of transmitting mosquito-borne diseases to humans. Larval based products used to control mosquito larvae are target specific, i.e., they have minimal to no effects on non-target organisms. However, when adult mosquito populations become a threat to public health and transmit diseases such as WNV, the DMVCD takes measures to control adult mosquitoes by conducting adult mosquito treatments to break the disease cycle in the population and continue with surveillance and larval based control.

The Urban Mosquito Control Program main focus is to reduce the mosquito populations of both native and invasive species of mosquitoes in urban locations throughout the DMVCD's jurisdiction. Surveillance trapping efforts allow operations to make scientific- based decisions on the use of resources to reduce arbovirus disease risk and high mosquito population. In addition, operations expanded on the Wide Area Larviciding System (WALS) Program in 2022 which is an additional tool and method used in our Integrated Vector Management (IVM) Program to apply larvicides to a broader geographical area to target mosquito larvae in difficult to find mosquito-breeding habitats. We utilize this method to target *Ae. aegypti* which is a cryptic-breeding mosquito in urban locations. During this mosquito season, we did 8 applications covering 50 acres per application. In addition, the DMVCD Urban Mosquito Program implemented the In2Care Mosquito Trap Program in 2023, (Figure 7) to augment it with another tool to control *Ae. Aegypti* populations.



Figure 7. Schematic view of the In2Care Mosquito Trap System.

The DMVCD started an Unmanned Aircraft System (UAS)/Drone Application Program in 2022 (Figure 8). Four staff members were trained and certified in the Federal Aviation Administration part 107 to pilot small UAS. In addition, the four staff members were certified by the Department of Pesticide Regulation to conduct aerial application using UAS. The intent of this program is to integrate this aerial method to the IVM Program to focus in rural problematic mosquito-breeding areas. This program allows the DMVCD to survey and conduct applications in a safe and effective manner in locations that are virtually inaccessible by traditional ground application methods. During this mosquito season, the DMVCD conducted seven Drone applications of 58.51 acres in rural locations in the District.



*Figure 8. Staff of DMVCD conducting an Unmanned Aircraft System application mission.*

In 2023, DMVCD Vector Control Technicians controlled 13,328 (54.%) mosquito-breeding sources out of 24,836 known or historical mosquito sources inspections (Table 4). Catch basins were treated and inspected monthly during the high mosquito season. In accordance with IVM principles, a variety of control methods were used to control mosquito-breeding sources and prevent insecticide resistance in mosquitoes (Table 5).



Table 4. Total mosquito-breeding sources and treatments of catch basins and historical sources in the DMVCD in 2023.

SOURCE TYPE	TOTAL SOURCES	TREATED	INSPECTIONS
Catch Basins	13,500	13,328	19,992
Historical Sources	24,836	9,142	32,831

Mosquitofish, *Gambusia affinis*, are a large component of maintaining permanent water sources such as ponds and troughs. In 2023, the DMVCD Alburn Fish Hatchery produced 93,075 mosquitofish. Of these, 16,534 mosquitofish were used to treat 242 mosquito-breeding sites in 2023 (Table 5). Free mosquitofish are also available to residents by request.

Table 5. Operational data for control efforts in 2023.

PHYSICAL CONTROL OPERATIONS	2023	2022	2021	2020
Number of sources		**	**	554
<b>MOSQUITOFISH OPERATIONS</b>				
Number of sites stocked	242	91	161	184
Number of mosquitofish used	16,534	3,303	3,856	3,214
<b>ADULTICIDE OPERATIONS</b>				
Number of operations	63	26	12	5
Pyronyl 525 (oz)	1,583.36	4,606.7	4,859	2,961.1
Fyfanon ULV (oz)	6,144.00	0	0	0
Fyfanon EW (oz)	16,264.00	7,186.2	N/A	N/A
<b>SURFACE AGENTS</b>				
Agnique Liquid (oz)	1,345.90	518	424.8	666.5
CocoBear(oz)	128.00	0	0	0
BVA2 larvicide (gallons)	5,319.54	5,352.5	5,867.5	4,492.8
<b>BIORATIONAL LARVICIDES</b>				
<b><i>Bacillus thuringiensis israelensis (Bti)</i></b>				
VectoBac 12AS (oz)	47,810.00	25,958.6	30,454.5	140,974
VectoBac G (lb)	32.00	60	40	41
VectoBac GR (lb)	280.00	287	0	40
VectoBac WDG (lb)	400.00	1,200	74	88



