AGENDA

1034th MEETING OF THE BOARD OF TRUSTEES
OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT

JUNE 8TH, 2016

TIME: 5:00 P.M.
PLACE: Office of the District, 23187 Connecticut Street, Hayward
TRUSTEES: Richard Guarienti, President, City of Dublin
Kathy Narum, Vice-President, City of Pleasanton
Robert Dickinson, Secretary, City of Piedmont
Humberto Izquierdo, County-at-Large
Wendi Poulson, City of Alameda
P. Robert Beatty, City of Berkeley
Scott Donahue, City of Emeryville
George Young, City of Fremont
Elisa Marquez, City of Hayward
James N. Doggett, City of Livermore
Eric Hentschke, City of Newark
Jan O. Washburn, City of Oakland
Ursula Reed, City of San Leandro
Ronald Quinn, City of Union City

1. Call to order.

2. Roll call.

3. President Guarienti invites any member of the public to speak at this time on any issue relevant to the District. (Each individual is limited to five minutes).

4. Approval of the minutes of the 1033rd meeting held May 11th, 2016 (**Board action required**).

5. Introduction of new Board Member Humberto Izquierdo representing the County-at-Large (Information only)

6. Presentation of the preliminary Engineers Report for fiscal year 2016-2017 by Melanie Guillory-Lee from SCI Consulting Group (Information only).

7. Resolution 1034-1 intending to continue assessments for fiscal year 2016-17, preliminarily approving the engineer's report, and providing for notice of hearing. **(Board action required**)

8. Resolution 1034-2 certifying the final Programmatic Environmental Impact Report (PEIR) for the ACMAD integrated mosquito management program (**Possible Board Action**)

9. Resolution 1034-3 adopting findings, approving mitigation activities, and authorizing approval for the ACMAD integrated mosquito management program and related actions pursuant to the California Environmental Quality Act (CEQA). (**Possible Board Action**)

10. Presentation and approval of the final budget for fiscal year 2016-17 (**Board action required**)

11. Closed session to discuss the District Manager's twelve-month evaluation pursuant to Government Code Section 54957.6. (Information only)

12. Compensation recommendation of District Manger Ryan Clausnitzer, based on a recommendation from the Manager Evaluation Committee, according to the manager's employee contract. **(Board action required**)

13. Second reading of revisions to chapters 500, 600, 700 of ACMAD policies (**Board action required**)

14. Financial Reports:

    a. Review of warrants dated May 15, 2016 numbering 054816 through 057616 amounting to $150,439.53 and warrants dated May 31, 2016 numbering 057716 through 061216 amounting to $121,469.33 (Information only).
    b. Review of Budget as of May 31, 2016. (Information only).

15. Presentation of the Monthly Staff Report for May 2015 (Information only).

16. Presentation of the Manager's Report for May 2015. (Information only).
    a. 2014-15 Draft Biennial Report
    b. Eden Landing Ecological Reserve and Oro Loma Horizontal Levee
    c. City council presentations to begin in Fall/ Winter of 2016
    d. Staff harassment and discrimination training occurred on May 5th
    e. Summer Quarterly newsletter to be available by end of June
    f. Pesticide shed replacement currently out for bid

17. Board President asks for reports on conferences and seminars attended by Trustees.

18. Board President asks for announcements from members of the Board.

19. Board President asks trustees for items to be added to the agenda for the next Board meeting.

20. Adjournment.

RESIDENTS ATTENDING THE MEETING MAY SPEAK ON ANY AGENDA ITEM AT THEIR REQUEST.

Please Note: A copy of this agenda is also available at the District website, www.mosquitoes.org **or via email by request. Alternative formats of this agenda can be made available for persons with disabilities. Please contact the district office at (510) 783-7744, via FAX (510) 783-3903 or email at acmad@mosquitoes.org to request an alternative format.**

Agenda item: 1034.4

MINUTES

1033rd MEETING OF THE BOARD OF TRUSTEES OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT

MAY 11TH, 2016

TIME:	5:00 P.M.
PLACE:	Office of the District, 23187 Connecticut Street, Hayward
TRUSTEES:	Richard Guarienti, President, City of Dublin
	Kathy Narum, Vice-President, City of Pleasanton
	Robert Dickinson, Secretary, City of Piedmont
	Scott Paulsen, County-at-Large
	P. Robert Beatty, City of Berkeley
	Wendi Poulson, City of Alameda
	Scott Donahue, City of Emeryville
	George Young, City of Fremont
	Elisa Marquez, City of Hayward
	James N. Doggett, City of Livermore
	Eric Hentschke, City of Newark
	Jan O. Washburn, City of Oakland
	Ursula Reed, City of San Leandro
	Ronald Quinn, City of Union City

President Guarienti called the regularly scheduled Board meeting to order at 5:02 P.M.

Trustees Guarienti, Paulsen, Beatty, Poulson, Donahue, Young, Marquez, Doggett, Hentschke, and Washburn were present; Trustees Narum, Dickinson, Reed, and Quinn were absent.

President Guarienti invited members of the public to speak on any issue relevant to the District, Trustee Paulsen introduced the new Alameda County Agricultural Commissioner and his Trustee replacement Humberto Izquierdo who attended as a guest.

The board approved the minutes of the 1032th meeting held April 13th, 2016. (Washburn, Marquez)– unanimous; Trustees Paulsen & Donahue—abstained.

Board President Guarienti welcomed the new Berkeley Trustee, Dr. P. Robert Beatty who provided his background as a current professor of Immunology at UC Berkeley.

Board President Guarienti read resolution 1033-1 honoring Trustee Paulsen representing the County-at-large. Trustee Washburn thanked Trustee Paulsen for his expertise during his term as Interim District Manager, Trustee Paulsen expressed his honor serving on the board and working with its respective Managers and Trustees.

The District Manager presented the proposed redesigned logo. Trustee Marquez asked if it would always be in color/ how it appeared in black and white, the District Manager responded that was taken into consideration during design. District Poulson asked if the cityscape represented the San Francisco Ferry Building, the District Manager responded that it was Oakland's Tribune Tower and/ or UC Berkeley's Campanili. Trustee Donahue offered his support due to its inclusion of the taxpayers of Alameda County and commented on the now "angry demeanor" of the mosquito. Trustee Washburn suggested to enlarge the mosquito, if possible, and that while there some "friendly" mosquitoes, most are "angry". He also asked if the mosquito could be enlarged and how this logo compares to other mosquito districts, the District Manager responded that he will look into this enlargement and that this logo differs as it is more in the style of a city seal than a private company for the safety of field staff. (Washburn, Doggett)– unanimous

The District Manager presented the draft 2016-17 budget and fielded the following questions and statements (in parentheses). Trustee Hentschke inquired about the reference to anthropological research (possible study in the District's marsh mosquitoes and human history). Trustee Donahue asked if the positive financial state of the District could make it open to public scrutiny (only if public health and "rainy day" reserves are not defined and filled, no capital projects planned, then discussions of reducing revenue (lowering taxes) will be recommended). Trustee Paulsen asked about why the working capital reserves lowered (this is based on a spreadsheet formula—60% of expenditure funds must be reserved for "dry period cash"). Trustee Beatty offered support for the budget. The District manager also explained certain changes in detail. The first item was in training which increased to include paying college classes for staff and $50,000 proposed for the District Manager's graduate study, to be discussed further during the District Manager's contract evaluation. Trustee Marquez requested that to be discussed further during the evaluation process. The second subject was capital expenditures which increased to include lab equipment (explained by Trustee Washburn), a new database, and increasing the size of the board room to allow for training, which Trustee Washburn attested to. Trustee Hentschke asked if the historical capital proposals became actual purchases, Trustees Doggett and Washburn confirmed that being the case and Trustee Washburn added that mosquito equipment breaks down, especially Argos, and then inquired if the District's Entomologist has used an Argo (briefly). The third item brought up was explaining the reclassification amount on the salary page. The District Manger explained this proposal is to possibly increase the salaries and change the titles of three positions (Biological Specialist, Environmental Specialist, Systems Specialist) based on parity, accurately reflecting their roles, and qualifications. When asked, Trustee Washburn received clarification on the proposal.

Board President Guarienti reported on the updates and first readings of policies 500, 600, 700 with assistance by the District Manager. Trustee Marquez stated that she appreciated the employee involvement. Trustee Paulsen asked if any changes triggered a meet and confer, the District Manager mentioned that some changes in future sections (300) were resolved in meet and confer, but other sections were moved to the more appropriate location in the MOU (e.g. pension vesting). Trustee Beatty asked about the changed policy numbers, Board President Guarienti mentioned that most numbers changed due to the amount of revision. Trustee Donahue asked who proposed the revisions and if a labor attorney should also be involved in the review, the District Manager offered that the consultant, Municipal Resource Group, who are doing the review are qualified to do so. Trustee Hentschke asked if the District could utilize Alameda County's attorneys for this review, both Trustee Paulsen and the District Manager mentioned that they would charge the same, if not more, than a private attorney. Board President Guarienti offered that it was

a thorough process. Trustee Doggett did find one grammatical error, which will be corrected in the 2nd reading at the next board meeting.

The Board reviewed warrants dated April 15, 2016 numbering 048916 through 051716 amounting to $114,754.70 and warrants dated April 30, 2016 numbering 051816 through 054716 amounting to $116,190.98.

The Board reviewed the budget and summary received as of April 30th, 2016. Trustee Beatty asked about why the aerial survey amount has not been spent (it will be expended in the next few weeks). Trustee Poulson inquired about the power to fine, the District Manager and Trustee Washburn explained the authority granted by the State Law. Trustee Donahue asked if one could "lob" a treatment over a fence, Trustee Washburn reminded Trustee Donahue to contact the District for this service. Trustee Marquez questioned the "permits" budget item (regulatory: NPDES, ditching). After the District Manager brought up removing the Budget Summary, Trustee Washburn agreed with its redundancy and outdated information.

The District Manager presented the Monthly Staff Report for April 2016. Trustee Washburn offered that crane flies numbers are high this year, which prompted Board President Guarienti to retell an anecdote attesting to this.

The District Manager presented the Manager's Report for April 2016. Board President Guarienti asked who previously evaluated the District Manager (Trustees Narum, Washburn, Dickinson, Quinn). Trustee Young requested that this be coordinated by the District Manager.

Board President Guarienti asked for reports on conferences and seminars attended by Trustees, there were none.

Board President Guarienti asked for announcements from the Board. Trustee Poulson visited the District booth at Earth Day in Alameda and followed up with staff member Sarah Erspamer with a service request identifying stagnant water breeding mosquitoes.

Board President Guarienti asked trustees for items to be added to the agenda for the June Board meeting, there were none.

The meeting adjourned at 6:30 P.M.

Respectfully submitted,

_____
Robert Dickinson, Secretary
BOARD OF TRUSTEES

Approved as written and/or corrected
at the 1034th meeting of the Board of
Trustees held June 8th, 2016

_____
Richard Guarienti, President
BOARD OF TRUSTEES

ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT

MOSQUITO AND DISEASE CONTROL ASSESSMENT

ENGINEER'S REPORT

FISCAL YEAR 2016-17

PURSUANT TO THE HEALTH AND SAFETY CODE, GOVERNMENT CODE AND ARTICLE XIIID OF THE CALIFORNIA CONSTITUTION

ENGINEER OF WORK:
SCIConsultingGroup
4745 MANGELS BOULEVARD
FAIRFIELD, CALIFORNIA 94534
PHONE 707.430.4300
FAX 707.430.4319
www.sci-cg.com

(THIS PAGE INTENTIONALLY LEFT BLANK)

ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT

BOARD OF TRUSTEES

Richard Guarienti, President, City of Dublin
Kathy Narum, Vice President, City of Pleasanton
Robert Dickinson, Secretary, City of Piedmont
Scott Donahue, City of Emeryville
James Doggett, City of Livermore
Elisa Marquez, City of Hayward
Scott Paulsen, County-at-large
Wendi Poulson, City of Alameda
Ronald Quinn, City of Union City
Ursula Reed, City of San Leandro
Jan Washburn, City of Oakland
George Young, City of Fremont
City of Berkeley, vacant
City of Newark, vacant

DISTRICT MANAGER

Ryan Clausnitzer

ENGINEER OF WORK

SCI Consulting Group

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

OVERVIEW

The Alameda County Mosquito Abatement District ("District") is an independent special District in Alameda County ("County") that covers all cities within the county except for the City of Albany. The District's services encompass more than 800 square miles and are provided to properties accommodating over 1.5 million residents.

In 1930, the Alameda County Mosquito Abatement District was officially formed in accordance with local authority provided by the Mosquito Abatement Act of 1915. The District's services are further supported by the California Health and Safety Codes. The District is overseen by a Board of Trustees (the "Board") comprised of fourteen members. Each City Council within the District and the Board of Supervisors of Alameda County appoint one Trustee. A Trustee serves a two-year term and can be reappointed.

The District provides control for both disease carrying mosquitoes and non-disease carrying mosquitoes within its boundaries (the "Assessment Area" or "Assessment District"). The purpose of the Alameda County Mosquito Abatement District is to reduce the risk of mosquito-borne disease and mosquito nuisance to property and the inhabitants of property within the District. The District services are available to all properties within the established boundary of the District.

The District's core services are summarized as follows:

- Early detection of public health threats through comprehensive mosquito and disease surveillance.
- Elimination and control of mosquitoes to protect public health and to diminish the nuisance and harm caused by mosquitoes.
- Protection of public health by reducing mosquitoes or exposure to mosquitoes that transmit diseases on property
- Appropriate, timely response to customer requests to prevent/control mosquitoes and the diseases they can transmit.

The District currently provides a "baseline" level of mosquito and disease control services in the County. Over the past few years, costs of providing services has exceeded revenue and without the additional assessment Services would have deteriorated. The services provided to the Assessment Area consist of maintaining the current level of services and in some cases expanded services, as listed below, above the existing baseline level of services.

The Assessment Area is narrowly drawn to include only properties that may request and/or receive direct and more frequent service, that are located within the scope of the mosquito surveillance area, that are located within flying or traveling distance of potential mosquito sources monitored by the District, and that will benefit from a reduction in the amount of mosquitoes reaching and impacting the property as a result of the enhanced mosquito

surveillance and control. The Assessment Diagram included in this report shows the boundaries of the Assessment Area.

The following is an outline of the primary services, programs and related costs that are funded by the mosquito and disease control assessment:[1]

- Mosquito control and abatement
- Surveillance for mosquito-borne diseases
- Mosquito inspections
- Response to service requests
- Mosquitofish for backyard fish ponds and other appropriate habitats
- Mosquito surveillance and disease testing
- Monitor mosquito populations and survey for mosquito-borne disease agents
- Upgrading of the equipment utilized by the District
- Presentations to schools and civic groups

This Engineer's Report ("Report") defines the benefit assessment, which provides funding for these improved mosquito and disease control services for property throughout the District, as well as related costs for equipment, capital improvements and services, facilities necessary and incidental to mosquito and disease control programs.

As used within this Report and the benefit assessment ballot proceeding, the following terms are defined:

> *"Vector" means any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and small mammals and other vertebrates (Health and Safety Code Section 2002(k)).*
>
> *"Vector Control" shall mean any system of public improvements or services that is intended to provide for the surveillance, prevention, abatement, and control of vectors as defined in subdivision (k) of Section 2002 of the Health and Safety Code and a pest as defined in Section 5006 of the Food and Agricultural Code (Government Code Section 53750(m)).*

Note: The District is the only dedicated agency controlling mosquitoes within its boundaries, in Alameda County. There are however, other agencies dedicated to the control of other types of vectors, such as rats. In any case, the California Code sections and other applicable citations within this report pertain specifically to mosquito and disease control even when the term vector is used.

[1] The improved mosquito and disease prevention services materially increase the usefulness, utility, livability and desirability of properties in the Assessment Area.

The District is controlled by Mosquito Abatement and Vector Control District Law of the State of California. Following are excerpts from the Mosquito Abatement and Vector Control District Law of 2002, codified in the Health and Safety Code, Section 2000, et. seq. which serve to summarize the State Legislature's findings and intent with regard to mosquito abatement and other vector control services:

> *2001. (a) The Legislature finds and declares all of the following:*
> *(1) California's climate and topography support a wide diversity of biological organisms.*
> *(2) Most of these organisms are beneficial, but some are vectors of human disease pathogens or directly cause other human diseases such as hypersensitivity, envenomization, and secondary infections.*
> *(3) Some of these diseases, such as mosquito borne viral encephalitis, can be fatal, especially in children and older individuals.*
> *(4) California's connections to the wider national and international economies increase the transport of vectors and pathogens.*
> *(5) Invasions of the United States by vectors such as the Asian tiger mosquito and by pathogens such as the West Nile virus underscore the vulnerability of humans to uncontrolled vectors and pathogens.*
> *(b) The Legislature further finds and declares:*
> *(1) Individual protection against the vector borne diseases is only partially effective.*
> *(2) Adequate protection of human health against vector borne diseases is best achieved by organized public programs.*
> *(3) The protection of Californians and their communities against the discomforts and economic effects of vector borne diseases is an essential public service that is vital to public health, safety, and welfare.*
> *(4) Since 1915, mosquito abatement and vector control districts have protected Californians and their communities against the threats of vector borne diseases.*
> *(c) In enacting this chapter, it is the intent of the Legislature to create and continue a broad statutory authority for a class of special districts with the power to conduct effective programs for the surveillance, prevention, abatement, and control of mosquitoes and other vectors.*
> *(d) It is also the intent of the Legislature that mosquito abatement and vector control districts cooperate with other public agencies to protect the public health, safety, and welfare. Further, the Legislature encourages local communities and local officials to adapt the powers and procedures provided by this chapter to meet the diversity of their own local circumstances and responsibilities.*

Further the Health and Safety Code, Section 2082 specifically authorizes the creation of benefit assessments for vector control, as follows:

> *(a) A district may levy special benefit assessments consistent with the requirements of Article XIIID of the California Constitution to finance vector control projects and programs.*

This Engineer's Report ("Report") was prepared by SCI Consulting Group (SCI) to describe the mosquito, disease surveillance and control services and related costs that are funded by the assessments, to establish the estimated costs for those Services, to determine the special benefits and general benefits received by property from the Services and to apportion the assessments to lots and parcels within the District based on the estimated special benefit each parcel receives from the services funded by the benefit assessment.

LEGISLATIVE ANALYSIS

PROPOSITION 218

This assessment was formed consistent with Proposition 218, The Right to Vote on Taxes Act, which was approved by the voters of California on November 6, 1996, and is now Article XIIIC and XIIID of the California Constitution. Proposition 218 provides for benefit assessments to be levied to fund the cost of providing services, improvements, as well as maintenance and operation expenses to a public improvement which benefits the assessed property.

Proposition 218 describes a number of important requirements, including a property-owner balloting, for the formation and continuation of assessments, and these requirements are satisfied by the process used to establish this assessment. When Proposition 218 was initially approved in 1996, it allowed for certain types of assessments to be "grandfathered" in, and these were exempted from the property–owner balloting requirement.

> *Beginning July 1, 1997, all existing, new, or increased assessments shall comply with this article. Notwithstanding the foregoing, the following assessments existing on the effective date of this article shall be exempt from the procedures and approval process set forth in Section 4:*
> *(a) Any assessment imposed exclusively to finance the capital costs or maintenance and operation expenses for sidewalks, streets, sewers, water, flood control, drainage systems or vector control.*

Mosquito and vector control was specifically "grandfathered in," underscoring the fact that the drafters of Proposition 218 and the voters who approved it were satisfied that funding for mosquito and vector control is an appropriate use of benefit assessments, and therefore confers special benefit to property.

SILICON VALLEY TAXPAYERS ASSOCIATION, INC. V. SANTA CLARA COUNTY OPEN SPACE AUTHORITY

In July of 2008, the California Supreme Court issued its ruling on the Silicon Valley Taxpayers Association, Inc. v. Santa Clara County Open Space Authority ("SVTA vs. SCCOSA"). This ruling is the most significant legal document in further legally clarifying

Proposition 218. Several of the most important elements of the ruling included further emphasis that:

- Benefit assessments are for special benefit to property, not general benefits[2]
- The services and /or improvements funded by assessments must be clearly defined
- Special benefits are directly received by and provide a direct advantage to property in the assessment district

This Engineer's Report, and the process used to establish this assessment is consistent with the SVTA vs. SCCOSA decision.

DAHMS V. DOWNTOWN POMONA PROPERTY

On June 8, 2009, the 4th Court of Appeal amended its original opinion upholding a benefit assessment for property in the downtown area of the City of Pomona. On July 22, 2009, the California Supreme Court denied review. On this date, Dahms became good law and binding precedent for assessments. In Dahms the Court upheld an assessment that was 100% special benefit (i.e. 0% general benefit) on the rationale that the services and improvements funded by the assessments were directly provided to property in the assessment district. The Court also upheld discounts and exemptions from the assessment for certain properties.

BONANDER V. TOWN OF TIBURON

On December 31, 2009, the 1st District Court of Appeal overturned a benefit assessment approved by property owners to pay for placing overhead utility lines underground in an area of the Town of Tiburon. The Court invalidated the assessments on the grounds that the assessments had been apportioned to assessed property based in part on relative costs within sub-areas of the assessment district instead of proportional special benefits.

BEUTZ V. COUNTY OF RIVERSIDE

On May 26, 2010, the 4th District Court of Appeal issued a decision on the Steven Beutz v. County of Riverside ("Beutz") appeal. This decision overturned an assessment for park maintenance in Wildomar, California, primarily because the general benefits associated with improvements and services were not explicitly calculated, quantified and separated from the special benefits.

GOLDEN HILL NEIGHBORHOOD ASSOCIATION V. CITY OF SAN DIEGO

On September 22, 2011, the San Diego Court of Appeal issued a decision on the Golden Hill Neighborhood Association v. City of San Diego appeal. This decision overturned an assessment for street and landscaping maintenance in the Greater Golden Hill neighborhood of San Diego, California. The court described two primary reasons for its

[2] Article XIII D, § 2, subdivision (d) of the California Constitution states defines "district" as "an area determined by an agency to contain all parcels which will receive a special benefit from the proposed public improvement or property-related service."

decision. First, like in Beutz, the court found the general benefits associated with services were not explicitly calculated, quantified and separated from the special benefits. Second, the court found that the City had failed to record the basis for the assessment on its own parcels.

COMPLIANCE WITH CURRENT LAW

This Engineer's Report is consistent with the requirements of Article XIIIC and XIIID of the California Constitution and with the *SVTA* decision because the Services to be funded are clearly defined; the Services are available to and will be directly provided to all benefiting property in the Assessment District; and the Services provide a direct advantage to property in the Assessment District that would not be received in absence of the Assessments.

This Engineer's Report is consistent with *Dahms* because, similar to the Downtown Pomona assessment validated in *Dahms*, the Services will be directly provided to property in the Assessment District. Moreover, while *Dahms* could be used as the basis for a finding of 0% general benefits, this Engineer's Report establishes a more conservative measure of general benefits.

The Engineer's Report is consistent with *Bonander* because the Assessments have been apportioned based on the overall cost of the Services and proportional special benefit to each property. Finally, the Assessments are consistent with *Beutz* because the general benefits have been explicitly calculated and quantified and excluded from the Assessments.

ASSESSMENT PROCESS

In order to allow property owners to ultimately decide whether additional funding should be provided for the District's mosquito and disease control services, the Board authorized by Resolution the Initiation of proceedings for a benefit assessment on February 13, 2008. In March and April of 2008, the District conducted an assessment ballot proceeding pursuant to the requirements of Article XIIID of the California Constitution ("The Taxpayer's Right to Vote on Taxes Act") and the Government Code. During this ballot proceeding, owners of property in the District were provided with a notice and ballot for the proposed special assessment. A 45-day period was provided for balloting and a public hearing was conducted on April 30, 2008.

It was determined after the conclusion of the public input portion of the public hearing that 70.19% of the weighted ballots returned were in support of the assessment. Since the assessment ballots submitted in opposition to the proposed assessments did not exceed the assessment ballots submitted in favor of the assessments (with each ballot weighted by the proportional financial obligation of the property for which ballot was submitted), the District gained the authority to approve the levy of the assessments for fiscal year 2008-09 and to continue to levy them in future years. The authority granted by the ballot proceeding includes an annual adjustment in the maximum authorized assessment rate equal to the annual change in the Consumer Price Index for the San Francisco Bay Area, not to exceed 3%. In the event that the annual change in the CPI exceeds 3%, any percentage change in excess of 3% can be cumulatively reserved and can be added to the annual change in the CPI for

years in which the CPI change is less than 3%. The Board took action, by Resolution No.937-1 passed on May 14, 2008, to approve the levy of the assessments.

In each subsequent year for which the assessments will be levied, the Board must preliminarily approve an updated Engineer's Report for the upcoming fiscal year at a noticed public hearing. The Engineer's Report should include a budget for the upcoming fiscal year's costs and services and an updated assessment roll listing all parcels and their proposed assessments for the upcoming fiscal year.

If the Board approves this Engineer's Report and the assessments it establishes for fiscal year 2016-17, the assessments would be submitted to the County Auditor for inclusion on the property tax rolls for fiscal year 2016-17.

GENERAL DESCRIPTION OF THE DISTRICT AND SERVICES

ABOUT THE MOSQUITO ABATEMENT DISTRICT

The Alameda County Mosquito Abatement District (the "District") is an independently funded public agency that controls and monitors mosquitoes and the diseases they carry in Alameda County. The District protects the usefulness, desirability and livability of property and the inhabitants of property within its jurisdictional area by controlling and monitoring disease-carrying and public nuisance mosquitoes. In addition, the District regularly tests for diseases carried by mosquitoes and educates property owners and the occupants of property in the District about how to protect themselves from mosquito-borne diseases.

The District staff consists of 16 employees including a District Manager, Field Operations Supervisor, Entomologist, Mechanic, Environmental Specialist, Systems Specialist, Administrative/Financial Manager, five Vector Biologists and one Mosquito Control Technician, two Assistant Mosquito Control Technicians, a Biological Specialist and other support staff.

The District is governed by the Alameda County Mosquito Abatement District Board of Trustees. The Board meetings are held at 5:00 p.m. on the second Wednesday of every month, and residents are welcome to attend.

DESCRIPTION OF MOSQUITO ABATEMENT PROGRAM

As mentioned earlier, the District currently provides a "baseline" level of services in the County as permitted with the limited funding available. The Assessment provides the additional funding to operate the program and expand the services provided in the Assessment Area to an optimum level necessary to protect the usefulness, utility, desirability and livability of property within its jurisdictional area.

INTRODUCTION

Following are the Services and resulting level of service for the Assessment Area. As previously noted, the District provides a baseline level of service in the County. These Services are over and above the current baseline level of service. The formula below describes the relationship between the final level of service, the existing baseline level of service, and the enhanced level of service to be funded by the assessment.

Final Level of Service	=	Baseline Level of Service	+	Enhanced Level of Service

The assessment provides funding for the continuation and enhancement of the service, surveillance, disease prevention, abatement, and control of mosquitoes within the District boundaries. Such mosquito abatement and disease prevention projects and programs include, but are not limited to, source reduction, biological control, larvicide applications,

adulticide applications, disease monitoring, public education, reporting, accountability, research and interagency cooperative activities, as well as capital costs, maintenance, and operation expenses (collectively "Services"). The cost of these Services also includes capital costs comprised of equipment, capital improvements and facilities and other expenses necessary and incidental to the mosquito control program.

VECTORS AND VECTOR-BORNE DISEASES IN THE DISTRICT SERVICE AREA

MOSQUITOES

Mosquitoes generally occur where there is adequate vegetation for harborage and where water is standing and/or stagnant. Although mosquitoes have seasonal cycles, some species reproduce continuously while conditions are suitable. The mosquito species listed in the table below can be generally described as floodwater, permanent water, and container-breeding mosquitoes and they are currently important in the District:

GENUS & SPECIES	LARVAL HABITAT	ABUNDANCE	HOSTS	DISEASE ASSOCIATIONS
Aedes dorsalis (Salt marsh mosquito)	Salt marshes	All year	Humans and other mammals	Serious Pest
Aedes sierrensis (Tree hole mosquito)	Tree holes, Tires, Miscellaneous Containers	Spring, Summer	Humans and other large mammals	Serious pest; Vector of Canine Heartworm
Aedes squamiger (Winter salt marsh mosquito)	Salt marshes	Spring	Humans and other large mammals	Serious pest
Aedes washinoi (Woodland pool mosquito)	Temporary woodland ponds	Spring, Summer	Humans and other large mammals	Serious Pest
Anopheles freeborni (Western malaria mosquito)	Seepages, Streams, Lakes, Gravel Pits	Summer	Humans and other large mammals	Vector of Malaria
Anopheles punctipennis	Cool, shaded grassy pools in creeks and lake seepages	Summer	Humans and other large mammals	Vector of Malaria
Culex erythrothorax (Tule mosquito)	Ponds, lakes, marshes with tules and cattails	Spring, Summer	Humans, Other Mammals, and Birds	Serious Pest; Vector of Encephalitis
Culex pipiens (House mosquito)	Storm Drain Systems, Septic Tanks, Roadside Ditches, Utility	Spring, Summer, Fall, Winter	Humans, Other Mammals, and Birds	Serious Pest; Vector of Encephalitis, West Nile Virus

Culex stigmatosoma (Foul water mosquito)	Foul Water, Sewage, Temporary Pools	Spring, Summer, Fall, Winter	Birds	Vector of West Nile Virus
Culex tarsalis (Encephalitis mosquito)	Creeks, Marshes, Temporary Pools, Roadside Ditches, Fresh Water	Spring, Summer, Fall, Winter	Birds, humans, and other mammals	Moderate Pest; Vector of Encephalitis, West Nile Virus
Culiseta incidens (Fish pond mosquito)	Fish Ponds, Temporary Pools, Catch Basins, Roadside Ditches	Spring, Summer, Fall, Winter	Humans and other large mammals	Serious Pest; Possible Vector of Canine Heartworm
Culiseta inornata (Winter salt marsh mosquito)	Marshes, Temporary Pools, Roadside Ditches	Fall, Winter, Spring	Humans and other large mammals	Serious Pest

Mosquitoes that lay their eggs in damp soil that might be flooded several years later occupy floodwater habitats. Once the area floods, most of the eggs hatch, producing a large number of mosquitoes that emerge as adults around the same time. The District has several floodwater species of concern. These include all of the *Aedes* species. Floodwater mosquitoes are most active at dawn and dusk, but they also bite during the day. *Aedes dorsalis and Aedes squaminger* produce multiple generations due to recurring tidal and rainwater flooding and resulting in high abundance. These species are strong flyers that can travel many miles from their source.

Mosquitoes that lay their eggs on the surface of standing water occupy permanent water habitats. Such habitats include both temporary and long-lasting standing water. Eggs are laid while mosquitoes are active and usually hatch within two to three days. *Anopheles, Culex,* and *Culiseta* mosquitoes inhabiting the District breed in these types of sources and have multiple generations. All of these mosquitoes are active at dawn and dusk, but *Culex* and *Culiseta* will bite well into the night. *Anopheles* and *Culex erythrothorax* can also bite during the day under shade.

Outdoor containers that hold standing water are common mosquito habitats in Alameda County. Containers include naturally occurring holes in trees, discarded buckets, cans, jars and tires; neglected swimming pools, wading pools, spas and boats; ornamental ponds, bird baths, cemetery flower cups, crumpled plastic and plugged rain gutters. *Aedes sierrensis* breeds in many species of tree holes, especially oaks, sycamores and cottonwoods, but can also inhabit artificial containers full of leaf litter. Eggs are deposited above the water line and hatch after sufficient rain accumulates to reach them. *Ae. sierrensis* normally produces one generation per year. It is an aggressive biter and can reach great abundance locally but does not fly far.

Mosquito-transmitted diseases in the District are caused by several pathogens. These include the following viruses: St. Louis encephalitis (SLE), Western equine encephalitis

(WEE) and West Nile virus (WNV); the protozoan parasite of malaria, *Plasmodium falciparum* or *P. vivax*; or the nematode parasite of canine heartworm, *Dirofilaria immitis*. This region has historically had sporadic detections of WEE and SLE, two arboviruses (arthropod-borne) that have been established in California for decades. Starting in 2004, WNV was found in wild birds, sentinel chicken flocks, mosquito pools and horses. To date there have been no human cases of West Nile Virus locally acquired in Alameda County.

Malaria is not locally transmitted in California at this time, but it used to be a major health problem in the Central Valley. Trappers, miners and other immigrants introduced malaria into California in the 1800's from areas where malaria was common. Effective mosquito control and drugs to cure malaria in humans led to the eradication of malaria in California in the 1950's. Consistent reintroduction by humans from areas where the disease is endemic creates a constant threat from malaria. In addition, some strains of malaria found in the world today are resistant to drugs that helped to eradicate the disease in the 1950's. The mosquitoes that can spread malaria are still abundant in our region and are capable of redistributing this serious health threat if the virus should somehow be reintroduced to the area.

Canine heartworm is a disease that infects wild and domestic dogs and occasionally cats. Although it can be life-threatening, pet owners can protect their animals by giving them medicine that kills the parasites. Heartworm medication is available through veterinary facilities.

Mosquito-borne diseases of most concern in the District are: Western equine encephalitis (WEE), St. Louis encephalitis (SLE), West Nile virus (WNV), and malaria, which are all transmitted by indigenous mosquitoes and for which no human vaccines exist. Vaccines are available to protect horses from WEE and WNV. Among the principal threats to which the Alameda County Mosquito Abatement District currently responds are:

- Human and animal diseases associated with mosquitoes
- Annoyance and economic disruption caused by mosquitoes
- Potential introduction of invasive mosquito species and/or diseases.

INTEGRATED PEST MANAGEMENT

As noted, the District's services address several types of mosquitoes and share general principles and policies. These include the identification of mosquito problems; responsive actions to control existing populations of mosquitoes, prevention of new sources of mosquitoes from developing, and the management of habitat in order to minimize mosquito production; education of land-owners and others on measures to minimize interaction with mosquitoes; and provision and administration of funding and institutional support necessary to accomplish these goals.

In order to accomplish effective and environmentally sound mosquito management, control of mosquitoes must be based on careful surveillance of their abundance, habitat (potential

abundance), pathogen load, and potential contact with people and animals; the establishment of treatment criteria (thresholds); and appropriate selection from a wide range of control methods. This dynamic combination of surveillance, treatment criteria, and use of multiple control activities in a coordinated program is generally known as Integrated Pest Management (IPM).

The Alameda County Mosquito Abatement District's Mosquito Management Program, like any other IPM program, involves procedures for minimizing potential environmental impacts. The District employs IPM principles by first determining the species and abundance of mosquitoes through evaluation of public service requests and field surveys, trapping of immature and adult pest populations, and, if the populations exceed predetermined criteria, using the most efficient, effective, and environmentally sensitive means of control. For all mosquito species, public education is an important control strategy. In appropriate situations, water management or other physical control activities (historically known as "source reduction" or "physical control") can be instituted to reduce mosquito-breeding sites. The District also uses biological control such as the stocking of mosquitofish in ornamental ponds, unused swimming pools and other artificial water bodies. When these approaches are not effective or are otherwise inappropriate, materials that have been, approved and labeled by the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation are used to treat specific pest-producing or pestharboring areas. The District choses materials that are highly specific, have the lowest impact on nontargets, selectively applied to places where mosquitoes occur. These materials are considerably more expensive than less specific pesticides and are labor intensive to apply.

The District's approach is organized into two principle sections to accomplish IPM. First, the administrative element provides leadership, expertise, public relations/education, and interface with other governmental authorities. Second, the operational and laboratory sections include technicians that perform IPM in the field. The technicians perform control and surveillance functions by responding to complaints from individual residents and by extensive examination of aquatic sites for mosquito larvae. The technicians and lab staff also monitor the treated areas to be sure that their control efforts have been successful.

The District has the capability of applying liquid and granular larvicides to treat sources of immature mosquitoes and aerosolized adulticides for area treatment of adult mosquitoes. Adulticiding is used to reduce significant populations of adult mosquitoes and to prevent or to reduce the spread of mosquitoborne disease in the environment. Applications are made by personnel licensed by the California Department of Public Health (or under the direct supervision of certified personnel) who are trained in the proper use of the products and specialized equipment used for this type of public health pest control. All insecticide products employed by the District are used with consideration of existing environmental conditions in order to minimize the impact on non-target organisms.

GENERAL SURVEILLANCE AND CONTROL PROCEDURES

Surveillance: Surveillance of mosquitoes in the District is accomplished by a combination of methods. First, technicians actively examine potential sites by sampling water, collecting

larvae, and identifying the larvae to species. Second, a variety of trap types are placed throughout the District for collecting adult mosquitoes (e.g. visual attractant Fay-Prince and New Jersey Light traps to monitor male and female mosquito abundance, and carbon dioxide- or human scent baited traps that attract host-seeking females or the eggs deposited by mosquitoes (e.g. ovitrap cups). The traps are set throughout the year, and the collected mosquitoes or eggs are numerated and identified to species for adults and at least to genus for eggs. The majority of the collected mosquitoes that can transmit WNV, SLE or WEE are tested for the presence of these viruses. Finally, individual residents and property owners call the District directly to report mosquitoes or to provide information about the locations of standing water that could produce mosquitoes.

Mosquito sources are scattered throughout the District. All properties within the District are within mosquito-flying range of one or more mosquito sources. Alameda County has 22 species of mosquitoes, each with a unique breeding source, and several of which are capable of vectoring diseases to humans and animals.

Mosquito populations are surveyed using a variety of field methods and traps. Surveillance is conducted in a manner based upon an equal spread of resources throughout the District boundaries, focusing on areas of likely sources. Treatment strategies are based upon the results of the surveillance program, and are specifically designed for individual areas. The surveillance traps are located and spread throughout the District in a balanced approach such that the traps measure mosquito levels throughout the District.

Viruses transmitted by mosquitoes are surveyed by testing mosquito vectors, and bird or mammal reservoirs, for WNV, SLE and WEE. The Davis Arbovirus Research and Training Lab at UC Davis or the Mosquito Lab at the District headquarters tests mosquitoes, birds or mammals using quantitative reverse transcription polymerase chain reaction or an immunoassay. The District participates in the statewide dead bird surveillance program for WNV, responding to reports of dead birds from the public and testing these birds deemed appropriate. Various County, State and private laboratories throughout California and elsewhere test humans and horses for WNV. DPH obtains and compiles results from all testing facilities and reports them to the appropriate local mosquito control agencies.

Control: The District's objective is to provide the properties a District-wide level of consistent mosquito control such that all properties would benefit from equivalent reduced levels of mosquitoes. Surveillance and monitoring are provided on a District-wide basis. The District, though, cannot predict where control measures will be applied because the type and location of control depends on the surveillance and monitoring results. However, the control thresholds and objectives are comparable throughout the District.

The District uses several techniques to control mosquito larvae and pupae (immatures), including biological, chemical, and physical control. The District uses the mosquitofish, *Gambusia affinis*, for biological control. These mosquito-eating fish work particularly well during warm months in a variety of permanent water sources. Artificial water sources are stocked at the request of the property resident or in other situations where biological control

is judged to be the best action to be taken. Other methods of biological control include the use of mosquito pathogens, parasites and predators.

Chemical control agents employed by the District to control immature mosquitoes include stomach toxins bacterial derived control agents, insect growth regulators (IGR's) and other contact pesticides. Stomach toxins are products of natural bacteria that are commercially manufactured and formulated as bacterial larvicides. The District employs two agents, *Bacillus thuringiensis israelensis* (Bti) and *Bacillus sphaericus* (Bs). The spores of these bacteria can be applied as either a liquid or a granule. The stomach toxin is activated after the spores are eaten by larvae, restricting use of these agents to the feeding stages of larval development. Bti has the advantage of specificity, only affecting mosquitoes and related groups of flies. Bs has the added advantage over Bti of effectively controlling larvae in highly polluted water and sometimes reproducing, extending the duration of its effectiveness. Another product utilized by ACMAD is Spinosad, derived from the fermentation of the naturally occurring soil bacterium, Sacchrapolyspora spinosa. It causes the excitation of the mosquito nervous system, ultimately leading to paralysis and death. Its action on the target organism is either by contact of by ingestion. This product can be applied in liquid or granular formulations.

The IGR used by the District is methoprene. Methoprene mimics a natural insect hormone that prevents successful development of larvae. It is available as a short-lived liquid and longer-acting granules and briquets. The product is absorbed into the larva, disrupting the hormone system and preventing successful completion of the life cycle. Methoprene must be applied prior to development of fourth instar larvae to ensure effectiveness. This product can be applied in liquid or granular formulation.

Additionally, the District uses surface active agents to control immature mosquitoes. The surface active agent is an oil combined with surfactants. Surface agents are effective against immature mosquitoes when inhaled at the water surface or by physically forming a surface film that drowns the mosquito. Surface active agents have the advantage of killing both larvae and pupae and are used in situations where other materials will not work.

Chemical control agents employed by the District to control adult mosquitoes contain pyrethrin, a natural plant-based insecticide, or pyrethroids, synthetic analogues of pyrethrin. These products provide rapid knockdown and kill of adult mosquitoes.

The District uses physical control as required; its application can temporarily or permanently alter habitats so that they do not produce mosquitoes. Technicians are educated to use physical control when it is appropriate. Examples of physical control include clearing vegetation around pond or stream banks, improving drainage by maintenance and debris removal from channels and waterways, removing water from containers, and providing access for other types of control work. All physical control and source reduction activities are accomplished in a way that does not impact mature trees, threatened or endangered species, or sensitive habitat areas.

