

FORM APPROVED COUNTY COUNSEL  
BY: Gregory P. Priamos DATE 4/29/15

Departmental Concurrence

FISCAL PROCEDURES APPROVED  
PAUL ANGULO - CPA, AUDITOR-CONTROLLER  
BY: Esteban Hernandez DATE 4/29/15

☐ A-30 ☐ Positions Added ☐ Change Order  
☐ 4/5 Vote

**SUBMITTAL TO THE BOARD OF SUPERVISORS  
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA**

831



**FROM:** Department of Environmental Health

**SUBMITTAL DATE:**  
April 27, 2015

**SUBJECT:** Continued Implementation of the Professional Service Agreement with SCI Consulting Group to approve the Engineering Report and associated Resolutions initiating proceedings to levy a special assessment and conduct balloting for Vector Control Funding Measure. District 1-5; [\$136,700 total; 100% department operating budget].

**RECOMMENDED MOTION:** That the Board of Supervisors:

1. Allow further implementation of phase 2 of the Agreement between the County of Riverside and the SCI Consulting Group to receive the Engineering Report for Vector Control Funding Measure of all current unincorporated service areas;
2. Adopt Resolution 2015-111 Proposition 218 ballot proceedings and the mailing of assessment ballots and 2015-112 initiating proceedings and providing notice of intention to levy special assessments and preliminarily approving engineer's report;
3. Approve and direct the Auditor-Controller to make the adjustments shown on Schedule A, attached.

**BACKGROUND:**  
Summary

Steve Van Stockum, Director

SVS:KJ

FINANCIAL DATA	Current Fiscal Year:	Next Fiscal Year:	Total Cost:	Ongoing Cost:	POLICY/CONSENT (per Exec. Office)
COST	\$ 124,000	\$ 12,700	\$ 136,700	\$ 0	Consent <input type="checkbox"/> Policy <input checked="" type="checkbox"/>
NET COUNTY COST	\$ 0	\$ 0	\$ 0	\$ 0	

**SOURCE OF FUNDS:** 100% Department Operating Budget

**Budget Adjustment:** Yes.

**For Fiscal Year:** 14/15

**C.E.O. RECOMMENDATION:**

APPROVE

BY:   
Steven C. Horn

**County Executive Office Signature**

**MINUTES OF THE BOARD OF SUPERVISORS**

Prev. Agn. Ref.: 3/24/2015 3-22

District: 1-5

Agenda Number:

3-17

**SUBMITTAL TO THE BOARD OF SUPERVISORS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA**  
**FORM 11:** Continued implementation of the Professional Service Agreement with SCI Consulting Group to approve the Engineering Report and associated Resolutions for Vector Control Funding Measure. District 1-5; [\$136,700 total; 100% department operating budget].

**DATE:** April 27, 2015

**PAGE:** Page 2 of 2

**BACKGROUND:**

**Summary (continued)**

On October 1, 2013 agenda item 3.8, the Board approved the issuance of an RFP for Consulting Services to conduct a Feasibility Study, Public Opinion Survey, Engineering, Balloting, and Administration for Vector Control Funding Measure. Prop 218 guidelines require a simple majority vote of the property owners that is weighted by the proposed assessment amount. The RFP was released on February 11, 2014 and sent to sixty nine potential vendors and closed on March 13, 2014 with only one bid received from SCI Consulting Group. Their Best and Final Offer, was received on May 1, 2014. On June 17, 2014 agenda item 3-24, the Board requested further information regarding the associated feasibility study and public opinion survey prior to consideration. Further discussions followed with the Northwest and Coachella Valley Mosquito & Vector Control Districts and letters of support were received on November 20, 2014 and July 9, 2014, respectively. On November 24, 2014 agenda item 3-37, the Board approved the Professional Service Agreement with SCI Consulting Group to conduct phase 1 for Public Opinion Survey and Research Services. On March 24, 2015 agenda item 3-22, the Board approved SCI Consulting Group to move forward and prepare the subsequent Engineering Report based upon the results of the Public Opinion Survey.

At this time, the Department of Environmental Health is seeking approval of Engineering Report and 2 Resolutions initiating proceedings to levy special assessments and ordering the mailing of ballots according to Prop 218 procedures.

**Impact on Citizens and Businesses**

This process will allow parcel owners within the unincorporated areas currently served by the County Department of Environmental Health to vote on maintained and enhanced vector control services with a very moderate annual benefit assessment. Should this initiative fail, then the County's options for continuing this program will become severely limited.

**SUPPLEMENTAL:**

**Additional Fiscal Information**

Funding for phase 2 to be paid in FY 2014/15 and 2015/16 using department operating funds.

**ATTACHMENTS:**

A. BUDGET ADJUSTMENT

Schedule A  
Department of Environmental Health  
Budget Adjustment  
Fiscal Year 2014/15

Increase in Appropriation:

10000 - 4200400000 - 524660	Consultants	124,000
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Increase in Estimated Revenue:

10000 - 4200400000 - 731100	Code Enforcement	57,808
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Decrease Restricted Fund Balance

10000 - 4200400000 - 321111	Rst For EH	66,192
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RESOLUTION NO. 2015-111

A RESOLUTION OF THE BOARD OF SUPERVISORS  
OF THE COUNTY OF RIVERSIDE  
ADOPTING PROPOSITION 218 ASSESSMENT BALLOT PROCEEDINGS PROCEDURES  
FOR THE COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM,  
MOSQUITO, VECTOR AND DISEASE CONTROL ASSESSMENT

**WHEREAS**, Proposition 218 was adopted on November 6, 1996, adding Articles XIIIC and XIID to the California Constitution; and

**WHEREAS**, Articles XIIIC and XIID of the California Constitution impose certain procedural and substantive requirements relating to assessments (as defined); and

**WHEREAS**, some of the requirements of Proposition 218 are unclear and require, or have required, judicial interpretation and/or legislative implementation; and

**WHEREAS**, the Board of Supervisors of the County of Riverside ("Board") believes it to be in the best interest of the County of Riverside Vector Control Program ("Program") to record its decisions regarding implementation of the provisions of Proposition 218 relating to assessments and to provide the community with a guide to those decisions and how they were reached.

**NOW, THEREFORE**, the Board does hereby resolve as follows:

**SECTION 1. Statement of Legislative Intent.** In adopting this resolution, it is the Board's intent to adopt assessment ballot proceedings, which are consistent and in compliance with Articles XIIIC and XIID of the California Constitution and with the Government Code Sections 53750 through 53754. It is not the intent of the Board to vary in any way from the requirements of either the California Constitution or the laws of the State of California.

**SECTION 2. Definition of Assessment.** Proposition 218 defines "assessment" as "any levy or charge by an agency upon real property that is based upon the special benefit conferred upon the real property by a public improvement or services, that is imposed to pay the capital cost of the public improvement, the maintenance and operation expenses of the public improvement or the cost of the service being provided." "Assessment" includes, but is not limited to, "special assessment," "benefit assessment," "maintenance assessment," and "special assessment tax."

**SECTION 3. Vector Control.** Government Code section 53750(l) defines "vector control" as "any system of public improvements or services that is intended to provide for the surveillance, prevention, abatement, and control of vectors" as defined.

**SECTION 4. Assessment Ballot Proceeding.** The following procedures shall be used in an assessment ballot proceeding that follows the requirements of Article XIID, section 4 of the California Constitution:

- A. **Amount of Assessment.** Only special benefits are assessable. The amount of each assessment shall be each identified parcel's proportionate share of the cost of the vector control services and capital improvement costs based upon that parcel's special benefit from the improvement or service. The amount shall be proportional to and no greater than the special benefits conferred on the property.

FORM APPROVED COUNTY COUNSEL  
BY: Dale A. Gardner 4/29/15  
DALE A. GARDNER

B. **Engineer's Report.** The Board shall direct the filing of an engineer's report that shall comply with the applicable state statute authorizing the assessment and with Article XIID, Section 4, of the California Constitution. The engineer's report shall explain the special benefit, as defined in Section 4B of this resolution, conferred by the improvement or property-related service. The engineer's report shall also provide the evidence upon which the Board may find that a special benefit exists. If the improvement or service confers a general benefit, the engineer's report shall describe the general benefit and an alternative funding source for any general benefits. The engineer's report shall be prepared by a registered professional engineer certified by the State of California, (the "Assessment Engineer").

C. **Notice.** The following guidelines shall apply to giving notice of an assessment:

1. The record owner(s) of each parcel to be assessed shall be determined from the last equalized property tax roll. If the property tax roll indicates more than one owner, the Notice shall be addressed to each owner. Only property owners shall receive notice;
2. The notice shall be sent at least forty-five (45) days prior to the date set for the public hearing on the assessment;
3. The notice provided by this section shall contain the following information:
  - a. The total amount to be assessed for the entire assessment district;
  - b. The amount to be assessed to the owner's particular parcel;
  - c. The duration of the payments;
  - d. The reason for the assessment;
  - e. The basis upon which the amount of the proposed assessment was calculated;
  - f. The date, time and location of the public hearing on the proposed assessment;
  - g. A summary of the procedures for the completion, return and tabulation of the assessment ballots;
  - h. A disclosure statement that the existence of a majority protest will result in the assessment not being imposed; and
  - i. A ballot to be completed by the owner, as further described in section D of this resolution.
4. The notice provided by this section and in accordance with Government Code Sections 53753(b) and (c) shall supersede and be in lieu of any other statutes requiring notice to levy or increase an assessment, including but not limited to the notice required by the state statute authorizing the assessment and Government Code section 54954.6;
5. Failure of any person to receive notice shall not invalidate the proceedings;
6. The cost of providing notice shall be included as a cost of the assessment.

D. **Assessment Ballot.** The following guidelines shall apply to the assessment ballot:

1. The ballot required by Article XIID, section 4(d), of the California Constitution shall be mailed to all property owners of record subject to the proposed assessment at least forty-five (45) days prior to the date of the public hearing on the proposed assessment. This ballot shall comply with Government Code Sections 53753(b) and (c). The ballot shall be designed in such a way that, once sealed, its contents are concealed.
2. All ballots must be returned either by mail or by hand delivery no later than the date for return of ballots stated on the notice and ballot described in this section.
  - a. Mailed ballots must be returned to the THE ACCOUNTING OFFICE, the person delegated and approved by the Board to tabulate the ballots (the "Tabulator"), at the address shown on the ballot: RIVERSIDE COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH DISTRICT ENVIRONMENTAL SERVICES C/O THE ACCOUNTING OFFICE 400 S EL CIELO RD. SUITE J, PALM SPRINGS, CA 92262.
  - b. Hand delivered ballots may be returned only at the time and location of the public hearing, to the Clerk of the Board. Ballots must be returned either by mail or by hand delivery prior to the conclusion of the public input portion of the public hearing.
3. **Each ballot must be signed under penalty of perjury.** In the event that more than one of the record owners of a parcel submits an assessment ballot, the amount of the proposed assessment to be imposed upon the parcel shall be allocated to each ballot submitted in proportion to the respective record ownership interests or, if the ownership interests are not shown on the record, as established to the satisfaction of the Tabulator or Assessment Engineer by documentation provided by the record owners. If two or more persons own a parcel subject to the assessment, any one owner may cast an assessment ballot for all owners.
4. If a parcel has multiple owners, any owner may request a proportional assessment ballot. If the ownership interest of the owner is not shown on the last equalized secured property tax assessment roll, such request must include evidence, satisfactory to the Program, of the owner's proportional rights in the parcel. The Assessment Engineer will provide the proportional ballot to the owner at the address shown on the assessment roll. Any request for a ballot to be mailed to another location must include evidence, satisfactory to the Program, of the identity of the person requesting the ballot. Each proportional ballot will be marked to identify it as a proportional ballot and to indicate the owner's proportional rights in the parcel. The Assessment Engineer will keep a record of each proportional ballot provided to an owner.
5. The Program will only accept official ballots mailed or otherwise provided to owners by the Assessment Engineer.
6. If an assessment ballot is lost, withdrawn, destroyed or never received, the Assessment Engineer will mail or otherwise provide a replacement ballot to the owner upon receipt of a request delivered to the Program or the Assessment Engineer. The replacement ballot will be marked to identify it as a replacement ballot or a replacement proportional ballot. Any request for a replacement or replacement proportional ballot to be mailed to another location must include evidence, satisfactory to the Program or the Assessment Engineer, of the identity of the person requesting the ballot.

The same procedure applies to replacement ballots or replacement proportional ballots, which are lost, withdrawn, destroyed, or never received.

7. If an assessment ballot is returned by the United States Post Office as undeliverable, the Assessment Engineer may mail a redelivered ballot to the current property owner, if updated ownership or owner mailing address can be determined. The redelivered ballot will be marked to identify it as a redelivered ballot.
8. An assessment ballot proceeding is not an election.
9. An assessment ballot is a disclosable "public record" as that phrase is defined by Government Code section 6252 during and after tabulation of the ballots.
10. The California Government Code requires that assessment ballots be signed by property owners. However, property owner names and corresponding votes will remain strictly confidential, except as necessary to count the votes or as may be required by California law.
11. To complete an assessment ballot, the owner of the parcel or his authorized representative must (1) mark the appropriate box (or circle) supporting or opposing the proposed assessment, and (2) sign, under penalty of perjury, the statement on the ballot that the person completing the ballot is the owner of the parcel or the owner's authorized representative. Only one box may be stamped or marked on each ballot. All incomplete or improperly marked ballots shall be disqualified from balloting. The Tabulator will retain all such invalid ballots.
12. After returning an assessment ballot to the Clerk of the Board, or the Tabulator on behalf of the Program, the person who signed the ballot may withdraw the ballot by submitting a written statement to the Clerk of the Board directing the Program to withdraw the ballot. Such statement must be received by the Clerk of the Board or the Tabulator prior to the close of the public input portion of the public hearing on the proposed assessment. When ballots for the assessment are tabulated, the Tabulator will segregate withdrawn ballots from all other returned ballots. The Clerk of the Board will retain all withdrawn ballots and will indicate on the face of such withdrawn ballots that they have been withdrawn.
13. In order to change the contents of a ballot that has been submitted, the person who has signed that ballot may (1) request that such ballot be withdrawn, (2) request that a replacement ballot be issued, and (3) return the replacement ballot fully completed. Each of these steps must be completed according to the procedures set forth above and prior to the conclusion of the public input portion of the public hearing.

**E. Tabulating Ballots.** The following guidelines shall apply to tabulating assessment ballots:

1. Assessment ballots shall remain sealed until tabulation commences at the conclusion of the public input portion of the public hearing.