<b><i>Bacillus sphaericus (Bs)</i></b>				
VectoLex Granules (lb)	120.00	175	15	45
VectoLex WSP (each)	778.00	541	351	1,512
<b><i>Bti and Bs</i></b>				
FourStar 180 (each)	100.00	121	99	7
<b>Spinosad</b>				
Natular 2EC (oz)	1,183.00	1,521.5	926.9	853
Natular DT (each)	679.00	126	0	237
Natular G30 (lb)	239.00	291.7	18.25	31.9
Censor (lb)	1,419.00	0	0	0
Natular XRT(each)	33.00	342	46	0
<b>Insect growth regulator (methoprene)</b>				
Altosid Briquets XR (each)	212.00	68	147	164
Altosid Liquid (oz)	288.00	909.5	488.1	1,148
Altosid Pellets WSP (each)	1,297.00	63,808	57,726	69,572
Altosid Sand Mix (lb)	588.50	13	618.6	695.5
Altosid XRG (lb)	1,234.40	351.1	498.3	482
Altosid P35 (lb)	120.00	0	0	0
Altosid SBG II (lb)	200.00	0	0	0
Altosid XRG Ultra (lb)	252.00	1,597	0	0
MetaLarv XRP (each)	0	N/A	1,394	00
Sumilarv WSP 25g (each pouch)	13,536.00	43	0	0
Duplex G (lb)	712.50	0	0	0

\*\* Data for 2022 was not quantifiable due to the implementation of a new data record system Fieldseeker.

## DMVCD Community Education and Outreach



The goal of the community education and outreach is to increase resident participation in preventing nuisance biting and vector-borne diseases by educating residents to reduce mosquito-breeding water sources and use the appropriate personal protective measures to reduce mosquito bites and mosquito-borne diseases.

In 2023, a total of 68 community education and outreach events were attended by the DMVCD staff, comprising 24 Visalia Rawhide baseball games, 15 farmers markets, 20 community events, 19 school/public presentations, and 5 senior center events across Visalia, Exeter, Farmersville, Dinuba, and London. These events, hosting over 1,100 visitors, contributed to the DMVCD's community engagement efforts.



*Outreach event in Exeter, National Night Out*



The DMVCD garnered media attention through features in local print agencies such as The Good Life and Lifestyle Magazine, as well as coverage from three local TV news stations (Telemundo, Univision, and ABC 30). Representatives from these stations conducted interviews and recorded videos with the General Manager, Dr. Debboun, Biologist, Juan Pablo Ortega, and Community Education and Outreach Coordinator, Erick Arriaga, discussing positive WNV mosquito samples found after the winter storms of 2022-2023. Additionally, 8 half-page advertisements were placed in The Good Life, targeting the senior residents who are at high risk of neuroinvasive WNV infections.

## DON'T WANT MOSQUITO BITES?

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**Mosquito-borne diseases can be transmitted to people through the bite of an infected mosquito.  
Do your part to protect yourself, your family & your community.**

Mosquitoes lay eggs on standing water. Eggs can develop into biting adults in as little as a week.  
Fix these common mosquito water sources or dump them weekly for a bite-free summer.



Report **neglected pools** & hot tubs anonymously



Keep **fountains** running & chlorinated or empty



Fill empty **plant trays** with soil/sand or perlite



Place window screens over **yard drains**



**DELTA MOSQUITO AND VECTOR CONTROL DISTRICT**  
SINCE 1922

(559) 732-8606  
[www.DeltaMVCD.org](http://www.DeltaMVCD.org)  
 @DeltaMVCD



**THERE IS NO CHARGE WHEN USING DISTRICT SERVICES**  
 Delta Mosquito & Vector Control is an independent special district that is committed to protecting public health. For more information on the District and our services. Visit the website, or call Monday - Friday 7:00am to 3:30pm.

