



Delta Mosquito and Vector Control District Strategic Plan 2021-2023



MANAGEMENT STATEMENT

Delta Mosquito and Vector Control District (DMVCD) has been serving the residents of Northern Tulare County since 1922. We work diligently to provide effective and efficient mosquito and vector control through scientific decision making, prudent financial planning, and standard integrated mosquito and vector management.

With the establishment of a new invasive mosquito species, redefining employee roles, and recent retirements, now is an ideal time to develop and implement a strategic plan for the District. Moving forward, the strategic plan will become standard and continuously developed to improve services to District residents.

The purpose of the strategic plan is to:

- Develop and shape the future of the District.
- Work towards a successful future.
- Improve on communication of the goals and needs of the District.
- Create performance and accountability measures for the District.

As we approach our 100-year anniversary of service, the DMVCD continues to strengthen our community relationships through thoughtful plans and effective resource allocations.



Figure 1. Delta Mosquito and Vector Control District Staff Photo, September 2021.

OUR HISTORY

In 1904, the first recorded mosquito control efforts in California were under the direction of University of California professors focused on salt-marsh mosquitoes in the San Francisco Bay marshlands. By 1908, malaria devastated the Central Valley, which led to the adoption of the “Mosquito Abatement Act” across California in 1915. This act has since been incorporated into the California Health and Safety Code, Division 3, which forms the basis for the creation, governing powers, and functions of current mosquito and vector abatement and control districts.

Delta Mosquito Abatement District was founded in 1922, covering 16 square miles, which at the time was the entire city of Visalia and some adjacent suburban areas. The District was formed in large part due to the efforts of the Visalia Woman’s Civic Club to eliminate malaria, the most prominent disease of the time. Over the following years, more land was annexed into the District, which currently stands with 712 square miles, covering most of northern Tulare County.

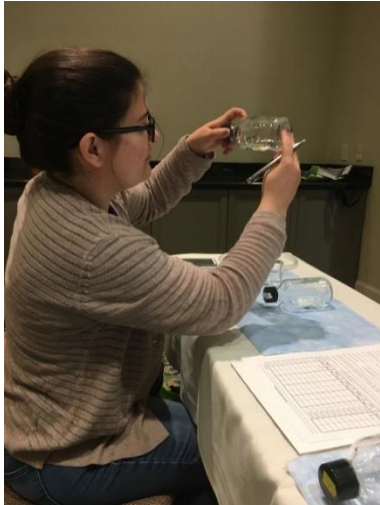
Although malaria is no longer an active threat in Tulare County, other mosquito-borne diseases threaten the public, either from our native *Culex* mosquitoes and the endemic West Nile virus, or the invasive *Aedes aegypti* mosquitoes and the diseases they are capable of transmitting.

In 2012, a new laboratory facility was built on District property to allow in-house testing of mosquito diseases. In 2021, a fish hatchery building was completed, allowing year round stock of mosquitofish to be available to District resident. Also in 2021, an assessment was passed for additional funding to help manage the invasive yellow fever mosquito, *Aedes aegypti*.



Figure 2. Delta Vector Control District Staff Photo, mid 1900’s.

OUR STRATEGY



Our Mission

Delta Mosquito and Vector Control District 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 in order to make Tulare County a safe place to live, work, and raise a family.

Our Vision

The Delta Mosquito and Vector Control District will be the authority for vector control and vector-borne disease prevention in Northern Tulare County.

Our Values

- ❖ Provide continual surveillance of mosquitoes to determine the threat of disease transmission, and annoyance levels.
- ❖ Use safe integrated pest management methods to suppress mosquito populations.
- ❖ Promote cooperation and communication with property owners, residents, social and political groups, and governmental agencies.
- ❖ Environmental Stewardship
 - Ecologically responsible
 - Responsive to environmental changes
 - Emphasis on biorational treatments for mosquito control
 - Application of only EPA approved products
- ❖ Knowledgeable
 - Science and data-based decision making
 - Technology enabled
 - Safety program adherent
- ❖ Professional
 - Honest
 - Reliable
 - Respectful
 - Responsive
 - Committed
 - Inclusionary
 - Teamwork-oriented



ENVIRONMENTAL SCAN

An Environmental Scan is a self-assessment process that allows organizations to identify their internal and external strengths, weaknesses, and foreseeable changes that may impact service.