2. An independent third party may tabulate the assessment ballots ("Tabulator"). The Tabulator shall follow the rules and procedures of the laws of the State of California, this resolution and any other rules and procedures of the Board. If the Tabulator needs clarification, then they shall inquire of the Board, who is the final arbiter. All ballots shall be accepted as valid except those in the following categories:
  - a. A photocopy of a ballot, a letter or other form of a ballot that is not an official ballot provided by the Program or the Assessment Engineer on behalf of the Program;
  - b. An unsigned ballot, or ballot signed by an unauthorized individual;
  - c. A ballot which lacks an identifiable mark in the box for a "yes" or "no" vote or with more than one box marked, will not be counted;
  - d. A ballot which appears tampered with or otherwise invalid based upon its appearance or method of delivery or other circumstances;
  - e. A ballot for which the barcode representing the parcel number is damaged or obstructed, unless the parcel number or property ownership information is legible and allows the Tabulator to clearly determine the property(s) identified on the ballot.
  - f. A ballot received after the close of the balloting time period.

The Tabulator's decision, after consultation with the Board's legal counsel that a ballot is invalid shall be final and may not be appealed to the Board.

3. If more than one of the record owners of a parcel submits an assessment ballot, the amount of the proposed assessment to be imposed upon the parcel shall be allocated to each ballot in proportion to the respective record ownership interests, as shown on the record or as established to the Program's satisfaction by documentation provided by the record owners.
4. In the event of a dispute regarding whether the signer of a ballot is the owner of the parcel to which the ballot applies, the Board will make such determination from the official County Assessor records and any evidence of ownership submitted to the Board prior to the conclusion of the public hearing. The Board will be under no duty to obtain or consider any other evidence as to ownership of property and its determination of ownership will be final and conclusive.
5. In the event of a dispute regarding whether the signer of a ballot is an authorized representative of the owner of the parcel, the Board may rely on the statement on the ballot signed under penalty of perjury that the person completing the ballot is the owner's authorized representative and any evidence submitted to the Board prior to the conclusion of the public hearing. The Board will be under no duty to obtain or consider any other evidence as to whether the signer of the ballot is an authorized representative of the owner and its determination will be final and conclusive.
6. A property owner who has submitted an assessment ballot may withdraw the ballot and submit a new or changed ballot up until the conclusion of the public input portion of the public hearing on the assessment. Assessment ballots may be withdrawn and newer changed ballots submitted up until the conclusion of the public input portion of the public hearing on the assessment.



7. A property owner's failure to receive an assessment ballot shall not invalidate the proceedings conducted under this section and section 4, Article XIII D, of the California Constitution.
8. The Program shall retain all ballots for a period of two (2) years from the date of the public hearing.

**F. Public Hearing**

1. At the public hearing, the Board shall hear and consider all public testimony, objections and protests regarding the proposed assessment and accept ballots until the close of the public input portion of the public hearing.
2. Reasonable time limits may be imposed on both the length of the entire hearing and the length of each speaker's testimony.
3. At the conclusion of the public input portion of the hearing, but prior to the conclusion of the public hearing, the Tabulator shall begin tabulation of the ballots at the direction of the Board, including those received during the public hearing.
4. If it is not possible to tabulate the ballots on the day of the public hearing, or if additional time is necessary for public testimony, the Board may continue the public hearing to a later date to receive additional testimony, information, or to finish tabulating the ballots.
5. If according to the final tabulation of the ballots, ballots submitted, and not withdrawn, in opposition of the proposed assessment exceed the assessment ballots submitted, and not withdrawn, in its favor, weighting those assessment ballots by the amount of the proposed assessment to be imposed upon the identified parcel, a "majority protest" exists and the Board shall not impose the assessment.

**PASSED AND ADOPTED** by the County of Riverside Board of Supervisors at its regular meeting on May 12, 2015 by the following vote:

**Ayes:**

**Noes:**

**Absent:**

**Abstain:**

Attest: \_\_\_\_\_  
Board Clerk

Approved: \_\_\_\_\_  
Chairman, Board of Supervisors

RESOLUTION NO. 2015-112

**A RESOLUTION OF THE BOARD OF SUPERVISORS  
OF THE COUNTY OF RIVERSIDE  
INITIATING PROCEEDINGS, PROVIDING NOTICE OF ITS INTENTION TO LEVY ASSESSMENTS,  
PRELIMINARILY APPROVING THE ENGINEER'S REPORT,  
AND PROVIDING FOR NOTICE OF HEARING, AND THE MAILING OF ASSESSMENT BALLOTS  
FOR THE COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM,  
MOSQUITO, VECTOR AND DISEASE CONTROL ASSESSMENT**

**WHEREAS**, the County of Riverside Vector Control Program ("Program") was established in 1972 as a division of the Department of Environmental Health; and

**WHEREAS**, the mission of the Program is to serve the public by suppressing populations of mosquitoes and other vectors of human disease-carrying potential, and reduce annoyance levels below generally acceptable thresholds, in order to protect the public health and comfort and permit full use and enjoyment of outdoor areas by residents and visitors within the Program; and

**WHEREAS**, the Program hereby proposes to establish a benefit assessment district and three zones with differing service levels, to continue services that provide direct and special benefits to certain real properties in the Program (the "Assessment Area"); and

**WHEREAS**, the Program proposes an assessment (the "Assessment") on all specially benefiting properties within the Program boundaries (the "Assessment Area" or "Assessment District").

**WHEREAS**, the Program has designated SCI Consulting Group as Engineer of Work ("Assessment Engineer") for purposes of these proceedings, and has ordered SCI Consulting Group to prepare an Engineer's Report in accordance with the Government Code, Health and Safety Code and Article XIID of the California Constitution; and

**WHEREAS**, an Engineer's Report ("Engineer's Report") has been prepared by SCI Consulting Group ("Assessment Engineer") and submitted to the County of Riverside Board of Supervisors ("Board"), in which an assessment is proposed to fund the cost of providing the Services. The Engineer's Report, which is available for public review at the Program's office, located at 800 Sanderson Avenue, Hemet CA 92545, is hereby incorporated by reference. This Engineer's Report includes: (1) a description of the mosquito, vector and disease control Services to be funded with assessment proceeds; (2) an estimate of the annual cost of such Services; (3) a description of the assessable parcels of land within the Program and proposed to be subject to the assessment; (4) a description of the proportionate special and general benefits conferred on property by the proposed assessment; (5) a description of the boundaries of the Program including boundaries of the zones, and (6) a specification of the amount to be assessed upon various types of assessable land to fund the cost of the mosquito, vector and disease control services with the differing service levels within the zones. This proposed assessment shall be described as the "Mosquito, Vector and Disease Control Assessment" (hereinafter the "Assessment") of County of Riverside Vector Control Program;

FORM APPROVED COUNTY COUNSEL  
BY: Dale A. Gardner 4/29/15  
DATE

**NOW, THEREFORE, BE IT RESOLVED**, by the Board of Supervisors of the County of Riverside, State of California, that:

1. An Engineer's Report by a registered professional engineer, (the Engineer of Work) has been prepared in accordance with Article XIID of the California Constitution and the California Government and Health and Safety Codes. The Engineer's Report has been made, filed with the Board and duly considered by the Board and is hereby deemed sufficient and preliminarily approved. The Engineer's Report shall stand as the Engineer's Report for all subsequent proceedings under and pursuant to the foregoing resolution.
2. This Board intends to levy and collect annual assessments within the Assessment Area to fund the cost of providing improved mosquito and disease testing and control services and the proposed projects and services set forth in the Engineer's Report. Within the Assessment Area, the proposed projects, services and programs are generally described as monitoring, disease prevention, abatement, and control of vectors within the Program's boundaries. Such improved mosquito abatement, vector control and disease testing and prevention projects include, but are not limited to, source identification, monitoring, control and reduction; rapid and cost-effective mosquito, vector and disease identification, testing, control, management and response; efficient, focused, environmentally sensitive and efficient larvicide and adulticide applications; disease monitoring, public education, reporting, accountability, research and interagency cooperative activities; as well as capital costs, maintenance and operation expenses (collectively "Services and Improvements"). The cost of these Services also includes capital costs comprised of equipment, capital improvements and facilities necessary and incidental to the Program's mosquito and vector control services.
3. The Assessment Area consists of the lots and parcels shown on the assessment diagram of the Assessment Area, on file with the Program's Manager, and reference is hereby made to such diagram for further particulars concerning zone boundaries and service levels.
4. Reference is hereby made to the Engineer's Report for a full and detailed description of the proposed projects and services, the boundaries of the Assessment Area and the proposed assessments upon assessable lots and parcels of land within the Assessment Area.
5. The estimated cost of funding the Services described in the Report and funded by the Assessment for fiscal year 2015-16 is approximately \$485,378. This cost results in a proposed assessment rate of SEVEN DOLLARS AND FOURTEEN CENTS (\$7.14) per single family equivalent benefit unit in Zone of Benefit A, and TWO DOLLARS AND FOUR CENTS (\$2.04) per single family equivalent benefit unit in Zone of Benefit B, and ONE DOLLAR AND TWO CENTS (\$1.02) per single family equivalent benefit unit in Zone of Benefit C for fiscal year 2015-16.
6. A public hearing shall be held before this Board as follows: at the Board Chambers of

the Riverside County Board of Supervisors, located at 4080 Lemon Street, Riverside CA 92501, on July 7, 2015 at the hour of 9:30 a.m. for the purpose of conducting a hearing and to consider all protests of property owners regarding the proposed Assessment and this Board's determination whether the public interest, convenience and necessity require the Services and this Board's final action upon the Engineer's Report and the assessments therein.

7. The Clerk of the Board of Supervisors is hereby authorized and directed to cause Notice of the hearing ordered hereof to be given in accordance with law by mailing, postage prepaid in the United States mail, and such Notice shall be deemed to have been given when so deposited in the mail. The mailed Notice shall be given to all property owners, by name, subject to the proposed assessments by such mailing to those persons whose names and addresses appear on the last equalized secured property tax assessment roll for the County of Riverside, or in the case of any public entity, the representative of such public entity at the address thereof known to the Clerk of the Board or the Assessment Engineer.
8. The mailed public notice of this public hearing shall also contain the following information: (a) the total amount of assessments proposed to be levied within the Assessment for fiscal year 2015-16; (b) the assessment chargeable to each property owner's parcel; (c) the duration of the proposed assessment; (d) the reason for the proposed assessment; (e) the basis upon which the amount of the proposed assessment was calculated; (f) the date, time and place of the public hearing on the proposed assessment as specified in this Resolution. Further, each notice shall include, in a conspicuous place, a summary of the procedures to be used for the completion, return and tabulation of the assessment ballots including a statement that the assessment shall not be imposed if the ballots submitted in opposition to the assessment exceed the ballots submitted in favor of the assessment, with ballots weighted according to the proportional financial obligation of the affected property. Each Notice shall also contain an official assessment ballot, a summary of the procedures applicable to the completion, return and tabulation of assessment ballots, and a statement that the existence of a majority protest will result in the assessment not being imposed. The assessment ballot shall include the address for receipt of the assessment ballot and a place where the person returning the assessment ballot may indicate his or her name, a reasonable identification of the parcel and his or her support or opposition to the proposed assessment. Each ballot shall be in a form that conceals its contents once it is sealed by the person submitting the ballot. The Notice and assessment ballot shall be mailed not less than forty-five (45) days before the date of the public hearing.
9. The assessments are proposed to be levied annually. If the proposed Special Assessments are approved and confirmed by the Board, the Special Assessments may increase in future years by an amount equal to the annual change in the Consumer Price Index-U for the Los Angeles-Riverside-Orange County area, not to exceed three percent (3%) per year, without a further vote or balloting process. In each subsequent year in which the assessments will be levied, an updated Engineer's Report, including a proposed budget and assessment rate, shall be prepared. The

updated Engineer's Report shall be considered by the Board at a noticed public hearing. The updated Engineer's Report shall serve as the basis for the continuation of the assessments.

**PASSED AND ADOPTED** by the Board of Supervisors of the County of Riverside at its regular meeting on May 12, 2015 by the following vote:

**Ayes:**

**Noes:**

**Absent:**

**Abstain:**

Attest: \_\_\_\_\_  
Board Clerk

Approved: \_\_\_\_\_  
Chairman, Board of Supervisors



# **COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM**

## **MOSQUITO, VECTOR AND DISEASE CONTROL ASSESSMENT**

### **ENGINEER'S REPORT**

FISCAL YEAR 2015-16

APRIL 2015

PURSUANT TO THE HEALTH AND SAFETY CODE, GOVERNMENT CODE AND  
ARTICLE XIID 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

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## COUNTY OF RIVERSIDE

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### **BOARD OF SUPERVISORS**

Marion Ashley (Fifth District) Chairman

Kevin Jeffries (First District)

John F. Tavaglione (Second District)

Chuck Washington (Third District)

John J. Benoit (Fourth District)

### **PROGRAM DIRECTOR**

Steve Van Stockum

### **ENGINEER OF WORK**

SCI Consulting Group



## TABLE OF CONTENTS

---

<b>TABLE OF CONTENTS .....</b>	<b>II</b>
<b>LIST OF FIGURES .....</b>	<b>IV</b>
<b>INTRODUCTION.....</b>	<b>1</b>
OVERVIEW .....	1
INTRODUCTION TO BENEFIT TO PROPERTY.....	3
LEGISLATIVE ANALYSIS .....	7
ASSESSMENT PROCESS .....	9
<b>GENERAL DESCRIPTION OF THE PROGRAM AND SERVICES.....</b>	<b>12</b>
ABOUT THE PROGRAM .....	12
SUMMARY OF SERVICES.....	12
VECTORS AND VECTOR-BORNE DISEASES IN THE PROGRAM SERVICE AREA .....	14
INTEGRATED VECTOR MANAGEMENT.....	17
SURVEILLANCE AND SITE ACCESS.....	19
EDUCATION.....	20
CONTROL OF MOSQUITOES .....	21
CONTROL AND SURVEILLANCE OF OTHER VECTORS .....	23
SERVICE REQUESTS .....	24
<b>ESTIMATE OF COST.....</b>	<b>25</b>
<b>METHOD OF ASSESSMENT .....</b>	<b>27</b>
DISCUSSION OF BENEFIT.....	27
MOSQUITO AND VECTOR CONTROL IS A SPECIAL BENEFIT TO PROPERTIES .....	29
BENEFIT FACTORS.....	30
BENEFIT FINDING.....	37
GENERAL VS. SPECIAL BENEFIT.....	38
CALCULATING SPECIAL BENEFIT .....	40
CALCULATING GENERAL BENEFIT .....	41
ZONES OF BENEFIT .....	45
METHOD OF ASSESSMENT.....	47
ASSESSMENT APPORTIONMENT .....	49
RESIDENTIAL PROPERTIES .....	50
COMMERCIAL/INDUSTRIAL AND WINERY PROPERTIES .....	52
AGRICULTURAL, VINEYARDS, DRY RANGELAND, CEMETERY, GOLF COURSE PROPERTIES ...	53
VACANT PROPERTIES .....	53
OTHER PROPERTIES.....	54
DURATION OF ASSESSMENT .....	54
APPEALS AND INTERPRETATION .....	55
<b>ASSESSMENT .....</b>	<b>56</b>
<b>ASSESSMENT ROLL .....</b>	<b>58</b>

**ASSESSMENT DIAGRAM..... 59**

## LIST OF FIGURES

---

FIGURE 1 – COST ESTIMATE – FY 2015-16 .....	25
FIGURE 3 – RESIDENTIAL ASSESSMENT FACTORS.....	51
FIGURE 4 – COMMERCIAL/INDUSTRIAL BENEFIT ASSESSMENT FACTORS.....	53
FIGURE 5 – SUMMARY COST ESTIMATE – FY 2015-16 BUDGET .....	56

## INTRODUCTION

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### OVERVIEW

The County of Riverside Vector Control Program was established in 1972 as a division of the County's Department of Environmental Health. The Program provides vector control services to all unincorporated areas of Riverside County not served by the Northwest Mosquito and Vector Control District nor the Coachella Valley Mosquito and Vector Control District. Additionally, services are also provided under contract to the cities of Banning, Beaumont, Hemet, Menifee, Moreno Valley, Murrieta, Perris, San Jacinto, Temecula and Wildomar.