Monitoring: For the most part, monitoring is the continuation of surveillance activities. District personnel specifically check treatment sites to be sure that applications were successful. In addition to physically checking the site, traps can be utilized to evaluate the success of the program.

PUBLIC RELATIONS, OUTREACH, AND EDUCATION

The public health risks of West Nile Virus mosquito-borne diseases create a need for regular and extensive media contacts, outreach and education. This includes making press releases, publishing brochures, responding to requests for interviews from all media, informing other government agencies, and giving presentations. . The District participates in a wide variety of special events including Home and Garden shows, the Alameda Country Fair, government information events, "Bug Days" at nature centers, or presentations to garden clubs, city councils, etc.

The District maintains a web site to provide mosquito control and related information on the internet. The District web site address is www.mosquitoes.org. The District has most of its publications on the site, Board of Trustee documents (agendas, minutes, financial, laboratory, and operational reports), specialized technical information (mosquito biology, mosquito-borne diseases, and technical reports), press releases, upcoming events, and additional general information about District services and links to other related web sites.

The District currently interacts professionally at many levels with other agencies. The District is a member of the Mosquito and Vector Control Association of California (MVCAC); employees attend meetings at both the regional and state level. District employees also attend and receive periodic continuing education programs designed to reinforce surveillance and control protocols and learn about new and emerging technologies. The District is a member of the American Mosquito Control Association; District staff participates in national programs relating to mosquito and disease control. The District is also an active member in the California Special Districts Association (CSDA), the Entomological Society of America (ESA), and the Society of Vector Ecologists (SOVE).

RESEARCH AND TESTING

The District cooperates with and conducts research in collaboration with other academic and government agencies located in California (e.g. University of California and California State University). The outcomes of this research presented at scientific conferences and published in scientific journals.

SERVICE REQUESTS

The District responds to service requests within its boundaries. Any property owner, business or resident in the District may contact the District to request mosquito control related service or inspection and a District field technician will respond promptly to the particular property to evaluate the property and situation and to perform appropriate surveillance and control services. The District responds to all service requests in a timely manner, (typically, within 24 hours), regardless of location, within its boundaries.

ESTIMATE OF COST

FIGURE 1 – COST ESTIMATE – FY 2016-17

Alameda County Mosquito Abatement District Mosquito and Disease Control Assessment Estimate of Cost Fiscal Year 2016-17	Preliminary Budget
Mosquito Control Services and Related Expenditures	
Mosquito Control and Disease Prevention	$2,672,842
Materials, Utilities and Supplies	$1,078,397
Capital Expenditures	$292,895
Other	$3,525,371
Total Mosquito Control Services and Related Expenditures	**$7,569,505**
Incidental Costs[1]	
Allowance for Uncollectable Assessments	$500
County Collection, Levy Administration, and Other Incidentals	$49,451
Total Incidential Costs	**$49,951**
Total Budget	**$7,619,456**
Contributions from Other Sources[2]	
Revenue from property taxes/ other sources	($6,498,854)
Total Mosquito & Disease Control Services and Incidentals	**$1,120,602**

Budget Allocation to Property			
	Total SFE Units[3]	Assessment per SFE[4]	Total Assessment[5]
	448,241	$2.50	$1,120,602

Notes:

1. Incidental Costs includes allowance for uncollectible assessments from assessments on public agency parcels, County collection charges and assessment administration costs.
2. As determined in the following sections, at least 10% of the total cost of the District Services must be funded from sources other than the assessment to cover any general benefits from the Services. Therefore, the cost of Services of $1,120,602, funded by the proposed assessment, can be funded exclusively through the assessment levy as a special benefit since the current District member contributions from their respective general funds exceed approximately 85.9% ($6,498,854/$7,569,505) of the total cost of District Services which is far in excess of the above required 10% non-assessment general benefit funding requirements.
3. SFE Units means Single Family Equivalent benefit units. See method of assessment in the following Section for further definition.
4. The assessment rate per SFE is the total amount of assessment per Single Family Equivalent benefit unit.
5. The assessment amounts are rounded down to the even penny for purposes of complying with the collection requirements from the County Auditor. Therefore, the total assessment amount for all parcels subject to the assessments may vary slightly from the net amount to be assessed.

METHOD OF ASSESSMENT

This section of the Report explains the benefits to be derived from the Services provided for property in the District, and the methodology used to apportion the total assessment to properties within the Mosquito and Disease Control Assessment area.

The Mosquito and Disease Control Assessment area consists of the Assessor Parcels within the Alameda County Mosquito Abatement District, with the exception of the City of Albany *(which decided not to be part of the District)*.

The method used for apportioning the assessment is based upon the proportional special benefits to be derived by the properties in the District over and above general benefits conferred on real property in the Assessment District. Special benefit is calculated for each parcel in the Assessment District using the following process:

1. Identification of total benefit to the properties derived from the Services
2. Calculation of the proportion of these benefits that are special vs. general
3. Determination of the relative special benefit within different areas within the Assessment District
4. Determination of the relative special benefit per property type and property characteristic
5. Calculation of the specific assessment for each individual parcel based upon special vs. general benefit; location, property type and property characteristics

DISCUSSION OF BENEFIT

In summary, the assessments can only be levied based on the special benefit to property. This benefit is received by property over and above any general benefits. This special benefit is received by property over and above any general benefits from the additional Services. With reference to the engineering requirements for property related assessments, under Proposition 218 an Engineer must determine and prepare a report evaluating the amount of special and general benefit received by property within the Assessment District as a result of the improvements or services provided by a local agency. That special benefit is to be determined in relation to the total cost to that local entity of providing the service and/or improvements.

Proposition 218 as described in Article XIIID of the California Constitution has confirmed that assessments must be based on the special benefit to property:

> *"No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."*

The below benefit factors, when applied to property in the Assessment Area, confer special benefits to property and ultimately improve the safety, utility, functionality and usability of property in the Assessment Area. These are special benefits to property in the Assessment

Area in much the same way that storm drainage, sewer service, water service, lighting, sidewalks and paved streets enhance the safety, utility and functionality of each parcel of property served by these improvements, providing them with more utility of use and making them safer and more usable for occupants.

It should also be noted that Proposition 218 included a requirement that existing assessments in effect upon its effective date were required to be confirmed by either a majority vote of registered voters in the Assessment Area, or by weighted majority property owner approval using the new ballot proceeding requirements. However, certain assessments were excluded from these voter approval requirements. Of note is that in California Constitution Article XIIID Section 5(a) this special exemption was granted to assessments for sidewalks, streets, sewers, water, flood control, drainage systems and vector control. The Howard Jarvis Taxpayers Association explained this exemption in their Statement of Drafter's Intent:

"This is the "traditional purposes" exception. These existing assessments do not need property owner approval to continue. However, future assessments for these traditional purposes are covered."[3]

Therefore, the drafters of Proposition 218 acknowledged that mosquito control assessments were a "traditional" and therefore acknowledged and accepted use.

Since all assessments, existing before or after Proposition 218 must be based on special benefit to property, the drafters of Proposition 218 inherently found that mosquito and disease control services confer special benefit on property. Moreover, the statement of drafter's intent also acknowledges that any new or increased mosquito control assessments after the effective date of Proposition 218 would need to comply with the voter approval requirements it established. This is as an acknowledgement that additional assessments for such "traditional" purposes would be established after Proposition 218 was in effect. Therefore, the drafters of Proposition 218 clearly recognized mosquito and disease control assessments as a "traditional" use of assessments, acknowledged that new mosquito and disease assessments may be formed after Proposition 218 and inherently were satisfied that mosquito control services confer special benefit to properties.

The Legislature also made a specific determination after Proposition 218 was enacted that mosquito control services constitute a proper subject for special assessment. Health and Safety Code section 2082, which was signed into law in 2002, provides that a district may levy special assessments consistent with the requirements of Article XIIID of the California Constitution to finance mosquito and disease control projects and programs. The intent of the Legislature to allow and authorize benefit assessments for mosquito and disease control services after Proposition 218 is shown in the Assembly and Senate analysis the Mosquito Abatement and Vector Control District Law where it states that the law:

[3] Howard Jarvis Taxpayers Association, "Statement of Drafter's Intent", January 1997.

Allows special benefit assessments to finance vector control projects and programs, consistent with Proposition 218. [4]

Therefore the State Legislature unanimously found that mosquito and disease control services are a valuable and important public service that can be funded by benefit assessments. To be funded by assessments, mosquito and disease control services must confer special benefit to property.

MOSQUITO AND DISEASE CONTROL IS A SPECIAL BENEFIT TO PROPERTIES

As described below, this Engineer's Report concludes that mosquito and disease control is a special benefit that provides direct advantages to property in the Assessment District. For example, the assessment provides reduced levels of mosquitoes on property throughout the Assessment District. Moreover, the assessment will reduce the risk of the presence of diseases on property throughout the Assessment District, which is another direct advantage received by property in the Assessment District. Moreover, the assessment funds Services that improve the use of property and reduce the nuisance and harm created by mosquitoes on property throughout the Assessment District. These are tangible and direct special benefits that are received by property throughout the specific area covered by the Assessment.

The following section, Benefit Factors, describes how and why mosquito control services specially benefit properties in the Assessment Area. These benefits are particular and distinct from its effect on property in general or the public at large.

BENEFIT FACTORS

In order to allocate the assessments, the Engineer identified the types of special benefit arising from the aforementioned mosquito and disease control Services and that would be provided to property within the District. The following benefit factors have been established that represent the types of special benefit to parcels resulting from the Services financed with the assessment proceeds. These types of special benefit are as follows:

REDUCED MOSQUITO POPULATIONS ON PROPERTY AND AS A RESULT, ENHANCED DESIRABILITY, UTILITY, USABILITY AND FUNCTIONALITY OF PROPERTY IN THE ASSESSMENT DISTRICT.

The assessments provide enhanced services for the control and abatement of nuisance and disease-carrying mosquitoes. These Services will materially reduce the number of mosquitoes on properties throughout the Assessment District. The lower mosquito populations on property in the Assessment District is a direct advantage to property that will serve to increase the desirability and "usability" of property. Clearly, properties are more desirable and usable in areas with lower mosquito populations and with a reduced risk of mosquito-borne disease. This is a special benefit to residential, commercial, agricultural,

[4] Senate Bill 1588, Mosquito Abatement and Vector Control District Law, Legislative bill analysis

industrial and other types of properties because all such properties will directly benefit from reduced mosquito populations and properties with lower mosquito populations are more usable, functional and desirable.

Excessive mosquitoes in the area can materially diminish the utility and usability of property. For example, prior to the commencement of mosquito control and abatement services, properties in many areas in the State were considered to be nearly uninhabitable during the times of year when the mosquito populations were high.[5] The prevention or reduction of such diminished utility and usability of property caused by mosquitoes is a clear and direct advantage and special benefit to property in the Assessment District.

The State Legislature made the following finding on this issue:

> *"Excess numbers of mosquitoes and other vectors spread diseases of humans, livestock, and wildlife, reduce enjoyment of outdoor living spaces, both public and private, reduce property values, hinder outdoor work, reduce livestock productivity; and mosquitoes and other vectors can disperse or be transported long distances from their sources and are, therefore, a health risk and a public nuisance; and professional mosquito and vector control based on scientific research has made great advances in reducing mosquito and vector populations and the diseases they transmit."* [6]

Mosquitoes emerge from sources throughout the Assessment District, and with an average flight range of two miles, mosquitoes from known sources can reach all properties in the Assessment District. These sources include standing water in rural areas, such as marshes, pools, wetlands, ponds, drainage ditches, drainage systems, tree holes and other removable sources such as old tires and containers. The sources of mosquitoes also include numerous locations throughout the urban areas in the Assessment District. These sources include underground drainage systems, containers, unattended swimming pools, leaks in water pipes, tree holes, flower cups in cemeteries, over-watered landscaping and lawns and many other sources. By controlling mosquitoes at known and new sources, the Services will materially reduce mosquito populations on property throughout the Assessment District.

A recently increasing source of mosquitoes is unattended swimming pools:

[5] Prior to the commencement of modern mosquito control services, areas in the State of California such as the Alameda County, San Mateo Peninsula, Napa County, Lake County and areas in Marin and Sonoma Counties had such high mosquito populations that they were considered to be nearly unlivable during certain times of the year and were largely used for part-time vacation cottages that were occupied primarily during the months when the natural mosquito populations were lower.

[6] Assembly Concurrent Resolution 52, chaptered April 1, 2003

"Anthropogenic landscape change historically has facilitated outbreaks of pathogens amplified by peridomestic vectors such as Cx. pipiens complex mosquitoes and associated commensals such as house sparrows. The recent widespread downturn in the housing market and increase in adjustable rate mortgages have combined to force a dramatic increase in home foreclosures and abandoned homes and produced urban landscapes dotted with an expanded number of new mosquito habitats. These new larval habitats may have contributed to the unexpected early season increase in WNV cases in Bakersfield during 2007 and subsequently have enabled invasion of urban areas by the highly competent rural vector Cx. tarsalis. These factors can increase the spectrum of competent avian hosts, the efficiency of enzootic amplification, and the risk for urban epidemics."[7]

INCREASED SAFETY OF PROPERTY IN THE ASSESSMENT DISTRICT.

The Assessments result in improved year-round proactive Services to control and abate mosquitoes that otherwise would occupy properties throughout the Assessment District. Mosquitoes are transmitters of diseases, so the reduction of mosquito populations makes property safer for use and enjoyment. In absence of the assessments, these Services would not be provided, so the Services funded by the assessments make properties in the Assessment District safer, which is a distinct special benefit to property in the Assessment District.[8] This is not a general benefit to property in the Assessment District or the public at large because the Services are tangible mosquito and disease control services that are provided directly to the properties in the Assessment District and the Services are over and above what otherwise would be provided by the District or any other agency.

This finding was confirmed in 2003 by the State Legislature:

"Mosquitoes and other vectors, including but not limited to, ticks, Africanized honey bees, rats, fleas, and flies, continue to be a source of human suffering, illness, death, and a public nuisance in California and around the world. Adequately funded mosquito and vector control, monitoring and public awareness programs are the best way to prevent outbreaks of West Nile Virus and other diseases borne by mosquitoes and other vectors."[9]

Also, the Legislature, in Health and Safety Code Section 2001, finds that:

[7] Riesen William K. (2008). Delinquent Mortgages, Neglected Swimming Pools, and West Nile Virus, California. Emerging Infectious Diseases. Vol. 14(11).

[8] By reducing the risk of disease and increasing the safety of property, the Services will materially increase the usefulness and desirability of certain properties in the Assessment Area.

[9] Assembly Concurrent Resolution 52, chaptered April 1, 2003

"The protection of Californians and their communities against the discomforts and economic effects of vectorborne diseases is an essential public service that is vital to public health, safety, and welfare."

REDUCTIONS IN THE RISK OF NEW DISEASES AND INFECTIONS ON PROPERTY IN THE ASSESSMENT DISTRICT.

Mosquitoes have proven to be a major contributor to the spread of new diseases such as West Nile Virus, among others. A highly mobile population combined with migratory bird patterns can introduce new mosquito-borne diseases into previously unexposed areas.

"Vector-borne diseases (including a number that are mosquito-borne) are a major public health problem internationally. In the United States, dengue and malaria are frequently brought back from tropical and subtropical countries by travelers or migrant laborers, and autochthonous transmission of malaria and dengue occasionally occurs. In 1998, 90 confirmed cases of dengue and 1,611 cases of malaria were reported in the USA and dengue transmission has occurred in Texas."[10]

"During 2004, 40 states and the District of Columbia (DC) have reported 2,313 cases of human WNV illness to CDC through ArboNET. Of these, 737 (32%) cases were reported in California, 390 (17%) in Arizona, and 276 (12%) in Colorado. A total of 1,339 (59%) of the 2,282 cases for which such data were available occurred in males; the median age of patients was 52 years (range: 1 month--99 years). Date of illness onset ranged from April 23 to November 4; a total of 79 cases were fatal." [11] *(According to the Centers for Disease Control and Prevention on January 19, 2004, a total of 2,470 human cases and 88 human fatalities from WNV have been confirmed).*

A study of the effect of aerial spraying conducted by the Sacramento-Yolo Mosquito and Vector Control District (SYMVCD) to control a West Nile Virus disease outbreak found that the SYMVCD's mosquito control efforts materially decreased the risk of new diseases in the treated areas:

[10] Rose, Robert. (2001). Pesticides and Public Health: Integrated Methods of Mosquito Management. Emerging Infectious Diseases. Vol. 7(1); 17-23.

[11] Center for Disease Control. (2004). West Nile Virus Activity --- United States, November 9--16, 2004. Morbidity and Mortality Weekly Report. 53(45); 1071-1072.

> *After spraying, infection rates decreased from 8.2 (95% CI 3.1–18.0) to 4.3 (95% CI 0.3–20.3) per 1,000 females in the spray area and increased from 2.0 (95% CI 0.1–9.7) to 8.7 (95% CI 3.3–18.9) per 1,000 females in the untreated area. Furthermore, no additional positive pools were detected in the northern treatment area during the remainder of the year, whereas positive pools were detected in the untreated area until the end of September (D.-E.A Elnaiem, unpub. data). These independent lines of evidence corroborate our conclusion that actions taken by SYMVCD were effective in disrupting the WNV transmission cycle and reducing human illness and potential deaths associated with WNV.* [12]

The Services funded by the assessments help prevent on a year-round basis the presence of mosquito-borne diseases on property in the Assessment District. This is another tangible and direct special benefit to property in the Assessment District that would not be received in absence of the assessments.

PROTECTION OF ECONOMIC ACTIVITY ON PROPERTY IN THE ASSESSMENT DISTRICT.

As recently demonstrated by the SARS outbreak in China and outbreaks of Avian Flu, outbreaks of pathogens can materially and negatively impact economic activity in the affected area. Such outbreaks and other public health threats can have a drastic negative effect on tourism, business and residential activities in the affected area. The assessments help to prevent the likelihood of such outbreaks in the District.

Mosquitoes hinder, annoy and harm residents, guests, visitors, farm workers, and employees. A mosquito-borne disease outbreak and other related public health threats would have a drastic negative effect on agricultural, business and residential activities in the Assessment District.

The economic impact of diseases is well documented. According to a study prepared for the Centers for Disease Control and Prevention, economic losses due to the transmission of West Nile Virus in Louisiana was estimated to cost over $20 million over approximately one year:

[12] Carney, Ryan. (2008), Efficiency of Aerial Spraying of Mosquito Adulticide in Reducing the Incidence of West Nile Virus, California, 2005. Emerging Infectious Diseases, Vol 14(5)

> *The estimated cost of the Louisiana epidemic was $20.1 million from June 2002 to February 2003, including a $10.9 million cost of illness ($4.4 million medical and $6.5 million nonmedical costs) and a $9.2 million cost of public health response. These data indicate a substantial short-term cost of the WNV disease epidemic in Louisiana.* [13]

Moreover, a study conducted in 1996-97 of La Crosse Encephalitis (LACE), a human illness caused by a mosquito-transmitted virus, found a lifetime cost per human case at $48,000 to $3,000,000 and found that the disease significantly impacted lifespans of those who were infected. Following is a quote from the study which references the importance and value of active mosquito control services of the type that would be funded by the assessments:

> *The socioeconomic burden resulting from LACE is substantial, which highlights the importance of the illness in western North Carolina, as well as the need for active surveillance, reporting, and prevention programs for the infection.* [14]

The Services funded by the assessments help prevent the likelihood of such outbreaks on property in the Assessment District and will reduce the harm to economic activity on property caused by existing mosquito populations. This is another direct advantage received by property in the Assessment District that would not be received in absence of the assessments.

PROTECTION OF ASSESSMENT DISTRICT'S AGRICULTURE, TOURISM, AND BUSINESS INDUSTRIES.

The agriculture, tourism and business industries will benefit from reduced levels of harmful or nuisance mosquitoes. Conversely, any outbreaks of emerging mosquito-borne pathogens such as West Nile Virus could also materially negatively affect these industries. Diseases transmitted by mosquitoes can adversely impact business and recreational functions.

[13] Zohrabian A, Meltzer MI, Ratard R, Billah K, Molinari NA, Roy K, et al. West Nile Virus economic impact, Louisiana, 2002. Emerging Infectious Disease, 2004 Oct. Available from http://www.cdc.gov/ncidod/EID/vol10no10/03-0925.htm

[14] Utz, J. Todd, Apperson, Charles S., Maccormack, J. Newton, Salyers, Martha, Dietz, E. Jacquelin, Mcpherson, J. Todd, Economic And Social Impacts Of La Crosse Encephalitis In Western North Carolina, Am J Trop Med Hyg 2003 69: 509-518

A study prepared for the United States Department of Agriculture in 2003 found that over 1,400 horses died from West Nile Virus in Colorado and Nebraska and that these fatal disease cases created over $1.2 million in costs and lost revenues. In addition, horse owners in these two states spent over $2.75 million to vaccinate their horses for this disease. The study states that "Clearly, WNV has had a marked impact on the Colorado and Nebraska equine industry." [15]

Pesticides for mosquito control impart economic benefits to agriculture in general. Anecdotal reports from farmers and ranchers indicate that cattle, if left unprotected, can be exsanguinated by mosquitoes, especially in Florida and other southeast coastal areas. Dairy cattle produce less milk when bitten frequently by mosquitoes [16]

The assessments serve to protect the businesses and industries and the employees and residents that benefit from these businesses and industries. This is a direct advantage and special benefit to property in the Assessment District.

REDUCED RISK OF NUISANCE AND LIABILITY ON PROPERTY IN THE ASSESSMENT DISTRICT

In addition to mosquito-borne disease risks, uncontrolled mosquito populations create a nuisance and health risk (e.g. allergic reactions, secondary infections from mosquito bites) for the occupants of property in the Assessment District. Properties in the Assessment District, therefore, benefit from the reduced nuisance factor that is created by the Services. Agricultural and rangeland properties also benefit from the reduced nuisance factor and harm to livestock and employees from lower mosquito populations.

Agricultural, range, golf course, cemetery, open space and other such lands in the Assessment District contain large areas of mosquito habitat and are therefore a significant source of mosquito populations. In addition, residential and business properties in the Assessment District can also contain significant sources.[17] It is conceivable that sources of mosquitoes could be held liable for the transmission of diseases or other harm. According to CA Health and Safety Code 2061:

[15] S. Geiser, A. Seitzinger, P. Salazar, J. Traub-Dargatz, P. Morley, M. Salman, D. Wilmot, D. Steffen, W. Cunningham, Economic Impact of West Nile Virus on the Colorado and Nebraska Equine Industries: 2002, April 2003, Available from http://www.aphis.usda.gov/vs/ceah/cnahs/nahms/equine/wnv2002_CO_NB.pdf

[16] Jennings, Allen. (2001). USDA Letter to EPA on Fenthion IRED. United States Department of Agriculture, Office of Pest Management Policy. March 8, 2001.

[17] Sources of mosquitoes on residential, business, agricultural, range and other types of properties include removable sources such as containers that hold standing water.

2061 (a) Whenever a public nuisance exists on any property within

a district or on any property that is located outside the district

from which vectors may enter the district, the board of trustees may notify the owner of the property of the existence of the public nuisance.

(b) The notice required by subdivision (a) shall do all of the

following:

(1) State that a public nuisance exists on the property, describe the public nuisance, and describe the location of the public nuisance on the property.

(2) Direct the owner of the property to abate the nuisance within a specified time.

(3) Direct the owner of the property to take any necessary action within a specified time to prevent the recurrence of the public nuisance.

(4) Inform the owner of the property that the failure to comply with the requirements of the notice within the specified times may result in the district taking the necessary actions, and that the owner shall be liable for paying the costs of the district's actions.

(5) Inform the owner of the property that the failure to comply with the requirements of the notice within the specified times may result in the imposition of civil penalties of up to one thousand dollars ($1,000) per day for each day that the public nuisance continues after the specified times.

The Services serve to protect the businesses and industries in the Assessment District. This is a direct advantage and a special benefit to property in the Assessment District.

IMPROVED MARKETABILITY OF PROPERTY.

As described previously, the Services specially benefit properties in the Assessment District by making them more useable, livable and functional. The Services also make properties in the Assessment District more desirable, and more desirable properties also benefit from

improved marketability. This is another tangible and direct special benefit to property which will not be enjoyed in absence of the Services.[18]

BENEFIT FINDING

In summary, the special benefits described in this Report and the expansion of Services in the Assessment District directly benefit and protect the real properties in the Abatement District in excess of the assessments for these properties. Therefore, the assessment engineer finds that the cumulative special benefits to property from the Services are reasonably equal to or greater than the annual assessment amount per benefit unit.

GENERAL VS. SPECIAL BENEFIT

Article XIIIC of the California Constitution requires any local agency proposing to increase or impose a benefit assessment to "separate the general benefits from the special benefits conferred on a parcel." The rationale for separating special and general benefits is to ensure that property owners subject to the benefit assessment are not paying for general benefits. The assessment can fund the special benefits to property in the Assessment Area but cannot fund any general benefits. Accordingly, a separate estimate of the special and general benefit is given in this section.

In other words:

Total Benefit	=	General Benefit	+	Special Benefit

There is no widely-accepted or statutory formula for general benefit from mosquito and disease control services. General benefits are benefits from improvements or services that are not special in nature, are not "particular and distinct" and are not "over and above" benefits received by other properties. General benefits are conferred to properties located "in the district,[19]" but outside the narrowly-drawn Assessment District and to "the public at

[18] If one were to compare two hypothetical properties with similar characteristics, the property with lower mosquito infestation and reduced risk of mosquito-borne disease will clearly be more desirable, marketable and usable.

[19] SVTA vs. SCCOSA explains as follows:

OSA observes that Proposition 218's definition of "special benefit" presents a paradox when considered with its definition of "district." Section 2, subdivision (i) defines a "special benefit" as "a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large." (Art. XIII D, § 2, subd. (i), italics added.) Section 2, subdivision (d) defines "district" as "an area determined by an agency to contains all parcels which will receive a special benefit from a proposed public improvement or property-related service." (Art. XIII D, § 2, subd. (d), italics added.) In a well-drawn district — limited to only parcels receiving special benefits from the improvement — every parcel within that district receives a shared special benefit. Under section 2, subdivision (i), these benefits can be

large." SVTA vs. SCCOSA provides some clarification by indicating that general benefits provide "an indirect, derivative advantage" and are not necessarily proximate to the improvements and services funded by the assessments.

A formula to estimate the general benefit is listed below:

General Benefit	=	Benefit to Real Property Outside the Assessment District	+	Benefit to Real Property Inside the Assessment District that is Indirect and Derivative	+	Benefit to the Public at Large

Special benefit, on the other hand, is defined in the state constitution as "a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large." The SVTA v. SCCOSA decision indicates that a special benefit is conferred to a property if it "receives a direct advantage from the improvement (e.g., proximity to a park)." In this assessment, the overwhelming proportion of the benefits conferred to property is special, since the advantages from the mosquito and disease control/protection funded by the Assessments are directly received by the properties in the Assessment District and are only minimally received by property outside the Assessment District or the public at large.

Proposition 218 twice uses the phrase "over and above" general benefits in describing special benefit. (Art. XIIID, sections 2(i) & 4(f).) There currently are some mosquito and disease control related services being provided to the Assessment District area. Consequently, there currently are some mosquito control related benefits being provided to the Assessment District and any new and extended service provided by the District would be over and above this baseline. Arguably, all of the Services funded by the assessment therefore are a special benefit because the additional Services would particularly and distinctly benefit and protect the Assessment District over and above the previous baseline benefits and service.

Nevertheless, arguably some of the Services would benefit the public at large and properties outside the Assessment District. In this report, the general benefit is conservatively estimated and described, and then budgeted so that it is funded by sources other than the assessment.

In the 2009 Dahms case, the court upheld an assessment that was 100% special benefit on the rationale that the services funded by the assessments were directly provided to property in the assessment district. Similar to the assessments in Pomona that were validated by Dahms, the Assessments described in this Engineer's Report fund mosquito and disease

construed as being general benefits since they are not "particular and distinct" and are not "over and above" the benefits received by other properties "located in the district."

control services directly provided to property in the assessment area. Moreover, as noted in this Report, the Services directly reduce mosquito and vector populations on all property in the assessment area. Therefore, Dahms establishes a basis for minimal or zero general benefits from the Assessments. However, in this report, the general benefit is more conservatively estimated and described, and then budgeted so that it is funded by sources other than the assessment.

CALCULATING GENERAL BENEFIT

Without this assessment the District would lack the funds to extend the additional Services to the Assessment District. The only additional service that is being provided is the vector control program assessment-funded Services. Consistent with footnote 8 of SVTA v. SCCOSA, and for the reasons described above, the District has determined that all parcels in the Assessment District receive a shared direct advantage and special benefit from the Services. The Services directly and particularly serve and benefit each parcel, and are not a mere indirect, derivative advantage. As explained above, Proposition 218 relies on the concept of "over and above" in distinguishing special benefits from general benefits. As applied to an assessment proceeding concurrent with the annexation this concept means that all mosquito and disease control services, which provide direct advantage to property in the Assessment District, are over and above the baseline and therefore are special.

Nevertheless, the Services provide a degree of general benefit, in addition to the predominant special benefit. This section provides a conservative measure of the general benefits from the Assessments.

BENEFIT TO PROPERTY OUTSIDE THE DISTRICT

Properties within the Assessment District receive almost all of the special benefits from the Services because the Services funded by the Assessments are provided directly to protect property within the Assessment District from mosquitoes and mosquito-borne diseases. However, properties adjacent to, but just outside of, the District boundaries may receive some benefit from the Services in the form of reduced mosquito populations on property outside the Assessment District. Since this benefit, is conferred to properties outside the district boundaries, it contributes to the overall general benefit calculation and will not be funded by the assessment.

A measure of this general benefit is the proportion of Services that would affect properties outside of the Assessment District. Each year, the District will provide some of its Services in areas near the boundaries of the Assessment District. By abating mosquito populations near the borders of the Assessment District, the Services could provide benefits in the form of reduced mosquito populations and reduced risk of disease transmission to properties outside the Assessment District. If mosquitoes were not controlled inside the Assessment District, more of them would fly from the Assessment District. Therefore control of mosquitoes within the Assessment District provides some benefit to properties outside the Assessment District but within the normal flight range of mosquitoes, in the form of reduced mosquito populations and reduced mosquito-borne disease transmission. This is a measure

of the general benefits to property outside the Assessment District because this is a benefit from the Services that is not specially conferred upon property in the assessment area.

The mosquito potential outside the Assessment District is based on studies of mosquito dispersion concentrations. Mosquitoes can travel up to two miles, on average, so this destination range is used. Based on studies of mosquito destinations, relative to parcels in the Assessment District average concentration of mosquitoes from the Assessment District on properties within two miles of the Assessment District is calculated to be 6%.[20] This relative mosquito population reduction factor within the destination range is combined with the number of parcels outside the Assessment District and within the destination range to measure this general benefit and is calculated as follows:

CRITERIA:

Mosquitoes may fly up to 2 miles from their breeding source.
38,786 parcels within 2 miles of, but outside of the District, MAY receive some mosquito and disease protection benefit
6% portion of relative benefit that is received
436,350 Parcels in the District

Calculations:
Total Benefit = 38,786 parcels * 6% =2,327 parcels equivalents
Percentage of overall parcel equivalents = 2,327 / 436,350 = **0.53%**

Therefore, for the overall benefits provided by the Services to the Assessment District, it is determined that 0.53% of the benefits would be received by the parcels within two miles of the Assessment District boundaries. Recognizing that this calculation is an approximation, this benefit will be rounded up to 1.0%.

BENEFIT TO PROPERTY *INSIDE* THE DISTRICT THAT IS *INDIRECT AND DERIVATIVE*

The "indirect and derivative" benefit to property within the Assessment District is particularly difficult to calculate. As explained above, all benefit within the Assessment District is special because the mosquito and disease control services in the Assessment District would provide direct service and protection that is clearly "over and above" and "particular and distinct" when compared with the level of such protection under current conditions. Further the properties are within the Assessment District boundaries and this Engineer's Report demonstrates the direct benefits received by individual properties from mosquito and disease control services.

[20] Tietze, Noor S., Stephenson, Mike F., Sidhom, Nader T. and Binding, Paul L., "Mark-Recapture of *Culex Erythrothorax* in Santa Cruz County, California", Journal of the American Mosquito Control Association, 19(2):134-138, 2003.

In determining the Assessment District area, the District was careful to limit it to an area of parcels that will directly receive the Services. All parcels directly benefit from the surveillance, monitoring and treatment provided on an equivalent basis throughout the Assessment District in order to maintain the same improved level of protection against mosquitoes and reduced mosquito populations throughout the area. The surveillance and monitoring sites are spread on a balanced basis throughout the area. Mosquito control and treatment is provided as needed throughout the area based on the surveillance and monitoring results. The shared special benefit - reduced mosquito levels and reduced presence of mosquito-borne diseases - is received on an equivalent basis by all parcels in the Assessment District. Furthermore, all parcels in the Assessment District directly benefit from the ability to request service from the District and to have a District field technician promptly respond directly to the parcel and address the owner's or resident's service need. The SVTA vs. SCCOSA decision indicates that the fact that a benefit is conferred throughout the Assessment District area does not make the benefit general rather than special, so long as the Assessment district is narrowly drawn and limited to the parcels directly receiving shared special benefits from the service. This concept is particularly applicable in situations involving a landowner-approved assessment-funded extension of a local government service to benefit lands previously not receiving that particular service. The District therefore concludes that, other than the small general benefit to properties outside the Assessment District (discussed above) and to the public at large (discussed below), all of the benefits of the Services to the parcels within the Assessment District are special benefits and it is not possible or appropriate to separate any general benefits from the benefits conferred on parcels in the Assessment District.

BENEFIT TO THE PUBLIC AT LARGE

With the type and scope of Services provided to the Assessment District, it is very difficult to calculate and quantify the scope of the general benefit conferred on the public at large. Because the Services directly serve and benefit all of the property in the Assessment Area, any general benefit conferred on the public at large is small. Nevertheless, there is some indirect general benefit to the public at large.

The public at large uses the public highways, streets and sidewalks, and when traveling in and through the Assessment Area they will benefit from the Services. A fair and appropriate measure of the general benefit to the public at large therefore is the amount of highway, street and sidewalk area within the Assessment Area relative to the overall land area. An analysis of maps of the Assessment Area shows that approximately 6% of the land area in the Assessment Area is covered by highways, streets and sidewalks. This 6% therefore is a fair and appropriate measure of the general benefit to the public at large within the Assessment Area

SUMMARY OF GENERAL BENEFITS

Using a sum of the measures of general benefit for the public at large and land outside the Assessment Area, we find that approximately 7.0% of the benefits conferred by the Mosquito and Disease Control Assessment may be general in nature and should be funded by sources other than the Assessment.

General Benefit Calculation		
	1.0%	(Outside the Assessment District)
+	0.0%	(Property within the Assessment District)
+	6.0%	(Public at Large)
=	7.0%	(Total General Benefit)

Although this analysis supports the findings that 7.0% of the assessment may provide general benefit only, this number is increased by the Assessment Engineer to 10% to conservatively ensure that no assessment revenue is used to support general benefit. This additional amount allocated to general benefit also covers general benefit to parcels in the Assessment Area if it is later determined that there is some general benefit conferred on those parcels.

The Mosquito and Disease Control Assessment total mosquito abatement, disease control, and capital improvement is $7,569,505. Of this total budget amount, the District will contribute $6,498,854 or 85.9% of the total budget from sources other than the Mosquito and Disease Control Assessment. This contribution offsets any general benefits from the Mosquito and Disease Control Assessment Services.

ZONES OF BENEFIT

The District's mosquito and disease control programs, projects and Services that are funded by the Mosquito and Disease Control Assessment are provided in all areas within the District. Parcels of similar type in the District would receive similar mosquito abatement benefits on a per parcel and land area basis. Therefore, zones of benefit are not justified.

The SVTA vs. SCCOSA decision indicates:

> *In a well-drawn district — limited to only parcels receiving special benefits from the improvement — every parcel within that district receives a shared special benefit. Under section 2, subdivision (i), these benefits can be construed as being general benefits since they are not "particular and distinct" and are not "over and above" the benefits received by other properties "located in the district."*

> *We do not believe that the voters intended to invalidate an assessment district that is narrowly drawn to include only properties directly benefiting from an improvement. Indeed, the ballot materials reflect otherwise. Thus, if an assessment district is narrowly drawn, the fact that a benefit is conferred throughout the district does not make it general rather than special. In that circumstance, the characterization of a benefit may depend on whether the parcel receives a direct advantage from the improvement (e.g., proximity to park) or receives an indirect, derivative advantage resulting from the overall public benefits of the improvement (e.g., general enhancement of the district's property values).*

In the Assessment Area, the advantage that each parcel receives from the Services is direct and the boundary for the Service Area is narrowly drawn so the Service Area includes parcels that receive the similar levels of benefit from the Services. Therefore, the even spread of assessment for similar properties in the narrowly drawn Service Area within the Program is indeed consistent with the OSA decision.

METHOD OF ASSESSMENT

As previously discussed, the Assessments fund enhanced, comprehensive, year-round mosquito control, disease surveillance and control Services that will reduce mosquito populations on property and will clearly confer special benefits to properties in the Assessment Area. These benefits can also partially be measured by the occupants on property in the Improvement District because such parcel population density is a measure of the relative benefit a parcel receives from the Improvements. Therefore, the apportionment of benefit is partially based the population density of parcels. It should be noted that many other types of "traditional" assessments also use parcel population densities to apportion the assessments. For example, the assessments for sewer systems, roads and water systems are typically allocated based on the population density of the parcels assessed.

Moreover, assessments have a long history of use in California and are in large part based on the principle that any benefits from a service or improvement funded by assessments that is enjoyed by tenants and other non-property owners ultimately is conferred directly to the underlying property.[21]

[21] For example, in *Federal Construction Co. v. Ensign (1922) 59 Cal.App. 200 at 211*, the appellate court determined that a sewer system specially benefited property even though the direct benefit was to the people who used the sewers: "Practically every inhabitant of a city either is the owner of the land on which he resides or on which he pursues his vocation, or he is the tenant of the owner, or is the agent or servant of such owner or of such tenant. And since it is the inhabitants who make by far the greater use of a city's sewer system, it is to them, as lot owners or as tenants, or as the servants or agents of such lot owners or tenants, that the advantages of actual use will redound. But this advantage of use means that, in the final analysis, it is the lot owners themselves who will be especially benefited in a financial sense."

With regard to benefits and source locations, the assessment engineer determined that since mosquitoes readily fly from their breeding locations to all properties in their flight range and since mosquitoes are actually attracted to properties occupied by people or animals, the benefits from mosquito control extend beyond the source locations to all properties that would be a "destination" for mosquitoes. In other words, the control and abatement of mosquito populations ultimately confers benefits to all properties that are a destination of mosquitoes, rather than just those that are sources of mosquitoes.

Although some primary mosquito sources may be located outside of residential areas, residential properties can and do generate their own, often significant, populations of mosquitoes and other organisms. For example, storm water catch basins in residential areas are a common source of mosquitoes. Since the typical flight range for a female mosquito, on average is 2 miles, most homes in the Assessment Area are within the flight zone of many mosquito sources. Moreover, there are many other common residential sources of mosquitoes, such as miscellaneous backyard containers, neglected swimming pools, leaking water pipes and tree holes. Clearly, there is a potential for mosquito sources on virtually all types of property. More importantly, all properties in the Assessment Area are within the destination range of mosquitoes and most properties are actually within the destination range of multiple mosquito source locations.

Because the Services are provided throughout the Assessment District with the same level of control objective in each zone, mosquitoes can rapidly and readily fly from their breeding locations to other properties over a large area, and because there are current or potential breeding sources literally everywhere in the Assessment District, the Assessment Engineer determined that all similar properties in the Assessment District have generally equivalent mosquito "destination" potential and, therefore, receive equivalent levels of benefit throughout the Assessment District.

In the process of determining the appropriate method of assessment, the Engineer considered various alternatives. For example, a fixed assessment amount per parcel for all residential improved property was considered but was determined to be inappropriate because agricultural lands, commercial property and other property also receive benefits from the assessments. Likewise, an assessment exclusively for agricultural land was considered but deemed inappropriate because other types of property, such as residential and commercial, also receive the special benefit factors described previously.

A fixed or flat assessment was deemed to be inappropriate because larger residential, commercial and industrial properties receive a higher degree of benefit than other similarly used properties that are significantly smaller. (For two properties used for commercial purposes, there is clearly a higher benefit provided to a property that covers several acres in comparison to a smaller commercial property that is on a 0.25 acre site. The larger property generally has a larger coverage area and higher usage by employees, customers, tourists and guests that would benefit from reduced mosquito populations, as well as the reduced threat from diseases carried by mosquitoes. This benefit ultimately flows to the

property.) Larger commercial, industrial and apartment parcels, therefore, receive an increased benefit from the assessments.

In conclusion, the assessment engineer determined that the appropriate method of assessment apportionment should be based on the type and use of property, the relative size of the property its relative population and usage potential, and its destination potential for mosquitoes. This method is further described below.