**Proudly Protecting Public Health Since 1922**

*Advertisement printed in the spring, summer, and fall issues of The Good Life newspaper.*



# PREVENT THE BITE DAY AND NITE!

Words by Dr. Mustapha Debboun, General Manager of Delta Mosquito and Vector Control District

No one welcomes mosquitoes into their homes or neighborhoods! They leave itchy bites, and some mosquitoes transmit serious mosquito-borne diseases to people and pets. We in the Central Valley of California have at least 16 different species of mosquitoes thriving among us in Tulare County. However, only two local types pose the most significant public health risks: 1) the invasive Yellow fever mosquito (*Aedes aegypti*) which transmits Dengue, Chikungunya, Zika, and Dog heartworm disease; and 2) the Southern house mosquito (*Culex quinquefasciatus*) which transmits West Nile virus, Saint Louis Encephalitis virus, and Western Equine Encephalitis virus. The Delta Mosquito and Vector Control professional staff do their best to protect the public from mosquito bites and mosquito-borne diseases using Integrated Mosquito/Vector Management and request all residents act to prevent mosquito bites day and night by doing the following:

## DID YOU KNOW?

Only female mosquitoes bite to obtain protein from the blood needed to produce eggs.

## MOSQUITO BITE PREVENTION TIPS

1. Remove or dump out all sources of standing water around your home, like flowerpots, tires, buckets, pet dishes, trash cans, etc.
2. Chlorinate pools and fountains.
3. Apply insect repellent containing an Environmental Protection Agency registered active ingredient, including DEET, Picaridin, Oil of Lemon Eucalyptus, Para-Menthane Diol, 2-Undecanone, IR3535, Nootkatone, or GO Repellent.
4. Wear loose-fitting long sleeves and pants, particularly if outside at dawn and dusk.
5. Try to stay cool in the summer because mosquitoes are attracted to your sweat and skin heat.
6. Wear light-colored clothes that are less attractive to mosquitoes.
7. Install screens on all windows and doors and keep them in good repair to keep mosquitoes out of your home.
8. Repair leaking faucets and broken sprinklers that contribute to standing water around your home.
9. Get free mosquito fish from Delta Mosquito and Vector Control District to feed on the mosquito larvae in your small aquatic ponds, fountains, and water troughs.
10. Visit the Delta Mosquito and Vector Control District during District community events to learn more about personal protective measures against mosquitoes.
11. Join us as a team to control mosquitoes in your homes and neighborhoods! ■

For additional information and tips contact us at:

Delta Mosquito and Vector Control District  
559-732-8606  
deltamvcd.org  
@deltamvcd

Article on Mosquito and Mosquito bite prevention written by Dr. Debboun and printed in the July Issue of the community Lifestyle Magazine.



*Dr. Mustapha Debboun engaging in a TV interview with a reporter from ABC 30.*

Early in the mosquito season, the DMVCD diligently documented flooded areas and locations with potential flooding risks to identify and address future mosquito-breeding sources effectively.

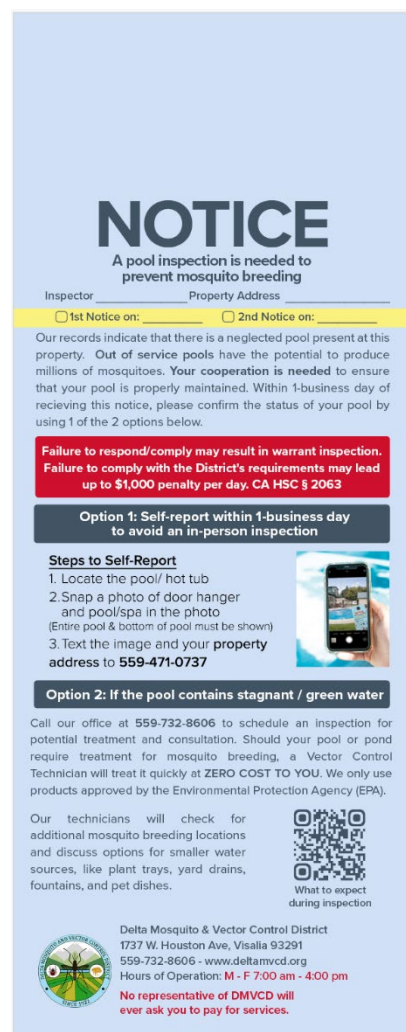
To enhance DMVCD visibility, the vehicle fleet was upgraded with new tailgate graphics. A QR code was incorporated into the graphic, scanned 56 times during the mosquito season, providing easy access to DMVCD information. Contact details were also added to the tailgate of each vehicle.