The Program's primary service area is located in unincorporated, mid-western Riverside County and encompasses approximately 2000 square miles. Collectively, these unincorporated areas served by the Program will be referred to as the "Service Area." The Program is the only agency providing comprehensive mosquito and vector control and vector-borne disease protection and prevention services in the Service Area, and provides its services to these properties accommodating approximately 238,000 residents. (Note that the Program also provides limited services to the far eastern, unincorporated portion of the County east of the Coachella Valley Mosquito and Vector Control District boundaries, but that those services are not included within the Service Area as defined in this report.)

The County of Riverside Vector Control Program is governed by the County of Riverside Board of Supervisors ("Board"). The County has five supervisorial districts, and one supervisor is elected from each district every four years. The Board of Supervisors' meetings are held at 9:00 AM on most Tuesdays, in the Board Chambers on the first floor located at 4080 Lemon Street in Riverside. The public is welcome to attend.

The Program provides mosquito control; surveillance of ticks, rodents and other vectors; and disease control services within its boundaries. The Program services are available to all properties in the Service Area. The mission of the Program is primarily to suppress mosquito-transmitted disease, and to reduce the nuisance levels of mosquitoes, and diseases associated with rodents, ticks and other vectors through environmentally sound control practices and public education.

Historically, the Mosquito and Vector Control Program had been funded primarily by the Riverside County General Fund. However, as a result of budget cuts, the Program no longer receives General Fund revenue. Currently, the Program within the Service Area is funded by a reduced and limited portion of County discretionary fees, including poultry ranch inspection fees. This limited funding for vector control is not considered stable nor reliable, and the Program's future operation is in significant jeopardy.

The Program strives to provide sustainable operations under its existing minimal budget. In response to the recent reduction in funding, the Program has made budget cuts and

staff reductions. However, operational costs continue to increase, and the cost of controlling disease outbreaks from mosquitoes, such as West Nile virus, rodents and other vectors, continues to increase. In addition, increased threats from new species of mosquitoes, like the Asian Tiger Mosquito, and emerging diseases (Dengue Fever, Yellow Fever, and Chikungunya) require a higher level of protection from the Program. The program has also observed an increase in unmaintained standing water sources such as swimming pools and ponds, which have contributed significantly to the rise of mosquito breeding sources due to the economic downturn.

Furthermore, the Program's efforts to use the most environmentally sound techniques together with the costs of complying with new legislation and regulations (e.g., NPDES permit<sup>1</sup>, ESA permit<sup>2</sup>, etc.), have further stressed the Program's budget. As a result, in order to maintain current levels of disease surveillance and vector control services, and to better respond to the threat of West Nile virus and other public health issues, the Program is proposing an assessment ("Assessment") on all specially benefiting properties within the Program's un-incorporated Service Area boundaries ("Assessment Area" or "Assessment District"). This new funding source would be used to continue the level of services currently provided to protect the public health in the Service Area.

If this assessment is approved, the Program would be able to continue to provide mosquito abatement and disease control services at the same quality level currently offered. The Program's main proposed services are summarized as follows:<sup>3</sup>

- Early detection of public health threats in the Program through comprehensive mosquito, vector and disease surveillance.
- Elimination and control of mosquitoes and mosquito sources in the Program to protect public health and to diminish the nuisance and harm caused by mosquitoes.
- Appropriate, timely response to customer requests in the Program concerning the prevention and control of mosquitoes and the diseases they can transmit.
- Provision of public outreach and education in the Program concerning mosquitoes and vector-borne diseases.
- Reduction of the potential for human and animal disease caused by vectors.

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<sup>1</sup> The National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

<sup>2</sup> The Endangered Species Act (ESA) prohibits the "take" of listed species through direct harm or habitat destruction. The U.S Fish and Wildlife Service may issue permits for the "incidental take" of endangered and threatened wildlife species.

<sup>3</sup>The proposed mosquito control and disease prevention services would materially increase the usefulness, utility, livability and desirability of properties in the Assessment Area.

- Reduction of the potential for human and animal discomfort or injury from vectors.
- Accomplish effective and environmentally sound vector management by means of:
  - i. Surveying for vector abundance/human contact
  - ii. Establishing treatment criteria
  - iii. Appropriately selecting from a wide range of Program tools or components
  - iv.
  - v. Most of the relevant vectors are quite mobile and cause the greatest hazard or discomfort at a distance from where they breed. Each potential vector has a unique life cycle, and most of them occupy several types of habitats. To effectively control these vectors, an Integrated Mosquito and Vector Management Program (IMVMP) must be employed. This Program consists of a dynamic combination of surveillance, treatment criteria, and use of multiple control activities in a coordinated program, with public education sometimes referred to as Integrated Pest Management (IPM) or Integrated Vector Management (IVM). Program policy is to identify those species that are currently vectors, to recommend techniques for their prevention and control, and to anticipate and minimize any new interactions between vectors and humans and domestic animals.

## INTRODUCTION TO BENEFIT TO PROPERTY

The Program currently provides a level of mosquito, vector and disease control services in the Assessment Area that will be drastically reduced or ceased altogether if the proposed assessment is not approved. If the proposed assessment is not approved, and Program services were not ceased altogether, the new reduced level of service would be the new “baseline” level of service and would include a very low level of surveillance, testing, monitoring and control of mosquitoes, resulting in higher mosquito populations and the potential for outbreak of diseases.

Continued services include surveillance, disease prevention, abatement, and control of mosquitoes for properties within the Assessment Area. Currently, mosquito and disease prevention services, 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, and maintenance and operation expenses as further described below.

The proposed Assessment Area is narrowly drawn to include only properties that, if the assessment is approved, may request and/or receive direct and more frequent service, are located within the scope of the vector surveillance area, are located within flying or traveling distance of potential vector sources monitored by the Program, and will benefit from a reduction in the amount of vectors reaching and impacting the property as a result of the Program’s vector surveillance and control. The Assessment Diagram included in this report shows the boundaries of the Assessment Area.

### SUMMARY OF SERVICES

The following is an outline of the primary programs, projects, services and improvements (collectively “Services”) that would be funded by the proposed Mosquito, Vector and Disease Control Assessment:<sup>4</sup> These will diminish or cease if the proposed Assessment is not approved.

- Continued, ongoing mosquito inspections, surveillance and control in the Assessment District
- Treatment of sources within the Assessment District with environmentally sound products wherever mosquito larvae and/or pupae are found
- Sustaining the mosquito fish program which provides free mosquito-eating fish for backyard ponds and other static water features to property owners in the Assessment District
- Rapid response to requests in the Assessment District concerning mosquitoes, insects, and other vectors
- Critical identification of mosquitoes, ticks and other arthropods in the Assessment District
- Vigilant surveillance and testing for mosquito- and other vector-borne diseases in the Assessment District
- Continued surveillance and testing of rats, deer mice, and ground squirrels and the diseases they carry throughout the Assessment District
- Continued surveillance and testing of ticks and the diseases they carry throughout the Assessment District
- Adult mosquito control within the Assessment District when necessary to protect public health on property in the Assessment District
- Program-wide community education, presentations, and other outreach programs to educate property owners and the occupants of property within the Assessment District about mosquitoes, vectors and the diseases they can transmit
- Regular maintenance of facilities and equipment utilized by the Program

This Engineer’s Report (“Report”) defines the proposed benefit assessment which would provide funding for these continued mosquito, vector and disease control services for property throughout the Assessment District, as well as related costs for equipment, capital improvements and services, and facilities necessary and incidental to mosquito, vector and disease control programs.

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

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<sup>4</sup> The mosquito and vector control and disease prevention services materially increase the usefulness, utility, livability and desirability of properties in the Assessment Area.

*“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 rodents and other vertebrates (Health and Safety Code Section 2002(k)).*

*“Vector Control” means 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(l)).*

The Program operates under the authority of the 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 mosquitoborne 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 vectorborne diseases is only partially effective.*

(2) *Adequate protection of human health against vectorborne diseases is best achieved by organized public programs.*

(3) *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.*

(4) *Since 1915, mosquito abatement and vector control districts have protected Californians and their communities against the threats of vectorborne 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 XIID 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 and vector control services to be funded by the proposed assessment, 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 proposed assessments to lots and parcels within the Program based on the estimated special benefit each parcel receives from the Services funded by the benefit assessment.

## LEGISLATIVE ANALYSIS

### PROPOSITION 218

This assessment is 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 XIIC and XIID 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 of a public improvement which provides a special benefit to 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.*

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 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 (2008) 44 CAL.4TH 431**

On July 14, 2008, the California Supreme Court issued its ruling on the Silicon Valley Taxpayers Association, Inc. v. Santa Clara County Open Space Authority (“Silicon Valley” or “SVTA”). This ruling is the most significant court case in further legally clarifying the substantive assessment requirements of Proposition 218. Several of the most important elements of the ruling included further emphasis that:

- Benefit assessments are for special benefits to property, not general benefits <sup>5</sup>
- 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
- All public improvements or services provide some level of general benefit
- If a district is narrowly drawn, the fact that a benefit is conferred throughout the district does not make it general

This Engineer's Report, and the process used to establish this proposed assessment are consistent with the SVTA decision.

**DAHMS V. DOWNTOWN POMONA PROPERTY (2009) 174 CAL.APP.4TH 708**

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 ("Dahms"). 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 (2009) 46 CAL.4TH 646**

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 ("Bonander"). 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 (2010) 184 CAL.APP.4TH 1516**

On May 26, 2010, the 4th District Court of Appeal issued a decision on the Steven Beutz v. County of Riverside appeal ("Beutz"). 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.

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<sup>5</sup> 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 would receive a special benefit from the proposed public improvement or property-related service."

**GOLDEN HILL NEIGHBORHOOD ASSOCIATION V. CITY OF SAN DIEGO (2011)199 CAL.APP.4TH 416**

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 ("*Greater Golden Hill*"). 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 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 XIIC and XIID 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* and *Greater Golden Hill* 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 funding should be provided for the Services summarized above, on March 24, 2015, the Board directed the Assessment Engineer to initiate the proceedings for a benefit assessment. A preliminary Engineer's Report was prepared to establish the estimated costs for the mosquito, vector, disease surveillance and control services and related costs that would be funded by the assessments, to determine the special benefits and general benefits received from the Services, and to apportion the assessments to lots and parcels within the Program based on the estimated special benefit each parcel receives from the Services funded by the benefit assessment.

Following submittal of this Report to the County of Riverside Board of Supervisors for preliminary approval, the Board may, by Resolution, call for an assessment ballot

proceeding and Public Hearing on the proposed establishment of the Mosquito, Vector and Disease Control Assessment ("Assessment").

If the Board approves such Resolution and calls for the mailing of notices and ballots, a notice of assessment and assessment ballot will be mailed to property owners at least 45 days prior to the date of the Public Hearing set by the Board. Such notice would include a description of the proposed assessments as well as an explanation of the method of voting on the assessments. Each notice would include a ballot on which the property owner could mark his or her approval or disapproval of the proposed assessments and a postage-prepaid ballot return envelope.

After the ballots are mailed to property owners, a minimum 45-day time period must be provided for the return of the assessment ballots. Following this 45-day time period, a public hearing must be held for the purpose of allowing public testimony regarding the proposed assessments and services. At this hearing, the public would have the opportunity to provide input on this issue and would have a final opportunity to submit ballots. After the conclusion of the public input portion of the hearing, the hearing may be continued to a future date to allow time for the tabulation of ballots. The public hearing is currently scheduled for July 7, 2015 at 9:30 a.m.

With the passage of Proposition 218 on November 6, 1996, The Right to Vote on Taxes Act, now Article XIII C and XIII D of the California Constitution, the proposed assessments can be levied for fiscal year 2015-16, and future years, only if the ballots submitted in favor of the assessments are greater than the ballots submitted in opposition to the assessments. (Each ballot is weighted by the amount of proposed assessment for the property that it represents).

If it is determined, when the tabulation results are announced, that the assessment ballots submitted in opposition to the proposed assessments do not exceed the assessment ballots submitted in favor of the assessments (weighted by the proportional financial obligation of the property for which ballots are submitted) the Board may take action, by resolution, to approve the levy of the assessments for fiscal year 2015-16 and future fiscal years. If the assessments are so confirmed and approved, the levies would be submitted to the Riverside County Auditor for inclusion on the property tax rolls for fiscal year 2015-16.

If the assessments are so confirmed and approved, the Program would have the needed funding in fiscal year 2015-16 to establish and provide the Services described in this report. The fiscal year 2015-16 assessment budget includes outlays for surveillance of West Nile virus and other emerging diseases, mosquito control, other vector surveillance and control, capital equipment, other operational costs, supplies and disease testing programs, as well as outlays to cover some of the costs of establishing the assessments.

If the assessments are so confirmed and approved, they may be continued in future years and may be increased in future years by an annual adjustment tied to the Los Angeles-

Riverside-Orange County Area Consumer Price Index ("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 procedures for the levy of the assessments in future years commence with the creation of a budget for the upcoming fiscal year's costs and services, an updated assessment roll listing all parcels and their proposed assessments for the upcoming fiscal year and the preparation of an updated Engineer's Report. After these documents are prepared and submitted, they could be reviewed and preliminarily approved by the County Board of Supervisors at a public meeting. At this meeting, the Board could also call for the publication in a local newspaper of the intent to continue the assessment and set the date for a noticed public hearing. At the annual public hearing, members of the public could provide input to the Board prior to the Board's decision on continuing the services and assessments for the next fiscal year.

## GENERAL DESCRIPTION OF THE PROGRAM AND SERVICES

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### ABOUT THE PROGRAM

The County of Riverside Vector Control Program is a division of the County's Department of Environmental Health that controls and monitors mosquitoes, and other harmful pests such as ticks and rodents. The Program protects the usefulness, desirability and livability of property and the inhabitants of property within its jurisdictional area through the abatement of vertebrate and invertebrate vectors. In addition, the Program regularly tests for diseases carried by mosquitoes, rodents, and ticks, and educates property owners and the occupants of property in the Program about how to protect themselves from diseases transmitted by these and other organisms.

