



Coachella Valley  
Mosquito and Vector  
Control District

43420 Trader Place  
Indio, CA 92201  
Phone (760) 342-8287  
www.cvmvcd.org

## **Board of Trustees Meeting**

**Tuesday, January 9, 2018**

**6:00 p.m.**

### **AGENDA**

Assistance for those with disabilities: If you have a disability and need accommodation to participate in the meeting, please call the Clerk of the Board at (760) 342-8287 for assistance so the necessary arrangement can be made.

1. **Call to Order** – Doug Walker, President
2. **Pledge of Allegiance**
3. **Roll Call**
4. **Motion to Excuse Absences**
5. **Confirmation of Agenda**
6. **Public Comment**
  - Those wishing to address the Board should complete a Public Comment Card and provide it to the Clerk of the Board.
  - Non-Agenda Items: Anyone wishing to address the Board on items not on the agenda should do so at this time. Each presentation is limited to no more than 3 minutes.
  - Agenda Items: Comments should be made when the agenda item is called. Each presentation is limited to no more than 3 minutes.
7. **Announcements**
  - General Manager's Report – **Jeremy Wittie, M.S., General Manager**
8. **Board Reports**
  - A. President's Report – **President Walker**

- B. Finance Committee – **Treasurer Kaplan**
  - Finance Committee Minutes (**Pg. 5**)

9. **Items of General Consent**

- The following items are routine in nature and may be approved by one blanket motion upon unanimous consent. Any member of the Board or the public may request an item be pulled from Items of General Consent for separate discussion.
- A. Minutes for November 14, 2017, Board Meeting (**Pg. 8**)
  - B. Correspondence (**Pg. 13**)
  - C. Approval of Expenditures for November 15-30, 2017, December 1-31, 2017, and January 1-9, 2018 (**Pg. 17**)
  - D. Informational Items:
    - District Travel (**Pg. 25**)
    - Staff reports from:
      - Semi-Annual Research Reports from the University of California, Riverside and Davis, and U.S. Department of Agriculture, for 2017 – **Jennifer Henke, MS, Laboratory Manager (Pg. 26)**
      - Entomological Society of America Annual Conference, November 5-9 in Denver, CO (**Pg. 46**)
      - MVCAC Planning Session, November 30-December 1, 2017 in Emeryville, CA (**Pg. 47**)
  - E. Department Reports (**Pg. 48**)
  - F. Approval to purchase one (1) ATV Track System-XT, in an amount not to exceed \$7,000.00, from Capital Replacement Budget Fund #8415.13.300 – from Mattracks Manufacturing Company – **Edward Prendez, Information Technology Manager (Pg. 51)**
  - G. Approval to utilize Public Surplus as a third party marketplace to auction District Equipment, Vehicles and Furniture – **Edward Prendez, Information Technology Manager (Pg. 52)**
  - H. Approval to extend the annual service agreement for security services for the District headquarters with Desert Resort Security Services, Inc. for one year in an amount not to exceed \$875 per month, from Fund #7675.01.305, Contract Services – **David l’Anson, Administrative Finance Manager (Pg. 54)**

10. **Old Business**

- A. Discussion regarding scheduling of the Strategic Planning Workshop – **Jeremy Wittie, MS, General Manager**

11. **New Business**

- A. Discussion and/or approval of General Manager Employment Agreement to be effective January 9, 2018 and 2017 Merit Pay – **ad hoc Negotiating Committee (Pg. 56)**
- B. Nomination and election of Board Officers for the 2018 Calendar Year – **ad hoc Nomination Committee (Pg. 70)**

12. **Closed Session**

- A. None.

13. **Trustee Comments, Requests for Future Agendas Items, Travel, and/ or Staff Actions**

The Board may not legally take action on any item presented at this time other than to direct staff to investigate a complaint or place an item on a future agenda unless (1) by a majority vote, the Board determines that an emergency situation exists, as defined by Government Code Section 54956.5, or (2) by a two-thirds vote, the board determines that the need for action arose subsequent to the agenda being posted as required by Government Code Section 54954.2(a). Each presentation is limited to no more than 3 minutes.