*Image of upgraded tailgate graphics for entire DMVCD Vehicle fleet.*



Vector Control Technicians were given redesigned green pool notices as new door hangers, aiding in the annual list of over 1,000 green pools. A dedicated property inspection webpage, accessible via a QR code on the door hangers, was established, offering residents insights into the property inspection process. The DMVCD website transitioned to a .gov URL, and vehicles, along with business cards displaying the old URL were updated to reflect the new .gov domain.



**NOTICE**  
A pool inspection is needed to prevent mosquito breeding

Inspector \_\_\_\_\_ Property Address \_\_\_\_\_

☐ 1st Notice on: \_\_\_\_\_ ☐ 2nd Notice on: \_\_\_\_\_

Our records indicate that there is a neglected pool present at this property. Out of service pools have the potential to produce millions of mosquitoes. **Your cooperation is needed** to ensure that your pool is properly maintained. Within 1-business day of receiving this notice, please confirm the status of your pool by using 1 of the 2 options below.

**Failure to respond/comply may result in warrant inspection. Failure to comply with the District's requirements may lead up to \$1,000 penalty per day. CA HSC § 2063**

**Option 1: Self-report within 1-business day to avoid an in-person inspection**

**Steps to Self-Report**

1. Locate the pool/ hot tub
2. Snap a photo of door hanger and pool/spa in the photo (Entire pool & bottom of pool must be shown)
3. Text the image and your property address to 559-471-0737

**Option 2: If the pool contains stagnant / green water**

Call our office at 559-732-8606 to schedule an inspection for potential treatment and consultation. Should your pool or pond require treatment for mosquito breeding, a Vector Control Technician will treat it quickly at **ZERO COST TO YOU**. We only use products approved by the Environmental Protection Agency (EPA).

Our technicians will check for additional mosquito breeding locations and discuss options for smaller water sources, like plant trays, yard drains, fountains, and pet dishes.

What to expect during inspection

Delta Mosquito & Vector Control District  
1737 W. Houston Ave, Visalia 93291  
559-732-8606 - [www.deltamvcd.org](http://www.deltamvcd.org)  
Hours of Operation: M - F 7:00 am - 4:00 pm  
**No representative of DMVCD will ever ask you to pay for services.**

Green Pool inspection doorhanger



**Delta Mosquito and Vector Control District**

**Prevenca la Picadura Día y Noche**

**¡Elimine los criaderos de mosquitos alrededor de su casa!**

**¿Usted tiene el control!**

Protegiendo la Salud Pública desde 1922

@DeltaMVCD  
559-732-8606  
[www.DeltaMVCD.gov](http://www.DeltaMVCD.gov)

Spanish Version of indoor outreach banner



**Delta Mosquito and Vector Control District**

**Prevent The Bite Day & Night**

**Eliminate Mosquito-breeding sources around your home!**

**You Have Control!**

Protecting the Public Health Since 1922

@DeltaMVCD  
559-732-8606  
[www.DeltaMVCD.gov](http://www.DeltaMVCD.gov)

English version of indoor outreach banner

In addition, the DMVCD developed bilingual stand-up banners in English and Spanish for events with space constraints or indoor settings where canopies are impractical. These bilingual banners convey important information on mosquito-breeding sources, bite prevention, personal protection, and how to report mosquito problems, reinforcing the DMVCD's community and outreach efforts.