STRENGTHS

- Larval-based control program
- Financial stability and accountability
- Public accessibility to staff and District information
- Culture of independence that fosters effective collaboration
- Scientific and innovative methods to monitor mosquito and vector abundance
- In-house arbovirus testing for rapid results
- Well-established adult mosquito surveillance grid
- Agency transparency

WEAKNESSES

- Data sharing and integration of laboratory and operations
- Limited mosquito control products
- Response time to public requests for service
- Limited ability to increase scale of operations in a short amount of time
- Low diversity of revenue sources
- Insecticide resistance
- Aging fleet relies on manual transmissions while current workforce cannot drive manual transmissions
- Limited knowledge of other vectors within the District and their impact on residents
- Limited surveillance in agricultural and rural areas of the District

FORESEEABLE CHANGES THAT MAY IMPACT SERVICE DELIVERY

- Climate change
- Changes in regulations
- Human population growth
- Introduction of additional invasive vector species
- Emerging vector-borne diseases
- Natural disasters



2021 GOALS

Review and update training policies and programs

- *Objectives:* Improve consistency in service delivery, reliability of collected data, and retention of employees.
- *Tactic:* Review training as well as knowledge and skill gaps for the current season, identify training methods, create a method to evaluate training of staff, and update current training documents and resources. Must include training for Fieldseeker. Develop strategies for checkpoint evaluations of staff during the mosquito season.
- *Timeline:* Need to be updated for March/April 2022 training.

Integrate Fieldseeker as data collection and reporting tool into District activities

- *Objectives:* Integrate data sharing between Laboratory and Operations, improve data integrity
- *Tactic:* District zones will be redrawn. Each section will list any problems they had with Fieldseeker during the 2021 season and identify any other weaknesses or needs that were not met by the program. For each issue, figure out a workaround or the ideal solution. Issues will be divided into those that can be fixed by us and those that need Frontier Precision staff to address as well as prioritize. Higher priority issues will be addressed first. Develop a plan for routine data accuracy checks.
- *Timeline:* List of issues (ongoing), potential solutions (end of November), apply fixes (mid-December and ongoing).

California Special District Association District Transparency (CSDA)

- *Objectives:* Achieve CSDA Transparency Certificate of Excellence to demonstrate values of the District
- *Tactic:* Follow CSDA checklist to ensure all documents are completed, up to date, and posted appropriately.
- *Timeline:* Achieve Certificate by July 2021 Board of Trustees meeting, follow up for future certification by keeping documents necessary for future certification up to date.

Annual report streamlined

- *Objectives:* Reduce time spent editing the annual report and improve routine reporting throughout the year.
- *Tactic:* Decide what data from each section needs to be included, create a template that is easy to edit, and compile needed data monthly and/or quarterly.
- *Timeline:* December 17, 2021

Provide cyber security training for District employees and update security protocols

- *Objectives:* Reduce the risk of security breaches and loss of District data.
- *Tactic:* Evaluate current District knowledge of cyber security with EMD Networking Services, Inc., and develop a plan to specifically address the gaps in knowledge. Establish routine phishing assessments, ensure everyone who has computer access receive biannual cyber security training, including:
 - Anti-phishing training
 - Password creation
- *Timeline:* Evaluate with EMD in April/May, conduct assessments afterwards, begin schedule for training.

Finalize restructure of District services

- *Objectives:* Improve District services to residents, reduce response time to service requests, and eliminate duplication of services.

- **Tactics:**
 - Integrate *Aedes aegypti*, yellow fever mosquito, services with the *Culex* House Mosquito Program into the new Urban Vector Control Program under operations. Examine changing support for Urban Zone Teams and what's needed in terms of manpower and equipment.
 - Evaluate creating a dairy crew, redistributing Field Zone 2, and restructuring all Field Zones.
- **Timeline:** December 2021.

Conduct adulticide resistance testing in mosquitoes

- **Objectives:** Perform all core and supplemental competencies to be a fully capable vector control District.
- **Tactics:** Maintain susceptible and wild caught mosquito colonies that survive the winter in the insectary, have enough adult mosquitoes on hand for field cage trails during treatments, and begin routine pesticide resistance testing across the District,
- **Timeline:** First CDC biobottle assays (summer 2021).

Hire Community Education and Outreach Coordinator

- **Objectives:** Increase Outreach activities and engagement with the public
- **Tactics:** Create job description and list of job duties, utilizing the assistance of the public relations officers from other Districts to help prioritize skills and duties.
- **Timeline:** Item completed early fiscal year 2021-2022.

Safety

- **Objectives:** Increase safety awareness at the District.
- **Tactics:** Evaluate staff at the end of the 2021 mosquito season and distribute a certificate to the staff member who is deemed to have been the most safety conscious during his/her time. Continue monthly safety meetings with all District sections involved.
- **Timeline:** Observe Safety for the entire duration of the year, implement new safety procedures as items of concern occur.