14. **Adjournment**

At the discretion of the Board, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated and may be subject to action by the Board.

All public records relating to an agenda item on this agenda are available for public inspection at the time the record is distributed to all, or a majority of all, members of the Board. Such records shall be available at the District office located at 43420 Trader Place, Indio, California

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**Certification of Posting**

I certify that on January 4, 2018, I posted a copy of the foregoing agenda near the regular meeting place of the Board of Trustees of the Coachella Valley Mosquito & Vector Control District, said time being at least 72 hours in advance of the meeting of the Board of Trustees (Government Code Section 54954.2)

Executed at Indio, California, on January 4, 2018.

\_\_\_\_\_  
Crystal G. Moreno, Clerk of the Board

**SECTION**

**9**



# **BOARD REPORTS**

# COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

## Finance Committee Meeting Minutes

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**TIME:** 4:37 P.M. NOVEMBER 14, 2017

**LOCATION:** 43420 Trader Place, Indio, CA 92201

**TRUSTEES PRESENT:**

Cathedral City	Shelley Kaplan	Coachella	Betty Sanchez
Indian Wells	Clive Weightman		

**TRUSTEES ABSENT:**

Desert Hot Springs	Adam Sanchez
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**OTHERS PRESENT:**

Jeremy Wittie, General Manager  
Crystal Moreno, Clerk of the Board  
Veronica Montoya, Accounting Technician II

- 1. Call to Order:** Treasurer Kaplan called the meeting to order at 4:37 p.m.
- 2. Roll Call:** Roll call indicated three (3) committee members out of four (4) were present.
- 3. Confirmation of Agenda**
- 4. Public Comments:** None.
- 5. Items of General Consent:**

**5A – Approval of Minutes from October 10, 2017, Finance Committee Meeting:** On motion from Trustee B. Sanchez seconded by Trustee Weightman and passed by unanimous vote, the Committee approved the minutes as presented.

**6. Discussion and/or Approval:**

**6A. Review of Check Report from Abila MIP for the period October 11, 2017 to November 8, 2017:** Reviewed by Committee.

**6B. CalCard Charges October 2017:** Reviewed by Committee

**6C. Review of October 2017 Financials:** Reviewed by Committee.

**6D. Treasurer’s Report and Review of Investments for October 2017:** Reviewed by Committee.

**7. Old Business:**

- a. Review of Draft Reserve Study

Trustee Weightman commented that it was good to collect the data but the District needs someone with expertise to put together the actual reserve study. A discussion ensued. The Committee directed Administrative Finance Manager to seek proposals.

**8. New Business:** None.

**9. Schedule Next Meeting:** The next Finance Committee Meeting will be held on Tuesday, January 9<sup>th</sup>, at 4:30 p.m.

**10. Trustee and/or Staff Comments/Future Agenda Items:** None.

**11. Adjournment:** The meeting was adjourned by Treasurer Kaplan at 5:27 p.m.

DRAFT

**SECTION  
10**



**ITEMS OF GENERAL CONSENT**

# COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

## Board of Trustees Meeting Minutes

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CALLED TO ORDER: 6:00 P.M. NOVEMBER 14, 2017

LOCATION: 43420 Trader Place, Indio, CA 92201

### TRUSTEES PRESENT:

PRESIDENT:	Doug Walker	Palm Desert
VICE-PRESIDENT:	Doug Hasset	La Quinta
SECRETARY:	Betty Sanchez	Coachella
TREASURER:	Shelley Kaplan	Cathedral City

County at Large	Franz De Klotz	Indio	John B. Stevens
County at Large	Bito Larson	Palm Springs	Dr. Doug Kunz
Indian Wells	Clive Weightman	Rancho Mirage	Michael Monroe