The Services proposed to be provided by the Program are over and above the baseline level of service that may be provided if the measure is not approved. The formula below identifies the final level of service as the sum of the baseline level of service and the continued level of service to be funded by the proposed new assessment.

<b>Final Level of Service</b>	=	<b>Baseline Level of Service</b>	+	<b>Continued Level of Service</b>
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### SUMMARY OF SERVICES

The County of Riverside Vector Control Program utilizes an Integrated Vector Management Program (IVMP) to manage vector populations (e.g., mosquitoes) and minimize the risk of vector-borne disease. For example, the Program monitors and manages mosquito populations to minimize the risk of pathogen transmission (e.g., West Nile virus), disruption of human activities and the enjoyment of public and private areas, as well as the injury and discomfort that can occur to residents and livestock due to populations of biting mosquitoes. The pathogens currently of most concern are those that cause Western Equine Encephalitis (WEE), St. Louis Encephalitis (SLE), West Nile virus (WNV), Chikungunya, Dengue Fever and Yellow Fever, which are transmitted by mosquitoes; Plague and Murine Typhus transmitted by fleas; Leptospirosis and Hantavirus Pulmonary Syndrome associated with rats and other rodents; and Lyme disease, spotted fever group *Rickettsia*, Babesiosis, Anaplasmosis, *Borrelia miyamotoi*, tularemia and Ehrlichiosis transmitted by ticks.

The spread of these pathogens and the diseases they cause is minimized through ongoing vector surveillance activities, source reduction, source treatment, abatement, and educational outreach. These efforts also minimize the impacts vectors can have on residents, such as pain, allergic reactions, and discomfort from mosquito bites. To fulfill this purpose, the Program may take any and all necessary steps to control mosquitoes, monitor rodents and other vectors, and perform other related vector control services.



The proposed assessment would provide an adequate funding source for the continuation of the projects and programs for surveillance, prevention, abatement, and control of vectors within the Service Area. Such mosquito abatement and vector control projects and programs include, but are not limited to, public education, surveillance, source reduction, biological control, larvicide and adulticide applications, disease monitoring, 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 necessary and incidental to the vector control program.

The Services are further defined as follows:

- Response to mosquito problems as well as other pestiferous or disease transmitting organisms.
- Control of mosquito larvae in sources such as catch basins, industrial drains, agricultural sources, ditches, drain lines, vaults, wastewater treatment plants, under buildings, residences, horse troughs, freshwater marshes, , creeks, septic systems and other sources.
- Control of rodents through public education, bait stations and information dissemination of exclusionary methods and typical attractants
- Monitoring of Hantavirus and plague-bearing rodents, and other harmful vectors, such as Deer Mice and Ground Squirrels, through surveillance, response to service requests, recommendations for exclusion, control, and public education.
- Surveying and analyzing mosquito larvae population data to assess public health risks and allocate control efforts.
- Monitoring of mosquito populations using adult mosquito traps such as, host seeking traps (e.g., carbon dioxide baited traps), New Jersey light traps, and oviposition traps.
- Monitoring for pathogens carried and transmitted by mosquitoes and other arthropods, such as Encephalitis and West Nile virus.
- Deploying sentinel chicken flocks, testing of mosquito pools, and assisting State and local public health agencies with blood analytical studies.
- Distributing printed material, brochures, social media messaging, media materials that describe what residents, employees and property owners can do to keep their homes and property free of mosquitoes and other vectors.
- Cooperating with the California Department of Public Health Services and State Universities to survey and identify arthropod-borne pathogens such as Lyme disease and Plague found in parks, on trails and other locations frequented by property owners and residents.
- Facilitating testing and monitoring for pathogens carried and transmitted by ticks, such as Lyme disease, Ehrlichiosis, spotted fever group *Rickettsia*, and Babesiosis.
- Advising residents on controlling other potentially hazardous organisms and vectors such as ticks, mites, and fleas.



- Educating property owners and residents about the risks of diseases transmitted by insects and small mammals and how to better protect themselves and their pets.
- Assisting government agencies and universities in testing for Hantavirus, Arenavirus, and other pathogens carried by small mammal populations.
- Testing for and control of new and emerging pathogens.

The Program protects the public from vector-borne pathogens and injury and discomfort caused by mosquitoes in an environmentally compatible manner, through a coordinated set of activities and methods collectively known as the Integrated Vector Management Program (IVMP) as mentioned earlier. For all vector species, pathogens, and disease, public education is a primary control and prevention strategy. In addition, the Program determines the abundance of vectors and the risk of vector-borne pathogen transmission or discomfort through evaluation of public service requests, communication with the public and agencies, and field and laboratory surveillance activities. If mosquito populations, for example, exceed or are anticipated to exceed predetermined guidelines, Program staff employs the most efficient, effective, and environmentally sensitive means of control for the situation. Where feasible, water management or other source reduction activities (e.g., physical control) are instituted to reduce vector production. In some circumstances, the Program also uses biological control such as the planting of mosquitofish. When these approaches are not effective or are otherwise inappropriate, pesticides are used to treat specific vector producing or vector-harboring areas.

## **VECTORS AND VECTOR-BORNE DISEASES IN THE PROGRAM SERVICE AREA**

The Program undertakes activities through its Integrated Vector Management Program to control the following vectors of pathogens and disease (as well as discomfort and injury) within the Program:

### **MOSQUITOES**

Certain species of mosquitoes found in Riverside County can transmit Dengue and Yellow fevers, St. Louis Encephalitis, Western Equine Encephalomyelitis, West Nile virus, and potentially other encephalitis viruses. Although some species of mosquitoes have not been shown to transmit pathogens, all species can cause human discomfort when the female mosquito bites to obtain blood. Reactions range from irritation in the area of the bite, to severe allergic reactions or secondary infections resulting from scratching the irritated area. Additionally, an abundance of mosquitoes can cause economic losses, and loss of use or enjoyment of recreational, agricultural, or industrial areas.

Of the world's 3,000 mosquito species, more than 50 live in California, and 8 have been identified in Riverside County. Continuous surveillance and special control efforts are aimed at the most problematic species including: *Culex tarsalis*, *Culex quinquefasciatus*, *Culex stigmatosoma*, *Culex erythrothorax*, and *Anopheles spp.* The mosquito species listed in the table on the following page can be generally described as species of concern in the Assessment Area:

SPECIES	HABITAT	ABUNDANCE	SEASON	DISEASE ASSOCIATIONS
<i>Culex tarsalis</i>	Many	Great	Spring, Summer, Fall	West Nile Virus, St. Louis Encephalitis, Western Equine Encephalomyelitis
<i>Culex quinquefasciatus</i>	Many	Great	Spring, Summer, Fall	West Nile Virus, St. Louis Encephalitis
<i>Culex erythrothorax</i>	Tule ponds, river	Occasional	Spring, Summer, Fall	Potential for secondary reservoir for WNV
<i>Culex stigmatosoma</i>	Foul water	Occasional	Spring, Summer, Fall	West Nile and other arboviruses
<i>Aedes aegypti</i>	Human dwellings, back porch, patios	Newly introduced, potentially great	Spring, Summer, Fall	Yellow fever, Dengue, Chikungunya virus
<i>Aedes nigromaculis</i>	Flooded pasture, ag fields	Great	Summer, Fall	Serious daytime pest in recreational areas
<i>Aedes vexans</i>	Flooded river channels	Great	Spring, Fall	Serious daytime pest in nearby areas
<i>Aedes melanimon</i>	Flooded Creeks, wetlands	Moderate	Spring, Fall	Daytime pest near rivers and wetlands
<i>Aedes sierrensis</i>	Rotted tree holes	Moderate	Late Winter, Spring	Canine heartworm, serious pest in urban/suburban areas
<i>Aedes albopictus</i>	Forests	Newly introduced, potentially great	Spring, Summer, Fall	Yellow fever, Dengue, Chikungunya virus
Psorophora Genera	Many	East County	All Year	Very pestiferous, both day and night feeders
<i>Culiseta incidens</i>	Many	Great	All Year	None, obnoxious pest in urban/suburban areas
<i>Culiseta inornata</i>	Many	Moderate	Winter, Spring, Fall	None, pest in rural areas

<i>Anopheles freeborni</i>	Rivers, creeks	Great	Spring, Summer, Fall	Malaria
<i>Anopheles punctipennis</i>	Rivers, creeks, lakes	Moderate	Spring, Summer, Fall	Malaria

*Culex tarsalis* (Western Encephalitis Mosquito) is the primary vector of West Nile Virus (WNV), Saint Louis encephalitis (SLE) and the Western Equine encephalomyelitis (WEE) viruses. This species lives in a variety of aquatic sources ranging from clean to polluted waters, flooded agricultural fields to backyard stagnant pools, and fresh water to high salinity brackish water. This mosquito breeds year round and prefers to feed on birds. However, it readily attacks humans, horses and cattle.

*Culex quinquefasciatus* (Southern House Mosquito) is most frequently found in residential communities. This species breeds in highly polluted waters, artificial containers, septic tanks, underground storm drain systems, catch basins, waste treatment ponds, and neglected swimming pools. Birds are the principal blood meal source; however, they will readily attack humans and invade their homes. This mosquito is also an excellent vector for West Nile virus.

*Culex erythrorhax* (Tule Mosquito) is associated with ponds containing water plants called Tules. The Tule mosquito is a late morning/nighttime-biting mosquito and has been identified as a species of concern in the transmission of West Nile virus to birds. (Secondary reservoir)

*Culex stigmatosoma*: This mosquito breeds in foul water. It is primarily a bird feeder but will bite humans and animals.

*Culiseta spp*: This species breeds in a variety of habitats during the cooler months, and are active mostly during spring, fall and winter. These mosquitoes are also associated with the transmission of arboviruses.

*Anopheles spp*: These mosquitoes also breed in cool shaded areas in riparian habitats and a variety of other habitats. These species are known to transmit malaria.

## RODENTS

Rodents are present in the Program including the Dusky-footed Wood Rat (*Neotoma microtus*), the Desert Wood Rat (*Neotoma lepida*), the Norway Rat (*Rattus norvegicus*), the Roof Rat or Black Rat (*Rattus rattus*) and the Deer Mouse (*Peromyscus maniculatus*), and are subjects of Program action. In addition to being unsanitary, rodents harbor and transmit a variety of organisms that infect humans. Rats are hosts to the worm that causes trichinosis in humans. Humans may become infected when they eat poorly cooked meat from a pig that has eaten an infected rat. Rodent urine may contain the bacterium

that causes Leptospirosis, and their feces may contain Salmonella bacteria. In Riverside County, Bubonic Plague is commonly associated with animal disease outbreaks in populations of California Ground Squirrels (*Otospermophilus beechyi*). The vector is the Squirrel Flea (*Oropsylla montana*). Infected rat fleas may transmit plague and Murine Typhus. Rat bites may cause Bacterial Rat-bite Fever or infection. *P. maniculatus* can transmit Hantavirus through bodily excretions. Gnawing by rats causes damage to woodwork and electrical wiring, resulting in short circuits and potential fires. Additionally, an abundance of rats can cause economic losses, loss of use of public recreational areas, and loss of the enjoyment of property. Dusky-footed Wood Rats and Desert Wood Rats carry Arenavirus, and bacterial infections that may be passed on to humans, horses, and domestic pets by the bite of tick vectors. Diseases of concern include Lyme Borreliosis (e.g., Lyme disease), Babesiosis, spotted fever group *Rickettsia*, and Ehrlichiosis.

#### **OTHER ANIMALS OF IMPORTANCE**

Although certain animal species such as bats, ground squirrels, fleas, ticks, opossums, wood rats and house mice would not be regularly controlled, these animals play important roles in the transmission of Plague, Murine Typhus, Hantavirus, or Lyme disease and are regularly surveyed for pathogens. The Program also routinely provides education and consulting services to the public about disease risk associated with these vectors and appropriate measures to protect human health. The Program utilizes data provided by its ear tagging system to analyze the infection histories of these animals to make sure that control measures are undertaken only when absolutely necessary. In extreme cases where the transmission of a pathogen or the occurrence of disease is likely, as with the other Program activities, control efforts may be employed. Control of these animals would be done in consultation with the California Department of Public Health, Riverside County Public Health Department, Riverside County Animal Control Departments, Riverside County Agricultural Commissioner's Offices, and other State and local agencies.

Most of the vectors mentioned above are extremely mobile and cause the greatest hazard or discomfort away from their breeding site. Each of these potential vectors has a unique life cycle and most of them occupy different habitats. In order to effectively control these vectors, an Integrated Vector Management Program must be employed. Program policy is to identify those species that are currently vectors, to recommend techniques for their prevention and control, and to anticipate and minimize any new interactions between vectors and humans.

#### **INTEGRATED VECTOR MANAGEMENT**

The Integrated Vector Management Program of the County of Riverside Vector Control Program (also generally referred to as Integrated Pest Management or IPM) is a long-standing, ongoing program of surveillance and control of mosquitoes and other vectors of human disease and discomfort. The program consists of six types of activities:

1. Surveillance for vector populations, vector habitats, disease pathogens, and public distress associated with vectors; this includes trapping and laboratory analysis of vectors to evaluate populations and disease threats, direct visual

- inspection of known or suspected vector habitats, the use of all-terrain vehicles and boats to access remote areas, maintenance of access paths, and public surveys.
2. Public education to encourage and assist reduction or prevention of vector habitats and prevent human vector interaction on private and public property.
  3. Management of vector habitat, especially through water control and maintenance or improvement of channels, tide gates, levees, and other water control facilities, etc. (i.e., Source Reduction/Physical Control).
  4. Vegetation management to improve surveillance and/or reduce vector populations.
  5. Rearing, stocking, and provision to the public of the mosquitofish *Gambusia affinis*; application of mosquito larvicides, such as materials containing the bacterium *Bacillus sphaericus* or *Bacillus thuringiensis israelensis* (i.e., Bti); and possibly the use of other predators or pathogens of vectors ("Biological Control").
  6. Application of non-persistent selective insecticides to reduce populations of larval or adult mosquitoes and other invertebrate threats to public health ("Chemical Control").

The Program's activities address two basic types of vectors – mosquitoes and other insects, and rodents – but both share general principles and policies including identification of vector problems; responsive actions to control existing populations of vectors, prevent new sources of vectors from developing, and manage habitat to minimize vector production; education of landowners and others (e.g., agencies) on measures to minimize vector production or interaction with vectors; and provision and administration of funding and institutional support necessary to accomplish these goals.

In order to accomplish effective and environmentally sound vector management, the manipulation and control of vectors must be based on careful surveillance of their abundance, distribution, habitat (potential abundance), pathogen load, and potential contact with people; the establishment of treatment guidelines; and appropriate selection from a wide range of control methods. This dynamic combination of surveillance, treatment guidelines, and use of multiple control activities in a coordinated program is generally known as Integrated Pest Management (IPM) (Glass 1975, Davis et al 1979, Borror et al 1981, Durso 1996, Robinson 1996).