2022 GOALS

Update all standard operating procedures (SOPs) and create SOPs as needed

- *Objectives:* Improve consistency in service delivery across all employees, reduce loss of historic knowledge when staff retire or leave the District, and reduce delays in services during unplanned absences by re-assigning staff to fill in.
- *Tactic:* Each section (Administration, Laboratory, and Operations) will create a list of all SOPs they currently have, including format and where they are located, and list any needed SOPs. Each section will create and implement a plan to review and update existing SOPs and create new ones.
- *Timeline:* List of SOPs should be completed by the end of January 2022, updating SOPs will be ongoing.

Develop a communication strategy

- *Objectives:* Provide unified messaging from the District and guide communication efforts to change resident behavior.
- *Tactic:* Review Mosquito and Vector Control Association of California (MVCAC) statewide and District Knowledge, Attitudes and Practices (KAP) study, choose goals for outreach for the year, identify key behaviors and target audiences, choose appropriate methods to reach audience, create and test key messages in a variety of formats, develop a plan to monitor effectiveness of outreach, schedule outreach as much as possible (social media posts, radio ads, etc.), and implement an outreach plan.
- *Timeline:* Begin planning in January, roll out the plan at timepoints agreed upon within the strategy and have analytics completed by December 2022.

Develop an Issues Management Strategy

- *Objectives:* Identify potential issues, reduce risk of those issues occurring, ensure that the District is prepared with a unified message, clarify roles and responsibilities in tracking and responding to issues as they arise.
- *Tactic:* Complete Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis, identify potential issues, develop a plan to prevent issues where possible, create 2-3 key messages for issues that are likely to occur, develop position statements if necessary, create media intake and response logs, and develop training plan for supervisory staff.
 - Complete yearly training for all supervisory staff and anyone else deemed likely to need to respond in case of an issue.
- *Timeline:* As soon as possible

Develop a District specific Integrated Vector Management Plan

- *Objectives:* Provide evidence-based guidelines and information on surveillance and control efforts, improve consistency in service delivery across all employees, and reduce loss of knowledge when staff retire or leave the District.
- *Tactic:* Review current California Department of Public Health (CDPH) Mosquito-Borne Virus Surveillance & Response Plan, and CDPH Guidance for Surveillance of and Response to Invasive *Aedes* mosquitoes and Dengue, Chikungunya, and Zika in California, and develop an action list including weaknesses in the existing program and solutions.
- *Timeline:* Begin review in January, integrate plan into new budget.

Routinely test for larvicide and adulticide resistance in mosquitoes

- *Objectives:* Identify and manage pesticide resistance in the District, improve effectiveness of control efforts.

- *Tactics:* Sample mosquito larvae and adults across the District, conduct regular district wide resistance testing of both adulticides and larvicides, develop a rotational plan for chemicals across the District, routinely access adulticide treatments using field cage trials.
- *Timeline:* Conduct initial tests early in the season before ordering pesticides and at the end of season. Have a rotation plan of chemicals across the District.

Monthly Community Newsletter

- *Objectives:* Develop trust with community members and improve transparency
- *Tactics:* Identify topics and information of interest to community members, create a newsletter template, create a sign-up form on the website for the newsletter and other updates to create an automatic mailing list, distribute monthly reports during the mosquito season to interested community members, as well as city councils, and other key organizations.
- *Timeline:* Begin planning before the start of the year with the intention of updates taking place during “mosquito season” (March/April to October/November).

Review and update all district safety policies

- *Objectives:* Reduce accidents in the workplace and stay current with safety regulations
- *Tactic:* Have a full working list of all District safety policies, where they are located, and when they were last reviewed.
- *Timeline:* June 2022.

A1-Super Duty Upgrades

- *Objectives:* Increase the usability of the A1-Super Duty to ensure that applications are easier and can be conducted with increasing frequency.
- *Tactics:* Review upgrades that have been done by other districts and make a list of which upgrades to prioritize completing. Complete upgrades in the order of importance, while keeping an eye out for any other upgrades that other districts may find, or ones that our staff may want to implement.
- *Timeline:* As soon as feasible around other shop work.