### TRUSTEES ABSENT:

Desert Hot Springs Adam Sanchez

### OTHERS PRESENT:

Jeremy Wittie, General Manager  
Crystal Moreno, Clerk of the Board  
Anita Jones, Human Resources Manager  
Jill Oviatt, Public Information Manager  
Jennifer Henke, Laboratory Manager  
Wakoli Wekesa, Operations Manager  
Edward Prendez, IT Manager  
Bobby Dieckmann, Field Supervisor  
Mike Martinez, Field Supervisor

1. **Call to Order:** President Walker called the meeting to order at 6:03pm.
2. **Pledge of Allegiance:** Trustee Stevens led the Pledge of Allegiance.
3. **Roll Call:** Roll call indicated ten (10) Trustees out of eleven (11) were present.
4. **Motion to Excuse Absences**
5. **Confirmation of Agenda**

President Walker requested to switch items 7 and 8, to allow the auditor to give his presentation sooner.

On motion from Trustee Kunz seconded by Vice-President Hassett, and passed by unanimous vote, the Board of Trustees approved the Agenda as amended.

**Ayes:** Trustees De Klotz, Hassett, Kaplan, Kunz, Larson, Monroe, B. Sanchez, Stevens, Walker, and Weightman.

**Noes:** None.

**Abstained:** None.

**Absent:** Trustee A. Sanchez.

**6. Public Comment:** La Quinta resident, Dale Tyerman, made a public comment regarding the cattle feedlot operations that are affecting the Trilogy community.

**8. Board Reports:**

**8B – Audit Presentation:** Chris Brown, from the offices of Fedak & Brown, LLP, gave a brief presentation on the District’s recent audit. He reported that the District staff was very responsive and that everything went very well.

**Finance Committee: Finance Committee Met Prior to Board Meeting:** Treasurer Kaplan congratulated Administrative Finance Manager l’Anson for the great audit report. He also reported that the Committee met prior to the Board Meeting and that there was nothing significant to report. Revenue is low, as expected for this time of year, and reserves are providing cash flow. The Committee discussed capitol assets and what the reserve levels should be.

**8A – President’s Report:** President Walker reported that Vice President Hassett was elected as the Southern California Region Trustee Representative for the Mosquito and Vector Control Association of California (MVCAC). President Walker also reported on his attendance at the MVCAC fall meeting.

**7. Announcements:**

**Surveillance Update:** Laboratory Manager Henke provided a brief update on the District’s surveillance program. She reported that there had been an increased number of human cases this past year, especially in Southern California. A discussion ensued.

**Operations Update:** Operations Manager Wekesa provided a brief update on the District’s Operations program. He reported on the rise of *Aedes aegypti* in California and on some of the Operations department’s goals for 2018. A discussion ensued.

**General Manager’s Report:** General Manager Wittie reported on his plans for 2018, the Center for Disease Control ELC Grant, and the Pacific Southwest Center of Excellence in Vectorborne Disease. He reported that the MVCAC would be awarding former General Manager Branka Lothrop, PhD, with an honorary membership at the 2018 Annual Meeting and invited Trustees to the attend the District’s end of the year luncheon on December 15<sup>th</sup>.