# FINANCIAL REPORTS

## Budgetary Comparison Schedule General Fund

Fiscal Year ended June 30, 2023

	Budgeted Amounts			Variance with
	Original	Final	Actual	Final Budget
<b>REVENUES</b>				
Property Taxes:				
Current secured	\$2,602,883	\$ 2,602,883	\$ 2,779,511	\$ 176,628
Current unsecured	172,167	172,167	203,703	31,536
Prior secured	42,402	42,402	44,777	2,375
Prior unsecured	1,200	1,200	1,576	376
State homeowner's property				
tax relief	17,918	17,918	17,330	(588)
Pass through income	307,218	307,218	557,844	250,626
Interest income	36,000	36,000	94,069	58,069
Charges for current services	-	-	-	-
Other governmental income	-	-	-	-
Assessments	955,528	955,528	937,068	(18,460)
Other income	149,964	149,964	83,531	(66,433)
Total Revenues	<u>4,285,280</u>	<u>4,285,280</u>	<u>4,719,409</u>	<u>434,129</u>
<b>EXPENDITURES</b>				
Current:				
Salaries and employee benefits	3,075,004	3,075,004	4,023,501	(948,497)
Services and supplies	1,279,637	1,279,637	930,258	349,379
Debt service	117,828	117,828	117,828	-
Capital outlay	360,840	360,840	49,761	311,079
Total expenditures	<u>4,833,309</u>	<u>4,833,309</u>	<u>5,121,348</u>	<u>(288,039)</u>
Excess (deficiency) of revenues				
over (under) expenditures	<u>(548,029)</u>	<u>(548,029)</u>	<u>(401,939)</u>	<u>146,090</u>
Net change in fund balance	<u>\$ (548,029)</u>	<u>\$ (548,029)</u>	<u>(401,939)</u>	<u>\$ 146,090</u>
Fund balance, July 1, 2022			<u>4,461,498</u>	
Fund balance, June 30, 2023			<u>\$ 4,059,559</u>	



## Governmental Fund Balance Sheet

	General Fund	Adjustments	Statement of Net Position
<b>ASSETS</b>			
Cash and cash equivalents	\$ 4,062,350	68,446	\$ 4,130,796
Accounts receivable	-	-	-
Capital assets, net of accumulated depreciation	76,642	4,544,770	4,621,412
Other post employment benefits asset	-	311,664	311,664
<b>Total Assets</b>	<b>4,138,992</b>	<b>4,924,880</b>	<b>9,063,872</b>
<b>DEFERRED OUTFLOWS OF RESOURCES</b>			
Pension deferrals	-	992,960	992,960
Other post employment benefits deferrals	-	19,325	19,325
<b>Total deferred outflows of resources</b>	<b>-</b>	<b>1,012,285</b>	<b>1,012,285</b>
<b>LIABILITIES</b>			
Accounts payable	41,707	-	41,707
Accrued expenses	21,795	-	21,795
Payroll liabilities	15,931	-	15,931
Accrued interest	-	23,057	23,057
Due in one year:	-		
Compensated absences	-	79,507	79,507
Financed purchase	-	97,472	97,472
Due in more than one year	-		
Compensated absences	-	53,004	53,004
Financed purchase	-	646,021	646,021
Net pension liability	-	2,638,649	2,638,649
<b>Total Liabilities</b>	<b>79,433</b>	<b>3,537,710</b>	<b>3,617,143</b>
<b>DEFERRED INFLOWS OF RESOURCES</b>			
Pension deferrals	-	3,894,511	3,894,511
Other post employment benefits deferrals	-	339,293	339,293
<b>Total deferred inflows of resources</b>	<b>-</b>	<b>4,233,804</b>	<b>4,233,804</b>
<b>FUND BALANCE/NET POSITION</b>			
Fund balance:			
Unassigned	4,059,559	(4,059,559)	-
<b>Total fund balance</b>	<b>4,059,559</b>	<b>(4,059,559)</b>	<b>-</b>
Net position:			
Net investment in capital assets	-	3,877,919	3,877,919
Unrestricted	-	(1,652,709)	(1,652,709)
<b>Total fund balance/net position</b>	<b>4,059,559</b>	<b>(1,834,349)</b>	<b>2,225,210</b>