ASSESSMENT APPORTIONMENT

The special benefits derived from the Mosquito and Disease Control Assessment are conferred on property and are not based on a specific property owner's occupancy of property or the property owner's demographic status, such as age or number of dependents. However, it is ultimately people who do or could use the property and who enjoy the special benefits described above. The opportunity to use and enjoy property within the Assessment District without the excessive nuisance, diminished "livability" or the potential health hazards brought by mosquitoes and the diseases they carry is a special benefit to properties in the Assessment District. This benefit can be in part measured by the number of people who potentially live on, work at, visit or otherwise use the property, because people ultimately determine the value of the benefits by choosing to live, work and/or recreate in the area, and by choosing to purchase property in the area.[22]

In order to apportion the cost of the Services to property, each property in the Assessment District is assigned a relative special benefit factor. This process involves determining the relative benefit received by each property in relation to a single family home, or, in other words, on the basis of Single Family Equivalents (SFE). This SFE methodology is commonly used to distribute assessments in proportion to estimated special benefit. For the purposes of this Engineer's Report, all properties are designated a SFE value, which is each property's relative benefit in relation to a "benchmark" parcel in the Assessment District. The "benchmark" property is the single family detached dwelling on a parcel of less than one acre. This benchmark parcel is assigned one Single Family Equivalent benefit unit or one SFE.

The calculation of the special benefit apportionment and relative benefit to properties in the Assessment Area from the Services is summarized in the following equation:

$$\textbf{Special Benefit (per property)} = \sum f\,\textbf{(Special Benefits)} * \sum f\,\textbf{(Property Specific Attributes}^{1}\textbf{)}$$

1. Such as use, property type, size, as well as vector-specific attributes such as destination potential and population potential

[22] It should be noted that the benefits conferred upon property are related to the average number of people who could potentially live on, work at or otherwise could use a property, not how the property is currently used by the present owner.

RESIDENTIAL PROPERTIES

Certain residential properties in the Abatement District that contain a single residential dwelling unit and are on a lot of less than or equal to one acre are assigned one Single Family Equivalent or 1.0 SFE. Traditional houses, zero-lot line houses, and town homes are included in this category of single family residential property.

Single family residential properties in excess of one acre receive additional benefit relative to a single family home on up to one acre, because the larger parcels provide more area for mosquito sources and the mosquito and disease control Services. Therefore, such larger parcels receive additional benefits relative to a single family home on less than one acre and are assigned 1.0 SFE for the residential unit and an additional rate equal to the agricultural rate described below of 0.0021 SFE per one-fourth acre of land area in excess of one acre. Mobile home parcels on a separate parcel and in excess of one acre also receive this additional acreage rate.

Other types of properties with residential units, such as agricultural properties, are assigned the residential SFE rates for the dwelling units on the property and are assigned additional SFE benefit units for the agricultural-use land area on the property.

Properties with more than one residential unit are designated as multi-family residential properties. These properties, along with condominiums, benefit from the Services in proportion to the number of dwelling units that occupy each property, the average number of people who reside in each property and the average size of each property in relation to a single family home in the District. This Report analyzed Alameda County population density factors from the 2000 US Census as well as average dwelling unit size for each property type. After determining the Population Density Factor and Square Footage Factor for each property type, an SFE rate is generated for each residential property structure, as indicated in Figure 2 below.

The SFE factor of 0.46 per dwelling unit for multifamily residential properties applies to such properties with two to four units (duplex, triplex, fourplex). Properties in excess of 5 units typically offer on-site management, monitoring and other control services that tend to offset some of the benefits provided by the Mosquito Abatement District. Therefore the benefit for properties in excess of 5 units is determined to be .32 SFE per unit for the first 20 units and 0.10 SFE per each additional unit in excess of 20 dwelling units.

FIGURE 2– RESIDENTIAL ASSESSMENT FACTORS

Type of Residential Property	Total Population	Occupied Households	Persons per Household	Pop. Density Equivalent	SqFt Factor	Proposed Rate
Single Family Residential	866,596	284,662	3.04	1.00	1.00	**1.00**
Condominium	103,373	37,417	2.76	0.91	0.66	**0.60**
Duplex, Triplex, Fourplex	144,626	57,815	2.50	0.82	0.56	**0.46**
Multi-Family Residential (5+ Units)	286,957	136,173	2.11	0.69	0.47	**0.32**
Mobile Home on Separate Lot	13,464	6,660	2.02	0.66	0.41	**0.27**

Source: 2000 Census, Alameda County, and property dwelling size information from the Alameda County Assessor data and other sources.

COMMERCIAL/INDUSTRIAL PROPERTIES

Commercial and industrial properties receive relatively lower levels of benefit in comparison to a single family home because they are generally open and operated for more limited times and employees of indoor businesses tend to spend less time outdoors. Since the hours of operation and the potential exposure to mosquitoes are measures of relative benefit, commercial and industrial properties receive lower relative levels of benefit. Therefore, commercial and industrial properties are determined to receive 0.50 SFE of benefit per one-quarter acre (10,890 square feet) of land area.

The SFE values for various commercial and industrial land uses are further defined by using average employee densities because the special benefit factors described previously are also related to the average number of people who work at commercial/industrial properties.

To determine employee density factors, this Report utilizes the findings from the San Diego County Association of Governments Traffic Generators Study (the "SANDAG Study") because these findings were approved by the State Legislature which determined the SANDAG Study to be a good representation of the average number of employees per acre of land area for commercial and industrial properties. As determined by the SANDAG Study, the average number of employees per acre for commercial and industrial property is 24. As presented in Figure 3, the SFE factors for other types of businesses are determined relative to their typical employee density in relation to the average of 24 employees per acre of commercial property.

Self-storage and golf course property benefit factors are similarly based on average usage densities. Figure 3 below lists the benefit assessment factors for such business properties.

AGRICULTURAL, RANGELAND, AND CEMETERY PROPERTIES

Utilizing research and agricultural employment reports from UC Davis and the California Employment Development Department and other sources, this Report calculated an average usage density of 0.05 people per acre for agriculture property, 0.01 for rangelands and timber and .10 for cemeteries. Since these properties typically are a source of mosquitoes and/or are typically closest to other sources of mosquitoes, it is reasonable to determine that the benefit to these properties is twice the usage density ratio of commercial and industrial properties. The SFE factors per 0.25 acres of land area are shown in the following Figure 3.

FIGURE 3 – COMMERCIAL/INDUSTRIAL BENEFIT ASSESSMENT FACTORS

Type of Commercial/Industrial Land Use	*Average Employees Per Acre [1]*	*SFE Units per Fraction Acre [2]*	*SFE Units per Acre After 5*
Commercial	24	0.500	0.500
Office	68	1.420	1.420
Shopping Center	24	0.500	0.500
Industrial	24	0.500	0.500

1. Source: San Diego Association of Governments Traffic Generators Study, University of California, Davis and other studies and sources.

2. The SFE factors for commercial and industrial parcels indicated above are applied to each fourth acre of building area or portion thereof. (Therefore, the SFE rate for any assessable parcel with 10,890 square feet or less in these categories is the SFE Units listed above.)

FIGURE 4 – OTHER LAND BENEFIT ASSESSMENT FACTORS

Other Types of Land Use	*Average Employees Per Acre [1]*	*SFE Units per 1/4 Acre [2]*
Self Storage or Parking Lot	1	0.021
Wineries	12	0.250
Golf Course	3.00	0.063
Cemeteries	1.20	0.050
Agriculture / Vineyards	0.05	0.0021
Timberland / Dry Rangeland	0.01	0.00042

1. Source: San Diego Association of Governments Traffic Generators Study, University of California, Davis and other studies and sources.

2. The SFE factors for commercial and industrial parcels indicated above are applied to each fourth acre of land area or portion thereof. (Therefore, the minimum assessment for any assessable parcel in these categories is the SFE Units listed herein.)

OTHER PROPERTIES

Article XIIID stipulates that publicly owned properties must be assessed unless those properties are reasonably determined to receive no special benefit from the assessment. All properties that are specially benefited are assessed. Publicly owned property that is used for purposes similar to private residential, commercial, industrial or institutional uses is benefited and assessed at the same rate as such privately owned property.

Other public properties such as watershed parcels, parks, open space parcels are determined to, on average, receive similar benefits as a single family home. Therefore such

parcels are assessed an SFE benefit factor of 1. Miscellaneous, small and other parcels such as roads, right-of-way parcels, and common areas typically do not generate significant numbers of employees, residents, customers or guests and have limited economic value. These miscellaneous parcels receive minimal benefit from the Services and are assessed an SFE benefit factor of 0.

Church parcels, institutional properties, and property used for educational purposes typically generate employees on a less consistent basis than other non-residential parcels. Many of these properties with higher population factors provide on-site management, monitoring and other control services that tend to offset some of the benefits provided by the District. Therefore, these parcels are determined to, on average, receive similar benefits as a single family home. Therefore such parcels are assessed an SFE benefit factor of 1.

Miscellaneous, small and other parcels such as roads, right-of-way parcels, and common areas typically do not generate significant numbers of employees, residents, customers or guests and have limited economic value. These miscellaneous parcels receive minimal benefit from the Services and are assessed an SFE benefit factor of 0.

DURATION OF ASSESSMENT

It is proposed that the Assessment be levied for fiscal year 2016-17 and continued every year thereafter, so long as mosquitoes remain in existence and the Alameda County Mosquito Abatement District requires funding from the Assessment for its Services in the District. As noted previously, if the Assessment and the duration of the Assessment are approved by property owners in an assessment ballot proceeding, the Assessment can continue to be levied annually after the Alameda County Mosquito Abatement District Board of Trustees approves an annually updated Engineer's Report, budget for the Assessment, Services to be provided, and other specifics of the Assessment. In addition, the District Board of Trustees must hold an annual public hearing to continue the Assessment.

APPEALS AND INTERPRETATION

Any property owner who feels that the assessment levied on the subject property is in error as a result of incorrect information being used to apply the foregoing method of assessment, may file a written appeal with the Manager of the Alameda County Mosquito Abatement District or his or her designee. Any such appeal is limited to correction of an assessment during the then current fiscal year or, if before July 1, the upcoming fiscal year. Upon the filing of any such appeal, the District Manager or his or her designee will promptly review the appeal and any information provided by the property owner. If the District Manager or his or her designee finds that the assessment should be modified, the appropriate changes shall be made to the assessment roll. If any such changes are approved after the assessment roll has been filed with Alameda County for collection, the District Manager or his or her designee is authorized to refund to the property owner the amount of any approved reduction. Any dispute over the decision of the District Manager, or his or her designee, shall be referred to the District Board of Trustees. The decision of the District Board of Trustees shall be final.

ASSESSMENT

WHEREAS, the Alameda County Mosquito Abatement District Board of Trustees contracted with the undersigned Engineer of Work to prepare and file a report presenting an estimate of costs of Services, a diagram for the benefit assessment area, an assessment of the estimated costs of Services, and the special and general benefits conferred thereby upon all assessable parcels within the Alameda County Mosquito Abatement District - Mosquito and Disease Control Assessment;

NOW, THERFORE, the undersigned, by virtue of the power vested in me under Article XIIID of the California Constitution, the Government Code and the Health and Safety Code and the order of the Alameda County Mosquito Abatement District Board of Trustees, hereby make the following determination of an assessment to cover the portion of the estimated cost of the Services, and the costs and expenses incidental thereto to be paid by the Mosquito and Disease Control Assessment.

The District has evaluated and estimated the costs of extending and providing the Services to the Assessment District. The estimated costs are summarized in Figure 1 and detailed in Figure 4, below.

The amount to be paid for the Services and the expenses incidental thereto, to be paid by the Alameda County Mosquito Abatement District for fiscal year 2016-17 is generally as follows:

FIGURE 5– SUMMARY COST ESTIMATE – FY 2016-17

Mosquito Abatement & Disease Control Services	$2,672,842
Materials, Utilities and Supplies	$1,078,397
Capital Equipment and Fixed Assets	$292,895
Other Expenses	$3,525,371
Total Mosquito Control Services and Related Expenditures	**$7,569,505**
Incidentals	$49,951
Total Budget	**$7,619,456**
Less Contributions from Other Sources:	
Other Revenue	($6,498,854)
Net Amount To Assessments	$1,120,602

An Assessment Diagram is hereto attached and made a part hereof showing the exterior boundaries of the assessment area. The distinctive number of each parcel or lot of land in the Mosquito and Disease Control Assessment is its Assessor Parcel Number appearing on the Assessment Roll.

I do hereby determine and apportion the net amount of the cost and expenses of the Services, including the costs and expenses incidental thereto, upon the parcels and lots of land within the Mosquito and Disease Control Assessment, in accordance with the special benefits to be received by each parcel or lot, from the Services, and more particularly set forth in this Engineer's Report.

The assessment determination is made upon the parcels or lots of land within the assessment area in proportion to the special benefits to be received by the parcels or lots of land, from the Services.

The assessment is subject to an annual adjustment tied to the Consumer Price Index-U for the San Francisco Bay Area as of December of each succeeding year (the "CPI"), with a maximum annual adjustment not to exceed 3%. Any change in the CPI in excess of 3% shall be cumulatively reserved as the "Unused CPI" and shall be used to increase the maximum authorized assessment rate in years in which the CPI is less than 3%. The maximum authorized assessment rate is equal to the maximum assessment rate in the first fiscal year the assessment was levied adjusted annually by the minimum of 1) 3% or 2) the change in the CPI plus any Unused CPI as described above.

The change in the CPI from December 2014 to December 2015 was 3.17% and the Unused CPI carried forward from the previous year is 14.52%. Therefore, the maximum authorized increase in the Assessment rate for fiscal year 2016-17 is 17.69%, and the maximum authorized assessment rate is $5.94 per single family equivalent benefit unit. The estimate of cost and budget in this Engineer's Report proposes assessments for fiscal year 2016-17 at the rate of $2.50, which is below the maximum authorized assessment rate.

Each parcel or lot of land is described in the Assessment Roll by reference to its parcel number as shown on the Assessor's Maps of the County of Alameda for the fiscal year 2016-17. For a more particular description of the property, reference is hereby made to the deeds and maps on file and of record in the office of the County Assessor of the County of Alameda.

I hereby place opposite the Assessor Parcel Number for each parcel or lot within the Assessment Roll, the proposed amount of the assessment for the fiscal year 2016-17 for each parcel or lot of land within the Alameda County Mosquito Abatement District- Mosquito and Disease Control Assessment.[23]

[23] Each parcel has a uniquely calculated assessment based on the estimated level of special benefit to the property as determined in accordance with this Engineer's Report.

Dated: June 1, 2016

Engineer of Work

By _____
John W. Bliss, License No. C052091

ASSESSMENT DIAGRAM

The Alameda County Mosquito Abatement District, Mosquito and Disease Control Assessment area includes all properties within the boundaries of the Alameda County Mosquito Abatement District.

The boundaries of the Mosquito and Disease Control Assessment Area are displayed on the following Assessment Diagram.

FILED IN THE OFFICE OF THE GENERAL MANAGER OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT, COUNTY OF ALAMEDA, CALIFORNIA, THIS _____ DAY OF _____, 20___.

_____
CLERK OF THE BOARD OF SUPERVISORS

RECORDED IN THE OFFICE OF THE GENERAL MANAGER OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT, COUNTY OF ALAMEDA, CALIFORNIA, THIS _____ DAY OF _____, 20_____.

_____
CLERK OF THE BOARD OF SUPERVISORS

AN ASSESSMENT WAS CONFIRMED AND LEVIED BY THE BOARD OF SUPERVISORS OF ALAMEDA COUNTY, ON THE LOTS, PIECES AND PARCELS OF LAND ON THIS ASSESSMENT DIAGRAM ON THE _____ DAY OF _____, 20____ FOR THE FISCAL YEAR 2016-17 AND SAID ASSESSMENT DIAGRAM AND THE ASSESSMENT ROLL FOR SAID FISCAL YEAR WERE FILED IN THE OFFICE OF THE COUNTY AUDITOR OF THE COUNTY OF ALAMEDA ON THE _____ DAY OF _____, 20____. REFERENCE IS HEREBY MADE TO SAID RECORDED ASSESSMENT ROLL FOR THE EXACT AMOUNT OF EACH ASSESSMENT LEVIED AGAINST EACH PARCEL OF LAND.

_____
CLERK OF THE BOARD OF SUPERVISORS

Note:
REFERENCE IS HEREBY MADE TO THE MAPS AND DEEDS OF RECORD IN THE OFFICE OF THE ASSESSOR OF THE COUNTY OF ALAMEDA FOR A DETAILED DESCRIPTION OF THE LINES AND DIMENSIONS OF ANY PARCELS SHOWN HEREIN. THOSE MAPS SHALL GOVERN FOR ALL DETAILS CONCERNING THE LINES AND DIMENSIONS OF SUCH PARCELS. EACH PARCEL IS IDENTIFIED IN SAID MAPS BY ITS DISTINCTIVE ASSESSORS'S PARCEL NUMBER.

SCI Consulting Group
4745 Mangels Blvd.
Fairfield, CA 94534

ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT
MOSQUITO AND DISEASE CONTROL ASSESSMENT DIAGRAM

ASSESSMENT ROLL

Reference is hereby made to the Assessment Roll in and for the assessment proceedings on file in the office of the Alameda County Mosquito Abatement District, as the Assessment Roll is too voluminous to be bound with this Report.

RESOLUTION NO. 1034-1

A RESOLUTION INTENTION TO CONTINUE ASSESSMENTS FOR FISCAL YEAR 2016-17, PRELIMINARILY APPROVING THE ENGINEER'S REPORT, AND PROVIDING FOR NOTICE OF HEARING FOR THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT MOSQUITO AND DISEASE CONTROL ASSESSMENT

WHEREAS, on May 14th, 2008 by its Resolution No. 937-1, the Board of Trustees of the Alameda County Mosquito Abatement District (the "Board") authorized the levy of assessments for the Mosquito and Disease Control Assessment (the "Assessment") pursuant to the provisions of the Health and Safety Code section 2080 et seq. and Article XIIID of the California Constitution; and

WHEREAS, such mosquito and disease control services provide tangible health benefits, reduced nuisance benefits and other special benefits to the public and properties within the areas of such services; and

WHEREAS, the purpose of the Assessment is for mosquito control projects and programs including projects, programs, public improvements and services intended to provide for the surveillance, prevention, abatement and control of mosquitoes and the diseases they carry throughout its boundaries ("Services"); and

WHEREAS, the Alameda County Mosquito Abatement District ("the District") is authorized, pursuant to the authority provided in Health and Safety Code Section 2082 and Article XIIID of the California Constitution, to levy assessments for mosquito and disease control services; and

WHEREAS, the Assessment was authorized by an assessment ballot proceeding conducted in 2008 and approved by 70.19% of the weighted ballots returned by property owners, and such assessments were levied by the Board by Resolution No. 937-1, passed on May 14, 2008;

WHEREAS, an annual adjustment to the Assessment rate equal to the change in the Consumer Price Index-U for the San Francisco Bay Area as of December of each succeeding year (the "CPI"), with a maximum annual adjustment not to exceed 3%, was also authorized by the assessment ballot proceeding conducted in 2008;

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of the Alameda County Mosquito Abatement District that:

1. SCI Consulting Group, the Engineer of Work, has prepared an Engineer's Report in accordance with Article XIIID of the California Constitution and Section 2082, et. seq., of the Health and Safety Code (the "Report"). The Report has been made, filed with the secretary of the board and duly considered by the Board and is hereby deemed sufficient and preliminarily approved. The Report shall stand as the Engineer's Report for all subsequent proceedings under and pursuant to the foregoing resolution.

2. It is the intention of this Board to levy and collect the continued assessments for the Mosquito and Disease Control Assessment for fiscal year 2016-17 for the proposed projects and services set forth in the Report. Within the Service Area, the proposed projects, services and programs are generally described as surveillance, disease prevention, abatement, and control of mosquitoes within the District boundaries. Such mosquito control and disease prevention projects and programs include, but are not limited to, source reduction, biological control, larvicide applications, adulticide applications, disease monitoring, public education, reporting, accountability, research and interagency cooperative activities, as well as capital costs, maintenance, and operation expenses and incidental expenses (collectively "Services"). The cost of these Services also includes capital costs comprised of equipment, capital improvements and facilities necessary and incidental to the District's mosquito and disease control program.

3. The levy of the Assessment may be continued annually and may be adjusted by up to the maximum annual CPI adjustment without any additional assessment ballot proceeding. The change in the CPI in 2015 was 3.17% and the Unused CPI carried forward from the previous year is 14.52%. Therefore, the maximum authorized increase in the Assessment rate for fiscal year 2016-17 is 17.69%, and the maximum authorized assessment rate is $5.94 per single family equivalent benefit unit. The estimate of cost and budget in this Engineer's Report proposes assessments for fiscal year 2016-17 at the rate of $2.50, which is below the maximum authorized assessment rate.

4. The estimated fiscal year 2016-17 cost of providing the Services is $1,120,602. This cost results in a proposed assessment rate for fiscal year 2016-17 of TWO DOLLARS AND FIFTY CENTS ($2.50) per single-family equivalent benefit unit. Reference is hereby made to the Report for a full and detailed description of the proposed assessments upon assessable lots and parcels of land.

5. Notice is hereby given that on July 13, 2016, at the hour of 5:00 p.m. at the Alameda County Mosquito Abatement District office located at 23187 Connecticut Street, Hayward, California; the Board will hold a public hearing to consider the ordering of the Services, and the levy of the continued assessments for fiscal year 2016-17.

6. The clerk of the board shall cause a notice of the hearing to be given by publishing a notice, at least ten (10) days prior to the date of the hearing above specified, in a newspaper circulated in the District.

PASSED and ADOPTED by the Board of Trustees of the Alameda County Mosquito Abatement District, State of California on June 8, 2016, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____

President, Board of Trustees, Alameda County Mosquito Abatement District

ATTEST:

_____

Secretary of the Board of Trustees, Alameda County Mosquito Abatement District

RESOLUTION 1034-2

A RESOLUTION OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT CERTIFYING THE FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT FOR ITS INTEGRATED MOSQUITO MANAGEMENT PROGRAM

WHEREAS, the Alameda County Mosquito Abatement District "District" issued a Notice of Preparation of a Programmatic Environmental Impact Report (PEIR) on May 11th, 2012 to the State Clearinghouse and reviewing agencies and interested parties, and notice was appropriately posted and published; and held a public scoping meeting on June 6th, 2012, and three comments were received from one federal agency, and two local agencies for consideration in preparing a PEIR under the California Environmental Quality Act (CEQA); and

WHEREAS, the District prepared a Draft PEIR (SCH #2012052037) and released it with a Notice of Availability on July 16th, 2015 to the State Clearinghouse and to other interested agencies and individuals for a 45-day public review period that concluded on September 4th, 2015; and

WHEREAS, the District held a public hearing before District staff, and consultants on August 5th, 2015 to allow for formal public testimony; and

WHEREAS, the District received three comments from the public, including one responsible agency, on the Draft PEIR by the due date and also considered late comment letters from Citizens Committee to Complete the Refuge on September 9, 2015 and the California Department of Fish and Wildlife on September 17th, 2015; and

WHEREAS, the District prepared responses to comments and text changes and additions in wording to the Draft PEIR recommended by the District's consultant for the Final PEIR which is comprised of the Responses to Comments/Text Changes document (Exhibit A) and the 2015 Draft PEIR (Exhibit B); and

WHEREAS the District distributed written responses to each public agency and others who commented on the Draft PEIR, and also provided an opportunity for review of the Final PEIR by the public, for a 10-day review prior to this meeting today; and

WHEREAS, the District finds that all of the responses to comments and the text changes and additions for the Final PEIR provide additional usable information and elaborate on or provide clarifications to the material contained in the Draft PEIR without substantially changing the District's proposed Program, or changing the conclusions contained in the Draft PEIR regarding impacts of the Program, such that no renoticing or recirculation of the Draft PEIR is required; and

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES,

that the District, as the Lead Agency under CEQA for the proposed Program's PEIR, hereby certifies that:

SECTION 1. The foregoing recitals are true and correct, and, together with the staff report, Final PEIR and the administrative record, form the basis for the determinations set forth below.

SECTION 2. The Board further finds, determines, and orders as follows:

A. The Final PEIR has been completed in compliance with CEQA.

B. The Final PEIR was presented to the Board, who has thoroughly reviewed and carefully considered the information contained in the Final PEIR.

C. The Board agrees with the conclusions contained in the Final PEIR and finds that the Final PEIR reflects the Board's independent judgment and analysis.

D. Having found that it is adequate and complete and in full compliance with the requirements of CEQA, the Board certifies the IMMP PEIR.

SECTION 3. This Resolution shall take effect immediately.

PASSED AND ADOPTED June 8, 2016, at a regular meeting of the Alameda County Mosquito Abatement District Board by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
Board President

ATTEST:

_____

Board Secretary

RESOLUTION 1034-3

A RESOLUTION OF THE ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT ADOPTING FINDINGS OF FACT, APPROVING THE MITIGATION MONITORINGPROGRAM, AND APPROVING ITS INTEGRATED MOSQUITO MANAGEMENT PROGRAM

WHEREAS, the Board of Trustees (Board) of the Alameda County Mosquito Abatement District (District), pursuant to its authority under State law, needs to continue with and expand upon its Integrated Mosquito Management Program into 2016 and beyond in order to protect the public health and the health of domestic animals from disease and discomfort caused by mosquitoes within the District's Service Area and within adjacent counties upon request by the County or vector control district; and

WHEREAS, the District prepared a Final Programmatic Environmental Impact Report (Final PEIR) (SCH #2012052037) as Lead Agency under the California Environmental Quality Act ("CEQA") and certified the Final PEIR by Resolution No. 1034-2 on June 8th, 2016; and

WHEREAS the District has made Findings of Fact and a Statement of Overriding Consideration under CEQA on the IMMP's significant environmental impacts and commitments to implement mitigation measures to reduce these impacts to less than significant (Exhibit A) considered in the Final PEIR; and

WHEREAS, the District has also made findings on the alternatives considered in the Final PEIR and has determined the preferred Program (Exhibit A) for adoption; and

WHEREAS, the District has prepared a monitoring program to ensure these mitigation measures and the District's best management practices that are included in the Program are implemented over the conduct of the Program (Exhibit B); and

WHEREAS, the District will maintain the documents and other materials that constitute the record of proceedings on which the District's findings are based are located at the District's office: 23187 Connecticut Street, Hayward, CA 94545; and this information is provided in compliance with Public Resources Code Section 21081.6(a)(2) and 14 Cal. Code Regs. Section 15091(e).

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES, that the District hereby finds, orders, and determines as follows:

SECTION 1. The foregoing recitals are true and correct, and, together with the staff report and entire administrative record, form the basis for the determinations set forth below.

SECTION 2. Based on substantial evidence contained in the Final PEIR and Exhibits attached to this Resolution, and the entire administrative record, the Board finds, determines, and orders as follows:

A. The preferred Program described in the Final PEIR and in Exhibit A is hereby approved.

B. The Board adopts Findings of Fact as set forth in Exhibit A, including the mitigation measures set forth therein.

C. The Board adopts the Mitigation Monitoring Program contained in Exhibit B.

D. The District General Manager is directed to file a Notice of Determination with the appropriate counties and to pay the California Department of Fish and Wildlife filing fee.

SECTION 3. This Resolution shall take effect immediately.

PASSED AND ADOPTED _____, at a regular meeting of the Alameda County Mosquito Abatement District Board by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____

Board President

ATTEST:

_____

Board Secretary

Exhibit B: Mitigation Monitoring Program (Draft)

The requirement for a mitigation monitoring or reporting program is introduced in Section 15091 of Title 14, California Code of Regulations, Chapter 3, Guidelines for Implementation of the California Environmental Quality Act. This section directs the public agency approving or carrying out the project, Alameda County Mosquito Abatement District (District or ACMAD) to make specific written findings for each significant impact identified in the PEIR. When making the required findings, the agency will also adopt a program for reporting on or monitoring the changes that it has either required in the Project or made a condition of approval to avoid or substantially lessen significant environmental effects. These mitigation measures must be fully enforceable through permit conditions, agreements, or other measures.

Section 15097 of the CEQA Guidelines requires the public agency to adopt a program for monitoring or reporting on the revisions that it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects reporting or monitoring responsibilities may be delegated to another public agency or private entity. However, until mitigation measures have been completed, the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program.

The District may choose whether its program will monitor mitigation, report on mitigation or both.

> Reporting generally consists of a written compliance review that is presented to the decision making body or authorized person. A report may be required at various stages during project implementation or upon completion of the mitigation measure. It is suited to projects that have readily measurable or quantitative mitigation measures or that already involve regular review.

> Monitoring is generally an ongoing or periodic process of project oversight. It is suited to projects with complex mitigation measures that are expected to be implemented over a period of time.

This mitigation program report will be comprised of a matrix of impacts and mitigation for each alternative selected for the adopted Integrated Mosquito Management Program (IMMP) followed by a description of the mitigation monitoring activities. The IMMP mitigation monitoring program is a monitoring program primarily (because the “mitigation” is largely comprised of ongoing best management practices) and a reporting program on the monitoring plan and other mitigation measures if required.

For the Program, mitigation identified in the PEIR for impacts that were identified as potentially significant but mitigable has been adopted by the District. Comments from agency consultations and public review have been considered in developing the IMMP mitigation monitoring program. For each significant but mitigable impact and adopted mitigation measure, this report identifies the implementation action required, the timing requirements for implementation, and the agency responsible for ensuring that the action occurs. In all cases, the District is responsible for evaluating monitoring data and compliance but may be obtaining assistance from other state agencies such as Department of Fish and Wildlife (CDFW) and Department of Public Health (DPH) and from federal agencies such as the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). For impacts that are less than significant, mitigation is not required by CEQA. However, monitoring is planned and discussed in this report.

1.1 Potentially Significant Impacts and Mitigation Measures

Table 1 lists all of the adopted mitigation measures for the Chemical Control Alternative that will be combined into the overall Program for implementation in any part of the Program Area:

Table 1 Significant Impacts and Mitigation for Chemical Control Alternative

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
10. Air Quality			
Objectionable Odors	**Impact AQ-25:** The Chemical Control Alternative could subject people to objectionable odors. Impacts could be **potentially significant but mitigable.**	**Mitigation Measure AQ-25a:** Maintain appropriate buffer zones between spray areas and sensitive receptor locations when possible for the application of the treatment compounds, especially true for aerial applications. > Location: Areas to receive treatment with pesticides that are near residential and commercial land uses > Monitoring/Reporting Action: District staff to check current land use maps or aerial photos prior to treatments > Effectiveness Criteria: Document odor complaints from the public > Responsible Agency: District > Timing: Prior to chemical treatments **Mitigation Measure AQ-25b:** When possible, defer application of treatment compounds until such time that favorable wind conditions would reduce or avoid the risk of drift into populated areas. > Location: Areas to receive treatment with pesticides that are near residential and commercial land uses > Monitoring/Reporting Action: District staff to check current land use maps or aerial photos prior to treatments > Effectiveness Criteria: Document odor complaints from the public > Responsible Agency: District > Timing: Prior to chemical treatments	Less than significant

Table 1 Significant Impacts and Mitigation for Chemical Control Alternative

Affected Resource and Area of Potential Impact	Identified Impact	Mitigation Measures	Significance After Mitigation
		Mitigation Measure AQ-25c: Use GPS dataloggers that document site-specific compliance with all label requirements for drift mitigation. > Location: Areas to receive treatment with pesticides that are near residential and commercial land uses > Monitoring/Reporting Action: District staff to check current land use maps or aerial photos prior to treatments > Effectiveness Criteria: Document odor complaints from the public > Responsible Agency: District > Timing: Prior to chemical treatments **Mitigation Measure AQ-25d:** Use precision application technology to reduce drift and the total amount of material applied. This measure can include (1) precision guidance systems that minimize ground or aerial spray overlap (e.g., GPS and Real Time Kinetics – GPS/RTK), and (2) computer-guided application systems that integrate real-time meteorological data and computer model guidance to reduce drift from aerial application (e.g., trade names "AIMMS," "Wingman™ GX," and "NextStar™ Flow Control"). > Location: Areas to receive treatment with pesticides that are near residential and commercial land uses > Monitoring/Reporting Action: District staff to check current land use maps or aerial photos prior to treatments > Effectiveness Criteria: Document odor complaints from the public > Responsible Agency: District > Timing: Prior to chemical treatments	

1.2 Less than Significant Impacts and Monitoring

Mitigation measures are neither required nor recommended for impacts determined to be less than significant. However, the District is committed to monitoring for environmental health and water quality during mosquito surveillance activities to address agency and public concerns even though there are no potentially significant impacts to ecological and human health or the environment outside of those mentioned in Table 1. By monitoring for these concerns, the PEIR conclusions of no impact or less than significant impact can be monitored to ensure impacts do not develop over time and to address public concerns with the application methods.

1.3 Best Management Practices

The District has implemented a number of procedures and practices under ongoing program activities that will continue into the future for the adopted Program. Table 2 lists all of the best management practices (BMPs) that the District has incorporated into its Program. These BMPs represent measures to avoid, minimize, eliminate, rectify, or compensate for potential adverse effects on the human, biological, and physical environments and District staff. While similar to mitigation measures under CEQA, these BMPs are already in use and would continue to be used as part of the adopted IMM Program. Thus, they represent ongoing environmental commitments by the District. These practices are organized under the following categories:

> General BMPs
> Tidal Marsh-Specific BMPs
> Salt Marsh Harvest Mouse (SMHM)
> Ridgway's Rail (RR) (Maley 2014)
> California Least Tern (CLT)
> Western Snowy Plover (WSnPl)
> California Tiger Salamander (CTS)
> Vernal Pool Tadpole Shrimp (VPTS)
> Contra Costa Goldfields (CCG)
> Palmate-Bracted Bird's Beak (PBBB)
> Vegetation Management
> Maintenance/Construction and Repair of Tide Gates and Water Structures in Waters of the U.S.
> Applications of Pesticides, Surfactants, and/or Herbicides
> Hazardous Materials Spill Management
> Worker Illness and Injury Prevention Program and Emergency Response
> California Red-Legged Frog (CRLF)
> Foothill Yellow-Legged Frog (FYLF)
> Western Spadefoot Toad (WST)
> Western Pond Turtle (WPT)
> Tricolored Blackbird (TCB)

The District will observe all state and federal regulations. The District will follow all appropriate laws and regulations pertaining to the use of pesticides (and herbicides) and safety standards for employees and the public, as governed by the USEPA, CDPR, and local jurisdictions (with some exceptions). Although the products the District uses are all tested, registered, and approved for use by the USEPA and/or CDPR, the District provides additional margins of safety with the adherence to additional internal guidance based on BMPs and the principles embodied in District IMM policies, where applicable, including but not limited to:

> District will ensure all District and contracted applicators are appropriately licensed by the state.

> District staff or contractors will coordinate with the Alameda County Agricultural Commissioner, and obtain and verify all required licenses and permits as current prior to pesticide/herbicide application.

> District will ensure that all applicators and handlers will use proper personal protective equipment.

Table 2 District Best Management Practices

A. General BMPs

1.	District staff has had long standing and continues to have cooperative, collaborative relationships with federal, state, and local agencies. The District regularly communicates with agencies regarding the District's operations and/or the necessity and opportunity for increased access for surveillance, source reduction, habitat enhancement, and the presence of special status species and wildlife. The District often participates in and contributes to interagency projects. The District will continue to foster these relationships, communication, and collaboration.
2.	In particular, District staff will regularly communicate with resource agency staff regarding mosquito management operations, habitat, and flora and fauna in sensitive habitats. Such communications will include wildlife studies and occurrences of special status species in areas that may be subject to mosquito management activities.
3.	When walking or using small equipment in marshes, riparian corridors, or other sensitive habitats, existing trails, levees and access roads will be used whenever possible to minimize or avoid impacts to species of concern and sensitive habitats. Specific care will be taken when walking and performing surveillance in the vicinity of natural and manmade ditches or sloughs or in the vicinity of tidal marsh habitat.
4.	District staff has received training from USFWS and CDFW biologists regarding endangered species, endangered species habitat, and wildlife/wildlife habitat recognition and avoidance measures. District supervisory staff frequently engages staff on these subjects. For example, District staff has become familiar with Ridgway's Rail call recordings to invoke avoidance measures if these calls are heard in the field. District staff is trained to be observant, proceed carefully, and practice avoidance measures if needed when accessing areas that may serve as bird nesting habitat (e.g., watch for flushing birds that may indicate a nest is nearby). Emphasis will be placed on species and habitats of concern where mosquito management activities might occur (e.g., SMHM, RR, special status plants, vernal pools, tidal marsh, etc.). These training sessions will be included as a part of the required continuing education training records that are kept by mosquito control agencies.
5.	Conduct worker environmental awareness training for all treatment field crews and contractors for special status species and sensitive natural communities that a qualified person (e.g., District biologist) determines to have the potential to occur on the treatment site. Conduct the education training prior to starting work at the treatment site and upon the arrival of any new worker onto sites with the potential for special status species or sensitive natural communities.
6.	District staff will work with care and caution to minimize potential disturbance to wildlife while performing surveillance and mosquito treatment/population management activities (see 1 through 5 above).
7.	Identify probable (based on historical experience) treatment sites that may contain habitat for special status species every year prior to work to determine the potential presence of special status flora and fauna using the CNDDB, relevant Habitat Conservation Plans (HCPs), NOAA Fisheries and USFWS websites, Calfish.org, and other biological information developed for other permits. Establish a buffer of reasonable distance, when feasible, from known special status species locations and do not allow application of pesticides/herbicides within this buffer whenever possible. Nonchemical methods are acceptable within the buffer zone when designed to avoid damage to any identified and documented rare flora and fauna.
8.	Vehicles driving on levees to travel through tidal marsh or to access sloughs or channels for surveillance or treatment activities will travel at speeds no greater than 10 miles per hour to minimize noise and dust disturbance.
9.	District staff will implement site access selection guidelines to minimize equipment use in sensitive habitats including active nesting areas and to use the proper vehicles for onroad and offroad conditions.
10.	Properly train all staff, contractors, and volunteer help to prevent spreading weeds and pests to other sites. Equipment and personnel gear will be cleaned between sites. The District headquarters contains wash rack facilities (including high-pressure washers) to thoroughly clean vehicles and equipment to prevent the spread of weeds.

11. Operation of noise-generating equipment (e.g., chainsaws, brushcutters) will abide by the time-of-day restrictions established by the applicable local jurisdiction (i.e., City and/or County) if such noise activities would be audible to receptors (e.g., residential land uses, schools, hospitals, places of worship) located in the applicable local jurisdiction. Shut down all motorized equipment when not in use.

12. For operations that generate noise expected to be of concern to the public, the following measures will be implemented:
    - Measure 1: Provide Advance Notices: A variety of measures are implemented depending on the magnitude/nature of the activities undertaken by the District, and may include but are not limited to press releases, the District website, social media, and posted signs. Public agencies and elected officials also may be notified of the nature and duration of the activities, including the Board of Supervisors or City Council, environmental health and agricultural agencies, emergency service providers, and airports.
    - Measure 2: Provide Mechanism to Address Complaints: District staff is available during regular business hours to respond to service calls and address concerns about nighttime operations.

13. The District will perform public education and outreach activities.

14. Engine idling times will be minimized either by shutting equipment and vehicles off when not in use or reducing the maximum idling time to 5 minutes. Correct tire inflation will be maintained in accordance with manufacturer‘s specifications on wheeled equipment and vehicles to prevent excessive rolling resistance. All equipment and vehicles will be maintained and properly tuned in accordance with manufacturer‘s specifications. All equipment will be checked by a certified visible emissions evaluator if visible emissions are apparent to onsite staff.

B. Tidal Marsh-Specific BMPs

1. District staff will continue to implement the measures in the USFWS's "Walking in the Marsh: Methods to Increase Safety and Reduce Impacts to Wildlife/Plants.” District staff will receive annual training and review of this document to remain up to date and current on this document and its methodologies for protecting special status species and the marsh habitat.

2. District will minimize the use of equipment (e.g., ARGOs) in tidal marshes and wetlands. When feasible and appropriate, surveillance and control work will be performed on-foot with handheld equipment. Aerial treatment (helicopter) treatments will be utilized when feasible and appropriate to minimize the disturbance of the marsh during pesticide applications. When ATVs (e.g., ARGOs) are utilized techniques will be employed that limit impacts to the marsh including: slow speeds; slow, several point turns; using existing levees or upland to travel through sites when possible; use existing pathways or limit the number of travel pathways used.

3. District will use reasonable measures to minimize travel along tidal channels and sloughs in order to reduce impacts to vegetation used as habitat (e.g., rail nesting and escape habitat).

4. District staff will minimize the potential for the introduction and spread of *Spartina*, perennial pepperweed and other invasive plant species by cleaning all equipment, vehicles, personal gear, clothing, and boots of soil, seeds, and plant material prior to entering the marsh, and avoiding walking and driving through patches of perennial pepperweed to the maximum extent feasible.

5. When feasible, boats will be used to access marsh areas for surveillance and treatment of mosquitoes to further reduce the risk of potential impacts that may occur when using ATVs to conduct mosquito management activities.

6. The District currently references and provides staff training relevant to the USFWS "Walking in the Marsh: Methods to Increase Safety and Reduce Impacts to Wildlife/Plants" guidelines (USFWS undated).
    - District staff is trained to walk carefully in the marsh and to continuously look ahead of themselves to avoid potential wildlife disturbance (e.g., carefully make observations in their surroundings to detect flushing birds and nests). Specific care is taken when walking and performing surveillance in the vicinity of natural and manmade ditches or sloughs or in vicinity of cord grass habitat (e.g., rack line).
    - When walking in marshes District staff utilizes existing trails when possible (i.e., deer trails and other preexisting trails).