**9. Items of General Consent:**

- A. Minutes for October 10, 2017, Board Meeting

- B. Correspondence
- C. Approval of Expenditures for October 11-31, 2017, and November 1-14, 2017
- D. Informational Items:
  - Cancellation of December Board Meeting
  - Treasurer to Approve Release of Payment to Vendors for December
  - District Travel
  - Staff reports from:
    - CSDA Clerk of the Board Conference, October 22-24, 2017, in Anaheim, CA
    - MVCAC Fall Meeting, November 1-2, 2017 in Sacramento, CA
- E. Department Reports
- F. Approval of Resolution 2017-15 Adopting Employee Pay Schedule, in conformance with California Code of Regulations, Title 2, Sections 570.5 and 571 – **Anita Jones, Human Resources Manager**
- G. Discussion and/or approval of Fiscal Year 2017/18 research proposals in an amount not to exceed \$120,000.00 from Fund #8510.01.600.00, Research Projects – **Jennifer A. Henke, M.S., Laboratory Manager**
- H. Approval of Resolution 2017-16 providing a gift certificate to employees for work performed late November through early December, 2017, in a total collective amount for all certificates not to exceed \$2,640.00, to be paid from Fund #5300.01.225 – Employee Incentive – **Jeremy Wittie, M.S., General Manager**

On motion from Secretary B. Sanchez seconded by Trustee Stevens, and passed by unanimous vote, the Board of Trustees approved the Items of General Consent.

**Ayes:** Trustees De Klotz, Hassett, Kaplan, Kunz, Larson, Monroe, B. Sanchez, Stevens, Walker, and Weightman.

**Noes:** None.

**Abstained:** None.

**Absent:** Trustee A. Sanchez.

#### 10. Old Business:

**10A.** Approval to contract with Dudek for Civil Engineering and Surveying Services for the Thermal Facility, in an amount not to exceed \$35,000.00 – **Jeremy Wittie, M.S., General Manager**

On motion from Trustee Stevens seconded by Vice President Hassett, and passed by unanimous vote, the Board of Trustees approved the Item 10A.

**Ayes:** Trustees De Klotz, Hassett, Kaplan, Kunz, Larson, Monroe, B. Sanchez, Stevens, Walker, and Weightman.

**Noes:** None.

**Abstained:** None.

**Absent:** Trustee A. Sanchez.

## 11. New Business:

**11A.** Discussion and/or approval to enter into an agreement with Rauch Communication Consultants, Inc., for the District's Strategic Planning needs, in an amount not to exceed \$15,000.00 – **Jeremy Wittie, M.S., General Manager**

On motion from Secretary B. Sanchez seconded by Trustee De Klotz, and passed by unanimous vote, the Board of Trustees approved the Item 11A.

**Ayes:** Trustees De Klotz, Hassett, Kaplan, Kunz, Larson, Monroe, B. Sanchez, Stevens, Walker, and Weightman.

**Noes:** None.

**Abstained:** None.

**Absent:** Trustee A. Sanchez.

**11B.** Appointment of ad hoc Nomination Committee – **Doug Walker, President:** President Walker appointed Trustees De Klotz, Hassett, and himself to serve on the ad hoc Nomination Committee.

## 12. Closed Session:

- A. **Closed Session:** Conference with Labor Negotiations District Representatives: Mark H. Meyerhoff, Chief Negotiator and Jeremy Wittie, MS, General Manager; Employee Organization: California School Employees Association ("CSEA"), Chapter 2001
- B. **Closed Session:** Public Employee Performance Evaluation of General Manager Pursuant to Government Code Section 54957 (b)(1)

Returning from Closed Session, President Walker announced that there was no reportable action taken.

## 13. Trustee Comments, Requests for Future Agenda Items, Travel and/or Staff Actions:

- Trustees Hassett, Walker, Larson, Monroe, Weightman, Kunz, Stephens commented that they are interested in attending the 2018 MVCAC Annual Conference.

- Trustee Hassett suggested that the District consider whether leadership be required to travel separately (not all on one flight or in one car).
- President Walker commented it was his last full meeting as president and he thanked the board for the opportunity.