The Program's Integrated Vector Management Program, like any other IPM program, by definition involves procedures for minimizing potential environmental impacts. The Program's program employs IPM principles by first determining the species and abundance of vectors through evaluation of public service requests and field surveys of immature and adult vector populations, and then, if the populations exceed predetermined guidelines, using the most efficient, effective, and environmentally compatible means of control. For all vector species, public education is an important control strategy, and for some vectors (rodents, ticks) it is the Program's primary control method. In some situations, water management or other physical control activities (historically known as

source reduction) can be instituted to reduce vector habitat and production. The Program also uses biological control such as the planting of mosquitofish in some settings. When these approaches are not effective or are otherwise inappropriate, pesticides are used to treat specific vector-producing or vector-harboring areas.

In order to maximize familiarity by the operational staff with specific vector sources in the project area, the Program is divided into operational zones. Each zone has assigned to it a full-time vector control technician, and sometimes also a vector control aide, whose responsibilities include public and agency communication and education, minor physical control, inspection and treatment of known vector sources, finding and controlling new sources, and responding to service requests from the public.

Vector control activities are conducted at a wide variety of sites throughout the Program's project area. These sites can be roughly divided into natural type (e.g., natural, restored, enhanced, or manmade simulating natural) sites such as vernal pools and other seasonal wetlands, or anthropogenic type sources such as, storm water detention basins, flood control channels, spreading grounds, street drains and gutters, wash drains, irrigated pastures, septic systems, swimming pools, tire piles, ornamental ponds and agricultural ditches etc.

## **SURVEILLANCE AND SITE ACCESS**

Surveillance is conducted in a manner based upon equal spread of resources throughout the Program boundaries, focusing on areas of likely sources. Treatment strategies are based upon the results of the surveillance programs, and are specifically designed for individual areas.

In addition to the disruption of human activities and causing our environment to be uninhabitable, certain insects and animals may transmit a number of pathogens. The pathogens of most concern in Riverside County are West Nile virus, St. Louis Encephalitis (SLE) and Western Equine Encephalomyelitis (WEE) transmitted by mosquitoes; Plague and Murine Typhus transmitted by fleas; Leptospirosis and Hantavirus Pulmonary Syndrome associated with rats and other rodents; and Lyme Disease, Babesiosis, and Ehrlichiosis transmitted by ticks.

Mosquito populations are surveyed using a variety of field methods and traps. Small volume mosquito "dippers" (e.g., small cup of approximately 12 ounces attached to a wooden or aluminum pole) and direct observation are used to evaluate larval populations; service requests from the public, field landing counts, light traps, and host seeking traps, and oviposition traps are used to evaluate adult populations.

Mosquito-borne pathogens are surveyed using sentinel chickens, adult mosquitoes, and wild birds. Coops with sentinel chickens are maintained on the property of willing landowners. The Program employs standard practices of good animal husbandry to ensure the health and well-being of the sentinel animals. The Program is in compliance



with the Animal Welfare Act (Reg. No.: 93-R-0457) as administered by the United States Department of Agriculture (USDA) for the well-being and safety of laboratory animals.

Adult mosquitoes are collected and tested for infection with West Nile virus, SLE and WEE. Collection is made with small light, host seeking, or oviposition traps. Host seeking traps are typically baited with carbon dioxide in the form of dry ice. Although traps are typically placed in vegetated areas, care is taken to ensure that placement of traps does not significantly damage any vegetation.

Surveillance also is conducted to determine vector habitat (e.g., standing water) and the effectiveness of control operations. Inspections are conducted using techniques to minimize the potential for environmental impacts. Staff routinely uses pre-existing access points such as roadways, open areas, walkways, and trails. Vegetation management (e.g., trimming trees and vines, clearing paths through brush) is conducted where overgrowth precludes safe and efficient access. All of these actions only result in a temporary/localized physical change to the environment with regeneration/regrowth occurring within a short period of time.

In order to access various sites throughout the Program for surveillance and for control, Program staff utilizes specialized equipment such as light trucks, all-terrain vehicles, and boats. Program policies on use of this equipment are designed to avoid environmental impact.

The Program's jurisdictional powers allow for testing for the presence of Plague and Murine Typhus by collecting ground squirrels, wild rodents, opossums, and fleas. Historically the Program has partnered with other public health agencies (e.g., CDPH) to perform this work. (Currently the Program does not anticipate it would provide this service due to a lack of staffing and certified specialists to perform the work.) Testing for the presence of Hantavirus Pulmonary Syndrome can be conducted by collecting wild rodents. Small animals can be trapped using live traps baited with food. The traps would be set in the afternoon and would be collected within 24 hours. The animals would be anesthetized and blood, tissue, and/or flea samples would be obtained. Threatened and endangered species and other legally protected animals that might become trapped would be released immediately and would not be used in these tests.

## EDUCATION

The primary goal of the Program's activities is to minimize vector populations, the potential for pathogen transmission, and the occurrence of disease by managing vector habitat while protecting habitat values for their predators and other beneficial organisms. Vector prevention for example, is accomplished through public education, including site-specific recommendations on water and land use, and by physical control (discussed in a later section).

The Program's education program teaches elementary school students, property owners, residents and agencies how to recognize, prevent, and suppress vector production and

harborage on their properties. This part of the Program's Services is accomplished through the distribution of brochures, fact sheets, newsletters, participation in local fairs and events, presentations to community organizations, contact with technicians in response to service requests, social media, public service announcements and news releases. Public education also includes a school program to teach future adults about vector biology, how to be responsible and eliminate vector-breeding sources, and to educate their parents or guardians about Program services and how they can reduce vector-human interaction.

## **CONTROL OF MOSQUITOES**

Mosquito control is based upon and driven by vector biology and surveillance. When a mosquito source produces mosquitoes in numbers that exceed Program treatment criteria, a technician will generally work with landowners or responsible agencies to reduce the habitat value of the site for mosquitoes (source reduction/physical control). If this is ineffective, not immediately obtainable, or inappropriate for the given site, the technician will determine the best method of treatment, including biological control and chemical control.

### **PHYSICAL CONTROL**

The Program physically manipulates and manages mosquito habitat areas (breeding sources) when appropriate to reduce mosquito production. This may include removal of containers and debris, removing standing water from unmaintained swimming pools and spas, removal of vegetation or sediment interrupting water flow, rotating stored water, pumping and/or filling sources, improving drainage and water circulation systems, breaching or repairing levees, and installing, improving, or removing culverts, tide gates, and other water control structures in wetlands. Mosquito source reduction and physical manipulation carried out in sensitive habitats is performed in consultation with the appropriate regulatory agencies.

### **BIOLOGICAL CONTROL**

The mosquitofish, *Gambusia affinis*, is the Program's primary biocontrol agent used against mosquitoes. Mosquitofish are not native to California, but have been widely established in the state since the early 1920's, and now inhabit most natural and constructed water bodies. The Program maintains mosquitofish in large tanks. Program technicians place mosquitofish in contained man-made settings where either previous surveillance has demonstrated a consistently high production of mosquitoes, or where current surveillance indicates that mosquito populations would likely exceed chemical control guidelines without prompt action. Mosquitofish are also made available to property owners and residents to control mosquito production in artificial containers, such as ornamental fishponds, water plant barrels, horse troughs, and abandoned swimming pools.



### CHEMICAL CONTROL (FOR MOSQUITOES AND OTHER VECTORS)

Since many mosquito-breeding sources cannot be adequately controlled with physical control measures or mosquitofish, the Program also uses biological materials and chemical insecticides approved by the US Environmental Protection Agency, the California Department of Pesticide Regulation, and other environmental agencies to control mosquito production where observed mosquito production exceeds Program guidelines. When field inspections indicate the presence of vector populations which meet Program guidelines for chemical control (including abundance, density, species composition, proximity to human settlements, water temperature, presence of predators, and others), Program staff applies these materials to the site in strict accordance with the label instructions. The primary types of materials used against mosquitoes are selective larvicides. In addition, if large numbers of adult mosquitoes are present and potential public health issue or actual public health issue exists, the Program may apply low persistence aerosol adulticides utilizing Ultra Low Volume methods and equipment to obtain control.

Mosquito Larvicides: Depending on time of year, water temperature, organic content, mosquito species present, larval abundance and density, and other variables, larvicide applications may be repeated at any site at recurrence intervals ranging from annually to weekly. Larvicides routinely used by the Program include methoprene (e.g., Altosid and MetaLarv) and Bti (*Bacillus thuringiensis israelensis*) and Bs (*Bacillus sphaericus*).

1. Methoprene is a biochemical, synthetic juvenile hormone designed to disrupt the transformation of a juvenile mosquito into an adult. It is applied either in response to observed populations of mosquito larvae at a site, and/or as a sustained-release product that can persist for up to four months. Application can be by hand, ATV, watercraft or aircraft (e.g., helicopter).
2. In past years the Program has used Agnique, which is the trade name for a surface film larvicide, comprised of ethoxylated alcohol. The Program has almost completely exhausted its stocks of this product, and as it is no longer manufactured the Program now uses larvicide oils such as CoCoBear and BVA2 oils as larvicides and pupicides.
3. Bti (*Bacillus thuringiensis israelensis*) is a bacterium that is ingested by larval mosquitoes and disrupts their gut lining, leading to death before pupation. Bti is applied by the Program as a liquid or bonded to inert substrate (e.g., sand, corncob granules) to assist penetration of vegetation. Persistence is low in the environment, and efficacy depends on careful timing of application relative to the larval instar. Therefore, use of Bti requires frequent inspections of larval sources during periods of larval production, and may require frequent applications of material. Application can be made by hand, ATV, watercraft or aircraft (e.g., helicopter).
4. *Bacillus sphaericus* is a biological larvicide. The mode of action is similar to that of Bti. *B. sphaericus* is better suited for use at sites with higher levels of organic content in the water.

Mosquito Adulticides: In addition to chemical control of mosquito larvae, the Program also performs Ultra Low Volume applications of pesticides for control of adult mosquitoes if specific guidelines are met, including species composition, population density (as measured by landing count or trapping of adult mosquitoes), proximity to human populations, and/or potential for the transmission of a pathogen and/or occurrence of disease (i.e. injury and discomfort). As with larvicides, adulticides are applied in strict conformance with label requirements.

Other Insecticides: In addition to direct chemical control of mosquito populations, the Program also applies insecticides to control ground-nesting yellowjackets that pose an imminent threat to humans, pets, or livestock. This activity is triggered by a public request for assistance, rather than in response to direct population monitoring. Drione®, DeltaDust® and Wasp-Freeze® are insecticides used by the Program to control ground-nesting yellowjackets. The potential environmental impacts of these materials is minimal because (1) their active ingredients include pyrethrins, deltamethrin, allethrin, and phenothrin, (2) the application rates are minimal, and (3) the mode of application, into underground nests, further limits the potential for environmental exposure from these materials.

## **CONTROL AND SURVEILLANCE OF OTHER VECTORS**

### **TICK SURVEILLANCE**

Lyme disease in Riverside County is monitored via adult tick collections. During the fall, winter, and spring months, the Program monitors tick populations in high use public areas. Ticks are collected by conducting tick “flagging.” Flagging material made up of white flannel is cut to a 3 by 3 foot square and attached to a handle approximately 4 feet long. The flag is passed over grasses and small shrubbery and examined for attached ticks. This collecting method takes advantage of the questing behavior of adult ticks. Ticks are readily collected in various areas of the San Jacinto Mountains, Santa Rosa Mountains, in the Banning and Beaumont foothill areas, the Santa Rosa Plateau area, and in the Ortega Mountains. The collections are principally made along well-worn paths frequently utilized by deer and hikers. The ticks are then identified, recorded, and sent off to the California Department of Public Health (CDPH) and the U.S. Army Center for Health Promotion and Preventive Medicine for testing. This data is used for risk assessment purposes.

### **RODENT CONTROL**

The Program’s Rodent Control and Surveillance Program routinely monitors for plague and hantavirus in Riverside County. Plague is commonly associated with animal disease outbreaks in populations of California Ground Squirrels (*Spermophilus beecheyi*). The vector linking the disease to humans is the Squirrel Flea (*Oropsylla montana*). Hantavirus is contracted through skin exposure or inhalation of airborne particles of feces or urine from infected rodents. The western portion of Riverside County has many habitats that are suitable locations for the development of deer mice. Surveillance activities are conducted during the Spring, Fall, and Winter seasons due to the necessary focus of WNV surveillance and mosquito control activities during the summer. Blood samples were collected, processed at the Program’s laboratory, and sent to CDPH for Hantavirus

antibody analysis. The program also provides detailed information and guidance to the public. The program's guidance is based on the principles of exclusion, and the implementation of best management practices to control rat and mice populations inside and outside of the home. In providing information to the public, Program staff stresses the importance of preventing rodent access into the home, and property management and maintenance to preclude the presence of rodent habitat.

Rat control can often be necessary at the community and neighborhood levels and require cooperation and collaboration amongst neighbors. The Program offers and makes staff available for informational presentations to communities in these situations. Program staff works with other local government agencies to provide information to the public and assist in remedying especially problematic situations.

Program staff answers phone calls and take inquiries from the public regarding rats. General information regarding rodent issues is provided through the Program website and printed literature.

Specific issues and service provision is handled by a Specialist, who answers phone calls/requests for information from members of the public or agencies with specific issues or problematic situations.

The Specialist provides information regarding rodent control, prevention, exclusion, and vector-borne disease. If deemed necessary and appropriate, a service request is made for an onsite visit. Subsequently, a rodent inspection is performed with an accompanying report. If applicable, information is provided regarding:

- Rodent habitat
- Property maintenance/BMPs
- Exclusion
- Trapping
- Disinfection
- Disposal
- Community/neighborhood presentation

Program staff provides community outreach and educational materials and information regarding rodent issues at public events, special presentations held throughout the year, and when communicating with the public in the field.

## **SERVICE REQUESTS**

Any property owner, business or resident can contact the Program to request vector control related service or inspection, and Program staff will respond promptly to the property to evaluate the situation and to perform appropriate surveillance and control services. The Program responds to all service requests within its boundaries in a timely manner, regardless of location.