C. Salt Marsh Harvest Mouse (SMHM)

1.	Activities [surveillance, treatment (excluding aerial applications), source reduction] within or adjacent to harvest mouse habitat will not occur within two hours before or after extreme high tides of 6.5 feet National Geodetic Vertical Datum (NGVD) or above as measured at the Golden Gate Bridge (corrected for time and tide height for the site) or when the marsh plain is completely inundated because suitable upland refugia cover is limited and potentially disturbance-creating activities could prevent mice from reaching available cover.
2.	Vegetation removal is limited to the minimum amount necessary to allow for surveillance, treatment, and mosquito habitat reduction (vegetation management) to minimize or avoid loss of SMHM. Similarly, excavation, fill, or construction activities will also be limited to the minimum amount necessary to minimize/avoid loss of SMHM.
3.	Vegetation clearing will be conducted systematically within the project area to ensure that SMHM are encouraged to move toward remaining vegetation and are not trapped in islands of vegetation subject to removal and far from suitable cover.
4.	To the extent feasible, physical control, vegetation management and other mosquito habitat reduction activities will be conducted between December 1 and February 28 (outside of the SMHM breeding season). Surveillance, chemical control, biological control, and public education activities occur year-round and are therefore carefully coordinated with resource agencies to minimize potential impacts to SMHMs and their habitats.
5.	When walking in the marsh, existing trails will be used whenever possible. Specific care will be taken when walking and performing surveillance in the vicinity of natural and manmade ditches or sloughs or in the vicinity of tidal marsh habitat to avoid potential disturbance of SMHM.
6.	District staff will receive training on measures to avoid impacts to SMHM.
7.	If SMHM nests or adults are encountered during mosquito management activities, avoidance measures will be immediately implemented and findings will be reported to the appropriate resource agency.

D. Ridgway's Rail (RR)

1.	Activities [surveillance, treatment (excuding aerial applications), source reduction] within or adjacent to Ridgway's Rail habitat will not occur within two hours before or after extreme high tides of 6.5 feet National Geodetic Vertical Datum (NGVD) or above as measured at the Golden Gate Bridge (corrected for time and tide height for the site) or when the marsh plain is completely inundated because suitable upland refugia cover is limited and potentially disturbance-creating activities could prevent clapper Ridgway's Rails from reaching available cover.
2.	Vegetation removal is limited to the minimum amount necessary to allow for surveillance, treatment, and mosquito habitat reduction (vegetation management) to minimize or avoid loss of RR. Similarly, excavation, fill, or construction activities will also be limited to the minimum amount necessary to minimize/avoid loss of RR.
3.	To the extent feasible, physical control, vegetation management and other mosquito habitat reduction activities will be conducted between September 1 and January 31 (outside of the RR breeding season). Surveillance, chemical control, biological control, and public education activities occur year-round and are therefore carefully coordinated with resource agencies to minimize potential impacts to RRs and their habitats.
4.	District staff will notify the appropriate resource agency prior to entering potential RR habitats and will regularly coordinate with the resource agency(ies) on the locations of breeding RRs and avoid breeding RRs to the extent feasible. Any observations of adverse effects to RRs will be reported by District staff.
5.	When walking in the marsh District staff will use existing trails whenever possible. Specific care will be taken when walking and performing surveillance in the vicinity of natural and manmade ditches or sloughs or in the vicinity of tidal marsh habitat to avoid potential disturbance of RRs.
6.	Entry into suitable breeding habitat for RR will be minimized. When entry is required, the preferred method will be by foot. Other entry methods will be based on consultation with the appropriate resource agency.
7.	District staff will receive training on measures to avoid impacts to RRs.

8.	If RR nests or adults are encountered during mosquito management activities, avoidance measures, as provided during training from the resource agencies, will be immediately implemented and findings will be reported to the appropriate resource agency.

E. California Least Tern (CLT)

1.	District staff will notify the appropriate resource agency prior to entering potential CLT habitats between April 15 and August 31 (breeding season) and will regularly coordinate with the resource agency(ies) on the locations of breeding CLTs and avoid breeding CLTs to the extent feasible. Any observations of adverse effects to CLTs will be reported by District staff.
2.	Entry into suitable breeding habitat for CLT will be minimized. When entry is required, vehicle speed will be reduced to 5mph and peripheral paths will be utilized to the extent feasible. Other entry methods will be based on consultation with the appropriate resource agency.
3.	District staff will receive training on measures to avoid impacts to CLTs.
4.	If CLT nests or adults are encountered during mosquito management activities, avoidance measures, as provided during training from the resource agencies, will be immediately implemented and findings will be reported to the appropriate resource agency.

F. Western Snowy Plover (WSnPl)

1.	District staff will notify the appropriate resource agency prior to entering potential WSnPl habitats (which may include seasonal ponds, managed ponds, and adjacent levees) between March 1 and September 15 (breeding season) and will regularly coordinate with the resource agency(ies) on the locations of breeding WSnPls and avoid breeding WSnPls to the extent feasible. Any observations of adverse effects to WSnPls will be reported by District staff.
2.	Entry into suitable breeding habitat for WSnPl will be minimized. When entry is required, vehicle speed will be reduced to 5mph and peripheral paths will be utilized to the extent feasible. Other entry methods will be based on consultation with the appropriate resource agency.
3.	District staff will receive training on measures to avoid impacts to WSnPls.
4.	If WSnPl nests or adults are encountered during mosquito management activities, avoidance measures, as provided during training from the resource agencies, will be immediately implemented and findings will be reported to the appropriate resource agency.

G. California Tiger Salamander (CTS)

1.	Trucks and ARGOs will be restricted to established roads and berms in vernal pool and stockpond areas. Only small ATVs (e.g. Polaris) will be utilized near vernal pools and stockponds.
2.	Methoprene, monomolecular films, and adulticides will not be used in vernal pool and stockpond areas during CTS breeding season (November-March) or if CTS larvae are present.
3.	Vegetation management and water manipulation in CTS habitat shall not occur from November through March to avoid the CTS breeding season and will be further delayed if CTS larvae are present to allow them time to attain full metamorphosis.
4.	Mosquitofish (*Gambusia affinis*) will not be introduced into any site containing CTS.
5.	The Declining Amphibian Populations Task Force Fieldwork Code of Practice will be followed in CTS habitat.
6.	If nonnative/introduced predators of CTS (e.g. bullfrogs) are encountered in CTS habitat during mosquito management activities, findings will be reported to the appropriate resource agency.
7.	If CTS are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
8.	District staff will receive training on measures to avoid impacts to CTS.

H. Vernal Pool Tadpole Shrimp (VPTS)

1.	Trucks and ARGOs will be restricted to established roads and berms in vernal pool areas. Only small ATVs (e.g. Polaris) will be utilized near vernal pools.

2.	Methoprene, monomolecular films, and adulticides will not be used in vernal pool areas if VPTS are present.
3.	Vegetation management and water manipulation in VPTS habitat shall not occur if VTPS are present.
4.	Mosquitofish (*Gambusia affinis*) will not be introduced into any site containing VPTS.
5.	If VPTS are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
6.	District staff will receive training on measures to avoid impacts to VPTS.

I. Contra Costa Goldfields (CCG)

1.	District staff will receive training on the identification, biology and preferred habitat of Contra Costa goldfields.
2.	When possible, project actions to be conducted in areas containing suitable habitat for this species (i.e. vernal pools)- will occur during the time period when CCG is in bloom and identifiable (March-June), so that any CCG plants observed can be avoided and documented.
3.	District staff will coordinate with CDFW and USFWS regarding the locations of known CCG populations, so that these populations can be avoided. Flagging may be used to identify the boundaries of known CCG populations.
4.	Trucks and ARGOs will be restricted to established roads and berms in vernal pool areas. Only small ATVs (e.g. Polaris) will be utilized near vernal pools. When feasible, mosquito management activities will be conducted on foot using hand equipment.

J. Palmate-Bracted Bird's Beak (PBBB)

1.	District staff will receive training on the identification, biology and preferred habitat of palmate-bracted bird's beak.
2.	When possible, project actions to be conducted in areas containing suitable habitat for this species will occur during the time period when palmate-bracted bird's beak is in bloom and identifiable (May-October), so that any palmate-bracted bird's beaks plants observed can be avoided and documented.
3.	District staff will coordinate with CDFW and USFWS regarding the locations of known palmate-bracted bird's beak populations, so that these populations can be avoided. Flagging will be used to identify the boundaries of known palmate-bracted bird's beak populations.
4.	When possible, mosquito management activities will be conducted on foot using hand equipment.

K. Vegetation Management

1.	Consultations will be made with the appropriate resource agency to discuss proposed vegetation management work, determine potential presence of special status species and areas of concern, and any required permits.
2.	Vegetation management work performed will typically be by hand, using handheld tools, to provide access to mosquito habitat for surveillance, and when needed control activities. Tools used include: machetes, small garden variety chain saw, hedge trimmers and "weed-eaters."
3.	District will consult and coordinate with resource agencies as well as have all necessary permits prior to the commencement of work using heavy equipment (e.g., larger than handheld/garden variety tools such as small excavators with rotary mowers) in riparian areas.
4.	Minor trimming of vegetation (e.g., willow branches approximately three inches in diameter or less, blackberry bushes, and poison oak) to the minimum extent necessary will occur to maintain existing paths or create access points through dense riparian vegetation into mosquito habitat. This may include minor trimming of overhanging limbs, brush and blackberry thickets that obstruct the ability to walk within creek channels. Paths to be maintained will not be a cut as a defined corridor but rather a path maintained by selective trimming of overhanging or intrusive vegetation. Paths to be maintained will range in width from 3 to 6 feet across.
5.	Downed trees and large limbs that have fallen due to storm events or disease will be cut only to the extent necessary to maintain existing access points or to allow access to mosquito habitats.

6.	Every effort will be made to complete vegetation management in riparian corridors prior to the onset of heavy rains. Maintenance work to be done in early spring will be limited to trimming of access routes to new tree shoots, poison oak, blackberries, and downed trees that block these paths.
7.	District staff will work with care and caution to minimize potential disturbance to wildlife, while performing vegetation management activities within or near riparian corridors.
8.	If suitable habitat necessary for special status species is found and if nonchemical physical and vegetation management control methods have the potential for affecting special status species, then the District will coordinate with the CDFW, USFWS, and/or NMFS before conducting control activities within this boundary or cancel activities in this area. If the District determines no suitable habitat is present, control activities may occur without further agency consultations.
9.	If using heavy equipment for vegetation management, District staff (and contractors) will minimize the area that is affected by the activity and employ all appropriate measures to minimize and contain turbidity. Heavy equipment will not be operated in the water and appropriate containment and cleanup systems will be in place on site to avoid, contain, and clean up any leakage of toxic chemicals.

L. Maintenance / Construction and Repair of Tide Gates and Water Structures in Waters of the U.S.

1.	District staff will consult with appropriate resource agencies (USACE, USFWS, CDFW, NMFS, BCDC, Regional Water Quality Control Board) and obtain all required permits prior to the commencement of ditch maintenance or construction within tidal marshes.
2.	Work plans for the upcoming season' proposed work as well as a summary of the last season' completed work will be submitted for review and comment to USACE, USFWS, NMFS, CDFW, BCDC and the Regional Water Quality Control Board no later than July 1 of each year for which work is being proposed. The work plan will include a delineation of all proposed ditching overlain on topographic maps at a minimum of 1" = 1000' scale, with accompanying vicinity maps. The plan will also indicate the dominant vegetation of the site, based on subjective estimates, the length and width of the ditches to be maintained, cleared or filled, and the estimated date the work will be carried out.
3.	All maintenance work will be done at times that minimize adverse impacts to nesting birds, anadromous fish, and other species of concern, in consultation with USFWS, NMFS, and CDFW. Work conducted will, whenever possible, be conducted during approved in water work periods for that habitat, considering the species likely to be present. For example, tidal marsh work will be conducted between September 1 and January 31, where possible and not contraindicated by the presence of other special status species. Similarly, in water work in waterbodies that support anadromous fish, work will be conducted between July 1 and September 30[1].
4.	Care will be taken to minimize the risk of potential disruption to the indigenous aquatic life of a waterbody in which ditch maintenance is to take place, including those aquatic organisms that migrate through the area.
5.	Staging of equipment will occur on upland sites.
6.	Mats or other measures will be taken to minimize soil disturbance (e.g., use of low ground pressure equipment) when heavy equipment is used.
7.	All projects will be evaluated prior to bringing mechanical equipment on site, in order to identify and flag sensitive sites, select the best access route to the work site consistent with protection of sensitive areas, and clearly demarcate work areas.
8.	Measures will be taken to minimize impacts from mechanical equipment, such as hand ditching as much as possible; reducing turns by track-type vehicles, taking a minimum number of passes with equipment, varying points of entry, driving vehicles at low speed, and not driving on open mud and other soft areas.
9.	Discharges of dredged or fill material into tidal waters will be minimized or avoided to the maximum extent possible at the project site and will be consistent with all permit requirements for such activity. No discharge of unsuitable material (e.g., trash) will be made into waters of the United States, and material that is discharged will be free of toxic pollutants in toxic amounts (see section 307 of the Clean Water Act). Measures will be taken to avoid disruption of the natural drainage patterns in wetland areas.

[1] Dates are from District's USACE source reduction permit. July 31, 2007.

10.	Discovery of historic or archeological remains will be reported to USACE and all work stopped until authorized to proceed by the appropriate regulatory authorities/resource agencies.
11.	Ditching that drains high marsh ponds will be minimized to the extent possible in order to protect the habitat of native salt pan species.
12.	No spoils sidecast adjacent to circulation ditches will exceed 8 inches above the marsh plain to minimize risk of colonization of spoils by invasive, nonnative plants and/or the spoils lines from becoming access corridors for unwanted predators (e.g., dogs, cats, red fox). Sidecast spoil lines exceeding 4 inches in height above the marsh plain will extend no more than 6 feet from the nearest ditch margin. Any spoils in excess of these dimensions will be hydraulically redispersed on site (e.g., by rotary ditcher), or removed to designated upland sites (per conditions of resource agency issued permits). Sidecast spoil lines will be breached at appropriate intervals to prevent local impediments to water circulation.
13.	If review of the proposed work plan by USACE, USFWS, or CDFW determines the proposed maintenance is likely to destroy or damage substantial amounts of shrubby or sub-shrubby vegetation (e.g., coyote brush, gumplant) on old sidecast spoils, the District will provide a quantitative estimate of the extent and quality of the vegetation, and provide a revegetation plan for the impacted species prepared by a biologist/botanist with expertise in marsh vegetation. The Corps approved revegetation plan will be implemented prior to April 1 of the year following the impacts.
14.	Small ditch maintenance work will be performed by hand, whenever possible, using handheld shovels, pitch forks, etc., and small trimmers such as "weed-eaters". (Note: the majority of small ditch work performed by the District is by hand.)
15.	When feasible, work will be done at low tide (for tidal areas) and times of entry will be planned to minimize disruption to wildlife.
16.	In marshes which contain populations of invasive nonnative vegetation such as pepperweed or introduced *Spartina*, sidecast spoils will be surveyed for the frequency of establishment of these species during the first growing season following deposition of the spoils. The results of the surveys will be reported to the USACE, USFWS and CDFW. If it is determined the sidecasting of spoils resulted in a substantial increase in the distribution or abundance of the nonnative vegetation which is detrimental to the marsh, the District will implement appropriate abatement measures after consultation with the USACE, USFWS and CDFW.
17.	When possible (i.e., with existing labor and vehicles), refuse such as tires, plastic, and man-made containers found at the work site will be removed and properly discarded.

M. Applications of Pesticides, Surfactants, and/or Herbicides

1.	District staff will conduct applications with strict adherence to product label directions that include approved application rates and methods, storage, transportation, mixing, and container disposal.
2.	District will avoid use of surfactants when possible in sites with aquatic nontargets or natural enemies of mosquitoes present such as nymphal damselflies and dragonflies, dytiscids, hydrophilids, corixids, notonectids, ephydrids, etc. Surfactants are a least preferred method but must be used with pupae to prevent adult mosquito emergence. The District will use a microbial larvicide (Bti, Bs) or IGR (e.g., methoprene) instead or another alternative when possible.
3.	Materials will be applied at the lowest effective concentration for a specific mosquito species and environmental conditions. Application rates will never exceed the maximum label application rate.
4.	To minimize application of pesticides, applications will be determined by surveillance and monitoring of mosquito populations.
5.	District staff will follow label requirements for storage, loading, and mixing of pesticides and herbicides. Handle all mixing and transferring of pesticides and herbicides within a contained area.
6.	Postpone or cease application when predetermined weather parameters exceed product label specifications, when wind speeds exceed the velocity as stated on the product label, or when a high chance of rain is predicted and rain is determining factor on the label of the material to be applied.
7.	Applicators will remain aware of wind conditions prior to and during application events to minimize any possible unwanted drift to waterbodies, and other areas adjacent to the application areas.
8.	Clean containers at an approved site and dispose of at a legal dumpsite or recycle in accordance with manufacturer's instructions if available.

9. Special Status Aquatic Wildlife Species: – A CNDDB search was conducted in 2012 and the results incorporated into Appendix A for this PEIR. District staff communicates with state, federal, and county agencies regarding sites that have potential to support special status species. Many sites where the District performs surveillance and control work have been visited by staff for many years and staff is highly knowledgeable about the sites and habitat present. If new sites or site features are discovered that have potential to be habitat for special status species, the appropriate agency and/or landowner is contacted and communication initiated. – Use only pesticides, herbicides, and adjuvants approved for aquatic areas or manual treatments within a predetermined distance from aquatic features (e.g., within 15 feet of aquatic features). Aquatic features are defined as any natural or man-made lake, pond, river, creek, drainage way, ditch, spring, saturated soils, or similar feature that holds water at the time of treatment or typically becomes inundated during winter rains. – If suitable habitat for special status species is found, including vernal pools, and if aquatic-approved pesticide, herbicide, and adjuvant treatment methods have the potential for affecting the potential species, then the District will coordinate with the CDFW, USFWS, and/or National Marine Fisheries Service (NMFS) before conducting treatment activities within this boundary or cancel activities in this area. If the District determines no suitable habitat is present, treatment activities may occur without further agency consultation.
10. District staff will monitor sites post-treatment to determine if the target mosquito population or weeds were effectively controlled with minimum effect to the environment and nontarget organisms. This information will be used to help design future treatment methods in the same season or future years to respond to changes in site conditions.
11. Do not apply pesticides that could affect insect pollinators in liquid or spray/fog forms over large areas (more than 0.25 acres) during the day when honeybees are present and active or when other pollinators are active. Preferred applications of these specific pesticides are to occur in areas with little or no honeybee or pollinator activity or after dark. These treatments may be applied over smaller areas (with hand held equipment), but the technician will first inspect the area for the presence of bees and other pollinators. If pollinators are present in substantial numbers, the treatment will be made at an alternative time when these pollinators are inactive or absent. If beehives are present, establish a buffer of reasonable distance, when feasible, and do not allow applications of pesticides within this buffer whenever possible.
12. The District will provide notification to the public (as soon as operationally possible) and/or appropriate agency(ies) when applying pesticides or herbicides for large-scale treatments (e.g., fixed-wing aircraft or helicopters) that will occur in close proximity to homes, heavily populated, high traffic, and sensitive areas. The District infrequently applies or participates in the application of herbicides in areas other than District facilities.
13. Prior to adulticide applications, the location of the application area will be reviewed with respect to the proximity to 303(d) listed impaired waterbodies for pyrethroids or sediment toxicity. If impaired, application of permethrin and resmethrin would not be conducted in these locations.

N. Hazardous Materials and Spill Management

1. Exercise adequate caution to prevent spillage of pesticides during storage, transportation, mixing or application of pesticides. All pesticide spills and cleanups (excepting cases where dry materials may be returned to the container or application equipment) will be reported to the Field Operations Supervisor and District Manager and recorded in the District safety and incident file.
2. Maintain a pesticide spill cleanup kit and proper protective equipment at the District's Service Yard and in each vehicle used for pesticide application or transport.
3. Manage the spill site to prevent entry by unauthorized personnel. Contain and control the spill by stopping it from leaking or spreading to surrounding areas, cover dry spills with polyethylene or plastic tarpaulin, and absorb liquid spills with appropriate absorbent materials.
4. Properly secure the spilled material, label the bags with service container labels identifying the pesticide, and deliver them to the District/Field Operations Supervisor for disposal.
5. A hazardous spill plan will be developed, maintained, made available, and staff trained on implementation and notification for petroleum-based or other chemical-based materials prior to commencement of mosquito treatment activities.

6.	Field-based mixing and loading operations will occur in such a manner as to minimize the risk of accidental spill or release of pesticides.

O. Worker Illness and Injury Prevention and Emergency Response

1.	Equip all vehicles used in wildland areas with a shovel and a fire extinguisher at all times.
2.	Train employees on the safe use of tools, equipment and machinery, including vehicle operation.
3.	District will regularly review and update their existing health and safety plan to maintain compliance with all applicable standards. Employees will be required to review these materials annually.

P. California Red-Legged Frog (CRLF)

1.	Vegetation management and water manipulation in CRLF habitat shall not occur from November through March to avoid the CRLF breeding season and will be further delayed if tadpoles are present to allow them time to attain full metamorphosis.
2.	Mosquitofish (*Gambusia affinis*) will not be introduced into any site containing CRLF.
3.	The Declining Amphibian Populations Task Force Fieldwork Code of Practice will be followed in CRLF habitat.
4.	If nonnative/introduced predators of CRLF (e.g. bullfrogs) are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
5.	If CRLF are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
6.	District staff will receive training on measures to avoid impacts to CRLF.

Q. Foothill Yellow-Legged Frog (FYLF)

1.	Vegetation management and water manipulation in FYLF habitat shall not occur from April to July avoid the FYLF breeding season and will be further delayed if tadpoles are present to allow them time to attain full metamorphosis.
2.	Mosquitofish (*Gambusia affinis*) will not be introduced into any site containing FYLF.
3.	The Declining Amphibian Populations Task Force Fieldwork Code of Practice will be followed in FYLF habitat.
4.	If nonnative/introduced predators of FYLF (e.g. bullfrogs) are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
5.	If FYLF are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
6.	District staff will receive training on measures to avoid impacts to FYLF.

R. Western Spadefoot Toad (WST)

1.	Vegetation management and water manipulation in WST habitat shall not occur from January to May to avoid the WST breeding season and will be further delayed if tadpoles are present to allow the them time to attain full metamorphosis.
2.	Mosquitofish (*Gambusia affinis*) will not be introduced into any site containing WST.
3.	The Declining Amphibian Populations Task Force Fieldwork Code of Practice will be followed in WST habitat.
4.	If nonnative/introduced predators of WST (e.g. bullfrogs) are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
5.	If WST are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
6.	District staff will receive training on measures to avoid impacts to WST.

S. Western Pond Turtle (WPT)

1.	Vegetation management and water manipulation in WPT habitat shall not occur during April and May to avoid the WPT breeding season.
2.	If nonnative/introduced turtle species (e.g. red-eared sliders) are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
3.	If nonnative/introduced predators of WPT (e.g. bullfrogs) are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
4.	If WPT are encountered during mosquito management activities, findings will be reported to the appropriate resource agency.
5.	District staff will receive training on measures to avoid impacts to WPT.

T. Tricolored Blackbird (TCB)

1.	Monomolecular films and oils will not be used in areas of TCB nesting during the nesting season.
2.	Vegetation management and water manipulation in TCB nesting areas shall not occur during the breeding season (March – August)
3.	District staff will receive training on measures to avoid impacts to TCB.

Exhibit A: CEQA Findings

Introduction

These findings under CEQA on the Alameda County Mosquito Abatement District's proposed Integrated Mosquito Management Program (IMMP or Program) are made by the District's Board of Trustees, pursuant to the CEQA Guidelines (California Code of Regulations, Title 14, section 15091) following certification of the Final PEIR and prior to Program approval and implementation. All significant impacts of the Program identified in the Final PEIR are included herein and organized according to the affected resource. The CEQA findings are numbered in accordance with the impact and mitigation numbers identified in the Final PEIR (June 2016). For each significant impact, a finding has been made as to one of more of the following, as appropriate:

a. Changes or alterations have been required in, or incorporated into, the Project that avoid or substantially lessen the significant environmental effect as identified in the Final PEIR.

b. Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

c. Specific economic, legal, social, technological or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the Final PEIR.

After each finding, a discussion of the supporting facts is provided.

This document is organized to cover the Program first with background material followed by findings on the alternatives considered as part of the Program as well as alternatives not included and the reasons for not including them. Following the findings on the alternatives, the required findings on significant impacts and mitigation are presented. Finally, the District has prepared a statement of overriding consideration for any significant and unavoidable impacts.

Program Background

The Alameda County Mosquito Abatement District (Lead Agency and Program Sponsor) prepared a Programmatic Environmental Impact Report (PEIR) to evaluate the effects of the continued implementation of a suite of control strategies and methods prescribed in its Integrated Mosquito Management Program (Program). The District implements its Program primarily within a jurisdiction or Service Area of 812 square miles. The activities described herein are conducted throughout Alameda County. The Program occurs in an area that is somewhat larger than the District's Service Area; this larger area is called the Program Area, the area in which potential impacts could occur.

Mosquito control activities are conducted at a wide variety of locations or sites throughout the District's Service Area, including tidal marshes, duck clubs, other diked marshes, lakes and ponds, rivers and streams, vernal pools and other seasonal wetlands, stormwater detention basins, flood control channels, spreading grounds, street drains and gutters, wash drains, irrigated pastures, or agricultural ditches, as well as animal troughs, artificial containers, tire piles, fountains, ornamental fishponds, swimming pools, and liquid waste detention ponds. Within the larger Program Area, activities would be conducted at similar sites.

The District was established in 1930 to reduce the risk of mosquito-borne disease and discomfort to the residents of its Service Area. In addition to being problematic by disrupting human activities and enjoyment of public and private areas, certain mosquito species are vectors that can transmit a number of

diseases. A vector is defined by the State of California as “any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, other insects, ticks, mites, and rats, but not including any domesticated animal…” [California Health and Safety Code Section 2002(k)].

The Proposed Program’s specific objectives are as follows:

> Reduce the potential for human and animal disease caused by mosquitoes

> Reduce the potential for human and animal discomfort or injury from mosquitoes

> Accomplish effective and environmentally sound mosquito management by means of:

  - Surveying for mosquito abundance/human contact
  - Establishing treatment criteria/thresholds
  - Appropriately selecting from a wide range of Program tools or components

Most of the relevant mosquito species are quite mobile and cause the greatest hazard or discomfort at a distance from where they breed. Each species has a unique life cycle, and most of them occupy several types of habitats. To effectively control them, an integrated mosquito management program must be employed. District policy is to identify those species that are currently vectors, to recommend techniques for their prevention and control, to anticipate and minimize any new interactions between mosquitoes and humans and domestic animals, and to watch out for the introduction of new disease vectors.

The Draft PEIR on the District’s proposed Program was circulated for public review from July 16, 2015 to September 4, 2015. On August 5, 2016, the District held a public hearing to obtain oral comments on the Draft PEIR. District staff and their consultants prepared responses to written comments received by US Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), Alameda County Water District, Citizens Committee to Complete the Refuge, and SAVE THE FROGS! and included these responses in the Final PEIR. The Board carefully reviewed and considered the Final PEIR prior to certifying the Final PEIR on June 8, 2016.

The District will maintain the documents and other materials that constitute the record of proceedings on which the District’s findings are based are located at the District’s office: 23187 Connecticut St., Hayward, CA 94545; and this information is provided in compliance with Public Resources Code Section 21081.6(a)(2) and 14 Cal. Code Regs. Section 15091(e).

Findings on Program Alternatives

The District’s Program is an ongoing series of related actions for control of mosquitoes, vectors of human disease and discomfort. The District has, since its inception, taken an integrated systems approach to mosquito control utilizing a suite of tools that consist of:

> Surveillance

> Physical Control

> Vegetation Management

> Biological Control

> Chemical Controls

  - Larvicides
  - Adulticides

> Public Education

These first five tools are called “alternatives,” are part of the present Program, and all would continue and be combined as the overall Proposed Program along with public education. These alternative Program “tools” or components are described in the Final PEIR (Chapter 2 Section 2.3) as “Program alternatives” for the CEQA process (except for public education, which is exempt from CEQA). Program incorporates vegetation management and physical and biological control, in part, to reduce the need for chemical control.

The District’s IMMP, like any IPM program, seeks by definition to use procedures that will minimize potential environmental impacts. The District’s IMMP employs IPM principles by first determining the species and abundance of mosquitoes through evaluation of public service requests and field surveys of immature and adult mosquito populations and incidence of disease, and then, if the populations exceed treatment thresholds or if diseases are detected, using the most efficient, effective, and environmentally sensitive means of control. For all mosquito species, public education is an important control strategy. In some situations, water management or other physical control activities can be instituted to reduce mosquito-breeding sites. The District also uses biological control such as the planting of mosquitofish in some settings: ornamental fish ponds, water troughs, water gardens, fountains, and unmaintained swimming pools. When these approaches are not effective, or are otherwise deemed inappropriate, then pesticides are used to treat specific mosquito-producing or mosquito-harboring areas.

A range of project alternatives was developed by the District partially as result of input from the scoping process, and these alternatives and others are briefly described and evaluated in a technical report to the Final PEIR (Appendix E). The District’s Proposed Program consists of the alternatives listed above, which are general types of coordinated and component activities: surveillance, physical control, vegetation management, biological control, and chemical control. The Proposed Program is a combination of these alternatives with the potential for all of these alternatives to be used in their entirety along with public education as described in the Final PEIR. The Final PEIR (Chapter 15) also considered the No Program Alternative (Section 15.3); a Reduced Chemical Control Alternative (Section 15.4.1); and a No Chemical Control Alternative (Section 15.4.2).

No Program Alternative

CEQA Guidelines require an analysis of the “No Project” Alternative, which is defined as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services [Section 15126.6, Subdivision (e)(2)]. For Program purposes, the No Project Alternative would be equivalent to “no action” or to discontinue the Program described in the Final PEIR. In the absence of continuing the Program, the District would exist solely to engage in public education control activities. **The District hereby finds that the No Program Alternative is not a feasible alternative for the following reasons:**

> Mosquitoes, vectors of human and animal disease and discomfort, would be more numerous than under existing conditions, and proliferate such that outbreaks of disease and illness would occur more frequently in the future.

> In comparison to existing conditions with the current Program fully implemented, the No Program Alternative would have the following potentially significant environmental impacts:

- **Urban and Rural Land Uses:** The increase in mosquitoes would impact the quality of the recreational experience and homeowners due to an increase in discomfort from biting mosquitoes. Biting insects can cause severe allergic reactions in sensitive individuals, leading to hospitalization and even death. Without control of saltmarsh mosquitoes, all land uses could be affected in nearby areas.
- **Biological Resources – Aquatic:** It is assumed CDPH would not be able to employ chemical treatments to the same extent as the District. The mosquito adulticide naled would not be used for

mosquito control. However, lack of IPM-based larval surveillance and control may lead to increased, non-IPM based use of adulticides by individuals and private contractors that could affect aquatic habitats. Ad-hoc larviciding by individuals using unregistered materials (e.g., bleach, oil) would cause substantial harm to biological resources including aquatic habitats.

- **Biological Resources – Terrestrial:** In the absence of organized mosquito control, unlicensed individuals may apply over-the-counter pesticides on their own, without training and potentially without adhering to label requirements. Furthermore, wildlife including birds would be subject to greater incidence of disease including WNV.
- **Ecological Health:** Indiscriminant use of aerosol foggers by the public may lead to increased pesticide resistance issues. In the absence of physical controls and nonchemical vegetation management, it is possible that the habitat conditions would result in greater rates of infection of species involved in the transmission of the disease. Domesticated animals would suffer greater incidence of disease and discomfort. The potential exists for increased use of inappropriate or unregistered materials such as bleach, oil, gasoline, diesel fuel, etc., in an effort to deal with mosquitoes. Their use can cause significant environmental harm compared to materials applied in accordance with label requirements by trained, licensed professionals.
- **Human Health:** In the absence of the District's IMMP, greater incidence of mosquito-borne disease and discomfort to people would occur in the Program Area. CDPH would not be able to replace all of the services the District currently provides or would provide under the Proposed Program. Lack of coordinated surveillance increases risk of emerging diseases or invasive mosquitoes going undetected until already established in an area; it reduces disease risk assessments and outbreak predictions at the local level. Lack of public outreach leads to increased mosquito production on private property and less information being available to people about mosquito-borne disease reduction. Homeowners would resort to use of pesticides available to them, many of which are more toxic than the ones used by the District.
- **Public Services and Hazard Response:** The greater use of over-the-counter pesticides could lead to greater improper disposal of the containers. A greater incidence of disease and discomfort would potentially increase the demand for emergency services in the Program Area.

Reduced Program Alternatives

CEQA Guidelines Section 15126.6(b) also requires that a draft EIR identify alternatives that are capable of avoiding or substantially lessening the significant environmental effects of the proposed project, even if the alternative would impede to some degree the attainment of all of the project objectives or would be more costly. Modifications to the Proposed Program could include the following "Reduced Program Alternatives" which would avoid some or most of the potentially significant impacts associated with the Proposed Program, depending on how reliance on the other alternatives (i.e., exclusion of some options) to achieve a similar level of control would be implemented.

Reduced Chemical Control Alternative

This alternative would eliminate the options of using one or more of the pesticides with the greatest potential to subject people to objectionable odors: lambda-cyhalothrin, pyrethrin, permethrin, resmethrin, deltamethrin, etofenprox, naled, and Bti for control of mosquitoes and for control of yellow jacket wasps; and it would eliminate the use of naled. Concerning air quality impacts due to objectionable odors, certain VOCs found in some pesticides emit characteristic odors when they evaporate (volatilize) into air, even at very low concentrations well within safety limits. Pesticides currently used, and proposed for future use, emit phenols (e.g., lambda-cyhalothrin, deltamethrin, etofenprox, permethrin, or resmethrin). Materials such as Bti and the adulticides pyrethrin and permethrin have an odor. Naled has a significant and

unavoidable impact on water resources so to reduce this impact the use of naled would have to be eliminated. The first option could result in greater use of other, less odorous chemicals and in greater amounts, and both options could have impacts on public health if these other chemical methods are not as effective for the specific treatment area due to mosquito resistance problems (see No Chemical Alternative below).

The Reduced Chemical Control Alternative could be implemented consistent with the Program objectives as long as the area affected is not large scale and as long as other, less odorous chemical options are available for use and the mosquito population is not resistant to the remaining chemical options. Limiting the choices of materials that can be used to a few chemicals significantly increases the risks of mosquito resistance to the few products that are available for use. Sound IMM involves many tools, with many materials being used, and using the most effective and least environmentally harmful.

The District hereby finds that the Reduced Chemical Control Alternative is not a feasible alternative for the following reasons:

> The impacts to water resources and air quality from the chemicals listed above, except for naled, can be mitigated as explained in the findings on significant impacts.

> It is infeasible and impractical to eliminate naled from the Program at the present time because it may be needed to control adult mosquitoes with pesticide resistance to pyrethrins and pyrethroids.

> Bti, pyrethrin, and permethrin are important options for use in mosquito control and should not be eliminated from the Program.

> Limiting the choices of materials that can be used to a few chemicals significantly increases the risks of mosquito resistance to the few products that are available for use.

No Chemical Control Alternative

This alternative would exclude all of the pesticide and herbicide products associated with the Chemical Control and Vegetation Management Alternatives from the Proposed Program. It would rely solely on Surveillance, Physical Control, the nonchemical physical component of the Vegetation Management Alternative, and the Biological Control (mosquitofish) Alternatives combined, along with ongoing public education. The issue is whether a Program made up only of these remaining alternatives would be effective and meet Program objectives and IMM principles.

Chemical control was required to combat an outbreak of mosquitoes (Oregon) and mosquitoes infected with WNV (Texas). Not letting mosquito populations get out of control due to inadequate surveillance and control measures is critical to avoidance of a large outbreak such as the one experienced in Texas in 2012. Consequently, a No Chemical Control Alternative would not be effective and not meet the District's Proposed Program objectives stated in Section 2.2.2. **The District hereby finds that the No Chemical Control Alternative is not a feasible alternative for the following reasons:**

> It would not meet the principles of successful IMM nor would it meet the District's Program objectives.

> The impacts to human health would be significant as follows:

- **Human Health:** In the absence of the chemical control tools being included in the District's IMMP, greater incidence of mosquito-borne disease and discomfort to people would occur in the Program Area. A wide range of public health issues would occur with the No Chemical Control Alternative.
  - > First, risk of human cases of mosquito-borne disease and mosquito interaction issues for humans, pets, and wildlife would increase. The San Francisco Bay Area has a well-documented history concerning human-mosquito interaction.

> Second, increased production of mosquitoes would occur on private property adjacent to areas that previously were treated with pesticide (and herbicide) products as well as increased cases of mosquito-borne disease in humans, their pets, and livestock. Additionally, the increase in mosquito-human interactions would result in an increased risk of severe reactions to the bites of mosquitoes in sensitive and immunocompromised individuals.

> Third, in the absence of organized mosquito control programs using chemical controls and reduced effectiveness in controlling mosquitoes, unlicensed individuals could begin applying over-the-counter pesticides on their own. Most of these individuals have little or no training in the proper and effective use of these materials, meaning a reasonable possibility exists of over- or under-application as well as the potential for creation of unrecognized resistance issues. This possibility is especially true for the indiscriminate use of aerosol foggers as well as concentrated pesticides that require mixing with water prior to application. Additionally, the health and well-being of sensitive individuals (e.g., asthmatics and chemically sensitive people) and their pets (especially birds and fish) could be affected by the unexpected drift of these pesticides into their yards, open windows, and neighborhood parks.

Conclusions Regarding the Alternatives

Based on the foregoing analysis and pursuant to CEQA Guidelines Section 15126.6, the District has considered a range of reasonable alternatives to the Program, which could feasibly attain most of the basic objectives of the Program but would avoid or substantially lessen certain significant effects of the Program. The District has evaluated the comparative merits of the various alternatives and identified and analyzed potentially environmentally superior alternatives. Based on this analysis and substantial evidence in the record, the **District finds and determines that none of the alternatives is feasible within the meaning of CEQA and therefore rejects each alternative in favor of the proposed Program**.

Findings on Significant Impacts of the Program

CEQA Finding No. AQ-25

Air Quality

Impact **AQ-25:** The Chemical Control Alternative could subject people to objectionable odors. Impacts could be potentially significant but mitigable, even with BMPs implemented.

Finding(s) a. Changes or alterations have been required in, or incorporated into, the Project that avoid or substantially lessen the significant environmental effect as identified in the Final PEIR.

Facts Supporting the Findings The District has adopted the following mitigation measure to reduce to less-than-significant levels the Program's impacts from the application of pesticides containing odorous compounds under the Chemical Control Alternative.

Mitigation Measure WR-AQ-25: The District and its contractors will implement one or more of the following measures as necessary and applicable to the specific application situation to reduce drift towards human populations/residences from the ground and aerial applications of odorous

treatment compounds:

Implementation of any one of the mitigation measures listed herein would reduce the impact to less than significant.

- Maintain appropriate buffer zones between spray areas and sensitive receptor locations whenever possible and practicable for the application of the treatment compounds, especially true for aerial applications.
- Defer application of treatment compounds until such time that favorable wind conditions would reduce or avoid the risk of drift into populated areas.
- Utilize equipment such as wind meters and global positioning system (GPS) tracking when applicable that assist in documenting site-specific compliance with all label requirements for drift mitigation.
- Use precision application technology to reduce drift and the total amount of material applied. This measure can include (1) Precision guidance systems that minimize ground or aerial spray overlap (e.g., GPS and Real Time Kinetics – GPS/RTK) and (2) Computer-guided application systems that integrate real-time meteorological data and computer model guidance to reduce drift from aerial application (e.g., trade names "AIMMS," "Wingman™ GX," and "NextStar™ Flow Control").

Conclusion: Under the Chemical Control Alternative, Section 10.2.7 describes the potential for objectionable odors. Certain VOCs, sulfur compounds, and chlorine compounds found in some pesticides, fumigants, and organochlorines emit characteristic odors when they evaporate (volatilize) into air, even at very low concentrations well within safety limits. Pesticides proposed for future use emit phenols (e.g., deltamethrin, etofenprox, permethrin, and resmethrin). Materials such as Bti in liquid form and the adulticides pyrethrin and permethrin have an odor. The human sense of smell (olfactory system) is sensitive to these types of compounds as a warning mechanism, and some individuals are more sensitive than others.

Mitigation Measure AQ-25 will reduce the impact to less than significant by ensuring that hydraulic spraying and atomizing (fogging) by the District~~,~~ will not result in drift of small droplets and gaseous vapors under some atmospheric conditions to populated areas or intensively used recreation areas even when small quantities of these types of substances are typically used. Furthermore, the District may choose other options for vector control when the potential for odorous compounds to reach people is high.