**14. Adjournment:** The meeting was adjourned by President Walker at 8:00 p.m.

DRAFT



# City of Palm Springs

## Office of the City Clerk

3200 E. Tahquitz Canyon Way • Palm Springs, California 92262  
Tel: 760.323.8204 • Fax: 760.322.8332 • TDD 760.864.9527 • www.palmspringsca.gov

November 16, 2017

Dr. Douglas Kunz  
3177 E. Sonora Road  
Palm Springs, CA 92264

RE: Re-appointment to the Coachella Valley Mosquito Vector Control Board

Dear Dr. Kunz:

CONGRATULATIONS . . . This letter is to inform you that at its meeting on November 1, 2017, the Palm Springs City Council reappointed you to the Coachella Valley Mosquito and Vector Control District Board of Trustees for a term from January 1, 2018 to December 31, 2021.

The City appreciates the continued commitment of the volunteers; as the City's boards, commissions, committees and representatives to outside agencies perform a critical role in the relationship between the City Council, Staff, and the Citizens of the City of Palm Springs.

On behalf of the City Council and the entire staff, I appreciate your continued commitment to the City of Palm Springs.

Sincerely,

Kathleen D. Hart, MMC  
Interim City Clerk

cc: Jill Oviatt, MCDM, Public Information Manager  
Crystal Moreno, Clerk of the Board  
Coachella Valley Mosquito Vector Control

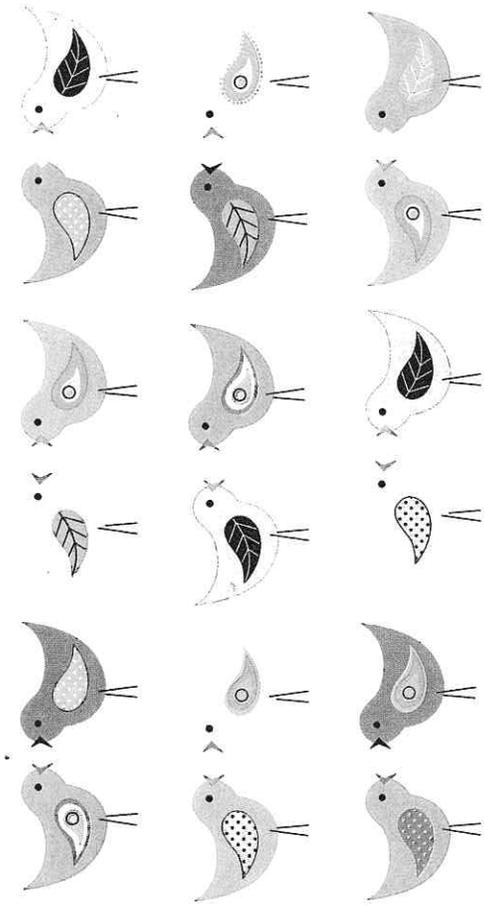
Thank you for this job shadow experience!  
I really enjoyed the field work and  
everyone's welcoming nature - Maria

This job shadow experience will encourage me to  
continue to help our world in whatever ways I  
can, and be open to new ideas. Thank you for  
having us. - Sydney Van Horn

I really enjoyed this job shadow  
experience and it taught me to keep  
my options open for the future.  
I'd like to thank you for take time  
out of your guy's days to teach us  
and show us everything there is to  
know about mosquitoes.

...for being so nice!

## Many Thanks



**From:** Diana Reyes

**Sent:** Friday, December 01, 2017 2:23 PM

**To:** Jeremy Wittie; Jill Oviatt

**Cc:** Wakoli Wekesa; Roberta Dieckmann; Michael Martinez; Oldembour Avalos; Geneva Ginn; Gregorio Alvarado

**Subject:** District recognition

I had a call from Jose Hernandez who works at Palm Springs Unified School District.

He is retiring from PSUSD and he wanted to tell the District that it was a pleasure working with us and wishes us much happiness and Happy Holidays.

What a nice gesture!

Great Work CVMVCD!!! Go Team!!

**Thank you,  
Diana Reyes  
Administration Clerk**



December 7, 2017

Dear Board of the Coachella Valley Mosquito and Vector Control District,

We are grateful for your support of our project *Sugar Baited Detection and a Field-Deployable Diagnostic for Improved Arbovirus Surveillance in Coachella Valley* in 2016-2017.