Non-mosquito testing capability evaluation

- *Objectives:* Increase the capacity of the District to respond to a wider variety of vectors and vector borne diseases.
- *Tactics:* Hire an additional Biologist who is able to focus on this task. Evaluate testing capabilities within the laboratory setting, and begin to gather information from other Districts as well as testing options when possible. Evaluate trapping or surveillance capabilities based on recommendations from officials and other districts. Begin to list potential control strategies and their feasibility. Decide which vectors and vector-borne diseases to focus on initially, as well as plans to further expand the program into the future. Possible focuses: ticks, fleas, kissing bugs, etc.
- *Timeline:* Ensure preparation to purchase some items for trial in the new budget.

Operation in Underground Mosquito-Breeding Sources

- *Objectives:* Ensure that all potential mosquito-breeding sources in the District are being surveyed and treated appropriately.
- *Tactics:* Evaluate the actual mosquito production in a variety of underground sites and establish an Integrated Vector Management approach to address the problem. Some potential areas which are not being regularly monitored are:
 - Electrical utility vaults
 - Underground drain lines
 - Storm water manhole covers

- *Timeline:* Implement staffing needs prior to the start of the 2022 mosquito season, begin surveying and treating during the 2022 mosquito season.

Administrative Analyst Training

- *Objectives:* Ensure that Administrative Analyst is cross-trained with all of the Administrative Assistant's duties, so that during the Administrative Assistant's absence, tasks will still be performed and completed.
- *Tactics:* Set aside time for the Administrative Assistant to train the Administrative Analyst one on one and make a clear calendar of tasks and deadlines. Tasks include but are not limited to:
 - The audit
 - The budget
 - Doing payroll and vouchers
 - Other Post Employment Benefits (OPEB)
 - Day-to-day activities
- *Timeline:* Continuous, until training is complete.

Sterile Insect Technique (SIT) Collaboration with Oxitec and SIT Training

- *Objectives:* Evaluate the effectiveness of Sterile Insect Techniques (SIT) within the District, and ensure all staff are trained on the different types of SIT in order to answer questions posed by the public.
- *Tactics:* Collaborate with Oxitec LTD for a trial of their Friendly Mosquitoes in selected locations within the District. Use existing resources and create resources to assist with the education of staff.
- *Timeline:* Collaboration timeline will depend on the Environmental Protection Agency approval of Oxitec within California, ideally starting before the start of the 2022 mosquito season. Training will take place for full time staff by February and for seasonal staff during their seasonal start training.

Evaluation of QISTA SMART BAM Mosquito Trap

- *Objectives:* Evaluate the effectiveness of the QISTA SMART BAM Mosquito Trap in the Central Valley of California.
- *Tactics:* Monitor matched areas with either a QISTA or a Biogents Sentinel Trap, the current gold standard in trapping, evaluate catch rates and biting pressure.
- *Timeline:* Expect the updated/modified QISTA traps before the start of the 2022 mosquito season, evaluate for the remainder of the season and provide feedback by December 2022.

District of Distinction Certificate

- *Objectives:* Achieve the District of Distinction Certification from the Special District Leadership Foundation through the California Special District Association.
- *Tactics:* Follow the checklist to ensure all documents and activities are completed, up to date, and maintained.
- *Timeline:* Achieve Certificate by 2022 July Board of Trustees meeting, and follow up for future certification by keeping all documents and activities up to date.

Safety

- *Objectives:* Increase Safety Awareness at the District.
- *Tactics:* Update and create safety checks and protocols. Increase amount of safety training during the year. Develop a targeted calendar of safety training.
- *Timeline:* Have increased safety training ready for the training modules at the start of the 2022 mosquito season. Evaluate usefulness of additional safety training throughout the year to finalize the calendar by the end of 2022.

2023 GOALS

Drone Program

- *Objectives:* Develop an active unmanned Aircraft Systems/Drone Program to assist with mosquito surveillance and breeding control sources.
- *Tactics:* Ensure at least four staff achieve pilot licenses. Create a full protocol for use of drones written and confirmed. Ensure all paperwork is in order. Purchase a treatment drone. Conduct first rural treatment.
- *Timeline:* Ensure a plan is in place before the start of the 2023 mosquito season, include the drone on the budget, and ensure conducting the first rural treatment before the end of the season.

Government Finance Officers Association Award in Financial Reporting

- *Objectives:* Obtain this award for Excellence in Government Finance to prove the excellent care the District takes with its public funds.
- *Tactics:* Create a list of necessary documents and make sure all are available and up to date. Generate documents with appropriate approval where necessary. Be sponsored by a member of the Association and complete the application.
- *Timeline:* December 2023

Community School Program

- *Objectives:* Create an outreach program to schools which will help educate future generations and get citizen scientists involved and interested in mosquito and vector surveillance activities.
- *Tactics:* Contact other districts which have successful programs and learn about their resources. Make contacts at schools and partnerships with teachers to help ensure that materials fit into existing lesson requirements. Potentially hire staff to specifically run the program, or find out if it can be mostly done by the teachers with assistance from the Community Education and Outreach Coordinator or other staff.
- *Timeline:* Conduct at least one lesson at one school by December 2023.