Significant and Unavoidable Impact and Statement of Overriding Consideration

CEQA requires all public agencies to balance the benefits of a proposed project against its unavoidable environmental effects in determining whether to approve the project or not. The District proposes to approve the Proposed Program despite the significant unavoidable adverse impacts identified in the PEIR (Section 9.2).

Impact WR-28: Due to the toxicity of its breakdown product but its importance in the District's IMMP, the application of naled is considered a significant and unavoidable impact to surface and groundwater resources.

This significant impact was evaluated under the Chemical Control Alternative in the Final PEIR. The evaluation of the mosquito adulticides in Section 9.2.7.2.2 Organophosphates, determined that the

insecticide naled has a breakdown product, dichlorovos, that may be present in toxic concentrations after naled is no longer detectable in the environment. Dichlorovos is very highly toxic to birds and freshwater fish and insects, including honeybees. The District would use naled infrequently in rotation with the other insecticides that are either pyrethrins or pyrethroids.

The District has determined that despite the significant and likely unavoidable effects of the Program as it relates to the potential use of naled, the economic, legal, social, technological and environmental benefits of implementing the Program outweigh and override this unavoidable adverse effect. The District has determined that the benefits of the Program, when balanced against all adverse effects, cause the effect remaining after mitigation to be acceptable because of the following considerations:

- It is infeasible and impractical to eliminate this material from the District's Program at the present time because it may be needed to control adult mosquitoes with pesticide resistance to pyrethrins and pyrethroids.
- If resistance to other the chemical options is encountered, and there is a threat to public health, then the public health benefit of using naled as an adulticide outweighs the potential direct impacts to water resources and the indirect impacts to nontarget organisms.

Each of these considerations is sufficient to approve the Program. For each of the reasons stated above, and all of them, the Program should be implemented notwithstanding the significant unavoidable adverse impact identified in the PEIR.

Alameda County Mosquito Abatement District

Ryan Clausnitzer
District Manager
ryan@mosquitoes.org

June 3rd, 2016

RE: ACMAD's 2016-17 Budget-Changes from first draft to Proposed Final Draft

Dear ACMAD Board,

I made some changes to the format and some amounts from the last version, itemized below:

- Salary increased to include the proposed manager's 4% COLA ($5,000)
- Capital replacement reserve reduced, split into Public Health reserve ($500,000) and VCJPA reserve category created ($77,000 added to bring the contingency fund up to the recommended level)
- Capital improvements increased by $10,000 for possible board room remodel
- $7,500 added in vector competency research for Zika virus through UC Davis
- $4,500 added to lab budget for a service contract for qPCR equipment
- $25,000 added to fringe benefits in the case that a former employee decides to retire and claim his OPEB benefits.

I am happy to answer any questions.

Sincerely,

Ryan Clausnitzer
District Manager

REVENUES		2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	% change fr prior year
	Ad Valoreum Property Taxes	$1,548,990	$1,503,800	$1,515,775	$1,535,792	$1,616,830	$1,616,830	$1,823,586	12.79%
	Special Tax (net of Admin)	$805,000	$797,200	$801,098	$810,000	$801,014	$801,014	$802,259	0.16%
	Benefit Assessment (net of Admin)	$1,075,000	$1,077,044	$1,083,018	$1,104,854	$1,082,918	$1,017,089	$1,096,858	7.84%
	Interest on pooled money	$20,000	$20,000	$15,000	$6,000	$4,000	$4,000	$8,000	100.00%
	Charges for Services	$0	$0	$0	$0	$0	$0	$0	
	Sale of Property and Equipment	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	0.00%
	Reimburese Retiree Health Benefits from OPEB					$119,014	$130,000	$170,909	31.47%
	Reimburse Management fees for OPEB					$12,000	$15,000	$22,100	47.33%
	Total Tax and Other Revenue	**$3,453,990**	**$3,403,044**	**$3,419,890**	**$3,461,646**	**$3,640,776**	**$3,588,933**	**$3,928,713**	9.47%
	Cash Carried Over	$2,005,000	$2,450,000	$3,012,633	$2,900,000	$3,000,000	$3,370,300	*$3,667,000*	8.80%
	Total Revenue, including cash carryover	**$5,458,990**	**$5,853,044**	**$6,432,523**	**$6,361,646**	**$6,640,776**	**$6,959,233**	**$7,595,713**	9.15%
EXPENDITURES	Salaries (permanent)	$1,289,556	$1,323,704	$1,275,097	$1,453,952	$1,479,120	$1,432,149	$1,550,594	8.27%
	Retirement (PERS)	$357,673	$370,992	$369,676	$169,085	$182,376	$202,026	*$422,589*	109.18%
	Seasonal Staff			$50,000	$100,000	$120,000	$141,400	$150,000	6.08%
	Medicare (separated out in 2013/14)				$22,532	$23,187	$26,781	$24,659	-7.92%
	Total Salaries + Retirement	**$1,647,229**	**$1,694,696**	**$1,694,774**	**$1,745,569**	**$1,804,683**	**$1,802,356**	**$2,147,842**	19.17%
	Fringe Benefits	$323,681	$333,067	$412,892	$435,048	$454,031	$417,556	$500,000	19.74%
	Services and Supplies	$703,773	$761,731	$805,370	$970,773	$820,746	$985,642	$1,078,397	9.41%
	Capital Expenditures	$95,700	$117,000	$178,500	$204,000	$323,000	$225,000	$295,000	31.11%
	Reserve for Contingencies	$25,000	$25,000	$25,000	$25,000	$50,000	$50,000	$25,000	-50.00%
	OPEB Trust Reimbursement	$111,035	$0	$0	$0	-	$145,000	$0	
	Total Operating Expenditures	**$2,906,418**	**$2,931,494**	**$3,116,536**	**$3,380,390**	**$3,452,460**	**$3,625,554**	**$4,046,239**	11.60%
RESERVES	Reserve amount							$3,549,474	
	Reserves for Working Capital (60% of operating costs)	$2,052,572	$2,427,306	$2,140,857	$2,028,234	$2,071,476	*$2,714,106*	$2,427,743	-10.55%
	Reserves leftover for committed funds							*$1,121,731*	
	Reserves for Public Health Emergency							$500,000	
	Reserves for Capital Improvement				$953,021	$1,116,840	$1,116,840	$544,731	
	(Reserves for pension liability: 2017-18)								
	Reserve in VCJPA Contingency fund							$77,000	
	Total Expenditures	**$4,958,990**	**$5,358,800**	**$5,257,393**	**$6,361,646**	**$6,640,776**	**$7,456,500**	**$7,595,713**	1.87%
	% increase over previous year								
	Salaries + Retirement	15%	3%	0%	3%	3%	4%	19%	
	Operating Expenses	10%	1%	6%	8%	2.1%	2.8%	11.6%	
	Dry Period Cash	7%	18%	-12%	-5%	2.1%	31.0%	-10.6%	
	Total Exp including Dry Period Cash		8%	-2%	21%	4.4%	12.3%	1.9%	

Salaries 7/1/16 - 6/31/17

	Date of hire	Pos	16-17 Base Salary	COL		New Base	Longevity	Long. Amount-4%	New Salary-4%	# mo	Subtotal
				4%							
Matthes	Apr-16	Admin	$ 4,299.75	4.0%	$ 171.99	$ 4,471.74	0%	$ -	$ 4,471.74	3	$ 13,415
Matthes		Admin	$ 4,514.74	4.0%	$ 180.59	$ 4,695.33	0%	$ -	$ 4,695.33	6	$ 28,172
Matthes		Admin	$ 4,740.47	4.0%	$ 189.62	$ 4,930.09	0%	$ -	$ 4,930.09	3	$ 14,790
Alemayehu	Jul-99	SS5	$ 7,640.36	4.0%	$ 305.61	$ 7,945.97	3%	$ 238.38	$ 8,184.35	12	$ 98,212
Appice	Mar-14	MCT3	$ 6,170.12	4.0%	$ 246.80	$ 6,416.92	0%	$ -	$ 6,416.92	2	$ 12,834
Appice		MCT4	$ 6,478.65	4.0%	$ 259.15	$ 6,737.80	0%	$ -	$ 6,737.80	10	$ 67,378
Busam	Apr-02	VB2	$ 7,497.82	4.0%	$ 299.91	$ 7,797.73	2%	$ 155.95	$ 7,953.69	7	$ 55,676
Busam		VB2	$ 7,497.82	4.0%	$ 299.91	$ 7,797.73	3%	$ 233.93	$ 8,031.66	5	$ 40,158
Campbell	Nov-03	VB2	$ 7,497.82	4.0%	$ 299.91	$ 7,797.73	2%	$ 155.95	$ 7,953.69	12	$ 95,444
Cardenas	Feb-12	VB1	$ 7,141.51	4.0%	$ 285.66	$ 7,427.17	0%	$ -	$ 7,427.17	8	$ 59,417
Cardenas		VB2	$ 7,497.82	4.0%	$ 299.91	$ 7,797.73	1%	$ 77.98	$ 7,875.71	4	$ 31,503
Castillo	Mar-02	Env Spec	$ 7,640.36	4.0%	$ 305.61	$ 7,945.97	2%	$ 158.92	$ 8,104.89	7	$ 56,734
Castillo		Env Spec	$ 7,640.36	4.0%	$ 305.61	$ 7,945.97	3%	$ 238.38	$ 8,184.35	5	$ 40,922
Clausnitzer	Jul-12	Mgr	$ 11,333.33	4.0%	$ 453.33	$ 11,786.66	0%	$ -	$ 11,786.66	12	$ 141,440
Erspamer	Aug-15	MCT1	$ 5,596.51	4.0%	$ 223.86	$ 5,820.37	0%	$ -	$ 5,820.37	2	$ 11,641
Erspamer		MCT2	$ 5,876.32	4.0%	$ 235.05	$ 6,111.37	0%	$ -	$ 6,111.37	10	$ 61,114
Ferdan	Jul-15	SS5	$ 7,640.36	4.0%	$ 305.61	$ 7,945.97	0%	$ -	$ 7,945.97	12	$ 95,352
Haas-Stapleton	Jul-15	ENT5	$ 8,625.01	4.0%	$ 345.00	$ 8,970.01	0%	$ -	$ 8,970.01	12	$ 107,640
Huston	Jul-91	Sup 5	$ 9,056.32	4.0%	$ 362.25	$ 9,418.57	5%	$ 470.93	$ 9,889.50	12	$ 118,674
Lam	Dec-02	AFM5	$ 8,597.87	4.0%	$ 343.91	$ 8,941.78	2%	$ 178.84	$ 9,120.62	4	$ 36,482
McMahon	Apr-14	VB2	$ 7,497.82	4.0%	$ 299.91	$ 7,797.73	0%	$ -	$ 7,797.73	12	$ 93,573
Rusmisel	Sep-15	VB1	$ 7,141.51	4.0%	$ 285.66	$ 7,427.17	0%	$ -	$ 7,427.17	8	$ 59,417
Rusmisel		VB2	$ 7,497.82	4.0%	$ 299.91	$ 7,797.73	0%	$ -	$ 7,797.73	4	$ 31,191
Sette	May-15	MCT2	$ 5,876.32	4.0%	$ 235.05	$ 6,111.37	0%	$ -	$ 6,111.37	4	$ 24,445
Sette		MCT3	$ 6,170.12	4.0%	$ 246.80	$ 6,416.92	0%	$ -	$ 6,416.92	8	$ 51,335
Wieland	Feb-15	Mech 3	$ 6,938.48	4.0%	$ 277.54	$ 7,216.02	0%	$ -	$ 7,216.02	1	$ 7,216
Wieland		Mech 4	$ 7,116.86	4.0%	$ 284.67	$ 7,401.53	0%	$ -	$ 7,401.53	11	$ 81,417
						Total Salaries					**$ 1,535,594**

Seasonals:

	Rate (ave)	#	Hours	
	$ 17.00	8	1,000	
			$136,000	
Unemployment		14,000	$4,624.00	

	Wages	Employer rate	Unfunded Liability Payment	Total PERS Payments
9.558% **Classic**	$ 939,393.75	$ 89,787.25	$ 301,000.00	$ 390,787.25
6.930% *Pepra*	$ 464,365.82	$ 32,180.55	$ 141	$ 32,321.55
				$ 423,108.81

Employer paid PERS	$ 423,109
	$ 1,958,703
Seasonals	$ 140,000
	$ 2,098,703
Possible Reclassifications	15,000
Medicare tax	$ 24,514
Grand Total	**$ 2,138,216**

BUDGET CATEGORY	FY 14-15	FY 15-16	FY 16-17	% change
CLOTHING AND PERSONAL SUPPLIES (PURCHASED)	$8,500	$8,500	8,500	0%
LAUNDRY SERVICE AND SUPPLIES (RENTED)	$9,000	$9,000	9,000	0%
UTILITIES				
Garbage ($1,440)	$1,500	$1,500	2,400	60%
PG & E ($14,400)	$14,500	$15,000	24,000	60%
Hayward Water & Sewage ($5,400+$275)	$6,000	$5,500	6,000	9%
Biohazard and Chemical Waste Disposal			3,500	
COMMUNICATIONS				
Telephone Service & Internet	$12,000	$13,500	13,800	2%
~~Public Notices~~	$500	$500		-100%
Website and email hosting	$500	$270	850	215%
Cell phone service (Verizon)	$4,200	$10,000	9,000	-10%
~~**RENTS / LEASES OF EQUIPMENT**~~				
~~Man lift for changing lights (put in with bldg maint?)~~	~~$500~~			
MAINTENANCE OF EQUIPMENT	$35,000	$40,000	45,000	13%
Accident repair (for repair of vehiles, to be reimbursed by VCJPA)	$5,000			
MAINTENANCE STRUCTURES & IMPROVEMENTS		$15,000		0%
Landscaping service	$5,000		3,600	
Building Maintenance and repairs	$10,000		10,000	
Yard Maintenance and repairs			1,400	
TRANSPORTATION, TRAVEL, and TRAINING				
Fuel and GPS (WexMart)	$40,000	$40,000	40,000	0%
GPS	$4,000	$4,000	4,000	0%
Meetings, conferences, & travel	$40,000	$45,000	35,000	-22%
Board meeting expenses	$1,000	$800	1,000	25%
Board payments in lieu	$16,800	$16,800	16,800	0%
Continuing Education fees	$4,000	$4,000	4,000	0%
Training for trustees	$1,000	$1,000	1,000	0%
Staff Training (automotive, IT, staff development)	$15,000	$15,000	80,000	433%
PROFESSIONAL / SPECIALIZED SERVICES				
Audit	$13,000	$13,000	13,000	0%
Actuarial reports	$3,000	$3,000	3,000	0%
Helicopter service	$25,000	$25,000	30,000	20%
Legal Services	$30,000	$15,000	20,000	33%
MVCAC Research Foundation	$5,000	$5,000	5,000	0%
UC Davis Zika virus vector competancy research			7,500	
~~CEQA~~	$10,000	$0	0	
OPEB management (should be reimbursed from OPEB Account)	$12,000		0	
Pre-employment physicals, hearing tests, respirator tests	$1,000	$1,000	0	-100%
~~County Assessor's fee for collection of special tax~~	~~$0~~		0	
Tax collection service - SCI	$35,000	$35,000	35,000	0%
~~Albany survey~~	$15,000	$0	0	

BUDGET CATEGORY	FY 14-15	FY 15-16	FY 16-17	% change
Payroll service (ADP)	$6,000	$5,500	6,000	9%
Environmental consultant services for regulatory issues	$5,000	$10,000	5,000	-50%
HR Services (RGS)	$30,000	$60,000	25,000	-58%
MEMBERSHIPS, DUES & SUBSCRIPTIONS				
AMCA (sustaining membership)	$4,000	$4,000	4,000	0%
CSDA $5,000 + 50 for local chapter)	$5,050	$5,500	5,500	0%
MVCAC (raising cap to 10,000)	$10,000	$10,000	12,000	20%
SOVE	$325	$325	200	-38%
LAFCo	$650	$650	778	20%
ESA	$150	$150	172	15%
~~Emergency Managers Assoc~~	$25	$25	0	-100%
~~Bay Area Mapping Assoc~~	$50	$50	0	-100%
Misc Memberships	$250		285	
INSURANCE - VCJPA				
Liability	$25,000	$31,824	37,473	18%
Property	$2,000	$1,934	6,429	232%
General Fund	$7,000	$8,325	7,676	-8%
Fidelity/Fraud	$2,000	$2,000	2,000	~~0%~~
Workers Compensation Insurance	$52,000	$63,736	61,560	-3%
Insurance fund-SIRS	$25,000	$25,000	25,000	0%
COMMUNITY EDUCATION	$33,000			
Supplies		$11,000	11,000	0%
WNV Ads		$11,000	11,000	0%
Printing		$11,000	11,000	0%
Logo Redesign		$0	2,000	
DISTRICT SPECIAL EXPENSE				
Pesticides	$150,000	$175,000	200,000	14%
Field supplies (dippers etc)	$1,000	$500	1,000	100%
Sentinel Chickens	$4,000	$0	0	
Fish and Fish Maint.	$4,000	$4,000	4,000	0%
Aerial Pool Survey	$17,000	$17,000	17,000	0%
Permits	$3,000	$3,000	3,000	0%
Board plaques and nameplates	$1,000	$500	1,000	100%
~~Seasonals (post ads, pre-empl physical)~~	$1,000	$1,000	0	
Safety	$2,000	$2,000	2,000	0%
Spray equipment	$15,000	$15,000	12,000	-20%
~~Misc Special Expense~~	$8,000			
HOUSEHOLD EXPENSES	$5,500	$5,500	5,000	-9%
Janitorial service		$0	0	
Supplies		$0	0	
Drinking water system & filter	$450	$450	480	7%
Alarm service - Sonitrol	$8,000	$8,000	9,000	13%

BUDGET CATEGORY	FY 14-15	FY 15-16	FY 16-17	% change
OFFICE EXPENSES				
Office Supplies (10,000 for 2 copiers + 5000 supplies)	$15,000	$20,000	20,000	0%
Postage	$1,000	$1,000	2,000	100%
Pitney Bowes - postage meter rental	$400	$400	400	0%
INFORMATION TECHNOLOGY				
Computers, supplies and software	$12,000	$12,000	15,000	25%
Contract services for Computer network	$4,000	$4,000	4,000	0%
Database consultant	$30,000	$30,000	25,000	-17%
~~LandVision subscription~~			0	
~~BAAMA membership~~		$50	0	
~~Computer hardware~~			0	
~~Computer software~~			0	
~~Expendable supplies (toner cartridges, CD's etc)~~			0	
LABORATORY SUPPLIES	$30,150			
Mosquito Surveillance - traps, dry ice	$10,000	$9,400	20,000	113%
Disease surveillance - RAMP Supplies	$5,000	$7,155	4,000	-44%
Mosquito pool testing (taken out of District special expense)	$10,000	$36,000	41,150	14%
~~Hood certification~~	$300	~~$200~~	~~0~~	-100%
Misc lab equipment and supplies	$4,500	$6,285	5,500	-12%
Reimbursement for light traps (to property owners)	$150	$200	200	0%
~~Profficiency panel~~	$200		~~0~~	
Pesticide resistance testing of mosquitoes (e.g. kdr)		$20,000	8,744	-56%
RESEARCH	$0	$0	9,000	
SMALL TOOLS AND INSTRUMENTS	$1,500	$1,500	2,500	67%
Total	**$820,746**	$984,529	1,078,397	10%

FRINGE BENEFITS

Employee	PERS Plan Code	PERS Hlth RATES 2016 (capped) 6 mths	PERS RATES 2017 6 mths	Total PERS Costs 2016-2017	Dental 2017 Rates	Total Dental	Life Ins. Rates 2016/17	Total Life Ins. 2016/17	Vision 2016/17 Rates	Total Vision	SDI	Benefit Cost per person
Admin												
Alemayehu	3753	1,821.39	1,967.10	22,730.95	251.93	3,023.16	9.25	111.00	32.52	390.24	982.12	27,237.47
Appice	1041	746.47	806.19	9,315.95	94.06	1,128.72	9.25	111.00	13.20	158.40	770.03	11,484.10
Busam	1043	1,821.39	1,967.10	22,730.95	251.93	3,023.16	9.25	111.00	32.52	390.24	954.44	27,209.79
Campbell	1041	746.47	806.19	9,315.95	251.93	3,023.16	9.25	111.00	13.20	158.40	954.44	13,562.95
Cardenas	1041	746.47	806.19	9,315.95	94.06	1,128.72	9.25	111.00	13.20	158.40	848.82	11,562.89
Castillo	1043	1,821.39	1,967.10	22,730.95	251.93	3,023.16	9.25	111.00	32.52	390.24	972.59	27,227.94
Clausnitzer	4503	1,821.39	1,967.10	22,730.95	251.93	3,023.16	9.25	111.00	32.52	390.24	1,414.40	27,669.75
Erspamer	1041	746.47	806.19	9,315.95	94.06	1,128.72	9.25	111.00	13.20	158.40	663.77	11,377.84
Ferdan	4542	1,418.29	1,531.75	17,700.26	161.05	1,932.60	9.25	111.00	20.50	246.00	929.53	20,919.39
Huston	1042	1,418.29	1,531.75	17,700.26	161.05	1,932.60	9.25	111.00	20.50	246.00	1,175.44	21,165.30
Haas-Stap	1062	1,418.29	1,531.75	17,700.26	251.93	3,023.16	9.25	111.00	20.50	246.00	1,076.40	22,156.82
Lam	1042	1,418.29	-	8,509.74	161.05	1,932.60	9.25	111.00	20.50	202.80	526.19	11,282.33
Matthes	1041	746.47	806.19	9,315.95	94.06	1,128.72	9.25	111.00	13.20	158.40	515.97	11,230.04
McMahon	1041	746.47	806.19	9,315.95	94.06	1,128.72	9.25	111.00	13.20	158.40	891.26	11,605.33
Rusmisel	1041	746.47	806.19	9,315.95	94.06	1,128.72	9.25	111.00	13.20	158.40	848.82	11,562.89
Sette	1041	746.47	806.19	9,315.95	94.06	1,128.72	9.25	111.00	13.20	158.40	698.45	11,412.52
Weiland	1043	1,821.39	1,967.10	22,730.95	251.93	3,023.16	9.25	111.00	32.52	390.24	905.95	27,161.30
Subtotal		*20,751.87*	*20,880.27*	*249,792.82*	*2,905.08*	*34,860.96*	*157.25*	*1,887.00*	*350.20*	*4,159.20*	*15,128.62*	*305,828.60*
.5% Admin Cost				1,248.96								1,248.96
Staff Totals				**251,041.78**		**34,860.96**		**1,887.00**		**4,159.20**	**15,128.62**	**307,077.56**

FRINGE BENEFITS

Annuitant	PERS Plan Code	PERS Hlth RATES 2016 (capped)	PERS RATES 2017	Total PERS Costs	Dental 2017 Rates	Total Dental	Life Ins. Rates 2016/17	Total Life Ins. 2016/17	Vision 2016/17 Rates	Total Vision	SDI	Benefit Cost per person
Brannan	1141	297.23	321.01	3,709.43	-	*1,200.00*			33.80	405.60		5,315.03
Brown	3391	408.04	440.68	5,092.34	94.06	1,128.72			33.80	405.60		6,626.66
Cain	1041	746.47	806.19	9,315.95	94.06	1,128.72			33.80	405.60		10,850.27
Conner	1321	408.04	440.68	5,092.34	94.06	1,128.72			33.80	405.60		6,626.66
Davis		0	-	-	94.06	1,128.72			33.80	405.60		1,534.32
King	3322	732.76	791.38	9,144.84	161.05	1,932.60			33.80	405.60		11,483.04
Knowles	1161	366.38	395.69	4,572.42	94.06	1,128.72			33.80	405.60		6,106.74
Lam	1042	0	1,531.75	9,190.50	161.05	1,932.60			33.80	202.80		11,325.90
Mead	3291	696.49	752.21	8,692.20	94.06	1,128.72			33.80	405.60		10,226.52
Mello	1322	816.08	881.37	10,184.68	-	*2,400.00*			33.80	405.60		12,990.28
Roberts	3342	732.76	791.38	9,144.84	161.05	1,932.60			33.80	405.60		11,483.04
Romeo	1142	594.46	642.02	7,418.86	161.05	1,932.60			33.80	405.60		9,757.06
Rusmisel	1042	1,418.29	1,531.75	17,700.26	161.05	1,932.60			33.80	405.60		20,038.46
Wood	1032	1,390.22	1,501.44	17,349.95	161.05	1,932.60			33.80	405.60		19,688.15
Turney	1043	1,821.39	1,967.10	22,730.95	251.93	3,023.16			33.80	405.60		26,159.71
Subtotal		*10,428.61*	*12,794.65*	*139,339.55*	*1,782.59*	*24,991.08*			*507.00*	*5,881.20*		*170,211.83*
			.5% Admin Costs=	696.70								696.70
Annuitant Totals				**140,036.25**		**24,991.08**				**5,881.20**		**170,908.53**
Grand Total				**391,078.03**		**59,852.04**		**1,887.00**		**10,040.40**	**15,128.62**	**477,986.09**
						increase	% Incr				Kirkpatrick?	25,000.00
Total 2008/2009					286,787.60		3.70%					
Total 2009/2010					299,829.80	13,042.20	4.55%					
Total 2010/2011					312,438.38	12,608.58	4.21%					
Total 2011/2012					324,662.75	12,224.37	3.91%	9 annuitants, 14 staff				
Total 2012/2013					392,260.05	67,597.30	20.82%	11 annuitants, 15 staff fr June thru Oct				
Total for 2013/14					431,448.40	39,188.35	9.99%	11 annuitants, 16 staff				
Total for 2016/17					477,986.09	46,537.69	10.79%	11 annuitants, 16 staff				

CAPITAL PURCHASES	#	UNIT COST	TOTAL 2007-2008	2008-2009	2009-2010	2010-2011	2011-1012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Mitchell on demand diagnostic DVD series	1	1,000.00	0.00	1000.00								
MTS 5200 Engine Analyzer	1	4,112.00	0.00									
Ford Engine Assembly exchange	1	2,700.00	2,700.00									
ARGO Tracks	1	3,000.00	3,000.00									
Conference Room Table - 24 inch extension	1	1,160.37	1,160.37									
2008/2009 Ford 150 4x4	1	24,500.00		24,500.00								
Tool boxes for truck	2	500.00		1,000.00								
Roof rack assembly for truck	1	500.00		500.00								
HydroTraxx Tracks	1			3,500.00								
2008/2009 Ford Ranger 2WD to replace vehicle #12	1	22,500.00		22,500.00								
Spray rig for Ford Ranger	1	1,750.00		1,750.00								
ARGO Avenger 700 with rubber tracks	1	24,400.00		24,400.00								
Wide trailer with lift gate supports and Fuel tanks	1	3,900.00		3,900.00								
Spray rig for new ARGO Avenger	1	3,600.00		3,600.00								
Solar panel system for fish tank w/ installation	1	5,600.00		5,600.00								
Small trailer for Polaris ATV	1	1,650.00		1,650.00								
Storm drain larvicider spray system	1	1,500.00		1,500.00								
Go Devil 16 Hp honda powered outboard motor	1	2,600.00		2,600.00								
Ford F-150 4X4					24,500.00							
Electric Gate with key pad entry					13,000.00							
Rain Gutter replacement for shop building					20,000.00	20,500.00						
2010 ARGO 750 HDI w/Rubber tracks						22,200.00						
2011 Ford Ranger 4 x 4 with extended cab 4door						21,900.00						
2010 Ford F-150 4x4 Super Cab long bed						26,000.00						
Spray rig for Ford F-150						5,100.00						
New VCMS Programming and Hardware							$ 15,000					
Rain Gutter replacement for shop building							$ 18,000					
2010 ARGO 750 HDI w/Rubber tracks							$ 22,500					
2011 Ford Ranger 4 x 4 with extended cab 4door							$ 22,000					
2010 Ford F-150 4x4 Super Cab long bed							$ 26,000					
Resealing parking lot in back service area							$ 13,500					
Total			**6,860.37**	**98,000.00**	**57,500.00**	**95,700.00**	**$ 117,000**					
VCMS Replacement Field Seeker software and hardware								$50,000				
Resealing parking lot in back service area								$13,500				
Paint Shop, covered parking and some interior								$30,000				
Carpet in Manager and support staff offices								$10,000				
2012 Ford F150 4 x4 (2)								$52,000				
2012 ARGO								$23,000				
Total								**$178,500**				
Repair & Reseal parking lot in back & front service areas									$30,000			
Paint Shop, covered parking and some interior									$30,000			
Alarm Replacement									$10,000			

CAPITAL PURCHASES	#	UNIT COST	TOTAL	2007-2008	2008-2009	2009-2010	2010-2011	2011-1012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	
Ford Escape										$27,000				
2012 Ford F150 4 x4 (2)										$52,000				
2012 ARGO										$23,000				
Right hand drive jeep										$32,000				
Total										**$204,000**				
Repair & Reseal parking lot in back & front service areas											$90,000			
Shop Roof											$40,000			
Skylights											$12,000			
Outdoor Lights, upgrade ballasts											$5,500			
Locker Room Expansion											$70,000			
2014 Ford F150 4 x4											$26,000			
Laboratory truck (Toyota or Nissan)											$32,000			
2014 ARGO											$23,000			
New microscope for lab											$7,000			
Digital Camera for Lab											$2,500			
New fish tank with filter and pump system											$16,000			
Total											**$324,000**			
Pesticide Shed												$120,000		
Locker Room Expansion												$70,000		
Brake Lathe												$9,000		
Metal Brake												$10,000		
New fish tank with filter and pump system												$16,000		
Total												**$225,000**		
Computer Database													*218,000*	*proposed*
Hardware (monitors & tablets)													*10,000*	
Board room expansion													*40,000*	
Lab equip													*27,000*	
Total													*295,000*	

16/17 TOTAL CAPITAL EXPENDITURES	*$ 295,000*
15/16 TOTAL CAPITAL EXPENDITURES	$ 225,000
14/15 TOTAL CAPITAL EXPENDITURES	$ 324,000
13/14 TOTAL CAPITAL EXPENDITURES	$ 204,000
12/13 TOTAL CAPITAL EXPENDITURES	$ 178,500
11/12 TOTAL CAPITAL EXPENDITURES	$ 117,000
10/11 TOTAL CAPITAL EXPENDITURES	$95,700
09/10 TOTAL CAPITAL EXPENDITURES	$57,500
08/09 TOTAL CAPITAL EXPENDITURES	$98,000
07/08 TOTAL CAPITAL EXPENDITURES	$6,860
06/07 TOTAL CAPITAL EXPENDITURES	$5,112
05/06 TOTAL CAPITAL EXPENDITURES	$94,975
04/05 TOTAL CAPITAL EXPENDITURES	$13,750
03/04 TOTAL CAPITAL EXPENDITURES	$189,280
02/03 TOTAL CAPITAL EXPENDITURES	$176,076
01/02 TOTAL CAPITAL EXPENDITURE	$189,925

DISTRICT TRAVEL

Event	Location	Dates	Registration	Hotel	Car	Meals	Flight	Incidentals	Atendees	Total
MVCAC Annual	Sacramento	February 28-March 3rd	$270	$450	$70	$60	$0	$30	5	$4,400
VCJPA	Oakland	March 4th?	$0	$0	$20	$0	$0	$0	2	$40
Legislation Days	Sacramento	April 5-6	$0	$129	$0	$20	$0	$20	2	$338
MVCAC Spring	Newport Beach	April 28-29	$0	$300	$50	$50	$150	$50	3	$1,800
CSDA Mgr Train	Squaw Valley	June 12-14	$625	$350	$194	$0	$0	$40	1	$1,209
MVCAC Summer	Santa Ana	July 22	$0	$600	$50	$150	$150	$40	2	$1,980
CSDA HR & Finance	El Dorado Hills	August 3-4th	$600	$0	$112	$100	$0	$40	1	$852
ESA	Ft Lauderdale, FL	August 7-12	$342	$565	$300	$300	$500	$100	3	$6,321
CSDA Annual	San Diego	October 10-13	$580	$636	$0	$50	$200	$100	1	$1,566
CalPers Ed Forum	Riverside	October 24-26	$349	$500	$100	$150	$200	$50	1	$1,349
MVCAC Fall	Seaside	October 26-27	$0	$300	$100	$128	$0	$20	4	$2,192
MVCAC Planning	Sacramento	December 1-2	$0	$300	$70	$128	$0	$40	3	$1,614
AMCA	San Diego	February 12-16	$270	$450	$100	$100	$200	$30	4	$4,600
MVCAC Annual	San Diego	March 26-29	$280	$450	$100	$64	$200	$30	6	$6,744
									2016-17 total	$27,218

Who is in?

Trustees	unk?
Staff	yes

to reserve
paid

Chapter 500. HIRING POLICIES

POLICIES SET FORTH IN THIS HANDBOOK REFLECT THE REQUIREMENTS OF CURRENT EMPLOYMENT LAWS. THESE LAWS AND THE ASSOCIATED REGULATORY REQUIREMENTS ARE SUBJECT TO CHANGE. CHANGES IN LAW MAY NOT BE REFLECTED IN THE STAFF POLICIES, BUT WILL BE IN FULL EFFECT. IF THERE IS A CONFLICT BETWEEN THE STAFF POLICY AND THE LEGAL REQUIREMENTS, THE LEGAL REQUIREMENTS SHALL CONTROL.

HIRING AND EQUAL EMPLOYMENT OPPORTUNITY POLICIES

§501 Hiring

§501.1 All District recruitments shall be conducted on a merit-based, competitive basis. There is not an established minimum number of days set for an open recruitment; the number of days a recruitment is open will depend upon an analysis of the current labor market for that job class.

§501.2 The job announcement and other advertisement materials will state the application process and timeline. Applicant failure to provide a completed application by the filing deadline or failure to follow instructions may disqualify an applicant from further consideration.

§501.3 Staff assigned by the District will review all application materials and determine those applicants who present qualifications which most closely match the requirements of the position, and who should be further considered for employment. After such review, applicants will be notified of their status and/or next steps in the selection process.

§501.4 Applicants may be required to participate in a variety of selection processes that may include an interview panel and/or written examination, physical ability or skills testing, or any combination of valid and job-related assessments designed to evaluate applicant possession of the knowledge, skills and abilities relevant to the position. Performance in the selection processes will identify those applicants qualified to proceed further in the hiring process.

§501.5 Applicant screening will include a review and confirmation of the applicant's employment history, education, professional credentials and/or certification, and criminal records (after the applicant is determined to be qualified for the position). If applicable to the position, the applicant's driving record and credit record may also be

reviewed. Appropriate authorization from the candidate will be obtained before the background checks are initiated.

§501.6 The District Manager or designee will be responsible for verifying references. An offer of employment shall not be made until the reference checking is completed.

§501.7 Only the District Manager is authorized to approve an offer of employment to a candidate. The initial verbal offer of employment may be made on a contingent basis, based on successful completion of further steps of the screening process. Contingencies may include a pre-placement medical exam. Candidates failing to meet the requirements of the contingent offer are subject to a withdrawal of the offer of employment.

§501.8 The employee's first day of work is considered the employee's anniversary date for purposes of service start date and benefits determination. An employee's anniversary date may change if the employee becomes permanent from a temporary or seasonal classification. Employee performance evaluations and step increases fall on the anniversary day unless the employee's classification changed or they took a leave of absence that required bridging two periods of uninterrupted employment.

502 Equal Employment Opportunity

§502.1 It is the District's policy to provide equal employment opportunity to all applicants and employees in accordance with applicable equal opportunity laws, directives and regulations of Federal, State and local governing bodies and agencies thereof. The District will base all of its employment decisions on job-related standards and its commitment to equal employment opportunity, and will employ, retain, train, promote, terminate and otherwise treat any and all employees and job applicants on the basis of merit, qualifications, and competence-

§502.2 The District does not discriminate against its employees or applicants on the basis of race, religion, color, sex (including gender, gender identity, gender expression, pregnancy, and breastfeeding), sexual orientation (including heterosexuality, homosexuality, and bisexuality), national origin, ancestry, marital status, age, medical condition, genetic characteristics or information, and physical or mental disability or any other category protected by law.

§502.3 Non-Discrimination/Equal Opportunity applies in all areas of District operations, including recruitment, hiring, promotion, compensation, benefits, work assignments, performance evaluation, disciplinary actions, layoffs, and employee development, along with District educational, social, and recreational programs.

Chapter 500. HIRING POLICIES

§503 Reasonable Accommodation

§503.1 The District provides employment-related reasonable accommodations to qualified individuals with disabilities within the meaning of the California Fair Employment and Housing Act and the Americans with Disabilities Act.

§503.2 An otherwise qualified candidate for employment who needs a reasonable accommodation to participate in a selection process should make such a request, preferably in writing, to the District Manager. The request must identify: a) the presence of a disability as set forth in the California Fair Employment and Housing Act and/or the Americans with Disabilities Act, b) the element(s) of the selection process for which an accommodation is requested, c) the requested accommodation.

§503.3 An applicant seeking a reasonable accommodation in order to participate in employment selection processes, or an employee seeking a reasonable accommodation to perform the essential job functions of his or her job should make such a request, preferably in writing, to the District Manager. The request must identify: a) the job-related functions at issue; and b) the desired accommodation(s).

§503.4 Following receipt of a request for accommodation, the District Manager may require additional information, such as reasonable documentation of the existence of a disability.

§503.5 The District may require an employee to undergo a fitness for duty examination at the District's expense to determine whether the employee can perform the essential functions of the job with or without reasonable accommodation. The District may also require that a District-approved physician conduct the examination.

§503.6 After receipt of reasonable documentation of disability and/or a fitness for duty report, the District Manager will arrange for an interactive discussion, in person or via telephone conference call, with the employee and his or her representative(s), if any. The purpose of the discussion is to work in good faith to fully consider all feasible potential reasonable accommodations.

§503.7 Following the conclusion of the interactive discussion, the District Manager will determine whether reasonable accommodation(s) can be made, and the type of accommodation(s) that will be offered. The District may not provide accommodation(s) that would pose an undue hardship upon District finances or operations, or that would endanger the health or safety of the employee or others. The District Manager will inform the applicant or employee of his/her decision as to reasonable accommodation(s) in writing.

Chapter 600. HARASSMENT AND DISCRIMINATION POLICY

§601 Policy

§601.1 The District prohibits any form of discrimination or harassment on the basis of membership in one or more protected classifications as defined in Section 601.2 of this Policy, as may be amended by State and federal law District employees have a grave responsibility for maintaining high standards of honesty, integrity, impartiality and conduct to assure proper performance of the District's business and the maintenance of confidence of the people it serves.

§601.2 Protected classifications include race, religion, color, sex (including gender, gender identity, gender expression, pregnancy, and breastfeeding), sexual orientation (including heterosexuality, homosexuality, and bisexuality), national origin, ancestry, marital status, age, medical condition, genetic characteristics or information, and physical or mental disability, or any other classification protected by law.

§601.3 The District, elected or appointed officials, officers, employees, or contractors are prohibited from harassing or discriminating against applicants, officers, officials, employees, or contractors because of: 1) an individual's membership in a protected classification; 2) the perception that an individual is a member of a protected classification; or 3) the individual associates with a person who has or is perceived to be a member of a protected classification.

§601.4 This Policy applies to all terms and conditions of employment, including, but not limited to, hiring, placement, promotion, disciplinary action, layoff, recall, transfer, leave of absence, compensation, and training.

§601.5 Disciplinary action or other appropriate sanctions up to and including termination will be instituted for prohibited behavior.

§601.6 Any form of retaliation against a person for filing a complaint or participating in the complaint resolution process is prohibited. Individuals found to be retaliating in violation of this Policy will be subject to appropriate sanction or disciplinary action up to and including termination.

§602 Definitions

§602.1 Harassment is unwelcome conduct based on membership in a protected classification that unreasonably interferes with an employee's job performance, or creates an intimidating, hostile or offensive work environment. Behavior that constitutes harassment may include, but is not limited to:

1. Unwanted sexual advances, requests for sexual favors and other acts where submission is made a term or condition of employment,

where submission to or rejection of the conduct is used as the basis for employment decisions.

2. Behavior that interferes with an employee's work performance or creates an intimidating, hostile or offensive working environment, including but not limited to:

    a) Speech, such as epithets, derogatory comments or slurs, on the basis of a protected classification. This might include inappropriate comments on appearance, including dress or physical features, or dress consistent with gender identification, or race-oriented stories and jokes.

    b) Physical acts, such as assault, impeding or blocking movement, offensive touching, or any physical interference with normal work or movement. This includes pinching, grabbing, patting, propositioning, or leering.

    c) Visual acts, such as displaying derogatory posters, or cartoons, or sending emails, pictures or drawings which are derogatory or sexually explicit.

§602.2 Discrimination is treatment or consideration of, or making a distinction in favor of or against, an applicant or employee based on membership in a protected classification. Discrimination in employment applies to all aspects of employment including hiring; firing; compensation; transfer; promotion or layoff; recruitment and testing; training and apprenticeship programs; fringe benefits; pay, retirement plans and disability leave; as well as other terms and conditions of employment.

§602.3 Retaliation is any adverse conduct taken because an applicant, employee, or contractor has reported harassment or discrimination, or has participated in the complaint and investigation process described herein, is prohibited. "Adverse conduct" includes but is not limited to: taking sides because an individual has reported harassment or discrimination, spreading rumors about a complaint, shunning and avoiding an individual who reports harassment or discrimination, real or implied threats of intimidation to prevent an individual from reporting harassment or discrimination, or taking negative employment action.