## ESTIMATE OF COST

**FIGURE 1 – COST ESTIMATE – FY 2015-16**

<b>County of Riverside Vector Control Program</b> <b>Mosquito, Vector and Disease Control Assessment</b> Preliminary Estimate of Cost Fiscal Year 2015-16				
				<b>Total Budget</b>
<b>Vector Control Services and Related Expenditures</b>				
Mosquito, Vector and Disease Control Operations				\$342,898
Services and Supplies				\$271,504
<b>Total Vector Control Services and Related Expenditures</b>				<b>\$614,402</b>
Less:				
District Contribution for General Benefit from Other Revenue Sources <sup>1</sup>				<b>(\$129,024)</b>
<b>Total Vector Control Services</b>				<b>\$485,378</b>
			(Net Amount to be Assessed)	
<b>Budget Allocation to Property</b>				
Zones of Benefit	Total Parcels	Total SFE Units <sup>2</sup>	Assessment per SFE <sup>3</sup>	Total Assessment <sup>4</sup>
Zone A	88,153	65,434	\$7.14	\$467,245
Zone B	17,900	8,284	\$2.04	\$16,918
Zone C	1,458	1,192	\$1.02	\$1,215
<b>Total</b>	<b>107,511</b>	<b>74,910</b>		<b>\$485,378</b>

**Notes:**

1. As determined in the following section, 21% of the cost of the Services funded by the Assessments including the amount of general benefit must be funded from sources other than the assessments, to cover any general benefits from these Services. The total cost to provide the Services is \$614,402 as shown above. The Program must contribute at least \$129,024 (or 21% of \$614,402), from sources other than the Assessments. The Program will contribute \$129,024 from non-assessment revenue. This contribution offsets any general benefits from the Mosquito, Vector and Disease Control Assessment Services.

2. SFE Units means Single Family Equivalent benefit units. See the section "Assessment Apportionment" for further definition.

3. The assessment rate per SFE is the total amount of assessment per Single Family Equivalent benefit unit.

4. The proceeds from the assessments will be deposited into a special fund for the Assessment. Funds raised by the assessment shall be used only for the purposes stated within this Report. Any balance remaining at the end of the fiscal year, June 30, must be carried over to the next fiscal year. The Total Assessment Budget is the sum of the final property assessments rounded to the lower penny to comply with the County Auditors' levy submission requirements. 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

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This section of the Report explains the benefits to be derived from the Services provided for property in the Program, and the methodology used to apportion the total assessment to properties within the Assessment Area.

The proposed Mosquito, Vector and Disease Control Service Area consists of the Assessor Parcels in the County of Riverside Mosquito and Vector Control Program Assessment Area, as defined within the area of the boundary diagram included within this Engineer's Report. (See the Assessment Roll for a list of all the parcels included in the proposed Mosquito, Vector and Disease Control Assessment.)

The method used for apportioning the assessment is based upon the proportional special benefits to be derived by the properties in the Program over and above the general benefits conferred to 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. The 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 codified in Article XIID 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 benefit factors listed below, 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 their 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 XIID 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."*<sup>6</sup>

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

Since all assessments existing before or after Proposition 218 must be based on special benefit to property, the drafters of Proposition 218 indicated that vector control services potentially confer special benefit on property based on the specific circumstances of the services and properties. Moreover, the statement of the drafter's intent also acknowledges that any new or increased vector control assessments after the effective date of Proposition 218 would need to comply with the engineering and voter approval requirements they established. Therefore, the drafters of Proposition 218 clearly recognized vector assessments as a "traditional" use of assessments, acknowledged that new vector assessments may be formed after Proposition 218, and inherently were satisfied that vector control services potentially confer special benefit to properties.

The Legislature also made a specific determination after Proposition 218 was enacted that vector 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 XIID of the California Constitution to finance vector control projects and programs. The intent of the Legislature

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<sup>6</sup> Howard Jarvis Taxpayers Association, "Statement of Drafter's Intent", January 1997.

to allow and authorize benefit assessments for vector 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:

*Allows special benefit assessments to finance vector control projects and programs, consistent with Proposition 218.<sup>7</sup>*

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

### **MOSQUITO AND VECTOR CONTROL IS A SPECIAL BENEFIT TO PROPERTIES**

As described below, this Engineer's Report concludes that mosquito and vector control is a special benefit that provides direct advantages to property in the Assessment District. For example, if approved, the assessment would provide for 1) surveillance throughout the Assessment Area to measure and track the levels and sources of mosquitoes impacting property in the area and the people who live and work on the property; 2) mosquito and mosquito source control, treatment and abatement throughout the Assessment Area such that all property in the area benefits from a comparable reduction of mosquito levels; 3) monitoring throughout the Assessment Area to evaluate the effectiveness of Program treatment and control, and to ensure that all properties are receiving the equivalent level of mosquito reduction benefits; and 4) service requests which result in Program staff directly visiting, inspecting and treating property.

The services proposed to be continued and enhanced by the Program would be provided throughout the Assessment Area; that is, the benefit received in the Assessment Area would be Program wide. Except as reflected in the "Other Properties" section of this Report, all property would receive benefits from the proposed comprehensive mosquito, vector and disease monitoring, control and prevention services.

Moreover, the Services funded by the proposed Assessments would reduce the level of mosquitoes and vectors arriving at and negatively impacting properties within the proposed Assessment District.

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

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<sup>7</sup> Senate Bill 1588, Mosquito Abatement and Vector Control District Law, Legislative bill analysis.



## BENEFIT FACTORS

In order to allocate the proposed Assessments, the Assessment Engineer identified the types of special benefit arising from the aforementioned Services and that would be provided to property in the Assessment Area. The following benefit factors represent the types of special benefit to parcels resulting from the Services to be financed with the assessment proceeds. These types of special benefit are as follows:

### **REDUCED MOSQUITO AND VECTOR POPULATIONS ON PROPERTY AND AS A RESULT, ENHANCED DESIRABILITY, UTILITY, USABILITY AND FUNCTIONALITY OF PROPERTY IN THE ASSESSMENT AREA**

The proposed assessments will provide for the continuation of services for the control and abatement of nuisance and disease-carrying mosquitoes. These Services materially reduce the number of mosquitoes and vectors on properties throughout the Assessment Area. The lower mosquito and vector populations on property in the Assessment Area 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 vector-borne disease. This is a special benefit to residential, commercial, agricultural, industrial and other types of properties because all such properties will directly benefit from reduced mosquito and vector populations, and properties with lower vector populations are more usable, functional and desirable.

Excessive mosquitoes and other vectors 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.<sup>8</sup> 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 Area.

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<sup>8</sup> Prior to the commencement of modern mosquito control services, areas in the State of California such as the San Mateo Peninsula, Napa County, Lake County and areas in Marin and Sonoma Counties had such high mosquito populations or other vector 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 vector populations were lower.

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.”<sup>9</sup>*

Mosquitoes and other vectors emerge from sources throughout the Assessment Area, and with an average flight range of two miles (although the flight range of a female mosquito may be up to 20 miles), mosquitoes from known sources can reach all properties in the Assessment Area. 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 Area. 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 materially reduce mosquito populations on property throughout the Assessment Area.

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<sup>9</sup> Assembly Concurrent Resolution 52, chaptered April 1, 2003.

A recently increasing source of mosquitoes is unattended swimming pools:

*“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.”<sup>10</sup>*

#### **INCREASED SAFETY OF PROPERTY IN THE ASSESSMENT AREA**

The proposed Assessments will result in continued year-round proactive Services to control and abate mosquitoes and other vectors that otherwise would occupy properties throughout the Assessment Area. Mosquitoes and other vectors are transmitters of diseases, so the reduction of mosquito and vector 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 Area safer, which is a distinct special benefit to property in the Assessment Area.<sup>11</sup> This is not a general benefit to property in the Assessment Area or the public at large because the Services are tangible mosquito, vector and disease control services that will be provided directly to the properties in the Assessment Area, and the Services are over and above the baseline services that could be provided by the County of Riverside Vector Control Program without the proposed Assessment.

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<sup>10</sup> Riesen William K. (2008). Delinquent Mortgages, Neglected Swimming Pools, and West Nile Virus, California. Emerging Infectious Diseases.Vol. 14(11).

<sup>11</sup> By reducing the risk of disease and increasing the safety of property, the proposed Services will materially increase the usefulness and desirability of certain properties in the Assessment Area.

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.”<sup>12</sup>*

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

*“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 AREA**

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.”<sup>13</sup>*

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<sup>12</sup> Assembly Concurrent Resolution 52, chaptered April 1, 2003.

<sup>13</sup> Rose, Robert. (2001). Pesticides and Public Health: Integrated Methods of Mosquito Management. Emerging Infectious Diseases. Vol. 7(1); 17-23.

*“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.”<sup>14</sup> (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:

*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 Elnaïem, 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.<sup>15</sup>*

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

#### **PROTECTION OF ECONOMIC ACTIVITY ON PROPERTY IN THE ASSESSMENT AREA**

As 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 proposed Assessments will help to prevent the likelihood of such outbreaks in the Assessment Area.

<sup>14</sup> Center for Disease Control. (2004). West Nile Virus Activity --- United States, November 9--16, 2004. Morbidity and Mortality Weekly Report. 53(45); 1071-1072.

<sup>15</sup> 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)

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

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 the US was estimated to cost over \$778 million from 1999 to 2012:

*There are no published data on the economic burden for specific West Nile virus (WNV) clinical syndromes (i.e., fever, meningitis, encephalitis, and acute flaccid paralysis [AFP]). We estimated initial hospital and lost-productivity costs from 80 patients hospitalized with WNV disease in Colorado during 2003; 38 of these patients were followed for 5 years to determine long-term medical and lost-productivity costs. Initial costs were highest for patients with AFP (median \$25,117; range \$5,385–\$283,381) and encephalitis (median \$20,105; range \$3,965–\$324,167). Long-term costs were highest for patients with AFP (median \$22,628; range \$624–\$439,945) and meningitis (median \$10,556; range \$0–\$260,748). Extrapolating from this small cohort to national surveillance data, we estimated the total cumulative costs of reported WNV hospitalized cases from 1999 to 2012 to be \$778 million (95% confidence interval \$673 million–\$1.01 billion). These estimates can be used in assessing the cost-effectiveness of interventions to prevent WNV disease.*<sup>16</sup>

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 vector control services of the type that would be funded by the proposed Assessments:

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<sup>16</sup> Initial and Long-Term Costs of Patients Hospitalized with West Nile Virus Disease. Arboviral Diseases Branch, Centers for Disease Control and Prevention, Fort Collins, Colorado; Prion and Health Office, Centers for Disease Control and Prevention, Atlanta, Georgia; Division of Preparedness and Emerging Infections, Centers for Disease Control and Prevention, Atlanta, Georgia. J. Erin Staples, Manjunath Shankar, James J. Sejvar, Martin I. Meltzer, and Marc Fischer. J. Erin Staples, Arboviral Diseases Branch, Centers for Disease Control and Prevention, 3150 Rampart Road, Fort Collins, CO 80521. E-mail: AUV1@cdc.gov.

*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.*<sup>17</sup>

The Services to be funded by the proposed Assessments will help prevent the likelihood of such outbreaks on property in the Assessment Area 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 Area that would not be received in absence of the Assessments.

#### **PROTECTION OF ASSESSMENT AREA'S AGRICULTURE, TOURISM, AND BUSINESS INDUSTRIES**

The agriculture, tourism and business industries in the Assessment Area will benefit from reduced levels of harmful or nuisance mosquitoes and other vectors<sup>18</sup>. Conversely, any outbreaks of emerging vector-borne pathogens such as West Nile virus could also materially negatively affect these industries. Diseases transmitted by mosquitoes and other vectors can adversely impact business and recreational functions.

*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."*<sup>19</sup>

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<sup>17</sup> 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.

<sup>18</sup> Properties within the Assessment Area consist of 6.0% agricultural properties and 1.1% tourism and business properties.

<sup>19</sup> 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](http://www.aphis.usda.gov/vs/ceah/cnahs/nahms/equine/wnv2002_CO_NB.pdf)



*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.*<sup>20</sup>

The proposed assessments will serve to protect the businesses and industries in the Assessment Area. This is a direct advantage and special benefit to property in the Assessment Area.

#### **REDUCED RISK OF NUISANCE AND LIABILITY ON PROPERTY IN THE ASSESSMENT AREA**

In addition to health related factors, uncontrolled mosquito and vector populations create a nuisance for residents, employees, customers, tourists, farm workers and guests in the Assessment Area. Properties in the Assessment Area will benefit from the reduced nuisance factor that will be created by the Services. Agricultural and rangeland properties also benefit from the reduced nuisance factor and harm to livestock and employees from lower mosquito and vector populations.

Agricultural, range, golf course, cemetery, open space and other such lands in the Assessment Area contain large areas of mosquito and vector habitat and are therefore a significant source of mosquito and vector populations. In addition, residential and business properties in the Assessment Area can also contain significant sources.<sup>21</sup> It is conceivable that sources of mosquitoes could be held liable for the transmission of diseases or other harm. For example, California Health & Safety Code sections 2062 and 2063 authorize civil penalties for property owners who do not remove standing water sources of mosquitoes on their property.

The proposed Services to be provided by the Program will reduce the mosquito and vector related nuisance and health liability to properties in the Assessment Area. The reduction of that risk of liability constitutes a special benefit to property in the Assessment Area and this special benefit would not be received, or only received minimally, in absence of the proposed Services funded by the proposed Assessments.

#### **BENEFIT FINDING**

In summary, the special benefits described in this Report and the continuation of Services in the Assessment Area would directly benefit and protect the real properties in the Assessment District in excess of the proposed assessments for these properties. Therefore, the Assessment Engineer finds that the cumulative special benefits to property

<sup>20</sup> Jennings, Allen. (2001). USDA Letter to EPA on Fenthion IRED. United States Department of Agriculture, Office of Pest Management Policy. March 8, 2001.

<sup>21</sup> Sources of mosquitoes on residential, business, agricultural, range and other types of properties include removable sources such as containers that hold standing water.



from the Services are reasonably equal to or greater than the proposed assessment of \$7.14 per benefit unit or Single Family Equivalent, SFE, for Zone A, \$2.04 per SFE for Zone B, and \$1.02 per SFE for Zone C (Figure 1 – Cost Estimate). These rates per SFE generate revenues of \$485,378, which is the amount needed to fund the Program's budget total of \$614,402, less the Program contribution of \$129,024. Further, the Engineer has judged that the special benefit to each parcel reasonably exceeds the sum of all dedicated taxes and assessments imposed on each parcel.

### GENERAL VS. SPECIAL BENEFIT

Article XIIC 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:

<b>Total Benefit</b>	<b>=</b>	<b>General Benefit</b>	<b>+</b>	<b>Special Benefit</b>
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There is no widely-accepted or statutory formula for general benefit from vector 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,"<sup>22</sup>

<sup>22</sup> The *Silicon Valley* decision 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 contain 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 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.

but outside the narrowly-drawn Assessment District and to “the public at large.” The *Silicon Valley* decision 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:

<b>General Benefit</b>	=	<b>Benefit to Real Property Outside the Assessment District</b>	+	<b>Benefit to Real Property Inside the Assessment District that is Indirect and Derivative</b>	+	<b>Benefit to the Public at Large</b>
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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 *Silicon Valley* 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 proposed assessment, the overwhelming proportion of the benefits conferred to property is special, since the advantages from the mosquito and disease 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. XIID, sections 2(i) & 4(f)). Significantly, without this proposed assessment, only the existing limited baseline services would be provided. The majority of the Services to be funded by the proposed assessment therefore would be a special benefit, because the Services would particularly and distinctly benefit and protect the Assessment Area over and above the minimal baseline benefits and service. However, some of the Services could benefit the public at large and properties outside the Assessment Area. In this report, the general benefit is liberally 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 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 liberally estimated and described, and then budgeted so that it is funded by sources other than the Assessment.