Evaluation of In-2-Care

- *Objectives:* Evaluate the In-2-Care traps in the District and decide how feasible their deployment may be for the entire District versus hot spot areas during the 2023 mosquito season.
- *Tactics:* Monitor matched areas with and without In-2-Care intervention, and with their different quantities deployed in the areas.
- *Timeline:* Evaluation will take place during the 2023 mosquito season.

Knowledge, Attitudes, and Practices (KAP) survey

- *Objectives:* Evaluate outreach activities and plan future activities appropriately.
- *Tactics:* Work on questions with a consulting company who completes KAP surveys and ensure it administers the surveys. Compare results to the 2021 survey.
- *Timeline:* Conduct surveys during mosquito season. Complete KAP surveys every two years.

Vehicle Fleet update plan in place and functioning

- *Objectives:* Implement a clear schedule so there are fewer unexpected surprises and no times without sufficient vehicles.
- *Tactics:* Evaluate agreement with Enterprise from the past three years and design long term plans.
- *Timeline:* Plan in place by December 2023.

Implement other vectors surveillance program

- *Objectives:* Increase the capacity of the District to respond to a wider variety of vectors and vector-borne diseases.
- *Tactics:* Use knowledge from previous years evaluation to start a plan of additional vectors surveillance programs.
- *Timeline:* December 2023

Update Employee paperwork

- *Objectives:* Ensure compliance with local, state and federal laws; increase accountability for all training given; outline clear and concise rules and requirements for all staff.
- *Tactics:* Continue compiling and adding to the program, have finalized paperwork and plan to streamline the onboarding process, annual training, offboarding process and reporting paperwork.
- *Timeline:* April, 2023.

Review all historical documents

- *Objectives:* Ensure there is no loss of knowledge from historical documents in obsolete forms; use interesting historical documents for outreach.
- *Tactics:* Scan in historical documents that are useful, appropriately dispose of documents that are not necessary, and update historical documents that need updating.
- *Timeline:* December 2023.

Update California Environmental Quality Act (CEQA) document

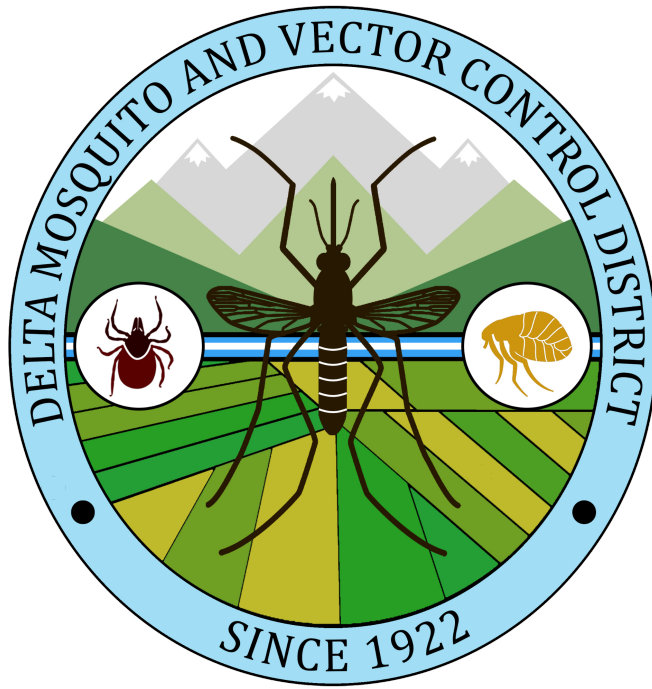
- *Objectives:* Ensure the CEQA document is updated and accurate to current activities.
- *Tactics:* Make and submit edits.
- *Timeline:* December 2023.

Evaluate all programs

- *Objectives:* Ensure that programs are operating at optimum levels.
- *Tactics:* Conduct a step by step evaluation of each program and implement improvements or a strategy for improvements if necessary.
- *Timeline:* Conduct evaluation during the mosquito and vector season and have an improvement plan ready before the end of the year.

Safety

- *Objectives:* Increase Safety Awareness at the District.
- *Tactics:* Evaluate the new safety protocols, training, and awards. Fill gaps that are found during evaluation with appropriate activity.
- *Timeline:* Ongoing.



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