§603 Policy Dissemination

§603.1 All employees shall be informed of the District's harassment and discrimination policy and complaint process prior to their need to know, and on a regular biennial basis. Also, said policy and complaint process shall be readily

available to the Board of Trustees, all employees and members of the general public utilizing the District's facilities and services. All employees of the District shall receive training on harassment and discrimination prevention in the workplace.

§603.2 All new employees shall be given a copy of the harassment and discrimination policy and complaint process upon hire.

§603.3 Employees promoted into supervisory positions shall be given another copy of the District's harassment and discrimination policy, as well as training on the supervisor's role in preventing harassment and discrimination in the workplace.

§604 Complaint Process

§604.1 An employee, job applicant or contractor who believes he or she is a victim of harassment or discrimination may make a complaint verbally or in writing with an incumbent in any of the following District positions without fear of reprisal. It is not necessary to follow the chain of command:

Immediate supervisor
Any supervisor
District Manager or designee

If the complaint of harassment or discrimination is the result of direct action or inaction on the part of the District Manager, the complaint should be filed directly with the President of the Board.

§604.2 Any supervisor who receives a complaint of harassment or discrimination shall notify the District Manager or designee immediately.

§605 Complaint Response Process

§605.1 Upon receipt of notification of a harassment or discrimination complaint, the District Manager or designee shall:

1. Authorize and supervise the timely investigation of the complaint and/or investigate the complaint. The investigation will include interviews with: a) the complainant; b) the accused harasser, or the individual alleged to have committed discriminatory action(s); and c) other persons who have relevant knowledge concerning the allegations in the complaint.

2. Review the factual information gathered through the investigation to determine whether the alleged conduct constitutes harassment, discrimination, or retaliation giving consideration to all factual information,

the totality of the circumstances, including the nature of the conduct, and the context in which the alleged incidents occurred.

3. Report the findings as to whether harassment or discrimination occurred to appropriate persons, including the complainant, the alleged violator, and the direct supervisor of the alleged violator as appropriate. Limitations on information released are set forth under Section 606 of this Policy.

4. If the allegations are sustained, take appropriate immediate remedial action, including imposition of discipline at a level appropriate to the circumstances, and sufficiently severe to ensure that the behavior does not continue. If discipline is imposed, the level of discipline will not be communicated to the complainant.

§605.2 The person initiating the complaint has the right to be accompanied by an advocate(s) when discussing alleged incidents, or participating in investigatory interviews. Said person shall be advised of this right prior to the commencement of such discussions.

§605.3 The District takes a proactive approach to potential Policy violations and will conduct an investigation of its employees, supervisors, managers or Board Members if it becomes aware that harassment, discrimination, or retaliation may be occurring, regardless of whether the recipient or third party reports a potential violation.

§606 Confidentiality

§606.1 Every possible effort will be made to ensure the confidentiality of complaints made under this Policy. Complete confidentiality cannot be guaranteed, however, due to the need to fully investigate and the duty to take effective remedial action. As a result, confidentiality will be maintained to the extent possible.

§606.2 An individual who is interviewed during the course of an investigation is prohibited from discussing the substance of the interview, except as otherwise directed by a supervisor or the District Manager. Any individual who discusses the content of an investigatory interview will be subject to discipline or other appropriate sanction.

§606.3 The District will not disclose or release a completed investigation report except as it deems necessary to support a disciplinary action, to take remedial action, to defend itself in adversarial proceedings, or to comply with the law or court order.

§607 Disciplinary Procedures and Sanction

Chapter 600. HARASSMENT AND DISCRIMINATION POLICY

§607.1 If conduct in violation of this Policy is found to have occurred, the District Manager or the President of the Board of Trustees shall take prompt and effective remedial action against the individual found to have committed the harassment or discrimination. The remedial action will be commensurate with the severity of the offense.

§607.2 Action taken to remedy a harassment or discrimination situation shall be done in a manner so as to protect employees from future occurrences of harassment of discrimination. A confidential written record of the District's investigation and action shall be maintained by the District Manager.

§607.3 The District shall take all reasonable steps to protect the complainant from further harassment or discrimination. Further, the District shall take all reasonable steps to protect the complainant

Chapter 700. GRIEVANCE AND DISCIPLINARY PROCEDURES

701 GRIEVANCE PROCEDURES

§701.1 The purpose of this grievance procedure is to promote communication and improve employer-employee relations by establishing a procedure for further consideration alleged violations of the specific provisions of the Employee Association's Memorandum of Understanding and District policies that impact working conditions. These procedures are not applicable to actions taken pursuant to Sections 304.2 (Employee Evaluations) or 702 (Employee Disciplinary Procedures) of this Policy Manual.

The District's objective is to encourage settlement of disputes as near as possible to the point of origin, and as informally as possible.

701.2
DEFINITIONS - As used in this Chapter, the following definitions shall apply:

a) A "grievance" is a formal written allegation by an employee who believes he or she has been adversely affected by an alleged violation of the specific provisions of the Employee Association's Memorandum of Understanding and District policies that impact working conditions.

b) A "grievant" is any employee adversely affected by an alleged violation of the specific provisions of the Employee Association's Memorandum of Understanding and District policies that impact working conditions, or is the Employee Association if grieving its rights on behalf of represented employees under any of the above.

c) A "day" is any day in which the District offices are open for business.

701.3
GENERAL PROVISIONS

a) All documents dealing with the processing of a grievance shall be filed separately from the personnel files of the participants.

b) Failure of the grievant to adhere to the time deadlines set forth in this Policy shall mean that the grievant is satisfied with the previous decision and waives the right to further appeal. Failure of the District to adhere to the time deadlines at any level shall mean that the grievance is automatically appealed to the next level, if any.

c) The grievant and the District may extend any time deadline by mutual agreement.

d) Every effort will be made to schedule meetings for the processing of grievances

at times which will not interfere with the regular work day of the participants. If any grievance meeting or hearing must be scheduled during the workday, any employee required by either party to participate as a witness or grievant in such meeting or hearing shall be released from regular duties for a reasonable amount of time without loss of pay.

e) Either party to the grievance may be represented at any step of the grievance procedure by an individual or organization of that party's choice.

f) Until final disposition of a grievance, the grievant shall comply with the directions of the District Manager.

g) No party to a grievance shall take any reprisals against the other party to the grievance because the party participated in an orderly manner in the grievance procedure.

h) Grievances of a similar of like nature may be joined as a single grievance by the District. The final decision in such cases shall be binding upon all parties to the consolidated grievance.

701.4
PROCEDURE Grievances will be processed in accordance with the following procedures:

a) **Level I - Informal Resolution**
Any employee or an individual or organization of that party's choice who believes he/she has a grievance shall present the grievance orally to the District Manager within ten (10) business days after the grievant knew, or reasonably should have known, of the circumstances which form the basis for the grievance. The District Manager shall meet with the employee and attempt to resolve the matter.

b) **Level II - Formal Written Grievance**
1. If the grievance is not settled within ten (10) business days of oral presentation to the District Manager as set forth in Level I of this procedure, and the grievant wishes to pursue the matter, the grievant shall present the grievance in writing on the appropriate form to the District Manager within ten (10) business days after the oral decision by the District Manager. The written information shall include:

    a. A description of the specific grounds of the grievance, including names, dates, and places necessary for a complete understanding of the grievance;
    b. A listing of the specific rule, regulation or provision which is alleged to have been violated;
    c. A listing of the reasons why the District Manager's proposed Level I resolution of the problem is unacceptable to the grievant; and

d. A listing of the specific actions requested of the District which will remedy the grievance.

2. The District Manager shall review the Written Appeal and shall communicate his or her decision on the Formal Written Grievance to the grievant in writing within ten (10) business days after receiving the grievance.

3. Within the above time limits, either party may request a personal conference.

c) **LEVEL III - Appeal to President of the District Board of Trustees**

1. If the grievant is not satisfied within the decision at Level II, the grievant may, within ten (10) business days of the receipt of the decision at Level II, appeal the decision to the Board President on the appropriate form. This statement shall include a copy of the original grievance and appeal along with a clear, concise statement of the specific basis for the appeal.

2. The Board President shall review all of the submitted documentation and communicate his/her decision to the grievant within ten (10) business days of his/her review.

3. The decision of the Board President shall be final and binding.

702 EMPLOYEE DISCIPLINARY PROCEDURES

§702.1 The District has adopted a progressive discipline policy to ensure a fair and consistent method of disciplining employees. The progressive discipline policy is intended to give employees advance notice, whenever possible, of problems with their conduct or performance in order to provide them an opportunity for improvement or correction.

§702.2 **DISCIPLINARY ACTION DEFINED**

a) As used in this Chapter, “Disciplinary Action” shall mean written or oral reprimand, suspension without pay, reduction in salary, demotion and/or termination.

b) The procedures set forth in this Chapter shall not apply to probationary employees or to any employee hired on a temporary basis.

c) The provisions of this Chapter shall not apply to reductions in force, and/or in pay which are part of a general plan to reduce or adjust salaries and wages.

d) The procedures set forth in this Chapter shall not preclude an employee from

entering into a written agreement with the District to settle a pending disciplinary matter, and further shall not preclude an employee from waiving any of the provisions provided for in this Chapter, as part of that written settlement agreement.

§702.3 CAUSES FOR DISCIPLINARY ACTION

§702.3 (i) Rules outlining impermissible conduct of employees are necessary for the orderly operation of any business and for the benefit and protection of the rights and safety of all employees.

§702.3 (ii) Examples of impermissible or unacceptable conduct that may lead to disciplinary action are identified below. The following list contains examples of conduct that may lead to imposing disciplinary action and this list should not be considered exhaustive:

a) Fraud in securing appointment

b) Inexcusable neglect of duty

c) Insubordination by refusal or willful failure to obey any lawful and reasonable order or directive made or given by any supervisor or the District Manager

d) Dishonesty by any misuse or misappropriation or attempted misuse or misappropriation of District funds or District property, by the rendering of any false statement or report to the District or District Manager, or by the willful omission to report information or to disclose facts which the duties of the position require to be reported or disclosed

e) Reporting to work under the influence of alcohol, restricted substances or drugs, or buying, selling, or using same on District property or at a worksite. Employees taking prescription or over-the-counter medication which may affect their ability to perform must advise the District Manager so that he/she can evaluate whether the employee will be able to safely work

f) Failure to perform competently perform the duties of the position

g) Unexcused absences, tardiness, or persistent absenteeism

h) Discourteous treatment of the public or other employees

i) Violation of District safety rules or other failure to perform work in a safe manner

j) Misuse of District property

k) Violation of any of the provisions of the Employee Manual or other District rules,

policies, and regulations

l) Refusal to take or subscribe to any oath or affirmation which is required by law in connection with his/her employment

m) Discrimination or harassment as defined by law and in the District Policies Chapter 600

n) Initiating a physical altercation during work hours or on a worksite

o) Carrying and/or using firearms or any other weapon while on duty or on District property

p) Failure to maintain required licenses &/or certifications

q) Conviction of a felony, or of a misdemeanor involving moral turpitude, or which is in conflict with the position held.

702.4 WRITTEN NOTICE OF INTENDED DISCIPLINARY ACTION

§702.4 (i) The District Manager may take disciplinary action against an employee for one or more of the causes specified in this Chapter. Normally, progressive discipline involves one or more written or oral reprimands, suspension without pay, reduction in salary, demotion and/or termination. Circumstances may warrant that one or more steps in the process be omitted.

Prior to disciplinary action being taken, a Written Notice of Intended Disciplinary Action will be served on the employee and shall include:

a) A statement of the nature of the disciplinary action

b) A statement of the causes thereof

c) The effective date of penalty

d) A statement in ordinary and concise language of the acts or omissions upon which the causes are based

e) A statement advising the employee that files and records bearing on the matter are available for the employee’s inspection

f) A statement advising the employee of his/her right to respond in writing to the District Manager

§702.4 (ii) The Written Notice of Intended Disciplinary Action will either (a) be mailed to the employee at his or her last known address by certified mail, postage prepaid, or (b)

be personally served by the District Manager or his/her designee. If the Notice is personally served, the employee will sign and date the Written Notice of Intended Disciplinary Action to acknowledge receipt. If the employee refuses to sign the Notice, the individual serving the Notice will document the time and date of service, and will document that employee refused to sign the Notice.

702.5 EMPLOYEE RESPONSE

§702.5 (i) Employees shall have the right to respond in writing to the District Manager and have the response considered prior to the discipline being imposed. Such a response must be submitted in writing to the District Manager within five (5) business days after receipt of the written notice of the proposed disciplinary action. Failure to submit a response within such period constitutes a waiver of the right to respond; however, a failure to respond shall not affect the employee's right to appeal the disciplinary action.

§702.5 (ii) Upon receipt of a timely response filed by the employee, and after giving consideration to the response, or upon expiration of the response period if the employee has not filed a response, the District Manager may dismiss the pending disciplinary action or proceed to impose or modify the original disciplinary action by serving the employee with an amended, written Notice of Disciplinary Action.

§702.5 (iii) The Written Notice of Disciplinary Action will either (a) be mailed to the employee at his or her last known address by certified mail, postage prepaid, or (b) be personally served by the District Manager or his/her designee. If the Notice is personally served, the employee will sign and date the Written Notice Disciplinary Action to acknowledge receipt. If the employee refuses to sign the Notice, the individual serving the Notice will document the time and date of service, and will document that employee refused to sign the Notice.

702.6 RIGHT OF APPEAL

§702.6 (i) If, after the final dispensation of the Employee Response procedure 702.5), the employee is unsatisfied, the employee shall have the right to request a hearing before the Board President or his/her designee to determine the appropriateness of the proposed disciplinary action. A written request must be submitted to the District Manager by the employee or his/her representative within three (3) business days of receipt of the Written Notice of Disciplinary Action (§702.5 (ii). The Board President or designee will hear the appeal within ten (10) business days of receipt of the employee's written request, unless both parties agree to a delay. The Board President shall evaluate both sides and will make a decision whether to uphold the disciplinary action as proposed, to reduce the recommended disciplinary action, or to revoke the proposed disciplinary action.

§702.6 (ii) An employee who has been suspended for more than three (3) working days, terminated, demoted, or has had a disciplinary reduction in salary has the right to appeal the disciplinary action to the District Board of Trustees, rather than to the Board President as provided in (a), above. A request for such an appeal must be filed in writing with the District Manager within ten (10) business days from the date of receipt of the Written Notice of Disciplinary Action under §702.5 (ii) and §702.5 (iii). The employee will be provided a copy of the signed and dated "Right of Appeal" form. Failure to file an appeal within the specified time period constitutes a waiver of the right of appeal.

702.7 HEARING

§702.7 (i) The Board shall appoint a three-member committee of Trustees to hear the appeal within thirty (30) business days after receipt thereof. The Committee shall set a date for hearing the appeal within ten (10) business days of receipt of the appeal. The Committee may continue the hearing either for the convenience of the Committee or upon written application from the appellant for good cause. Written notice of the time and place of the hearing, and any continuance thereof, shall be given to the appellant and his/her representative, if applicable. The parties may submit all proper and pertinent evidence against or in support of the causes in advance of the hearing. The hearing shall be closed except to necessary parties unless the employee requests in writing that the hearing be open to the general public. The Board may elect to contract with an independent hearing officer to conduct the hearing. The opinion rendered by the Committee or hearing officer shall be advisory only and not binding on the Board. Upon receipt of an advisory opinion, the Board shall render a final decision to adopt, reduce, or reject the disciplinary action. The decision of the Board shall be final and binding. The President of the Board of Trustees or his/her designate will provide a written report to the employee and the employee's representative, if applicable, of their findings and final decision.

702.7 (ii) The Board shall issue subpoenas for the appearance of witnesses for the appellant upon his/her written request and at the appellant's cost. The Board may require such costs to be prepaid.

702.7 (iii) HEARING Failure of the appellant to appear at the hearing shall be deemed a withdrawal of his/her appeal, and the action of the Board shall be final.

702.7 (iv) The Board may affirm, reduce, reduce with conclusions or revoke the Disciplinary Action. The decision of the Board shall be final for all purposes.

702.7 (v) In the event that an employee is unavailable for personal service of the hearing notice, such notice may be served upon the employee by certified mail, postage prepaid. Such notice shall be effective upon proof of delivery.

Agenda item 1034.14a ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT

LIST OF WARRANTS DATED May 15, 2016.

WAR NO	PAYEE	FOR	ACCT NO	AMT OF CHARGE	AMT OF WARRANT
054816	Biological Specialist	Total salary less deduction for payroll	1011	2,324.96	
054816	Mosq Control Tech	May 1 to May 15, 2016.	1011	2,093.61	
054816	Vector Biologist	"	1011	2,699.30	
054816	Vector Biologist	"	1011	2,777.30	
054816	Mosq Control Tech	"	1011	2,110.78	
054816	Environment Specialist	"	1011	2,543.55	
054816	District Manager	"	1011	3,591.22	
054816	Asst Mosq Control Tech	"	1011	2,022.82	
054816	Field Seasonal	"	1011	656.72	
054816	IT Specialist	"	1011	2,851.71	
054816	Entomologist	"	1011	3,043.98	
054816	Office Seasonal	"	1011	1,011.26	
054816	Field Seasonal	"	1011	281.27	
054816	Field Supervisor	"	1011	2,975.42	
054816	Lab Seasonal		1011	803.15	
054816	Finance Manager	"	1011	2,444.92	
054816	Office Assistant	"	1011	1,550.26	
054816	Vector Biologist	"	1011	3,271.67	
054816	Mosq Control Tech	"	1011	2,493.12	
054816	Mosq Control Tech	"	1011	1,988.57	
054816	Mechanic Specialist	"	1011	3,023.78	
054816	IRS	Federal tax withheld (payroll)	1011	7,946.99	
054816		Medicare Tax Withheld (payroll)	1011	899.88	
054816		District Contribution to Medicare (payroll)	1311	899.89	
054816	State of California	State Tax withheld (payroll)	1011	2,450.26	58,756.39
054916	Public Employees' Ret.	Employee Contributions	1011	17.00	
	ment System	Employee Paid Member Contributions, 7% & 6.5%	1011	4,384.59	
		Employer Contribution 9.353% & 6.73%	1211	5,348.74	9,750.33
055016	Aetna Life & Annuity	Employee Contributions	1011		150.00
055116	CALPERS 457 Plan	Employee Contributions - PERS 457	1011		2,660.00
055216	Delta Dental Plan	Monthly Premium	1411		5,395.95
055316	Vision Service Plan	Health premium	1411		1,047.80
055416	Airgas	Dry ice cut block slab	3131.1		306.30
055516	Adapco	Vectobac	3391.1		6,496.16
055616	Bayside	Janitorial services,May 2016	3051		300.00
055716	Big Sky Enterprises	Waste oil pickup	3231		218.25
055816	Cintas	Laundry service	3071	166.06	
		Personal supply	3031	390.87	556.93
055916	Corp. Park Landscaping	Landscape maintenance	3211		195.00
056016	Cardno	MVCAC EIR	3411		120.07
056116	Calpers	Fees for GASB-68 Reports & Schedules	3411		1,300.00
056216	Carquest	Car parts	3231		29.84
056316	Donato Builders	April progress billing	5111		31,070.70
056416	EDD	Letter L0103622592	1011		7,054.00
056516	Grainger	Cord, hand drum pump, trash bags	3231		113.36
056616	KBA Docusys	Canon copier rental	3111		462.60
056716	Kimball Midwest	Brake power ULV	3231		79.07
056816	Liewer Enterprises Inc.	Invoice #156923	3231		230.42
056916	Mar-Len Supply Inc.	Moter Mounts	3231		446.37
057016	Namakan West Fisheries	Mosquito Fish	3391.4		462.00
057116	Ferris Hoist & Repair	Adaptor kit, rotary, lift inspection	3231	728.20	
			3211	110.00	838.20
057216	PFM Asset	Investment advisory services	3411		1,647.75
057316	Macke Water Syst. (Quench)	Water filter rental	3551		98.95
057416	Waste Management	Garbage, April service	3271		197.45
057516	Jan Washburn	Reimbursement for ACMA, Savannah GA	3351.3		2,433.43

WAR NO	PAYEE	FOR	ACCT NO	AMT OF CHARGE	AMT OF WARRANT
057616	US Bank Cal Card	Amazon - Towel dispensers	3051	17.16	
		FoodMaxx - Eating utensiles	3051	30.14	
		Canon copier rental	3111	341.01	
		Paganos Hardware - Key	3111	2.18	
		Alameda Repair Shop - Key	3111	20.70	
		Mozy - Back up for peachtree computer	3121	54.45	
		My Choice Software - Microsoft office 365	3121	539.60	
		My Choice Software - Microsoft office 365	3121	323.76	
		Central Computer - Computer for MM	3121	630.12	
		Uline - Multiple plastic pails/lids	3131.1	473.47	
		JCE Target - Glue trap	3131.1	51.65	
		BioQuip - Mosquito trap	3131.1	245.21	
		Route4Me - Professioanl plan	3131.1	49.00	
		Amazon - Phone battery case	3131.1	35.19	
		Amazon - Eiko eke 21v 150w Mr16 base	3131.1	32.91	
		Amazon - Fast blow fuse	3131.1	6.74	
		JCE Target - Catchmaster 909	3131.1	44.64	
		The Home Depot - Super mulipurp spray	3131.1	12.07	
		The Home Depot - Flagging tape	3131.1	5.47	
		Uline - Buckets w/lid	3131.1	384.46	
		Amazon - Storage bags	3131.1	222.22	
		Amazon - Bottle brush	3131.1	55.02	
		Amazon - Storage gallon bags	3131.2	50.64	
		Lifetech - Partial payment, taqman fast virus	3131.3	739.20	
		Spot Imaging - Tilting Mount	3131.3	1,855.83	
		Amazon - Two label makers	3131.3	97.88	
		Qiagen - Rneasy mini kit	3131.3	1,454.55	
		Amazon - Label maker	3131.3	48.94	
		UCD VM - Mosquito pool testing	3131.3	395.00	
		UCD VM - Proficiency panel, dry ice	3131.3	241.00	
		Amazon - Parafilm M Roll	3131.5	22.66	
		Lampire Biological Lab - Chicken blood	3131.5	205.50	
		Amazon - Chair	3131.5	37.28	
		Amazon - Office Chair	3131.5	138.58	
		Amazon - Pump	3171	17.27	
		Amazon - Brake Fluid	3171	21.12	
		Amazon - American Flag	3211	31.48	
		Amazon - Garden hose filter	3211	36.95	
		Amazon - California Flag	3211	26.99	
		Amazon - Off Road tire	3231	161.24	
		Amazon - Off Road tire	3231	161.24	
		Amazon - Off Road tire	3231	161.24	
		Amazon - Off Road tire	3231	161.24	
		Amazon - Three Hook Clip holders	3231	14.85	
		The Ford Store - Element Asy	3231	96.34	
		Guaranteed Auto - Repair on vehicle	3231	500.77	
		Kamps Propane - Island commercial	3231	26.22	
		Telepacific Com - Com	3291.1	1,138.53	
		Oakland Parking - Parking	3351.1	7.00	
		Berkeley Parking - Parking	3351.1	2.00	
		Fastrak	3351.1	25.00	
		Deli café - MVCAC, leg day, Sac, EC	3351.3	8.66	
		Residence Inn - MVCAC, hotel, Sac, EC	3351.3	148.67	
		Jetsuitex - MVCAC, OC, RF	3351.3	217.16	
		CSDA - Conference, RC	3351.3	625.00	
		Resort Squaw creek - Managers meeting, hotel, RC	3351.3	175.00	
		Nob Hill - Food for training at VC	3351.3	44.29	
		Nob Hill - Food for training at VC	3351.3	92.12	
		University Of Beer - MVCAC, dinner, RC	3351.3	15.78	
		O Deli café - MVCAC, sac, lunch, RC	3351.3	6.50	
		Kacha Thai Bistro - MVCAC, sac, lunch, RC& EC	3351.3	38.01	
		Residence Inn - MVCAC, hotel, Sac, RC	3351.3	148.67	
		Lucky - Supplies for board meeting	3351.4	25.16	
		Amazon - Towpower	3391.6	141.30	
		Amazon - T-Connector	3391.6	14.91	
		Amazon - Tool box	3391.6	326.04	
		Amazon - Cordless tool battery	3391.6	34.50	
		Amazon - Dry ice storage chest	3391.6	684.73	
		Alameda County Fair - Fair fee	3392	10.00	
		Amazon - The study of insects (two)	3392	228.76	
		Walgreens - Repellent wipes	3392	142.24	
		YP - Advertising	3392	744.00	
		Constant Contract - Contract	3392	20.00	
		Momento Spanish yellow page - Advertising	3392	144.00	
		Logo Guru - Logo prize money/processing fee	3392	495.00	
		Logo Guru - Logo feature listing fee	3392	39.00	
		Tableau Software - Professional user	3392	1,999.00	
		Sub-total			18,022.21
		Total			**150,439.53**

Agenda item 1034.14a

ALAMEDA COUNTY MOSQUITO ABATEMENT DISTRICT
LIST OF WARRANTS DATED May 31, 2016.

WAR NO	PAYEE	FOR	ACCT NO	AMT OF CHARGE	AMT OF WARRANT
057716	Biological Specialist	Total salary less deductions for payroll period	1011	2,605.50	
057716	Mosq Control Tech	"	1011	2,093.61	
057716	Vector Biologist	"	1011	2,818.73	
057716	Vector Biologist	"	1011	2,777.30	
057716	Mosq Control Tech	"	1011	2,110.78	
057716	Environmental Specialist	"	1011	2,662.98	
057716	District Manager	"	1011	3,993.91	
057716	Asst Mosq Control Tech	"	1011	2,022.82	
057716	Field Seasonal	"	1011	773.86	
057716	IT Specialist	"	1011	2,877.00	
057716	Entomologist	"	1011	3,222.41	
057716	Office Seasonal	"	1011	1,106.24	
057716	Field Seasonal	"	1011	281.28	
057716	Field Supervisor	"	1011	3,050.07	
057716	Lab Seasonal	"	1011	778.74	
057716	Finance Manager	Total salary less deductions for payroll period	1011	2,519.58	
057716	Office Assistant	"	1011	1,550.26	
057716	Vector Biologist	"	1011	3,271.66	
057716	Mosq Control Tech	"	1011	2,493.11	
057716	Mosq Control Tech	"	1011	1,988.58	
057716	Mechanic Specialist	"	1011	3,143.21	48,141.63
057716	IRS	Federal Tax Withheld	1011	7,982.09	
057716		Medicare Tax Withheld	1011	903.29	
057716		District Contribution to Medicare	1311	903.28	
057716	State of California	State Tax Withheld	1011	2,458.05	12,246.71
057816	Public Employees' Retire-	Employees contributions	1011	17.00	
	ment System	Employee paid member contributions, 7%, 6.5%	1011	4,321.59	
		District contribution 9.353%, 6.73%	1211	5,348.74	9,687.33
057916	Aetna Life & Annuity	Employee contributions	1011		150.00
058016	Calpers 457 Plan	Employees contributions - PERS 457	1011		2,660.00
058116	Calpers	Health insurance	1411		33,428.76
058216	Jefferson Pilot Insurance	Insurance premium	1411		105.30

WAR NO	PAYEE	FOR	ACCT NO	AMT OF CHARGE	AMT OF WARRANT
058316	T Scott Donahue	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
058416	P. Robert Beatty	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
058516	James Doggett	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
	Robert Dickinson	Trustee in lieu expenses - 1033rd meeting	3351.5		
058616	Richard Guarienti	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
058716	Eric Hentschke	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
058816	Elisa Marquez	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
	Katherine Narum	Trustee in lieu expenses - 1033rd meeting	3351.5		-
058916	Scott Paulsen	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
059016	Wendi Poulson	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
059116	Ronald Quinn	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
	Ursula Reed	Trustee in lieu expenses - 1033rd meeting	3351.5		-
059216	Jan Washburn	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
059316	George Young	Trustee in lieu expenses - 1033rd meeting	3351.5		100.00
059416	Airgas	Dry ice pellets	3131.1		249.01
059516	Alco	Locker room	5111		250.00
059616	Dereje Alemayehu	Reimbursement for lab blood feeder	3031		158.07
059716	Thomas Branan	Dental expenses for Bettey Branan	1411		136.00
059816	Cintas	Personal supplies	3031	-	
		Laundry service	3071	597.98	597.98
059916	Grainger	Puller ratchet lift cap	3171		228.42
060116	Kimball Midwest	White absorbent pads	3231		240.55
060216	Liewer Enterprises Inc	Parking brake replacement	3231		577.34
060316	Municipal Resource	Human resources services	3411		3,950.00
060416	Mar-Len Supply	Back pack sprayer	3391.6		961.78
060516	Naylor Steel	Aluminum flat bar	3211		12.67
060616	NBC Supply Corp	Gloves, safety eyewear	3391.6		202.40
060716	PG & E	Utilities	3271		1,351.56
060816	Pitney Bowes	Postage	3111		157.30
060916	Sonitrol	Monitoring charges	3551	717.49	
		Relocation of strobe - bathroom project	5111	337.00	1,054.49
061016	Univar	Pump & tanks repair kit	3231		113.64
061116	Verizon	Communication expenses	3291.4		765.22
061216	Wright Express	Fuel expenses, statement ended 05-15-16	3351.1		2,943.17
		Total Warrants			**121,469.33**

Agenda item 1034.14b

Alameda County Mosquito Abatement
As of May 31, 2016. (11 of 12 mth, 92%)

			EXPENDED IN MAY	EXPENDED TO DATE	BUDGETED	BALANCE	% EXPENDED
SALARY & BENEFITS							
1011	Salary and Wages		144,151.69	1,452,947.23	1,573,549.00	120,601.77	92%
1411	Contribution to Medicare		1,803.17	19,260.12	26,781.00	7,520.88	72%
1311	Contribution to Retirement		10,697.48	194,614.97	202,026.00	7,411.03	96%
1211	Contribution to Health Care		34,717.86	397,323.24	443,302.57	45,979.33	90%
		TOTAL SALARY & BENEFITS	**191,370.20**	**2,064,145.56**	**2,245,658.57**	**181,513.01**	92%
SERVICE AND SUPPLIES							
3031	Clothing and Personal Supplies		390.87	6,877.65	8,500.00	1,622.35	81%
3051	Household Expenses		347.30	4,196.60	5,500.00	1,303.40	76%
3071	Laundry Service and Supplies		764.04	6,556.86	9,000.00	2,443.14	73%
3111	Office Expenses		983.79	12,066.10	20,000.00	7,933.90	60%
3121	Computer & Software		1,547.93	9,860.01	12,000.00	2,139.99	82%
3131	Laboratory						
	3131.1	Mosquito Surveillance	2,173.36	12,875.96	15,000.00	2,124.04	86%
	3131.2	Disease Surveillance	50.64	6,995.16	7,155.00	159.84	98%
	3131.3	Mosq pool testing	4,832.40	22,214.13	36,000.00	13,785.87	62%
	3131.4	Hood certification	0.00	270.00	200.00	-70.00	135%
	3131.5	Misc lab eqpt & supplies	562.09	4,120.70	6,285.00	2,164.30	66%
	3131.6	Reimbursement for light traps	0.00	0.00	200.00	200.00	0%
		Laboratory Total	7,618.49	46,475.95	64,840.00	18,364.05	72%
3171	Small Tools and Instruments		266.81	662.27	2,500.00	1,837.73	26%
3211	Maintenance - Structures & Improvement		413.09	6,346.28	20,000.00	13,653.72	32%
3231	Maintenance Equipment		4,060.18	21,619.20	45,000.00	23,380.80	48%
3271	Utilities		1,549.01	20,385.62	22,000.00	1,614.38	93%
3291	Communication						
	3291.1	Telephone service & internet	1,138.53	12,450.44	13,500.00	1,049.56	92%
	3291.2	Public Notices	0.00	0.00	500.00	500.00	0%
	3291.3	Website & email hosting	0.00	242.48	270.00	27.52	90%
	3291.4	Cell phone services	765.22	7,755.00	10,000.00	2,245.00	78%
		Communications Total	1,903.75	20,447.92	24,270.00	3,822.08	84%
3331	Memberships, Dues, Subscriptions		0.00	14,540.00	20,700.00	6,160.00	70%
3351	Transportation & Travel						
	3351.1	Fuel & GPS	2,977.17	33,631.00	44,000.00	10,369.00	76%
	3351.2	Misc Travel	0.00	0.00	0.00	0.00	0%
	3351.3	Meetings & conferences	3,953.29	19,503.80	45,000.00	25,496.20	43%
	3351.4	Board meeting expenses	25.16	501.45	800.00	298.55	63%
	3351.5	Trustee in lieu	1,100.00	11,055.62	16,800.00	5,744.38	66%
		Transportation & Travel Total	8,055.62	64,691.87	106,600.00	41,908.13	61%
3391	District Special Expenses						
	3391.1	Pesticides	6,496.16	119,398.48	175,000.00	55,601.52	68%
	3391.2	Field supplies	0.00	575.70	500.00	-75.70	115%
	3391.3	Sentinel Chickens	0.00	0.00	0.00	0.00	0%
	3391.4	Fish & Fish Maint	462.00	4,429.40	4,000.00	-429.40	111%
	3391.51	Aerial Pool Survey	0.00	0.00	17,000.00	17,000.00	0%
	3391.52	Permits	0.00	1,104.00	3,000.00	1,896.00	37%
	3391.53	Continuing Education fees	0.00	3,771.00	4,000.00	229.00	94%
	3391.54	Board Plaques & nameplates	0.00	239.80	500.00	260.20	48%
	3391.55	Seasonals (post ads, pre-empl.)	0.00	0.00	1,000.00	1,000.00	0%
	3391.6	Spray equipment & Safety	2,365.66	6,568.15	17,000.00	10,431.85	39%
		District Special Expenses Total	9,323.82	136,086.53	222,000.00	85,913.47	61%
3392	Community Education		3,822.00	9,021.47	33,000.00	23,978.53	27%
3411	Professional and Specialized Services		7,017.82	153,314.26	224,887.00	71,572.74	68%
3471	Insurance - Collision, Liability etc		0.00	42,532.00	42,350.00	-182.00	100%
3491	Workers Compensation Insurance		0.00	63,736.00	60,745.00	-2,991.00	105%
3531	Insurance Fund - SIRS		0.00	0.00	0.00	0.00	0%
3551	Rents, Leases - Equipment		816.44	8,387.40	9,350.00	962.60	90%
		TOTAL SERVICES & SUPPLIES	**48,880.96**	**647,803.99**	**953,242.00**	**305,438.01**	68%
CAPITAL							
5111	Structures and Improvements		31,657.70	39,857.83	190,000.00	150,142.17	21%
5311	Equipment		0.00	10,468.50	58,000.00	47,531.50	18%
		TOTAL CAPITAL	**31,657.70**	**50,326.33**	**248,000.00**	**197,673.67**	20%
	Reserve fo Contingencies		**0.00**	**0.00**	**50,000.00**	**50,000.00**	0%
	OPEB Trust Reimbursement		**149,986.27**	**149,986.27**	**145,000.00**	**-4,986.27**	103%
		Annual Operating Expenditures	*271,908.86*	*2,762,275.88*	***3,641,900.57***	**879,624.69**	
OTHER							
	Dry Period Cash (60%)		**0.00**	0.00	**2,714,106.00**	**2,714,106.00**	0%
	Reserve for Capital Replacement		**0.00**	0.00	**1,116,840.00**	**1,116,840.00**	0%
		Total Other	**0.00**	**0.00**	**3,830,946.00**	**3,830,946.00**	0%
	Total Expenditure		**271,908.86**	**2,762,275.88**	**7,472,846.57**	**4,710,570.69**	

Agenda item: 1034.15

Alameda County Mosquito Abatement District

Ryan Clausnitzer
District Manager
ryan@mosquitoes.org

MONTHLY STAFF REPORT – May 2016

1. OPERATIONS

A. Narrative

Field staff responded to 234 service requests during the month of May. About 44% of those calls were fish requests. Technicians found *Culiseta incidens* breeding at 31% of those fish requests. *Cs. incidens* breeds year around in Alameda County and is one of our most ubiquitous species. This species was also implicated in a high percentage of “biting” and “prevent” service requests.

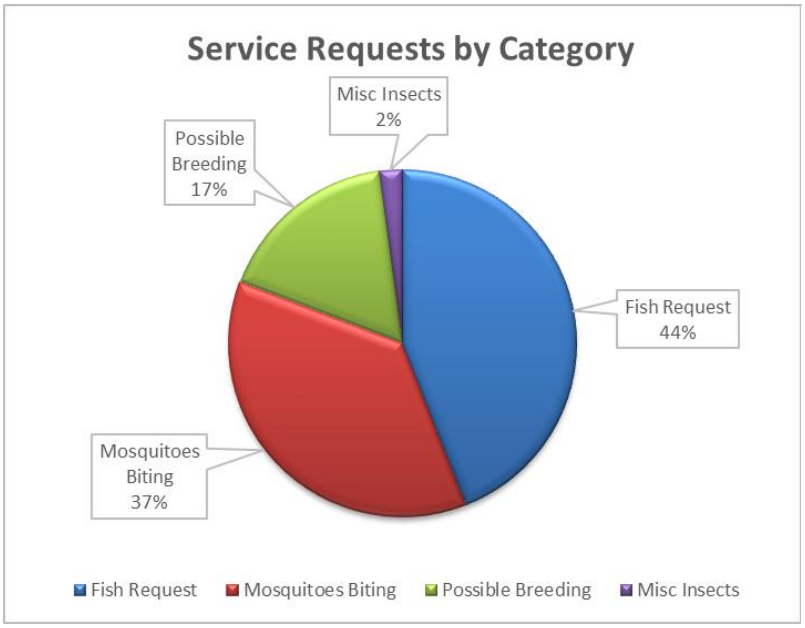
The prime focus species for inspections and treatments during the month were *Culex pipiens* and *Culex tarsalis*. This will continue at least until the first heavy fall & winter rains arrive. Field staff treated catch basins throughout the county as did the field seasonals. Swimming pools, remaining sources still holding rain water, canals, and ditches which are not flowing as they did during rain events, are being inspected and treated for *Cx. tarsalis* on a regular basis.

Effort was also put into monitoring and treating *Aedes dorsalis*, *Culex erythrothorax* and several species of *Anopholes* mosquitoes. *Ae. dorsalis* is an aggressive day-biting species driven by high tide cycles. If not kept under control, it can generate a large number of biting complaints. *Cx. erythrothorax* is associated with sources that contain tules and/or bulrush. They are our most aggressive species of *Culex spp.* and competent vectors of West Nile virus. *Anopholes spp.* mosquitoes are responsible for the transmission of malaria on a worldwide basis. Though no locally acquired malaria cases have been documented in recent decades, many imported cases show up in Alameda County each year and *Anopholes* mosquitoes can be very aggressive biters.

Joseph Huston
Field Operations Supervisor

B. Operational Data

1. Service Requests



Total Service Requests May 2016	=234
May - Ten year average	=241
May - Five year average	=183
May - Last Year	=92
Range (10 yr) =	= 92-549

Mosquito species attributed to service request	
An franciscanus	2
Ae sierrensis	3
Ae squamiger	4
Ae washinoi	1
Crane Flies	5
Cs incidens	70
An freeborni	1
Cx pipiens	27
Biting midges	1
Midges	3
Misc	1

2. Other

Number of all injuries during **2016** = 1

3. Activity Report

Administration	1102.3
Larval Surveillance & Control	911.5
Disease Monitoring	94
Laboratory	397.25
Equipment & Facility Maintenance	123.75
Public Education	65.5
Interagency Communication	16
Fish Rearing and Maintenance	40.25
Safety	75.75
Misc	53.23
Regular Hours	**2879.5**
ETO Hours Accrued	**73.75**
Total Work	**2953.2**

Vacation Hrs Used		179.75
Sick Hours Used		53
Workers Comp.		**0**
ETO Used		21.75
Total Leave		**254.5**
Total Work - Leave		**2953.23**
Total Hours		**3207.73**

2. LAB

Below is a summary of the activities from the Mosquito Lab for May, 2016

Budget

- As of May 31, 2016 (11 months of 12, 92 % of the year), 72 % of the lab budget has been expended.
- Expenditures for the month were to improve lab infrastructure for the upcoming summer of mosquito trapping and arbovirus monitoring, acquire equipment and supplies for to maintain the mosquito colony, and to prepare for research projects.

Mosquito Abundance Monitoring

- Our second Seasonal Mosquito Lab Technician, Allen Esterly, began work during the month of May. Allen is graduating from CSU East Bay this year with a degree in Microbiology. His efforts at ACMAD will be focused upon assisting with monitoring mosquito abundance throughout the District, contributing to assessing disease prevalence in mosquitoes and birds using quantitative reverse-transcription PCR, and aiding in our upcoming research efforts.
- Mosquito abundance continues to increase with the highest, as measured by New Jersey Light traps, occurring near Coyote Hills Regional Park and in Union City. However, relative to 2015, overall mosquito abundance for the year remains relatively low throughout the District (Figure 1).
- Ongoing monitoring for invasive *Aedes* species around the District headquarters and throughout Alameda County has not detected any such mosquitoes during 2016.

Arbovirus Monitoring

- For the year 2016, to date there has been no dead birds or mosquitoes found to contain West Nile virus, St. Louis encephalitis virus, or Western equine encephalitis virus in Alameda County.