## EVALUATING SPECIAL BENEFIT

An evaluation of the special benefit is included here to ensure that the assessment on any parcel does not exceed the reasonable cost of the proportional special benefit conferred on that parcel. (The general benefit resulting from the Services is rigorously quantified and

separated in the next section of the report.) The following table shows the budget allocation for Program services within the Assessment Area.

Vector Control Services	Budget Allocation	Budget Allocation per \$7.14 SFE Assessment Rate
Mosquito and Vector Control	37%	\$2.64
Mosquito and Vector Surveillance	41%	\$2.93
Public Education	8%	\$0.57
Capital Facilities and Equipment	14%	\$1.00

The proportional special benefit to individual properties and their owners can be defined by the ratio of the cost of Services provided by the Program per SFE benefit unit compared to the same services and materials provided by an independent contractor or purchased outright. An evaluation of private pest control services in the area identified that a typical single-visit mosquito control service for a residential property costs \$400 and a typical rodent control service for a residential property costs \$100. Clearly, these costs far exceed the proportional cost of \$2.64 to a typical property owner for the same services provided by the Program in the Assessment Area. Similarly, an analysis of the cost to an individual for mosquito and vector control surveillance equipment such as mosquito traps, finds that the purchase price of a mosquito trap ranges from \$92 to \$321 – and this does not include the costs of setting, monitoring, and collecting and evaluating the samples. Again, these individual surveillance costs far exceed the proportional cost of \$2.93 to a typical property owner in the Assessment Area. Further, the analysis of the proportional costs of \$0.57 for public education and \$1.00 for capital facilities and equipment compared with estimated costs to provide these services from alternative providers also confirms that the proposed assessments are far less than the reasonable costs of Services.

### CALCULATING GENERAL BENEFIT

Without this proposed Assessment the Program would lack the funds to continue current Services to the Assessment Area. Consistent with footnote 8 of the *Silicon Valley* decision, and for the reasons described above, the Program has determined that, except as reflected in the “Other Properties” section of this Report, all parcels in the Assessment Area receive a shared direct advantage and special benefit from the Services. The Services directly and particularly serve and benefit each such 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, this concept means that the baseline general benefits are minimal and that the majority of the vector control services, which provide direct advantage to property in the Assessment Area, are over and above the baseline and therefore are special.

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

### **BENEFIT TO PROPERTY OUTSIDE THE PROGRAM**

Properties within the Assessment Area receive all of the special benefits from the Services, because the Services funded by the Assessments will be provided directly to protect property within the Assessment Area from mosquitoes and vector-borne diseases. However, properties adjacent to, but just outside of, the boundaries may receive some benefit from the proposed Services in the form of reduced mosquito populations on property outside the Assessment Area. 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 Area. Each year, the Program will provide some of its Services in areas near the boundaries of the Assessment Area. By abating mosquito populations near the borders of the Assessment Area, the Services could provide benefits in the form of reduced mosquito populations and reduced risk of disease transmission to properties outside the Assessment Area. If mosquitoes were not controlled inside the Assessment Area, more of them would fly from the Assessment Area. Therefore control of mosquitoes within the Assessment Area provides some benefit to properties outside the Assessment Area but within the normal flight range of mosquitoes, in the form of reduced mosquito populations and reduced vector-borne disease transmission. This is a measure of the general benefits to property outside the Assessment Area 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 Area is based on studies of mosquito dispersion concentrations. Although the flight range of a female mosquito may be up to 20 miles, for the purpose of this calculation an average mosquito destination range of two miles is used. Based upon a 2003 study in Santa Cruz County, average concentration of mosquitoes from the Assessment Area on properties within two miles of the Assessment Area is calculated to be 6%.<sup>23</sup> This relative mosquito and vector population reduction factor within the destination range is combined with the number of parcels outside the Assessment Area and within the destination range to measure this general benefit. This is calculated as follows:

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<sup>23</sup>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.

**CRITERIA:**

THERE ARE 316,258 PARCELS WITHIN TWO MILES OF, BUT OUTSIDE OF THE ASSESSMENT DISTRICT, THAT MAY RECEIVE SOME MOSQUITO AND DISEASE PROTECTION BENEFIT

6 % PORTION OF RELATIVE BENEFIT THAT IS RECEIVED (FROM STUDY)

THERE ARE 107,511 ASSESSABLE PARCELS IN THE ASSESSMENT DISTRICT

**CALCULATIONS:**

TOTAL BENEFIT = 316,258 PARCELS X 6% = 18,975 PARCEL EQUIVALENTS

PERCENTAGE OF OVERALL PARCEL EQUIVALENTS =  $18,975 / 107,511 = 17.65\%$

Therefore, for the overall benefits provided by the Services to the Assessment District, it is determined that 17.65% of the benefits would be received by the parcels within two miles of the Assessment District boundaries.

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

The “indirect and derivative” benefit to property within the Assessment has been analyzed. As explained above, all benefit within the Assessment Area is special because the mosquito and disease control services in the Assessment Area 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 proposed Assessment Area boundaries, and this Engineer’s Report demonstrates the direct benefits received by individual properties from mosquito and disease control services.

The Assessment Engineer has drawn the Assessment Area to include parcels that will directly receive the services. (As reflected in the “Other Properties” section of this Report, there are a small number of parcels within the Program Boundary that do not receive special benefit such as certain right of way parcels, etc.) All parcels within the Program boundaries will directly benefit from the surveillance, monitoring and treatment that will be provided on an equivalent basis throughout the Assessment Area, in order to maintain the same improved level of protection against mosquitoes and reduced mosquito populations throughout the area. The surveillance and monitoring sites would be spread on a balanced basis throughout the area. Mosquito and vector control and treatment would be provided as needed throughout the area based on the surveillance and monitoring results. The shared special benefit - reduced mosquito and vector levels and reduced presence of vector-borne diseases - would be received on an equivalent basis by all parcels in the Assessment Area. Furthermore, all parcels in the Assessment Program would directly benefit from the ability to request service from the Program and to have a Program field technician promptly respond directly to the parcel and address the owner’s or resident’s service need. The *Silicon Valley* 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, or receiving only minimal services. The Program 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 Area.

#### **BENEFIT TO THE PUBLIC AT LARGE**

Because the Services directly serve and primarily benefit the property in the Assessment Area, any general benefit conferred on the public at large would be minimal. For example, services including public education, the distribution of informational materials and pamphlets, appearances at local fairs and events, and news releases provide special benefit to properties inside the Assessment Area, and minimally provide benefit to the public at large. Moreover, improved safety to public recreation areas and general commerce also provides special benefit to properties within the Assessment Area and minimal benefit to the public at large. Transient visitors to the Assessment Areas, not directly associated with local property in any way, may also receive benefit as part of the public at large. Therefore, there would be some indirect and general benefit to the public at large.

The public at large uses the public highways, streets, sidewalks, railroads, lakes and seashores, and when traveling in and through the Assessment Area they will benefit from the Services. It is understood that there are other regional facilities, like shopping centers, that attract the general public from outside of the Program's boundaries. However, since all of these facilities, including highways, streets, sidewalks, railroads, lakes and seashores, are primarily used by property owners within the Program, the use of the complete area of these public areas is a reasonable proxy. A fair and appropriate measure of the general benefit to the public at large therefore is the amount of highway, street, sidewalk, railroad, lake and seashores area within the Assessment Area relative to the overall land area. An analysis of maps of the Assessment Area shows that approximately 2.88% of the land area in the Assessment Area is covered by highways, streets, sidewalks, railroads, and lakes. This 2.88% 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 20.53% of the benefits conferred by the proposed Mosquito, Vector and Disease Control Assessment may be general in nature and should be funded by sources other than the Assessment.

#### **General Benefit Calculation**

$$\begin{aligned}
 &17.65\% \text{ (Outside the District)} \\
 + &0.00\% \text{ (Inside the district – indirect and derivative)} \\
 + &2.88\% \text{ (Public at Large)} \\
 \\ 
 = &20.53\% \text{ (Total General Benefit)}
 \end{aligned}$$

Although this analysis supports the findings that 20.53% of the assessment may provide general benefit only, this number is increased by the Assessment Engineer to 21% to more liberally 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 proposed cost of the Services is \$614,402. Of this total budget amount, the Program must contribute at least \$129,024 (or 21% of \$614,402) from sources other than the Mosquito, Vector and Disease Control Assessment. The Program will contribute \$129,024 from General Fund revenue. This contribution offsets any general benefits from the Mosquito, Vector and Disease Control Assessment Services.

#### **ZONES OF BENEFIT**

The boundaries of the Assessment Area have been carefully drawn to include all of the properties in the County of Riverside Vector Control Program Assessment Area that would receive special benefit from the proposed Services. Such parcels are in areas with a material population of people, pets and livestock on the property. The current and future population of property is a conduit of benefit to property because people, pets and livestock are ultimately affected by mosquitoes and vector-borne diseases and the special benefit factors of desirability, utility, usability, livability and marketability are ultimately determined by the population and usage potential of property.

In other words, the boundaries of the Assessment Area have been narrowly drawn to include only properties that will specially benefit from the proposed enhanced level of mosquito and vector control services.



The *Silicon Valley* 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 benefitting 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 proposed Assessment, the advantage that each parcel receives from the mosquito and vector control services is direct, and the boundaries are narrowly drawn to include only parcels that benefit from the Assessment. Therefore, the even spread of assessment throughout the narrowly drawn Program is indeed consistent with the *Silicon Valley* decision.

The Program has reviewed service levels in regards to its core services including surveillance, larviciding, and service requests throughout the Assessment Area, and confirmed that service levels and benefits are essentially equivalent across all parcels within the Assessment Area’s boundaries (except as noted below). Regarding service requests, the Program will respond to any parcel located within the Program, regardless of how remote, and provide mosquito control services appropriate to the situation.

As part of the evaluation of service levels, the Program’s review showed that two areas within the Assessment Area submit fewer service requests, are far less accessible, and require a lesser amount of surveillance due to the significantly reduced usage by human population. Additionally, these areas support a lower concentration and number of mosquito breeding sites. These zones of reduced service requests and surveillance include the rural areas along the highway 371 corridor, designated herein as Zone B, and the mountainous areas of the Program located in rural far-western Riverside County north of highway 74, as well as the remote area south of highway 74 in mid-western Riverside County, designated herein as Zone C. These areas described as Zone of Benefit B, or Zone B, and Zone of Benefit C, or Zone C, are indicated in the assessment diagram.

The Program uses mosquito traps to collect and quantify species, quantities, concentrations, viral loads, etc. of mosquitoes. The selection of the locations of these traps requires a multi-attribute evaluation, with trap locations changing seasonally and when high concentrations of mosquitoes are identified. Program staff visits areas within the Assessment Area to observe potential sources of mosquito production, and perform adult and larval mosquito surveillance as appropriate. The Program reviewed the overall services provided throughout the entire Assessment Area, and compared it with the level of services provided within Zone B, and determined that Zone B parcels do not typically receive the same level of general surveillance as compared to the areas inside Zone A. It was calculated based on the overall distribution of that type of service that Zone B parcels receive 71.43% fewer services than parcels in Zone A. Therefore Zone B parcels will be subjected to a 71.43% assessment reduction.

The area represented by Zone C is comprised of the mountainous areas in the far western portion of the Assessment Area north of highway 74, and portions south of highway 74 in mid-western Riverside County. These regions in Zone C have significantly reduced accessibility and as a result are minimally inhabited. This lack of habitation combined with relatively few sources of breeding activity within the zone necessitates an even lower level of surveillance compared to the level required in Zone B. The Program analyzed the overall services provided throughout the entire Assessment Area, and compared it with the level of services provided within Zone C, and determined that Zone C parcels receive a significant reduction in the level of general surveillance and control services as compared to the areas inside Zone A and Zone B. It was calculated based on the overall distribution of those types of services that Zone C parcels receive 85.71% fewer services than parcels in Zone A. Therefore parcels in Zone C will be subjected to an 85.71% assessment reduction.

Zone A	100%
Zone B	28.57%
Zone C	14.29%

The Zone B and Zone C parcels will be subject to reduced assessments, commensurate with the two different benefit levels within those two zones. (If in the future, the routine adult mosquito trapping service is extended into part or all of Zone B or Zone C, the boundaries of the affected zone will be modified accordingly.)

## **METHOD OF ASSESSMENT**

As previously discussed, the proposed Assessments will fund continued, comprehensive, year-round mosquito and vector control, disease surveillance and control Services that will reduce mosquito and vector populations on property and will clearly confer special benefits to properties in the Assessment Area. These benefits can partially be measured by the property owners, guests, employees, tenants, pets and animals on property in the

Assessment Area who will enjoy a more habitable, safer and more desirable place to live, work or visit. As noted, these benefits ultimately flow to the underlying property.

Therefore, the apportionment of benefit is partially based on people who potentially live on, work at, or otherwise use the property. This methodology of determining benefit to property through the extent of use by people is a commonly used method of apportionment of benefits from assessments.

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.<sup>24</sup>

With regard to benefits and source locations, the Assessment Engineer determined that since mosquitoes and other vectors 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 and vector control extend beyond the source locations to all properties that would be a “destination” for mosquitoes and other vectors. In other words, the control and abatement of mosquito and vector populations ultimately confers benefits to all properties that are a destination of mosquitoes and vectors, rather than just those that are sources of mosquitoes.

Although some primary mosquito and vector sources may be located outside of residential areas, residential properties can and do generate their own, often significant, populations of mosquitoes and vector organisms. For example, storm water catch basins in residential areas in the Assessment Area are a common source of mosquitoes. Since the typical flight range for a female mosquito, on average is two (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.

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<sup>24</sup> 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.”

Because the Services will be provided throughout the Assessment Area with the same level of control objective, 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 throughout the Assessment Area, the Assessment Engineer determined that all similar properties in the Assessment Area have generally equivalent mosquito “destination” potential and, therefore, receive equivalent levels of benefit (except as noted above for Zone B & C).

In the process of determining the appropriate method of assessment, the Assessment 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 and vector populations, as well as the reduced threat from diseases carried by mosquitoes and other vectors. 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, Vector 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, vectors 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.<sup>25</sup>

In order to apportion the cost of the Services to property, each property in the Assessment Area 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 an 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:

<b>Special Benefit (per property)</b>	<b>=</b>	$\sum f$ (Special Benefits)	<b>*</b>	$\sum f$ (Property Specific Attributes <sup>1</sup> )
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<sup>1</sup>. Such as use, property type, size, as well as vector-specific attributes, such as destination potential and population potential.

## RESIDENTIAL PROPERTIES

Certain residential properties in the Assessment Area 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. Properties with more than one detached single family residence on one acre or less are assigned 1.0 SFE per single family home.