Research

- The mosquito colony has been successfully reestablished, is healthy, and ready to support our planned studies of pesticide resistance of mosquitoes collected in Alameda County.
- Interviews were conducted this month to recruit volunteer student research interns to assist with the pesticide resistance study. From the applicant pool, three were selected, and will begin their projects at the end of June.
- After a site visit of the Horizontal Levee Project at the Oro Loma Sanitary District, we have begun efforts to organize a long-term biological assessment of arthropods at that research site.

Certifications

- This month, the Laboratory Directory passed the Category C and D exams for the Vector Control Technician Certification Program. Thus, now the Biological Specialist and Laboratory Director are fully certified in this program (passing Category A, B, C, and D exams).

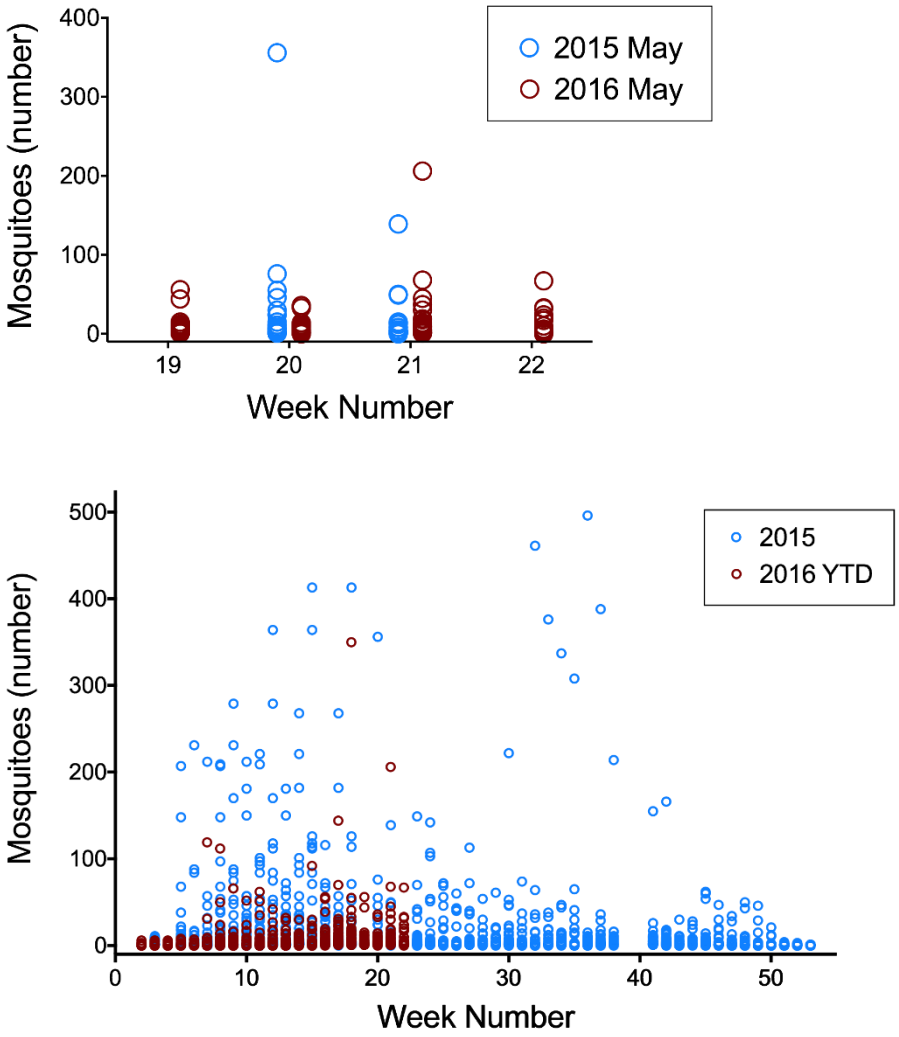


Figure 1. Mosquito abundance for 2015 and 2016 as measured using New Jersey Light Traps for the month of May (top) and the year to date (YTD; bottom).

Submitted respectfully by Eric Haas-Stapleton, PhD, ACMAD Laboratory Director, on June 2, 2016

3. PUBLIC EDUCATION

A. Upcoming Events

- **Berkeley CERT Presentation** – Wednesday, June 8th, 7pm (997 Cedar, Berkeley)
- **Alameda County Fair** – Wednesday, June 15th through Monday, July 4th (Alameda County Fairgrounds, Pleasanton)
- **UC Berkeley Botanical Garden Bug Day** – Sunday, June 19th, 11am-3pm (200 Centennial Dr., Berkeley)

B. Google Analytics

	May	April
Number of Sessions	1,892	2,528
Users	1,643	2,144
Pageviews	3,680	5,286
Average Session Duration	1 minute 29 sec.	2 minutes 10 sec.
New Visitors	83.03%	82.6%
Top Cities	San Francisco (8%), Oakland (5.5%), Not Set (5%), Hayward (4.3%), Fremont (3%)	San Francisco (6.8%), Oakland (6.2%), Fremont (5.8%), Hayward (5%), Los Angeles (4.4%)
Top Pages	Homepage (21.2%), California Species (14.4%), Request Mosquitofish (8.1%), Services (6.4%), Mosquito Lifecycle (6%)	Homepage (23%), California Species (15.2%), Services (8.9%), Request Mosquitofish (6.2%), Mosquito like insects (4%)

C. Facebook

	May	April
Total Posts	0	12
Number Reached	0	420
Most Popular	N/A	Dump and Drain message (retweeted from SGMVCD)
Number of Likes	105	105

D. Twitter

4.	**May**	**April**
Total Tweets	0	12
Tweet Impressions	1,749	2,324
Top Tweet (# Impressions)	2 Mentions	CDC Chief: Zika is coming. (235 impressions)
Profile Visits	47	111
New Followers (Total Followers)	9 (394)	9 (388)

TABLE OF CONTENTS

DISTRICT UPDATES

Arrivals and Departures

ACMAD went through an uncharacteristic transition during the past two years with changes throughout the organization. Changes in management, trustees, staff, regulations, procedures, technology, and the introduction of an invasive mosquito species occurred over 2014 to 2015.

Dr. Chindi Peavey

District Manager Dr. Chindi Peavey served ACMAD from mid-2012 until early 2015. Dr. Jan Washburn, who resigned his position as a Trustee representing the City of Berkeley for 25 years, accepted the position of Interim Manager for six months until a permanent manager was chosen. He then returned to the Board representing the City of Oakland.

Dr. Jan O. Washburn

Ryan Clausnitzer, who also came from the Board of Trustees representing the City of Alameda, became the sixth District Manager in July of 2015. Besides his knowledge of the District as a Trustee and former Board President, he also has experience in mosquito and vector control in the Bay Area, most recently in Environmental Health with the San Francisco Department of Public Health.

Change among the Board of Trustees and District staff was also common the last few years. Fifty percent of the current fourteen Board of Trustees were appointed in only the past two years. Fifty percent of the sixteen permanent staff also changed during this period. Long-time employees Sharon Mead (30 years), Greg Wood (16 years), and Lyle Cain (12 years) retired from the District in 2014 and 2015.

Regulatory Updates

Before retiring in 2012, former District Manager John Rusmisel prepared the District for future challenges by initiating a Programmatic Environmental Impact Report (PEIR). Nearing the completion stage, this project has taken almost four years to finalize. This document thoroughly analyzes the District's integrated pest management program and will help protect the District's ability to effectively control mosquitoes in an environmentally conscious manner.

New Challenges

Another major hurdle which faced the District, and the State, was the arrival of the invasive mosquito species *Aedes albopictus* and *Aedes aegypti*. District staff discovered two female *Ae. aegypti* mosquitoes in May of 2015 at the District office in Hayward. After extensive surveillance and treatments, no further specimens were found. Besides the pestiferous and difficult to control nature of these species, they also vector serious diseases such as dengue fever, chikungunya, and the Zika virus.

This discovery changed the way the District must survey and treat for mosquitoes. Much of this detection relies on the District's laboratory's surveillance strategy but also from public education. The route information is received is transitioning from print media and brochures to social and digital media.

Looking Forward

In order to adjust to the future challenges of regulations and invasive species, mosquito control technology must adapt by researching unconventional options such as unmanned aircrafts (drones) and genetically modifying mosquitoes. Improvements in the District laboratory already allows a more rapid response to public health threats by the use of RT-QPCR testing of mosquito-borne diseases. The laboratory also utilizes a larger variety of surveillance traps, such as AGOs and BG Sentinels.

Besides technological improvements in the laboratory, equipment upgrades include increased capacities in mosquitofish production, aerosolizing spray equipment for underground treatments, and GPS-coordinated adulticiding. Though the use of adult fogging is rare, it is an important tool for mosquito control and was used a few times in 2014-15.

In order to adjust to these substantial staff and leadership changes, increased regulations, and equipment and laboratory upgrades, the District must have a strong financial backbone. The District provides other post-employment benefits (OPEB) for its retirees and this fund is currently fully funded. The District also strives to control unfunded pension liabilities, produces a balanced budget, distributes funds into appropriate reserve categories, and does this with only requesting half of its benefit assessment revenue.

The District proudly approaches its 86th year of service to the people of Alameda County with a dedicated and professional staff who are supported to face the challenges of mosquito abatement by an engaged and thorough Board of Trustees.

GOVERNING BOARD

The Alameda County Board of Supervisors and each of the elected councils of the 13 cities within the District appoint one trustee to represent its constituency on the governing board of the Alameda County Mosquito Abatement District. The Board of Trustees consists of individuals dedicated to community service and willing to accrue the knowledge required to effectively govern a mosquito abatement district. The district board members possess a variety of skills and expertise in academia, agriculture, art, business, chemical engineering, education, electrical engineering, entomology, environmental health, environmental health and safety, insurance, finance, government, general contracting, human resources, mechanical engineering, scientific research, and water quality.

The diversity of knowledge possessed by the trustees provides a broad, conceptual framework within which the Board decision-making occurs. In these ever-changing times, the knowledge base provided by the trustees is an invaluable resource.

The Trustees serve two-year terms without compensation; however, they do receive allowances for expenses incurred in attending business meetings of the Board. The regular Board meetings are held on the second Wednesday of each month at the District office, 23187 Connecticut Street, Hayward at 5:00 p.m. and the meetings are open to the public.

Trustees for the years 2014 & 2015

Trustee	**Representing**	**Years of Service**
Dennis Bray	County-at-large (2014)	11
Scott Paulsen	County-at-large (2014 & 2015)	1.5
Ryan Clausnitzer	Alameda (2014)	2.5
Wendi Poulson	Alameda (2015)	.5
Jan O. Washburn	Berkeley	21.5
Richard Guarienti	Dublin	2.5
Scott Donahue	Emeryville (2015)	1
George Young	Fremont	3
Barbara Halliday	Hayward (2014)	4
Elisa Marquez	Hayward (2015)	1
James N. Doggett	Livermore	38
Elizabeth Anders	Oakland (2014)	.5

Jan O. Washburn	Oakland (2015)	.5

Trustees for the years 2014 & 2015 (continued)

Trustee	**Representing**	**Years of Service**
William Spinola	Newark	33
Robert Dickinson	Piedmont	2
Kathy Narum	Pleasanton	2.5
James Prola	San Leandro (2014)	8
Ursula Reed	San Leandro (2015)	1
Ronald E. Quinn	Union City	14

Current Committee Assignments

Financial Committee

Purpose: A standing committee tasked with reviewing the annual budget, assessing the District's long term capital needs, making recommendations for designating reserves, and evaluating the allocation of the OPEB Trust.

Membership: Trustees Young, Quinn, Dickinson, and Narum

Status: Between April and June the committee will review the budget for the 2016-17 fiscal year, while reviewing the asset allocation of the OPEB Trust and possibly selecting a new auditing firm in the late summer.

Policy Committee

Purpose: Evaluates the District's Policies and updates and adds policies as needed. All District policies must be approved by a majority of the Board.

Membership: Trustees Doggett, Guarienti, and Marquez

Status: The Municipal Resource Group and staff are almost finished reviewing District policies prior to proposed changes being presented to the committee. In order for policies to change, they must have two readings and Board approval.

Manager Evaluation Committee

Purpose: The primary task of this committee is to review the performance of the District Manager, annually in June. Compensation changes and contract adjustments will be based on this evaluation.

Membership: Past, present, and future Board Presidents include Trustees George, Guarienti, and Narum

Status: This committee replaces the Ad Hoc Committee on Long Term Planning that was created to recruit and review the District Manager during the first year of employment. Further changes to the salary and contract can be recommended annually.

West Nile Virus (Public Health Emergency) Committee

Purpose: To meet with the District Manager and/or staff to review District surveillance and treatment information pertaining to current or emerging public health threats and make recommendations to the Board if necessary.

Membership: Trustees Washburn, Doggett, and Poulson

Status: This committee only meets on an as needed basis.

Personnel Committee

Purpose: To meet as needed if personnel issues rise to the level of an appeal to the Board.

Membership: Board Officers – Guarienti, Narum, and Dickinson are members.

Status: This committee only meets on an as needed basis.

DISTRICT PERSONNEL

Name of Employee	Position	Years of Service
Dereje Alemayehu	Vector Biologist (Zone 3 & 4) Biological Specialist	14
Nick Appice	Mosquito Control Technician (Zones 2 & 3)	1.5
John Busam	Vector Biologist (Zone 9 & 10)	13.5
Ryan Clausnitzer	District Manager	.5
Lyle Cain	Vector Biologist (Zones 5 & 7)	15
Cornelius Campbell	Vector Biologist (Zone 8)	12
Miguel Cardenas	Mosquito Control Technician (Zone 2, Zone 6)	3
Erika Castillo	Environmental Specialist	13.5
Sarah Erspamer	Mosquito Control Technician (Zone 1)	.5
Robert Ferdan	Systems Specialist	.5
Eric Haas-Stapleton	Entomologist	.5
Joseph Huston	Field Operations Supervisor	24
Michelle Izumizaki	Mosquito Control Technician (Zone 1) Biological Specialist	6
Bruce Kirkpatrick	Entomologist	17
Clarence Lam	Administrative/Financial Manager	13
Gregory Leipzig	Vector Biologist (Zone 6)	9
Tom McMahon	Vector Biologist (Zone 10)	15
Sharon Mead	Systems Specialist	30
Chindi Peavey	District Manager	2.5
Ben Rusmisel	Vector Biologist (Zone 3 & 4)	.5
Jeremy Sette	Mosquito Control Technician (Zones 5 & 7)	.5
Jan Washburn	Interim District Manager	.5
Mark Wieland	Mechanical Specialist	1
Gregory Wood	Mechanical Specialist	16

Seasonal Employees

2014

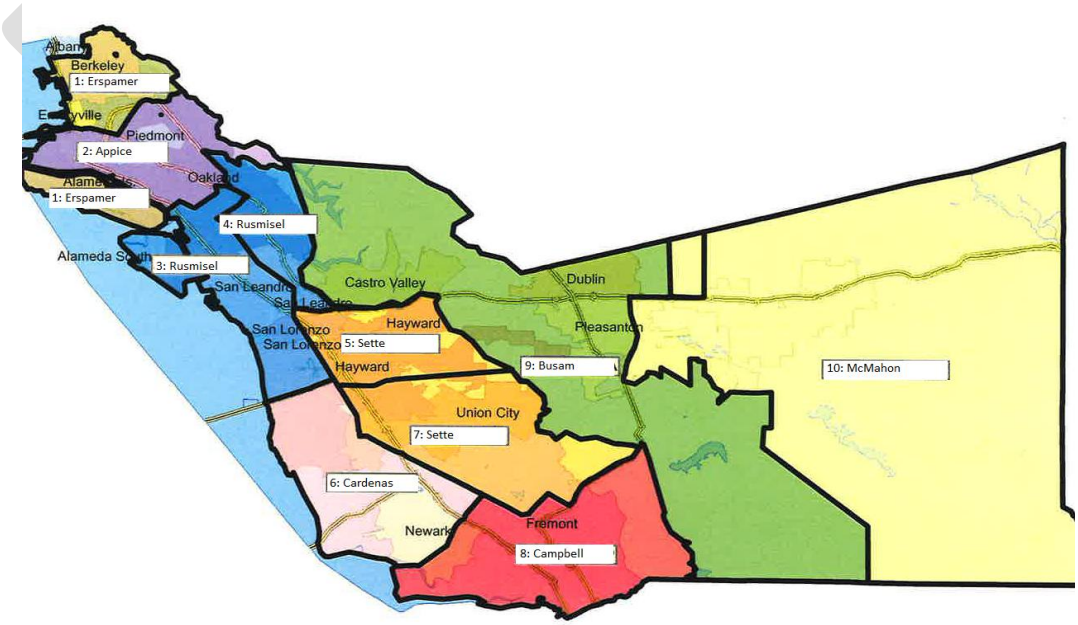
Kevin Huffstutler
Gilberto Martinez
Michelle Matthes
Nobo Namata

2015

Jacob Ferdan
Kevin Huffstutler
Michelle Matthes
Miguel Munoz
Jason Young

2015 ACMAD Staff

2015 ACMAD Zone Boundaries



OPERATIONAL DATA 2011-2015

	2011	2012	2013	2014	2015
Physical control operations					
Maintenance of ditches (lineal feet)	8515	15440	0	0	0
Mosquitofish operations					
Total # of sites stocked with *Gambusia*	787	792	761	691	606
Total number of fish planted	17,118	15,663	15,986	13,445	10,664
Chemical control operations					
Pyrenone 25-5 adulticide (oz)	7	0	2	820	159
Skeeter Abate granules (lbs)	44	0	0	0	0
Surface Agents					
Golden Bear 1111 larvicidal oil (gal.)	111	3.4	0	0	0
BVA2 larvicidal oil (gal.)	1255	876	1937	1540	2170
Cocobear (gal.)	0	0	0	0.3	0.42
Agnique MMF monomolecular film (oz)	0.6	1.5	0	0	0
Biorational larvicides					
Bacteria based					
Bacillus thuringiensis israelensis					
Vectobac12AS liquid concentrate (gal.)	100	40	54	58	103
Vectobac GS (lbs)	0	0	0	0	481
Vectobac G granular (lbs)	4496	2874	2741	2464	3923
Bacillus sphaericus					
Vectolex CG (lbs)	3375	1005	1094	659	1460
Vectolex WSP (lbs)	57	23	16	6	34
Vectolex WDG (lbs)	194	41	54	108	140
FourStar 180 day Briquets (lbs)	188	29	93	54	5
Bacillus thuringiensis israelensis and *Bacillus sphaericus*					
Vectomax WSP (lbs)	0	0	0	0	2
Vectomax FG (lbs)	0	0	0	0	4927
Vectomax CG (lbs)	181	31	0	0	0
Spinosad					
Natular XRT (lbs)	531	491	153	581	1277
Natular G30 (lbs)	75	150	916	29	1
Insect growth regulator (methoprene)					
Altosid Liquid Larvicide 20% (oz)	683	222	311	275	626
Altosid Briquets (each)	1684	1478	1903	1686	3072
Altosid XR Briquets (each)	611	1042	247	3911	2510
Altosid Pellets (dry oz)	3150	6687	3094	6369	2289
Altosid WSP (dry oz)	0	178	0	0	0

OPERATIONS REPORT

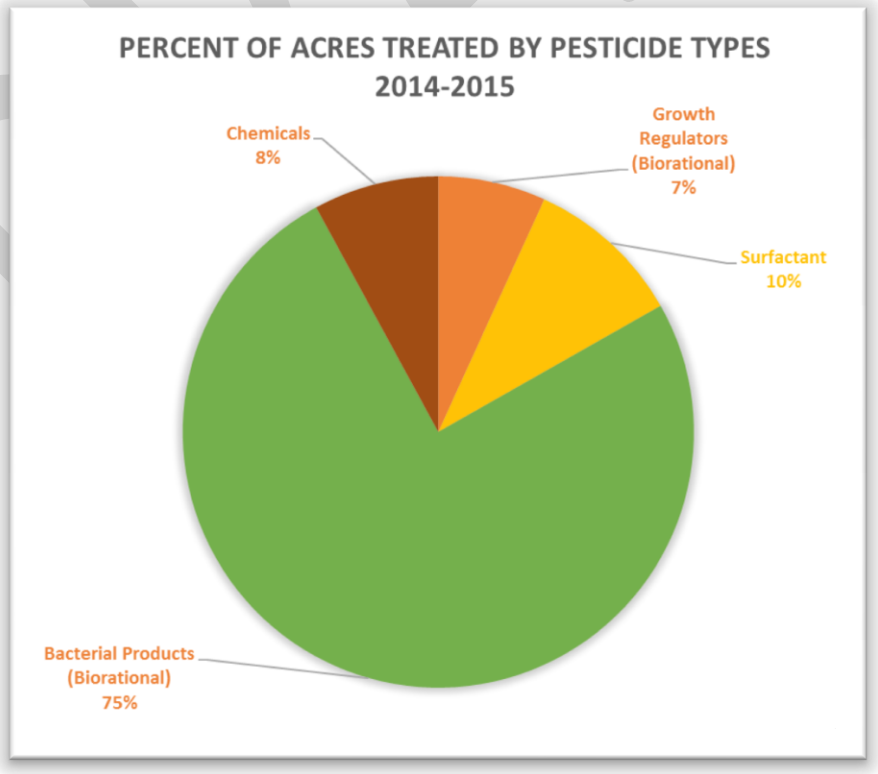
Material Usage

Alameda County Mosquito Abatement District's focus and dedication to a larval based control program utilizing biorational materials was maintained during 2014 – 2015 even though environmental conditions were well outside the norm. Drought years and water use limitations posed significant challenges and led to a change in many of the regular patterns we would normally see with mosquito breeding. Mosquitoes were forced to utilize smaller sources of water and in many cases became more difficult to treat based on location and access. The drought also sped up the breeding cycles of many of our most important disease and nuisance species. 82% of the acres treated in Alameda County were treatments for larval and/ or pupal mosquitoes.

A combination of West Nile virus (WNV) positive birds and WNV positive mosquitoes in several sections of the county posed a severe enough threat to public health and safety that adulticiding treatments by hand and via truck mounted fogger were utilized. This has been a rare occurrence with ACMAD in recent decades.

Figure 1 shows the percentage of acres treated with each of the materials utilized by ACMAD.

Figure 1



Physical Control Operations

The lack of external agency approval on a region wide basis on permits brought ACMAD's physical control program to a standstill. Work is under way to try and solidify a region wide permit that will allow our critical ditching program to resume. Having flow into and out of our many marsh sources greatly reduces breeding of several of our most aggressive day biting mosquito species. It also saves a great deal of resources by eliminating and/or reducing the need to treat these sources with biorationals and surfactants.

Service Requests

Figure 2 depicts the five types of service requests taken by the District. By order of volume, fish requests make up the highest number of calls taken by the District coming in at 43 % in 2014-2015. Fish requests have been the highest percentage of calls received for many years. They have proven to be an important tool to prevent mosquito emergence in backyard ponds, swimming pools, and horse troughs. The second highest percentage of service requests were from callers indicating that they were seeing or were being bitten by mosquitoes. These calls generated 33 % of the service requests that came in 2014-2015. Twenty-two percent of calls were about sources of standing water callers felt could be breeding mosquitoes. The two aforementioned types of service requests are often at least partially driven by the amount of coverage mosquitoes and mosquito related disease receive in local and national media.

Requests for various insect identification and "other" requests accounted for 1 % each of the service request calls or emails received by the district in 2014-2015.

Figure 2

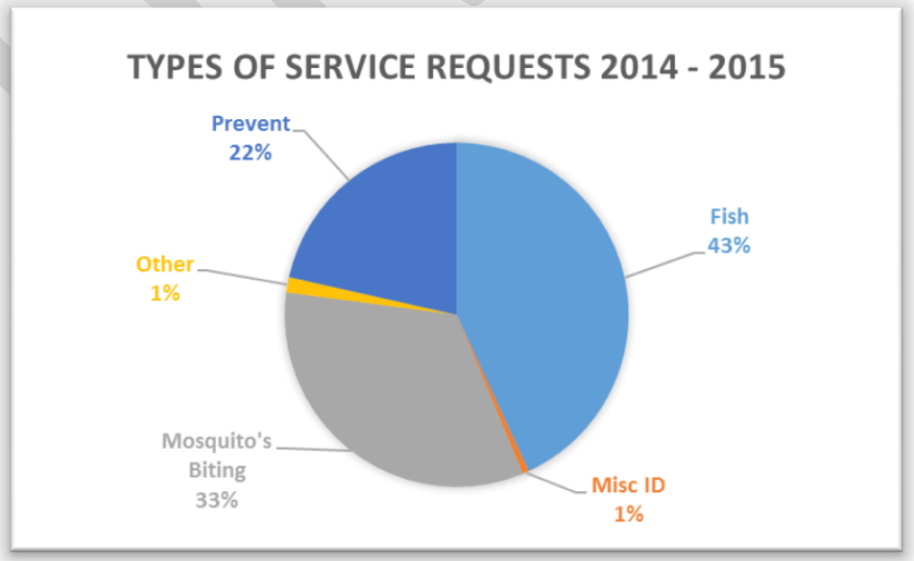


Figure 3 depicts the percentage of service requests received per city within the District. Figure 4 graphs the number and type of service request received from each city and area ACMAD serves. These numbers are primarily driven by population of a given city. Other factors related to the type and volume of service requests are; citizen awareness and/or concern with mosquito related issues and the amount and proximity of local sources in various regions of the County.

Figure 3

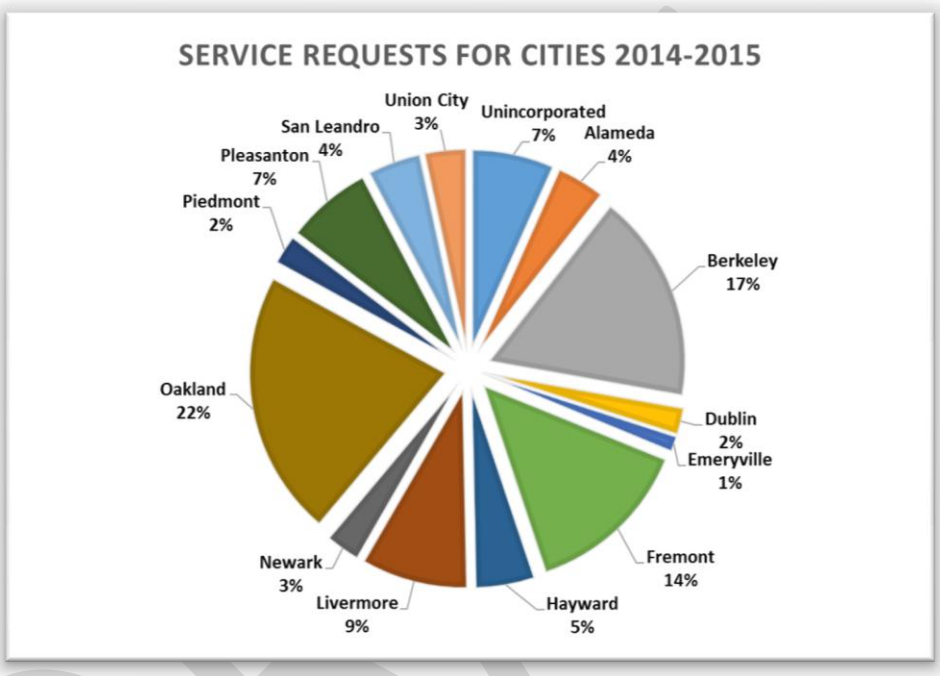
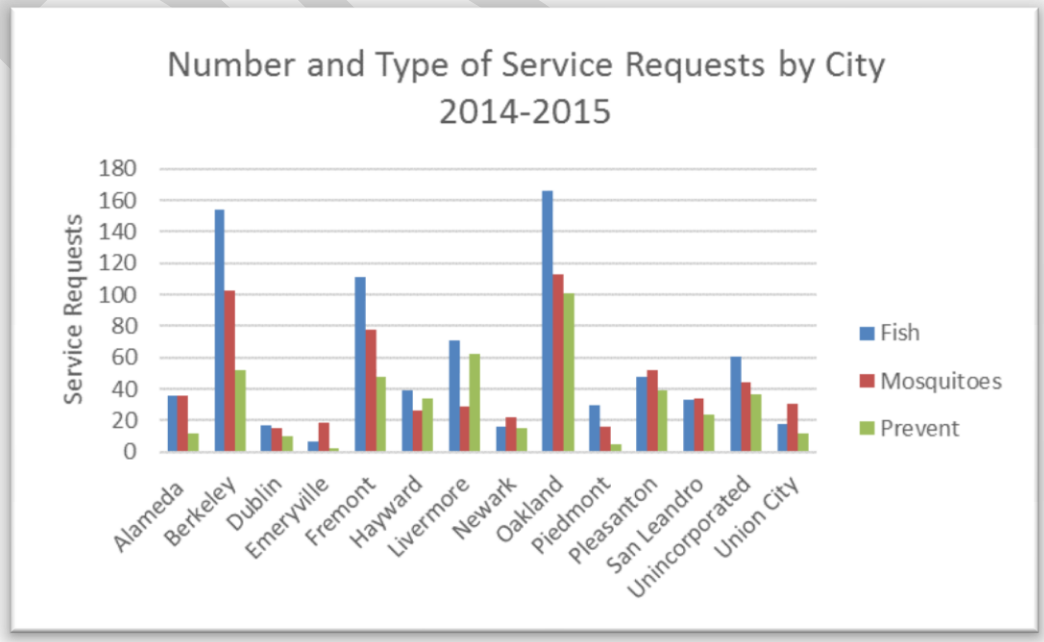


Figure 4



Mosquito Lab Report

Overview of Mosquito Lab Activities

The ACMAD Mosquito Lab is focused upon supporting the activities of Operations by assessing mosquito abundance, the prevalence of arboviruses (arthropod-borne viruses) in birds and mosquitoes, and conducting research that supports District activities. Mosquito abundance is assessed by collecting mosquitoes in a variety of trap types that are placed throughout the District and identifying each collected mosquito to species. Arbovirus prevalence is assessed by testing dead birds that are reported to ACMAD by the California Department of Public Health (CDPH) and vector-competent mosquitoes that are collected in traps for the presence of West Nile virus (WNV), Saint Louis encephalitis virus (SLEV), and Western equine encephalitis virus (WEEV). Research priorities are determined by needs of Operations (*e.g.* assessing the efficacy of new treatment technologies) and discovery that supports long-term goals in mosquito control (*e.g.* quantifying pesticide resistance in mosquitoes collected throughout the District).

Mosquito Abundance Monitoring

Overview of Abundance Monitoring. The Mosquito Lab monitors mosquito abundance in the District by analyzing the contents of traps that are placed to capture adult mosquitoes or the eggs they oviposit on surfaces. Four types of traps are used which employ different mosquito attractants: New Jersey Light Traps (NJLT; light attractant), dry ice-baited CDC EVS traps (CO_2 attractant), CDC autocidal gravid ovitrap (AGO; oviposition site attractant), and BG-Sentinel trap (human scent attractant). Egg abundance is monitored using ovi-cup traps that lure gravid female mosquitoes to oviposition sites for the purpose of determining whether invasive species of mosquito are present in the District (e.g. the yellow fever mosquito (*Aedes aegypti*)).

Monitoring with NJLT. Fourteen (14) NJLT were deployed to sites that were identified by Operations to be of high importance for regular monitoring of mosquito abundance. The location of these traps is indicated on the trap site map by lightning bolt icons (Figure 1). Using the NJLT, mosquito abundance was monitored weekly during each month of 2014 and 2015 (Figure 2). For 2014, a total of 12,626 mosquitoes were collected from the NJLT and identified to species. For 2015, 1.95-fold more mosquitoes were collected in NJLT and identified to species (24,719 mosquitoes). The data from NJLT suggest there was increased mosquito abundance in the District for 2015 relative to 2014. For 2014, data from individual NJLT sites showed highest mosquito abundance in North Berkeley, near Coyote Hills Regional Park (Fremont), and Livermore (indicated by red and dark orange circles in Figure 3A). Very low mosquito abundance was observed for 2014 in Mountain House, southeast Fremont, and south

Oakland (indicated by green circles in Figure 3A). In contrast, highest mosquito abundance for 2015 as measured using NJLT occurred in the southwest region of Fremont, near Coyote Hills Regional Park (Fremont), and Union City (Figure 3B). Low mosquito abundance for 2015 was observed using NJLT in Mountain House, Pleasanton, east Fremont, and throughout Oakland (Figure 3B).

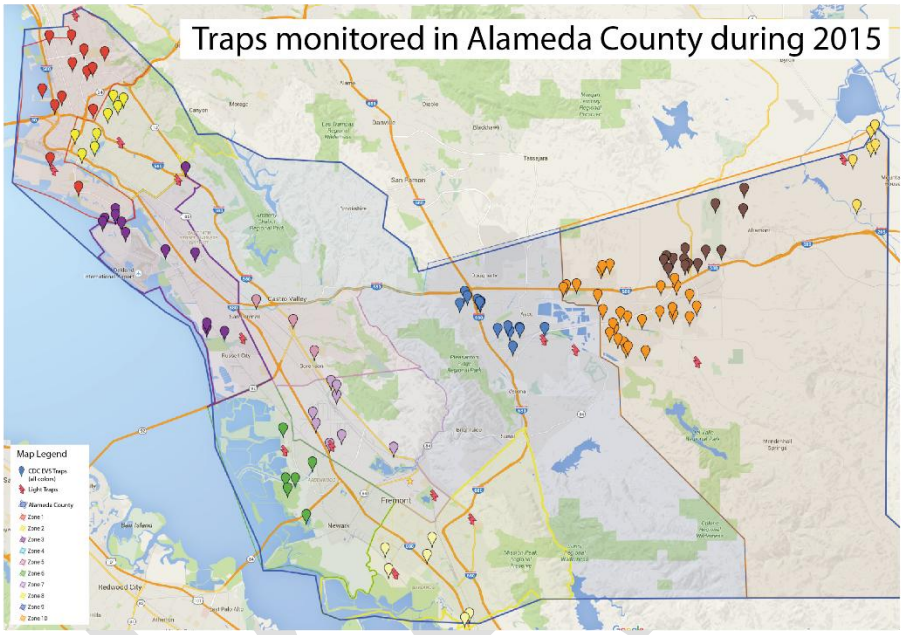


Figure 1. Location of CDC EVS traps (i.e. CO_2 traps). CDC EVS trap locations are indicated by inverted tear-drop icons (all colors) while NJLT locations are indicated by red lightening bolts. The Alameda County Boundary is within the large blue polygon while zones serviced by Operations Staff are indicated by smaller colored polygons.

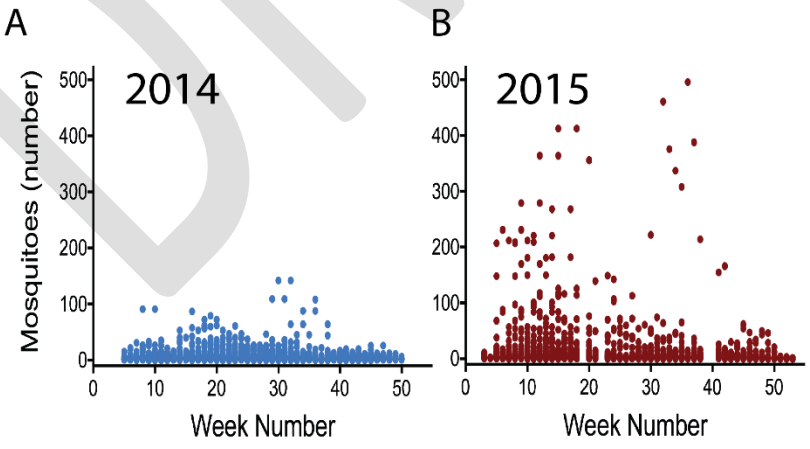


Figure 2. Number of Mosquitoes Collected in NJLT. Aggregate number of mosquitoes collected in all NJLT in the District for each week during 2014 (A) and 2015 (B).
Substantially greater numbers of mosquitoes were collected in NJLT during 2015 relative to 2014.

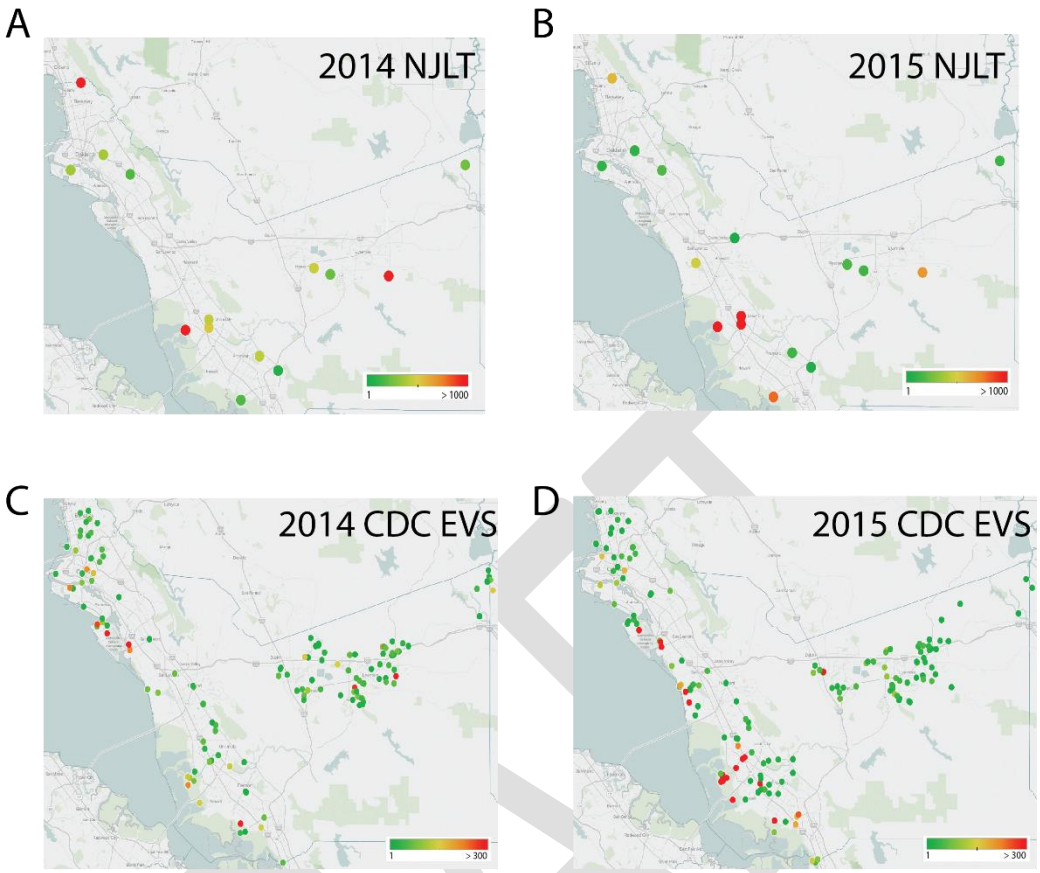


Figure 3. Mosquito abundance in NJLT (top) and CDC EVS traps (botom) for 2014 (left) and 2015 (right). Highest mosquito abundance is indicated with red and dark orange circles, with colors progressing from yellow to green indicating lower mosquito abundance. Scale bars for the NJLT range from 1 to >1000 mosquitoes per trap site, while scale bars for the CDC EVS traps range from 1 to >300 mosquitoes per trap site.

Monitoring with CDC EVS traps. In 2015, 119 CDC EVS traps were deployed to sites throughout the District that are of importance for assessing mosquito abundance and the prevalence of mosquito-vectored disease in mosquitoes (*e.g.* WNV). During 2014, more than 95 sites were regularly monitored for mosquito abundance throughout the District (not shown). The locations of the CDC EVS traps for 2015 that were regularly monitored for abundance is indicated on the trap site map by the inverted-drop-shaped icons (Figure 1). Additional CDC EVS traps were placed to monitor mosquito abundance when birds or mosquitoes were found to contain WNV (trap locations not shown). Highest mosquito abundance for 2014, as measured using CDC EVS traps (Figure 3C), was in southwest Oakland, near Baylands (southwest Fremont), and Livermore. For 2015, highest mosquito abundance was observed on and near Bay Farm Island (Oakland), west Hayward, in the Coyote Hills Regional Park (Fremont), Union City, south of Dublin and Fremont (central and southwest regions; Figure 3D). Of note, relatively low mosquito abundance was observed in 2014 for Fremont with relatively high abundance in Livermore. In contrast, high abundance was observed in

2015 in some areas of Fremont, with low abundance in Livermore. These notable patterns of mosquito abundance correlated with prevalence of WNV detected in birds and mosquitoes that were collected in these regions: 2014 had higher WNV in Livermore with relatively little WNV observed in Fremont, while in 2015 there was no WNV detected in Livermore with prevalence of WNV for the year observed only in the western regions of the District (Figure 4).

Monitoring with AGO, ovi-cup and BG-Sentinel Traps. These traps were used to monitor for invasive *Ae. aegypti* in the District, and none of these traps collected mosquitoes of this or any other invasive species of mosquito during 2014 or 2015.