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, vector 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 each residential unit, and an additional rate equal to the agricultural rate described below of 0.0021 SFE per one-quarter acre of land area in

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<sup>25</sup> 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.

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 (other than properties with more than one single family home as described above) 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 Assessment Area. This Report analyzed Riverside County population density factors from the 2010 US Census (updated through 2012, which is the most recent data available at present time) 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 3 below.

An SFE factor of 0.61 is applied to condominium parcels, and a factor of 0.63 SFEs is applied to mobile homes on a separate parcel, not in a mobile home park. The 0.51 per dwelling unit for multi-family residential properties applies to such properties with two to four units (duplex, triplex, fourplex). Properties in excess of five (5) units typically offer on-site management, monitoring and other control services that tend to offset some of the benefits provided by the Mosquito, Vector and Disease Control Assessment District. Therefore the benefit for properties in excess of five (5) units is determined to be 0.37 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**

<b>Type of Residential Property</b>	<b>Pop. Density Equivalent</b>	<b>SqFt Factor</b>	<b>SFE Factor</b>
Single Family Residential	1.00	1.00	<b>1.00</b>
Condominium	1.04	0.61	<b>0.61</b>
Duplex, Triplex, Fourplex	0.83	0.51	<b>0.51</b>
Multi-Family Residential (5+ Units)	0.77	0.37	<b>0.37</b>
Mobile Home on Separate Lot	0.93	0.63	<b>0.63</b>

Source: 2010 Census, Riverside County, and property dwelling size information from the Riverside County Assessors' data and other sources.



## COMMERCIAL/INDUSTRIAL AND WINERY PROPERTIES

Commercial and industrial properties are generally open and operated for more limited times, relative to residential properties. Therefore, the relative hours of operation can be used as a measure of benefits, since employee density also provides a measure of the relative benefit to property. Since commercial and industrial properties are typically open and occupied by employees approximately one-half the time of residential properties, it is reasonable to assume that commercial land uses receive one-half of the special benefit on a land area basis relative to single family residential property.

The average size of a single family home with 1.0 SFE factor in the Assessment Area is 0.25 acres. Therefore, a commercial property with 0.25 acres receives one-half the relative benefit, or a 0.50 SFE factor.

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 or 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 4, 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.

Commercial and industrial properties in excess of five (5) acres generally involve uses that are more land intensive relative to building areas and number of employees (lower coverage ratios). As a result, the benefit factors for commercial and industrial property land area in excess of five (5) acres is determined to be the SFE rate per 1/4 acre for the first five (5) acres, and the relevant SFE rate per each additional acre over five (5) acres. Institutional properties that are used for residential, commercial or industrial purposes are also assessed at the appropriate residential, commercial or industrial rate.

Winery properties have the distinction of being a main attraction for tourism. In fact, recent studies have found that wineries and the viticulture industry draw approximately 5,000,000 tourists per year. Since wineries have a relatively low employee density relative to other commercial properties and since tourists are primarily drawn to winery properties, the benefits for such properties are based on the average employees and tourists per acre. Utilizing data from UC Davis and the California Employment Development Department, this Report finds that the average employees and tourists per acre of winery property is 12. This equates to an SFE factor of 0.25 per 0.20 acres of winery property.

Self-storage and golf course property benefit factors are similarly based on average usage densities. Figure 4 below lists the benefit assessment factors for such business properties.

### **AGRICULTURAL, VINEYARDS, DRY RANGELAND, CEMETERY, GOLF COURSE 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/vineyard property, 0.01 for rangelands and timber, 1.2 for cemeteries and 3.0 for golf courses. Since these properties typically are a source of mosquitoes and vectors and/or are typically closest to other sources of mosquitoes and other vectors, 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, after adjustment for the usage density, are shown in the following Figure 4.

**FIGURE 3 – COMMERCIAL/INDUSTRIAL BENEFIT ASSESSMENT FACTORS**

<b>Type of Commercial/Industrial Land Use</b>	<b>Average Employees Per Acre <sup>1</sup></b>	<b>SFE Units per Fraction Acre <sup>2</sup></b>	<b>SFE Units per Acre After 5</b>
Commercial	24	<b>0.500</b>	0.500
Office	68	<b>1.420</b>	1.420
Shopping Center	24	<b>0.500</b>	0.500
Industrial	24	<b>0.500</b>	0.500
Self Storage or Parking Lot	1	<b>0.021</b>	
Wineries	12	<b>0.250</b>	
Golf Course	3	<b>0.033</b>	
Cemeteries	1.20	<b>0.050</b>	
Agriculture / Vineyards	0.050	<b>0.0021</b>	
Timberland / Dry Rangeland	0.010	<b>0.00042</b>	

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

2. The SFE factors for commercial, industrial and agricultural parcels indicated above are applied to each fifth acre of land area or portion thereof. Additional acres over five for commercial, office, shopping center and industrial parcels are calculated per acre or portion thereof. (Therefore, the minimum assessment for any assessable parcel in these categories is the SFE Units listed herein.)

3. Wineries and wine production facilities that rest on parcels of land that include agriculture or vineyard uses are assessed the winery rate for the production facility and the agriculture / vineyard rate for the excess land.

### **VACANT PROPERTIES**

The benefit to vacant properties is determined to be proportional to the corresponding benefits for similar type developed properties. However, vacant properties are assessed at



a lower rate due to the lack of active benefits, as measured by use by residents, employees, customers and guests. A measure of the benefits accruing to the underlying land is the average value of land in relation to improvements for developed property. An analysis of the assessed valuation data from Riverside County found that for improved properties, the ratio between improved value and land value is 40%. Since vacant properties have very low to zero population/use densities until they are developed, a 50% benefit discount is applied to the valuation factor of 0.40 to account for the current low use density and potential for harm or nuisance to the property owner, residents, employees, customers and guests. The combination of these measures results in a 0.20 factor. It is reasonable to assume, therefore, that approximately 20% of the benefits are related to the underlying land and 80% are related to the day-to-day use of the property. Using this ratio, the SFE factor for vacant parcels is 0.20 per parcel.

It must be noted that in future years, the SFE factors for properties in the Service Area will be reviewed and updated to reflect changes in land use (i.e., vacant land that has been developed, residential land that has been rezoned to commercial) for assessment calculation purposes.

## **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, agricultural or institutional uses is benefited and assessed at the same rate as such privately owned property.

Miscellaneous, small and other parcels such as small sliver parcels, lot-line adjustment and other unusual parcels, typically do not generate significant numbers of employees, residents, customers or guests and have limited economic value. These miscellaneous parcels therefore, do not receive special benefit from the Services and are assessed an SFE benefit factor of 0. Some roads, right-of-ways, and certain common areas are not defined parcels and are not assessed – additionally, they also typically provide offsetting access benefit which facilitates the delivery of the Services.

## **DURATION OF ASSESSMENT**

It is proposed that the Assessment be levied for fiscal year 2015-16 and every year thereafter, so long as mosquitoes and vectors remain in existence and the County of Riverside Vector Control Program requires funding from the Assessment for its Services. 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 be levied annually after the County of Riverside Board of Supervisors approves an annually updated Engineer's Report, budget for the Assessment, Services to be provided, and other specifics of the Assessment. In addition, the County Board of Supervisors 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 County of Riverside Vector Control Program or his or her designee. The County requires a taxpayer to first pay the disputed assessment before challenging it. 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 Program Manager or his or her designee will promptly review the appeal and any information provided by the property owner. If the Program 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 Riverside County for collection, the Program 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 Program Manager, or his or her designee, shall be referred to the County Board of Supervisors. The decision of the County Board of Supervisors shall be final.

## ASSESSMENT

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**WHEREAS**, the County of Riverside Board of Supervisors 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 district, an assessment of the estimated costs of Services, and the special and general benefits conferred thereby upon all assessable parcels within the Assessment Area;

**NOW, THEREFORE**, the undersigned, by virtue of the power vested in me under Article XIID of the California Constitution, the Government Code and the Health and Safety Code and the order of the County of Riverside Board of Supervisors, 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, Vector and Disease Control Assessment.

The Program has evaluated and estimated the costs of extending and providing the Services to the Assessment District. The estimated costs are detailed in Figure 1 and summarized in Figure 5, below.

The amount to be paid for the Services and the expenses incidental thereto, to be paid by the County of Riverside Vector Control Program for fiscal year 2015-16 is generally as follows:

**FIGURE 4 – SUMMARY COST ESTIMATE – FY 2015-16 BUDGET**

Vector and Disease Control Operations	\$	342,898
Services and Supplies	\$	271,504
Less: District Contribution from Other Sources	\$	(129,024)
<b>Net Amount To Assessments</b>	<b>\$</b>	<b>485,378</b>

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 Assessment Area 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, Vector 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 the 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 Los Angeles-Riverside-Orange County 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.

If property owners in the Assessment District, in an assessment ballot proceeding, approve the initial fiscal year benefit assessment for special benefits to their property including the CPI adjustment schedule, the assessment may be levied annually and may be adjusted by up to the maximum annual CPI adjustment without any additional assessment ballot proceeding. In the event that in future years the assessments are levied at a rate less than the maximum authorized assessment rate, the assessment rate in a subsequent year may be increased up to the maximum authorized assessment rate without any additional assessment ballot proceeding.

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 Riverside for the fiscal year 2015-16. For a more particular description of the property, reference is hereby made to the deeds and maps on file and of record in the offices of the Riverside County Assessor.

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 2015-16 for each parcel or lot of land within the Mosquito, Vector and Disease Control Assessment District.<sup>26</sup>

Dated: April 23, 2015



Engineer of Work

By \_\_\_\_\_  
John W. Bliss, License No. C052091

<sup>26</sup> 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.

## **ASSESSMENT ROLL**

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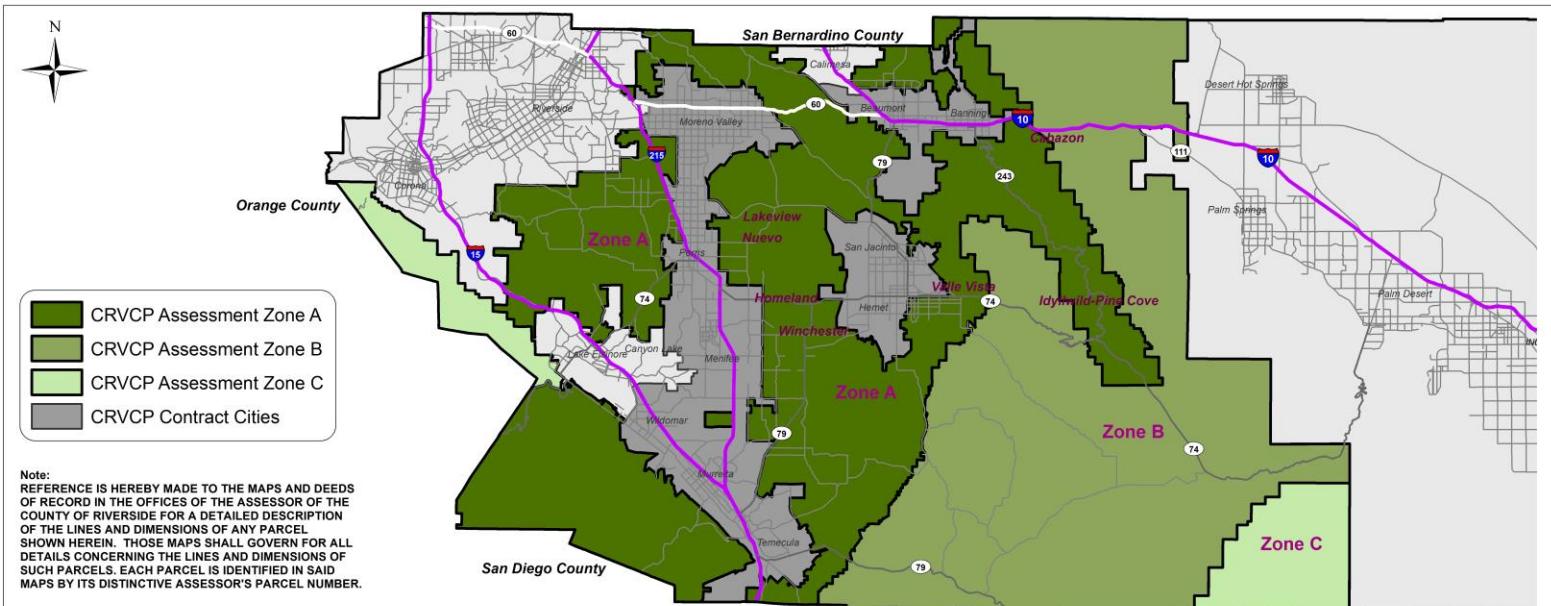
Reference is hereby made to the Assessment Roll in and for the assessment proceedings on file in the office of the County of Riverside Vector Control Program, as the Assessment Roll is too voluminous to be bound with this Report.

## ASSESSMENT DIAGRAM

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The proposed County of Riverside Vector Control Program, Mosquito, Vector and Disease Control Assessment Area includes all properties within the boundaries of the Assessment Area.

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



FILED IN THE OFFICE OF THE PROGRAM MANAGER OF THE COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM, COUNTY OF RIVERSIDE, CALIFORNIA, THIS \_\_\_\_ DAY OF \_\_\_\_, 2015.

\_\_\_\_\_  
PROGRAM MANAGER

RECORDED IN THE OFFICE OF THE PROGRAM MANAGER OF THE COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM, COUNTY OF RIVERSIDE, CALIFORNIA, THIS \_\_\_\_ DAY OF \_\_\_\_, 2015.

\_\_\_\_\_  
PROGRAM MANAGER

AN ASSESSMENT WAS CONFIRMED AND LEVIED BY THE BOARD OF TRUSTEES OF THE COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM, COUNTY OF RIVERSIDE, ON THE LOTS, PIECES AND PARCELS OF LAND ON THIS ASSESSMENT DIAGRAM ON THE \_\_\_\_ DAY OF \_\_\_\_, 2015 FOR THE FISCAL YEAR 2015-16 AND SAID ASSESSMENT DIAGRAM AND THE ASSESSMENT ROLL FOR SAID FISCAL YEAR WERE FILED IN THE OFFICE OF THE PROGRAM MANAGER OF THE COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM, ON THE \_\_\_\_ DAY OF \_\_\_\_, 2015. REFERENCE IS HEREBY MADE TO SAID RECORDED ASSESSMENT ROLL FOR THE EXACT AMOUNT OF EACH ASSESSMENT LEVIED AGAINST EACH PARCEL OF LAND.

\_\_\_\_\_  
PROGRAM MANAGER

Prepared by:  
SCI Consulting Group  
4745 Mangos Boulevard  
Fairfield, CA 94534  
707-430-4300

## COUNTY OF RIVERSIDE VECTOR CONTROL PROGRAM Mosquito, Vector & Disease Control Assessment