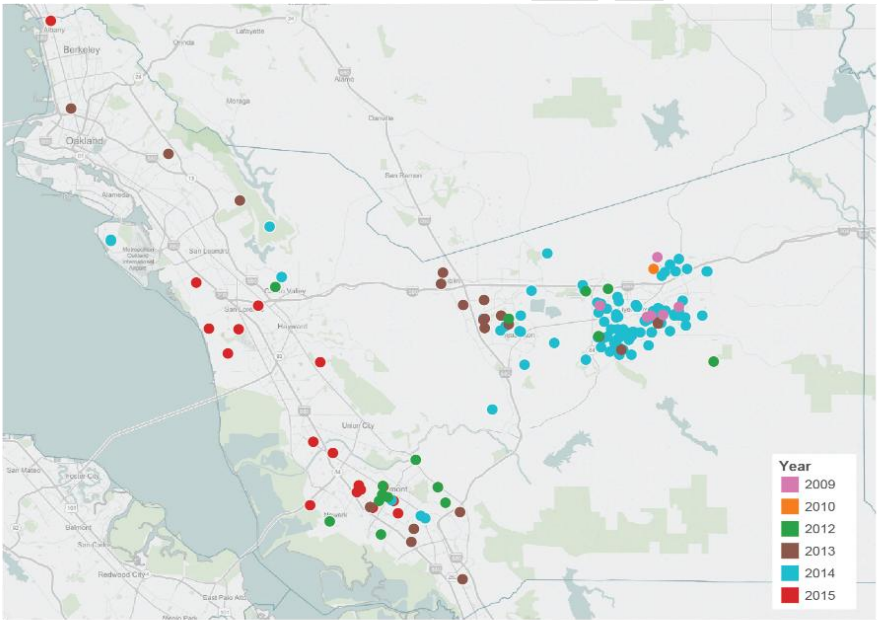


Figure 4. Location of birds that were collected in the District from 2009 - 2015 and found to contain WNV. The location of birds containing WNV are indicated with colored circles corresponding to the year shown in the figure legend. WNV was not detected in any bird during 2011. To date, no bird in the District has been found to contain SLE or WEE.

Arbovirus Surveillance in Birds and Mosquitoes

Improvements in Arbovirus Surveillance. During 2014 and until July of 2015, corvid birds (e.g. crows) were tested in the ACMAD Mosquito Lab for WNV infection using a rapid analyte measurement platform test (i.e. RAMP test, an immunoassay). Non-corvid birds and mosquitoes were sent to the Center for Vector-borne Diseases at UC Davis Center (CVEC) and tested for WNV, SLEV and WEEV using reverse transcription - quantitative polymerase chain reaction (RT-QPCR). Since August of 2015, birds and mosquitoes are tested for the presence of WNV, SLEV and WEEV in the ACMAD Mosquito Lab using the RT-QPCR method employed by CVEC, and we are reporting

the results of our testing to the California Vector-borne Disease Surveillance Gateway (http://gateway.calsurv.org/). Testing birds and mosquitoes for these viruses in the ACMAD Mosquito Lab reduced the testing cost and the time from mosquito collection to test results from 2- 5 days to as little as 3 hours. The reduced testing time substantially improved the response of Operations to WNV detected in birds or mosquitoes. For example, when a WNV-positive bird is identified, we set approximately 30 CDC EVS traps within 1 mile of where the bird was found and the trapped mosquitoes are tested in the ACMAD Mosquito Lab for WNV, SLEV and WEEV. This has allowed us to identify with higher precision the areas that Operations should focus upon for mosquito control. Additionally, species of mosquitoes that are known to transmit WNV are routinely tested for the virus when they are collected the CDC EVS traps (we test more than 90 % of these vector-competent species that are collected). Finally, we are providing arbovirus testing services to Alameda County Vector Control Services District for the mosquitoes they collect in Albany, CA.

Arbovirus surveillance in birds. Because WNV can amplify and cause severe disease in some species of bird (e.g. corvids), and some species of mosquito feed upon birds and humans (e.g. *Culex pipiens*), birds can serve as a reservoir for arboviruses that may be transmitted to humans by mosquitoes. Consequently, the presence of unusually high numbers of dead birds may indicate sustained transmission of arboviruses between birds and mosquitoes in a particular locale, increasing the risk that arboviruses may be transmitted to humans. Regular testing of dead birds for the presence of arboviruses can provide early warning of increased risk for arbovirus transmission to humans, and an opportunity for Operations to focus mosquito control efforts on that area. Dead birds in the District are reported by the public to the CDPH. Those that can be tested for WNV, SLEV or WEEV are retrieved by ACMAD Operations Staff and brought to the ACMAD Mosquito Lab for testing. In 2015, 494 dead birds were reported, and of the 82 birds that could be tested, and 3.8 % contained WNV (Figure 5). Birds that were not tested have typically been dead for too long, and if the virus were present, would not be detectable. All of the WNV-positive birds in 2015 were collected in the western regions of the District, with most found in or near Fremont and Hayward (Figure 4). Higher numbers of dead birds were reported during 2014 (n = 856), the proportion of tested birds found to contain WNV was substantially higher (11.3 %; Figure 5), and all were collected in Livermore (Figure 4). A comparison of the number of birds tested to the number that were reported indicates there was no significant difference in the testing effort for 2014 or 2015 relative to the prior 5 years (Fisher's exact test; P = 0.5140 and 0.5992, respectively).

Arbovirus surveillance in mosquitoes. Since August of 2015, ACMAD Mosquito Lab has conducted routine arbovirus surveillance of all mosquitoes captured in the CDC EVS

traps placed throughout the District, with more than 90 % of arbovirus-competent species of mosquitoes tested in the lab for the presence of WNV, SLEV and WEEV using RT-QPCR. When dead birds were found to be infected with WNV, the Mosquito Lab placed 25 – 30 CDC EVS traps in an area no more than 1 mile from where the dead bird was found, and we tested all vector-competent species of mosquitoes that were collected in the traps for the presence of WNV, WEEV, and SLEV. When testing mosquitoes for arbovirus infection, it is not economical to test each mosquito individually. Instead, the mosquitoes collected in a single trap or group of nearby traps are pooled together into groups of up to 50 mosquitoes and tested for arboviruses. During 2014, 213 mosquito pools were tested, and 16 were found to contain WNV (7.5 % of the mosquito pools contained WNV; Figure 6). Similar to what was found for WNV prevalence in birds for 2014, all of the WNV-positive mosquito pools detected for that year were collected in Livermore, with half of the WNV-positive pools collected in Bruno Canziani Park. Increased numbers of mosquito pools were tested in 2015, yet a similar number of WNV-positive mosquitoes were detected (n = 17; 4.4 % positive mosquito pools; Figure 6). As was observed for WNV-positive dead birds in 2015, the mosquitoes from all of the WNV-positive pools were collected in the western region of the District. Of note, 12 % of the WNV-positive mosquito pools were detected because of the routine arbovirus surveillance of mosquitoes that were collected in CDC EVS traps, and not because of a mosquito trapping response to WNV-positive birds. To date, neither WEEV nor SLEV has been detected in any mosquito collected in Alameda County.

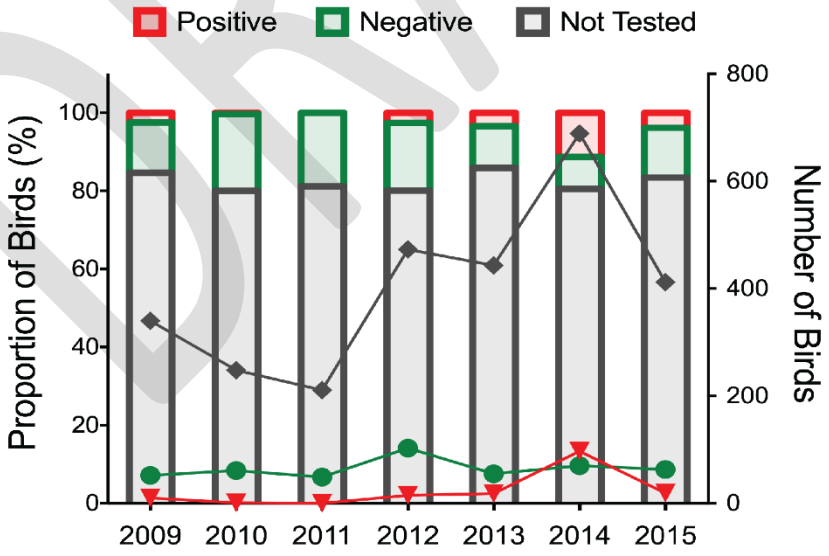


Figure 5. Proportion and number of dead birds reported by CDPH to the District that were positive or negative for WNV, or could not be tested from 2009 - 2015. The proportion of birds that did or did not contain WNV, or were not tested for each year is shown on the left y-axis, and the number of birds for each year is shown on the right y-axis.

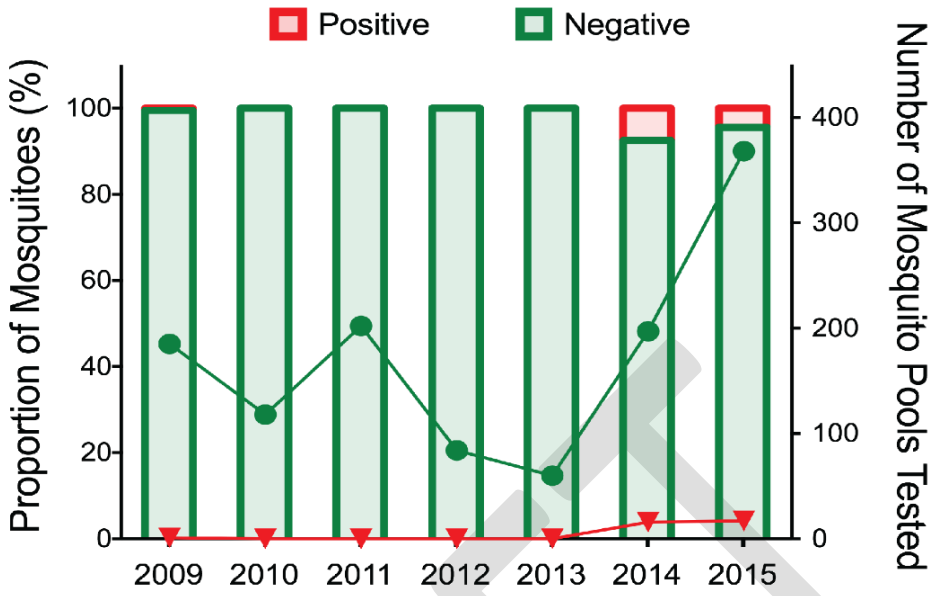


Figure 6. Proportion and number of mosquito pools collected from CDC EVS traps that were pooled and tested for WNV. The proportion of mosquito pools that did or did not contain WNV for each year is shown on the left y-axis, and the number of mosquito pools tested for each year is shown on the right y-axis.

Mosquito Research

Research Overview. Research by the Mosquito Lab during 2015 was focused upon three projects: (1) compare the efficacy of broken dry ice blocks with pellets in CDC EVS traps with the goal of improving trap performance and increasing employee safety, (2) assessing the impact of aerosolized BVA 2 (a mineral oil-based larvicide) on adult mosquito abundance in storm drains, and (3) comparing to commonly used approaches for isolating RNA from mosquitoes with the intent of using the results to determine which platform the Mosquito Lab should adopt when transitioning to an automated RNA isolation system. Finally, the Mosquito Lab began work to lay the foundation for collaborative research with local academic institutions with the intent of recruiting undergraduate research interns and graduate students that conduct research on mosquito-related research with District staff. To this end, a research plan is described herein that is aimed at assessing pesticide resistance in *Culex pipiens* collected throughout the District.

Comparison of dry ice blocks or pellets for CDC EVS traps. The rationale for this study was to improve safety as technicians were hammering dry ice blocks into pieces that could fit into the CDC EVS traps (a distinct hazard to the eyes, and a time-consuming endeavor). District staff believed that broken dry ice blocks allowed the CO_2 traps to function for longer periods of time, and thus improved trap performance. The results of the study showed that there was no significant difference in the quantity of dry ice that

could be placed in the traps or that remained in the traps after they were place outside for 18 hours (Figure 7). Traps collect most mosquitoes during in the early evening, with approximately 10 % of the collection during the hours around sunrise. Because CDC EVS traps are typically placed in the late morning to early afternoon, the quantity of dry ice pellets remaining in the CDC EVS traps should be sufficient for collecting mosquitoes throughout the entire trap day. Moreover, use of dry ice pellets over broken blocks improves employee safety while reducing time needed to prepare the CDC EVS traps for placement. Consequently, the District staff now use dry ice pellets whenever possible for the CO_2 traps.

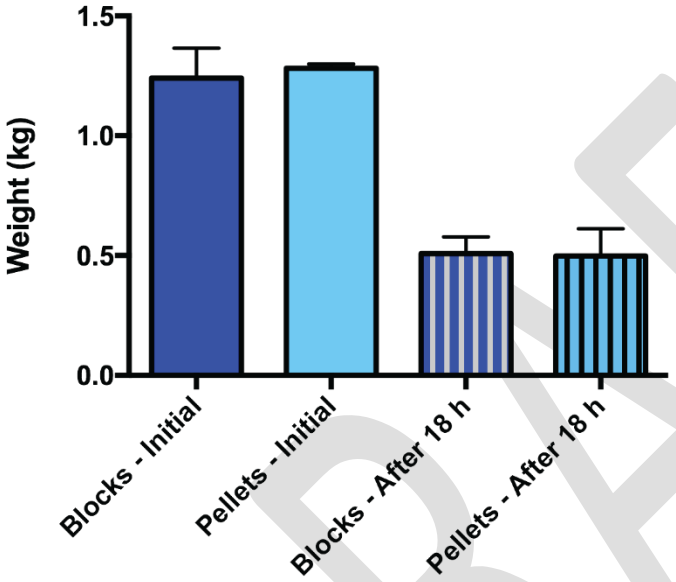


Figure 7. Comparison of dry ice blocks and pellets in CDC EVS traps. The dry ice receptacle of CDC EVS traps were filled completely with pellets of dry ice or blocks of dry ice that were crushed with a hammer (n = 3 per treatment). The mass of dry ice in each was measured before and after being placed outside for 18 hour (h).

Assessment of aerosolized BVA 2. We conducted a preliminary 128-day study in Pleasanton to assess the efficacy of aerosolized BVA 2 oil to reduce local abundance of adult mosquitoes in catch basins and storm drains. The Underground Larvacidal Aerosolizer (ULA) is a truck-mounted instrument that generates BVA 2 droplets which are deposited near the site that they are released, or are distributed moderate distances within that or nearby storm drains to extend the range of treatment for mosquito control (please see Equipment Upgrades for more information regarding the ULA). Smaller aerosolized BVA 2 droplets remain suspended for a short duration in the storm drain, and may contact adult mosquitoes in residence. If adult mosquitoes are coated with sufficient quantities of BVA 2, they may be unable to fly, thus providing immediate control of adult mosquitoes that are residing in storm drains treated with aerosolized BVA 2. Briefly, CDC EVS trapping data showed increasing adult mosquito abundance in the area around Val Vista Park in Pleasanton (day 8, Figure 8), and inspections of nearby properties indicated that mosquito breeding was likely occurring in the storm drains. Mosquito abundance at Val Vista Park were compared to abundance at the

nearby Pleasanton Waste Water Treatment Plant (less than 100 meters from aerosolizer treatment sites), where the aerosolized BVA 2 was not applied. On day 32, aerosolized BVA 2 were applied to storm drains in the area (15-30 seconds of treatment per drain, 8.3 ml / second) and mosquito abundance assessed on day 35 (Figure 8). The results show a 92 % reduction in mosquito abundance two days after the treatment. Continued enhanced monitoring of the area showed an increase in mosquito abundance on day 57, with substantially higher mosquito abundance on day 77. Consequently, a second aerosolized BVA 2 treatment was applied to the storm drains in the area. Mosquito abundance was reduced by 68 % within a week of treatment, and within two weeks was reduced further to 94 % of the pre-treatment values (Figure 8). Notably, mosquito abundance remained low in the area for the remainder of the study (51 days after the second treatment; Figure 8), and for the remainder of 2015 (not shown). The results of a more limited study of aerosolized BVA 2 in Fremont also showed reduced mosquito abundance after the treatment (not shown). The results of these studies suggest that BVA 2 aerosolized into storm trains may be highly effective for localized control of adult mosquitoes that reside in these environments. Expanded studies to assess the efficacy of aerosolized BVA 2 in storm drains are planned for 2016 and 2017.

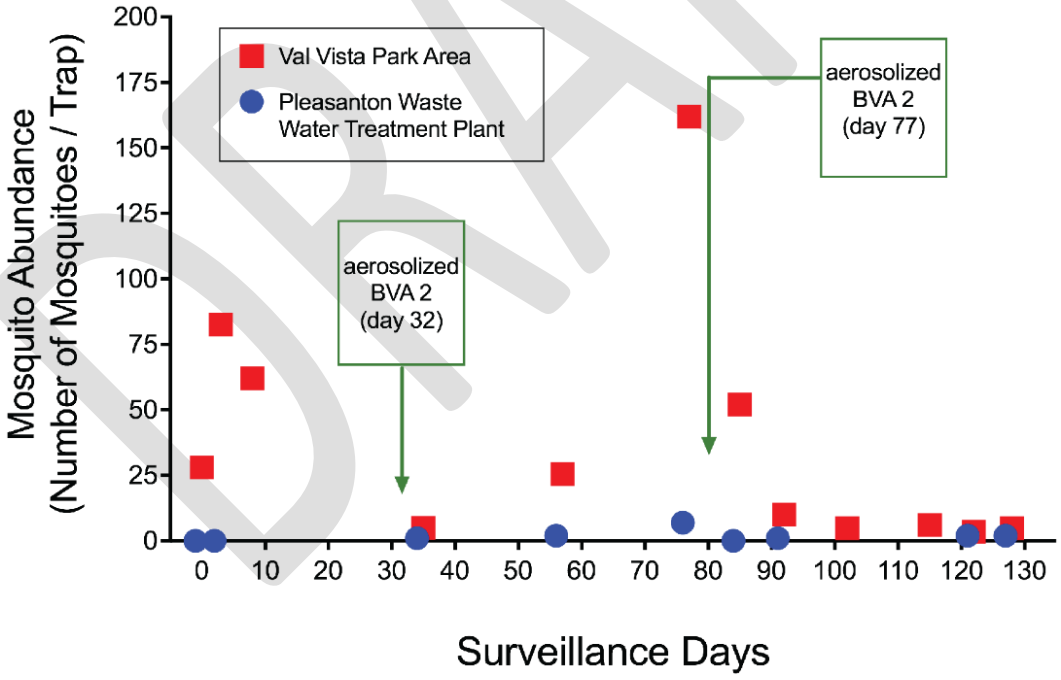


Figure 8. Proportion and number of mosquito pools collected from CDC EVS traps that were pooled and tested for WNV. The proportion of mosquito pools that did or did not contain WNV for each year is shown on the left y-axis, and the number of mosquito pools tested for each year is shown on the right y-axis.

Comparison of methods for isolating RNA from mosquitoes. Analyzing low quantities viral RNA isolated from mosquitoes is essential to assess the prevalence of arboviruses and the intensity of infection in mosquitoes. Two technologies predominate for isolating RNA from cells: silica membranes (RNeasy spin column, Qiagen), or silica conjugated to magnetic particles (MagMAX, ThermoFisher). The ACMAD Mosquito Lab evaluated the relative quantity of viral RNA that was isolated from adult mosquitoes using RNeasy spin columns or an automated MagMax system. Because the ACMAD Mosquito Lab does not currently possess an automated MagMax system for RNA isolation, we collaborated with Laboratory Staff at the San Mateo Mosquito and Vector Control District, who provided that instrumentation. The optical density and quantity of the purified RNA was assessed as an indirect measure of specificity for each RNA isolation method. Briefly, pools of adult *Culex erythrothorax* mosquitoes (n = 0, 1, 5, 10, 25 or 50 mosquitoes per pool) and inactivated virus (WNV, SLEV and WEEV) were added to lysis buffer, and the samples homogenized using a bead beater (n = 3 per treatment). Samples were subsequently centrifuged and the RNA isolated from the supernatant using RNeasy spin columns with a vacuum manifold or a MagMax Express instrument, as described by the manufacturers. Identical sample and RNA elution volumes were used for each sample. The optical density (525 nm) and RNA concentration of the elutions were measured using a NanoDrop 2000 Spectrophotometer (ThermoFisher). Half of each eluted RNA sample was subsequently clarified with centrifugation to remove residual precipitates from the isolated RNA. Triplex TaqMan RT-QPCR was used to assess the relative quantity of WNV, SLEV and WEEV in each RNA sample and the quantity of virus that was detected reported as the cycle threshold value (Ct value). Clarification of the eluted RNA using centrifugation did not affect RNA concentration (Figure 9), but did reduce the quantity of brown precipitate in the eluted RNA samples (not shown), and improved virus detection in the RT-QPCR assay (Figure 10). Increasing the quantity of eluted RNA in the RT-QPCR assay from 2 µl to 10 µl improved the sensitivity for detecting WNV, SLEV and WEEV (Figure 10). Increasing the number of mosquitoes in a sample tube (*i.e.* mosquito pool) from 1 to 50 did not significantly affect amplification of WNV, SLEV or WEEV in the RT-QPCR assay (Figure 10). In sum, because the Ct values from samples isolated using MagMax were always significantly lower than those from RNA isolated using RNeasy columns (Figure 10; Two-way ANOVA, $P < 0.0001$), the MagMax platform should be adopted by the ACMAD Mosquito lab for automated RNA isolation.

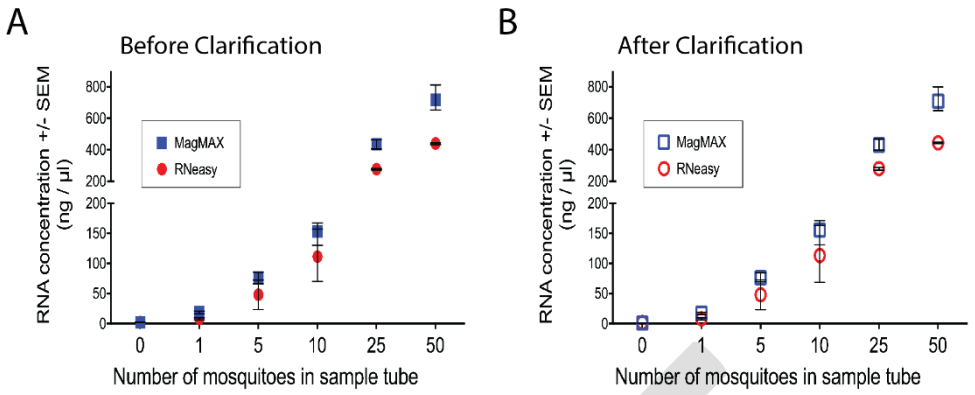


Figure 9. RNA concentration before (A) and after (B) clarification. There was no significant difference in RNA concentration of samples before and after clarification (Two-way ANOVA, RNeasy P = 0.8257, MagMAX P = 0.8790). Significant differences in RNA concentration were observed for samples containing 25 or 50 mosquitoes when extracts from RNeasy columns and MagMAX were compared (Unpaired t test, P < 0.01). The greatest reduction in RNA concentration (45 %) was observed for the 50 mosquito sample. RNA quality as measured by the ratio of absorbance at 260 and 280 nm was high for all samples (260/280 = 2.15 ± 0.147).

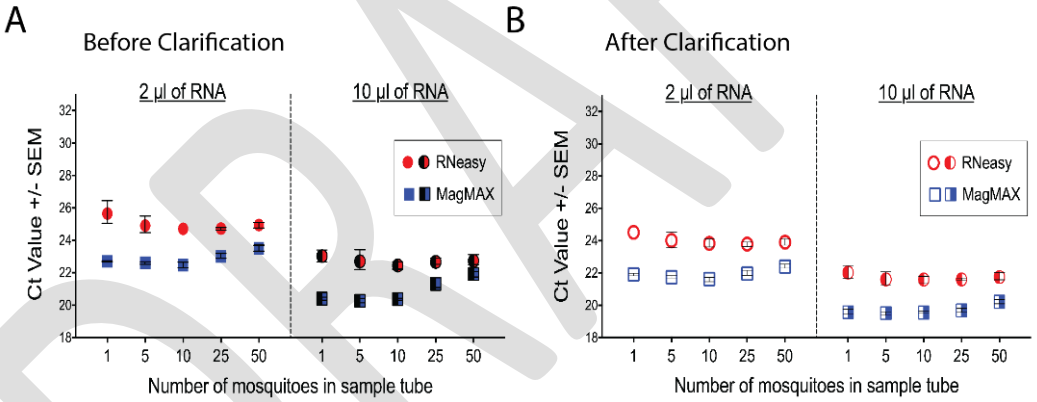


Figure 10. Triplex RT-QPCR amplification of WNV using 2 µl or 10 µl of eluted RNA that was isolated using MagMAX or RNeasy columns, before (A) and after clarification (B) using centrifugation. A similar distribution of Ct values was observed for amplification of WEE and SLE (not shown). Samples with 0 mosquitoes had significantly higher Ct values (multiple t tests, P > 0.05). Thus, the 0 mosquito samples were excluded in subsequent analyses. The Ct values from TaqMan assays with 10 µl of eluted RNA were always significantly lower relative to assays with 2 µl of RNA (Two-way ANOVA, P < 0.001). Similarly, the Ct values for samples assayed after clarification were always significantly lower compared to those analyzed with TaqMan before clarification (Two-way ANOVA, P < 0.001). When the 0 mosquito samples were excluded, there was no significant difference in the Ct values for 1 to 50 mosquitoes in a sample, irrespective of the isolation method and whether samples were clarified (Multiple t tests, P > 0.1). The Ct values from samples isolated using MagMAX were always significantly lower than those from RNA isolated using RNeasy columns (Two-way ANOVA, P < 0.0001).

Research Plan to assess pesticide resistance in Culex pipiens collected throughout the District. The geospatial allelic variation in genes known to mediate resistance to

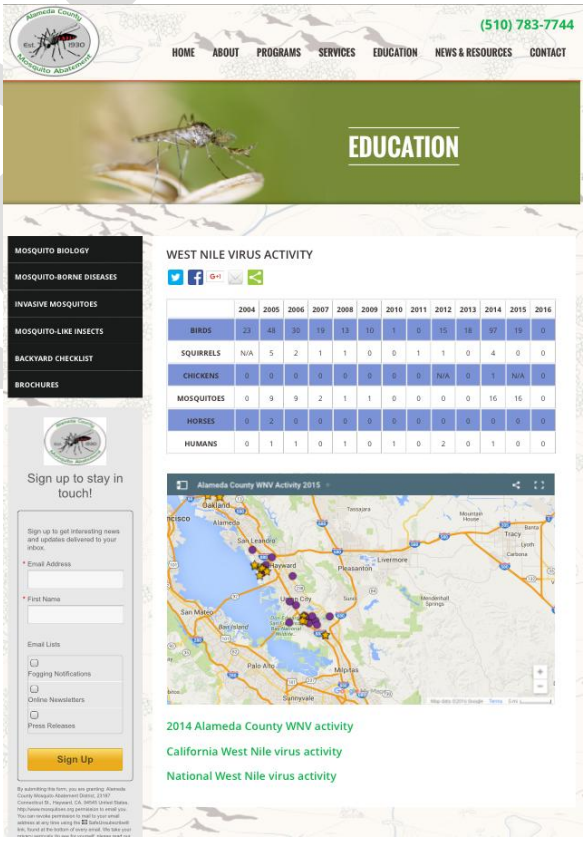
pyrethroid insecticides (*e.g*. knockdown resistance (*kdr*), acetylcholine esterase -1 (*ace-1*), and members of the cytochrome P450 (*CYP*) gene superfamily) will be assessed for *Cx. pipiens* collected in Alameda County. Knockdown resistance (*kdr*) is a well-studied mechanism of resistance to pyrethroid insecticides that is know to occur in many insect species, including mosquitos that transmit pathogens such as West nile virus (WNV) and dengue virus. Pyrethroids act on the insect nervous system by prolonging voltage-gated sodium ion channel opening to cause increased neuron activity, and eventually paralysis or death [1]. Resistance to pyrethroids is conferred by point mutations in the sodium channel that reduce the sensitivity to pyrethroids (*i.e.* the *kdr* gene). Pyrethroid resistance in mosquitoes is also mediated by mutations in the enzymes involved with neurotransmitter activity (e.g. *acetylcholine esterase – 1* (*ace-1*))[2] or oxidase enzymes that impact pyrethroid metabolism (members of the cytochrome P450 (*CYP*) gene superfamily) [3,4]. The allelic variation in *kdr*-mediated pyrethroid resistance has been previously documented for *Aedes albopictus*, *Anopheles sinensis*, *An. gambie*, and *Culex quinquefasciatus* (closely related to *Cx. pipiens*)[5-8]. However, the *kdr* genotype does not always confer high pyrethroid resistance. A complex network of mechanisms that include point mutations in resistance genes (*e.g*. *ace-1* or *CYP*), changes in gene expression, RNA-editing, and other metabolic pathways make important contributions to the resistance profile [9-11]. Consequently, continuing with the same research approach to only address the distribution of *kdr* alleles in mosquito species that are native or invasive to Alameda County may be of moderate academic value. Less well studied is the geospatial allelic variation in mutations of *ace-1* or *CYP* in mosquitoes. Thus, it may be of potentially greater value to analyze the allelic variation of *kdr*, *ace-1* and *CYP* in mosquitoes collected in Alameda County. Moreover, assessing the prevalence of resistance alleles for these genes may be of high operational value. For example, were there an outbreak of a mosquito-vectored disease (*e.g.* WNV), assessing the resistance genotype of mosquitoes within the area planned for pyrethroid treatment may be used to determine whether the adulticide treatment has the potential to reduce adult mosquito populations. *Cx. pipiens*, a vector of WNV will be collected at specific sites in Alameda County, and tested for functional, biochemical, and genetic resistance to pyrethroid insecticides. The functional test will be the bottle assay that is traditionally used to assess mosquito resistance to insecticides [12]. The biochemical tests will be performed on cellular lysates isolated from the collected mosquitoes to assess the activity of enzymes known to metabolize pyrethroids (e.g. α-esterase, β-esterase, oxidase, acetylcholine esterase, and glutathione-s-transferase). DNA isolated from the mosquitoes tested with the bottle assay will be analyzed using RT-QPCR to assess the geospatial distribution of resistance alleles for *kdr*, *ace-1* and certain *CYP* genes. This research will be conducted in collaboration with Dr. Nazzy Pakpour and students from California State University, East Bay.

PUBLIC OUTREACH

New website homepage design

In 2014 the District overhauled its long standing website at www.mosquitoes.org. While much of the content of the site stayed the same, a more streamlined look and navigational menu were incorporated into the new design. In addition, the public can now signup for quarterly newsletters, press releases, fogging notifications, and connect directly with the District's Facebook and Twitter accounts all via the website. Each page of the website also allows for the public to share, bookmark, or translate the content through a variety of modes such as social media (Facebook, Twitter, Tumblr, Pinterest, Digg, etc.), email, and google translate.

As a part of the Districts attempt to reach out to the public on mosquito related issues through digital platforms, internet advertisements were incorporated into the District's overall media campaigns. These ads supplemented the existing advertisements in the PennySaver publication and posters in Bay Area Rapid Transit (BART) stations. All of the ads focused on draining standing water, reporting neglected swimming pools, and personal preventive measures to avoid mosquito bites.



New website page layout features a signup tool on the left hand side and share buttons underneath the page headings.

Public outreach through participation in local fairs and community events continued to be a staple of the District's public education program. In 2014 and 2015 the District's display at the annual Alameda County Fair won numerous awards (including the exhibitor's choice award for two straight years) and attracted fairgoers to the mosquito prevention messaging is a vital part of the District's overall program.

2015 Alameda County Fair Display

Shows and fairs the District participated in:

2014

- Alameda County Spring Home & Garden Show
- Dublin St. Patrick's Day Festival
- Oakland Earth Expo
- CSUEB World Health Day Info Fair
- Berkeley Bay Festival
- San Leandro Earth Day & Watershed Festival
- Alisal Elementary Science Fair
- Port of Oakland Earth Day Festival
- Chabot College Return of the Swallows Festival
- Peralta Colleges Sustainability Eco Festival
- Alameda Earth Day Festival
- Dublin Water Wise Workshop
- Alden Lane Nursery Fish Giveaway
- Hayward Cinco de Mayo Festival
- Palomares Elementary School Science Expo & Watershed Festival
- UCB Botanical Garden "Bug Days"
- Alameda County Fair
- Hayward Zucchini Festival
- Newark Days Festival
- Alameda County Fall Home & Garden Show

2015

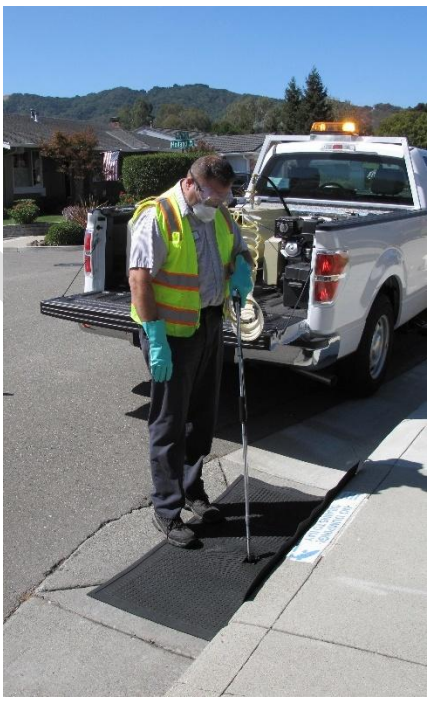
- Alameda County Spring Home & Garden Show
- Dublin St. Patrick's Day Festival
- San Leandro Earth Day & Watershed Festival
- Oakland Earth Expo
- Berkeley Bay Festival
- Peralta Colleges Sustainability Eco Festival
- Alameda Earth Day Festival
- Hayward Cinco de Mayo Festival
- Alden Lane Nursery Fish Giveaway
- Palomares Elementary School Science Expo & Watershed Festival
- Niles Wildflower, Art, Garden, & Qulit Show
- Alameda County Fair
- Hayward Zucchini Festival
- Newark Days Festival
- Alameda County Fall Home & Garden Show
- CSUEB Discovery Day Science Fair

EQUIPMENT UPGRADES

Underground Larvicidal Aerosolizer (ULA)

The introduction of an underground larvicidal aerosolizer proved to be a valuable asset to assist the District's rigorous storm drain and catch basin mosquito control program.

ULA setup in the back of a District truck



ULA treatment

The ULA aerosolizes liquid mosquito larvicides and produces droplets larger than that of an ultra-low volume (ULV) fogger, accompanied by a more direct force, or push, resulting from the compressed air. This allows the larger droplets to fall quickly, treating the immediate area. The smaller, lighter droplets will then be carried by natural and induced air currents further down the storm drains, reaching areas that may have trapped water or sections where water travel is constricted.

The ULA consist of a gasoline engine powered air compressor, trigger and wand assembly with venturi, and valve selected chemical tanks. There are two (2) trigger and wand assemblies with adjoining tanks. This is to accommodate water base and oil base solutions separately. You can choose between the two with the selector valve located behind the chemical tanks. The storage box contains the catch basin containment rubber mats and safety gear.

Fish Program

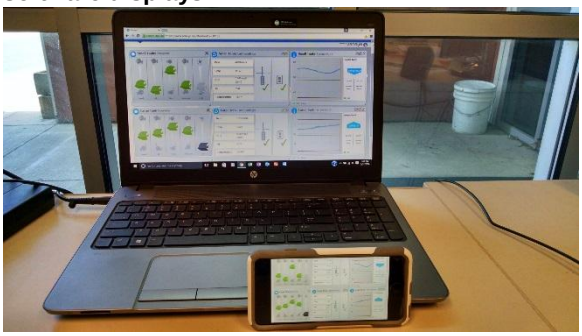
The District improved the Fish Program with the purchase of two 800 gallon rectangular tanks with an integrated pumping system.

Two new tanks and pump system

Fry tray in the tank

The system came complete with sectional dividers, UV Algae Management, Heater, and a Fry Tray. All these are essential to encourage a self-sufficient, reproductive environment. Of course, with this improvement, the expansion for protection was also necessary. A new canopy and netting provides protection from natural predators and weather. Several staff members contributed to the assembly and construction.

Left: Protective shade cloth and netting added to the tanks. Below: Water quality monitoring software displays.



In addition to structural improvements, sensors and software contribute to the observation of trends and maintenance schedules.

FINANCIAL REPORT

FOR FISCAL YEARS ENDING
JUNE 30, 2014 AND JUNE 30, 2015

	2014	2015
Revenues :		
Property taxes	$1,597,083	$1,732,006
Redevelopment distribution	$165,563	$172,346
Special Assessments	$1,886,169	$1,899,118
Homeowners Property Tax Relief, State Subvention	$15,924	$15,714
Transfer from OPEB Trust	$0	$133,188
Interest	$9,958	$13,942
Miscellaneous	$24,619	$38,724
Total Revenues	$3,699,316	$4,005,038
Expenditures :		
Salaries and fringe benefits	$1,950,547	$2,086,888
Materials, supplies and services	$556,992	$807,706
Payment of CalPERS "side fund" & reduction of unfunded liability	$0	$825,406
Transfer to OPEB trust	$800,000	$500,000
Capital outlay	$135,589	$252,341
Total Expenditures	$3,443,128	$3,146,935
Net change in fund balances	$256,188	$858,103
Fund balances, beginning of period	$3,263,459	$3,519,647
Fund balances, end of period	$3,519,647	$4,377,750

Alameda County Mosquito Abatement District
Combined Balance Sheet For The Years
Ending June 30, 2014 and June 30, 2015

Assets	**June 30, 2014**	**June 30, 2015**
Current and Investments	$ 3,713,484.00	$ 4,592,660.00
Accounts receivable	$ -	$ -
Capital Assets (Net)		
Non-depreciable assets	$ 61,406.00	$ 61,406.00
Depreciable assets, net	$ 2,606,574.00	$ 2,627,985.00
Total Assets	$ 6,381,464.00	$ 7,282,051.00
Deferred Outflow	$ -	$ 163,799.00
Liabilities		
Account Payable	$ 54,908.00	$ 98,462.00
Compensated Absences	$ 138,929.00	$ 116,448.00
Net Pension Liability	$ -	$ 1,923,046.00
Total Liabilities	$ 193,837.00	$ 2,137,956.00
Net Assets		
Invested in Capital Assets	$ 2,667,980.00	$ 2,689,391.00
Unrestricted	$ 3,519,647.00	$ 2,769,101.00
Total Net Assets	$ 6,187,627.00	$ 5,458,492.00

References Cited

1. Scott JG, Yoshimizu MH, Kasai S (2015) Pyrethroid resistance in Culex pipiens mosquitoes. Pestic Biochem Physiol 120: 68-76.
2. Weill M, Malcolm C, Chandre F, Mogensen K, Berthomieu A, et al. (2004) The unique mutation in ace-1 giving high insecticide resistance is easily detectable in mosquito vectors. Insect Mol Biol 13: 1-7.
3. Ranson H, N'Guessan R, Lines J, Moiroux N, Nkuni Z, et al. (2011) Pyrethroid resistance in African anopheline mosquitoes: what are the implications for malaria control? Trends Parasitol 27: 91-98.
4. Kasai S, Weerashinghe IS, Shono T, Yamakawa M (2000) Molecular cloning, nucleotide sequence and gene expression of a cytochrome P450 (CYP6F1) from the pyrethroid-resistant mosquito, Culex quinquefasciatus Say. Insect Biochem Mol Biol 30: 163-171.
5. Xu Q, Wang H, Zhang L, Liu N (2006) Kdr allelic variation in pyrethroid resistant mosquitoes, Culex quinquefasciatus (S.). Biochem Biophys Res Commun 345: 774-780.
6. Kasai S, Ng LC, Lam-Phua SG, Tang CS, Itokawa K, et al. (2011) First detection of a putative knockdown resistance gene in major mosquito vector, Aedes albopictus. Jpn J Infect Dis 64: 217-221.
7. Xu T, Zhong D, Tang L, Chang X, Fu F, et al. (2014) Anopheles sinensis mosquito insecticide resistance: comparison of three mosquito sample collection and preparation methods and mosquito age in resistance measurements. Parasit Vectors 7: 54.
8. Verhaeghen K, Bortel WV, Roelants P, Okello PE, Talisuna A, et al. (2010) Spatio-temporal patterns in kdr frequency in permethrin and DDT resistant Anopheles gambiae s.s. from Uganda. Am J Trop Med Hyg 82: 566-573.
9. Chang X, Zhong D, Fang Q, Hartsel J, Zhou G, et al. (2014) Multiple resistances and complex mechanisms of Anopheles sinensis mosquito: a major obstacle to mosquito-borne diseases control and elimination in China. PLoS Negl Trop Dis 8: e2889.
10. Donnelly MJ, Corbel V, Weetman D, Wilding CS, Williamson MS, et al. (2009) Does kdr genotype predict insecticide-resistance phenotype in mosquitoes? Trends Parasitol 25: 213-219.
11. Brooke BD (2008) kdr: can a single mutation produce an entire insecticide resistance phenotype. Trans R Soc Trop Med Hyg 102: 524-525.
12. Brogdon WG, McAllister JC (1998) Simplification of adult mosquito bioassays through use of time-mortality determinations in glass bottles. J Am Mosq Control Assoc 14: 159-164.