The purpose of this letter is to request a no cost extension on the remaining unspent funds (\$10,676.69) granted to us in 2017. We would like to be able to use those monies in 2018. The rationale for this request is that we had an employee leave the project in October 2017, resulting in unspent funds that were not used for salary support.

If granted, we plan to use the funds to increase the effort of the new Lab Assistant, Jackson Stuart, who will work on finishing 2017 the project by conducting more testing of the SmartTrap RT-LAMP device in the BSL-3 insectary. Jackson will also lead the 2018 project deploying sugar baits in traps in the Coachella Valley next summer.

Thank you in advance for considering this request.

Sincerely,

A handwritten signature in cursive script, appearing to read "L. Coffey".

Lark L. Coffey, Ph.D.  
Davis Arbovirus Research and Training  
Center for Vectorborne Diseases  
Assistant Professor, Department of Pathology, Microbiology and Immunology  
School of Veterinary Medicine, 5327 VetMed3A  
University of California  
1 Shields Avenue  
Davis, California, 95616  
lcoffey@ucdavis.edu

**Coachella Valley Mosquito and Vector Control District**

Checks Issued for the Period of:  
December 8, 2017 to January 4, 2018

<b>Check No</b>	<b>Payable To</b>	<b>Description</b>	<b>Check Amount</b>	<b>Total Amount</b>
	Payroll Disbursement 12/15/2017	-	170,788.12	
	Payroll Disbursement 12/29/2017	-	169,923.07	
<b>Pre-Approved Expenditures:</b>				<b>340,711.19</b>
<b>Cash - First Foundation Bank Checking</b>				
41313	Burrtec Waste & Recycling Svcs.	Waste Disposal Services: 12/1/17 - 12/31/17	385.90	
41314	CalPERS-RETIREMENT ACCT	Retirement Contributions: 11/12/17 - 11/25/17	22,873.26	
41315	DIRECTV, Inc.	Satellite Programming Services: 11/25/17 - 12/24/17	69.24	
41316	Frontier Communications-Internet	IT Communications: 11/25/17 - 12/24/17	452.84	
41317	Frontier Communications-Toll/POTS	Telecommunications: 11/28/17 - 12/27/17	159.24	
41318	Gas Co.	Utilities: 10/23/17 - 11/25/17	95.51	
41319	ICMA Retirement Trust	Deferred Compensation: 11/12/17 - 11/25/17	8,652.38	
41320	Imperial Irrigation District	Power Usage Charges: 11/3/17 - 12/5/17	1,543.47	
41321	Imperial Irrigation Dist-Lab Acct	Power Usage Charges: 11/3/17 - 12/5/17	4,388.76	
41322	Indio Water Authority	Water Usage Charges: 11/2/17 - 12/4/17	622.33	
41323	Principal Life Insurance Co.	Dental, Life, AD&D Premiums: 12/1/17 - 12/31/17	10,083.02	
41324	Standard Insurance Company	LTD Insurance Premiums: 12/1/17 - 1/31/17	6,126.58	
41325	Verizon Business	IT Communications: 12/1/17 - 12/31/17	1,185.00	
41326	Verizon Wireless	IT Communications: 11/8/17 - 11/7/17	1,828.73	
				<b>58,466.26</b>
<b>Cash - First Foundation Bank Checking</b>				
41327	Airgas Safety Inc.	Operating Supplies	316.54	
41328	Advance Imaging Systems	Contract Expense	179.23	
41329	American Engraving Co.	Reproduction & Printing	1,086.70	
41330	AvQuest Insurance Service	Property & Liability Insurance	4,070.00	
41331	Car Quest Auto Parts	Motor Fuel & Oils	219.67	
41332	Cintas Corporation	Uniform Expense	3,840.36	
41333	Cisco WebEx, LLC.	Maintenance Contracts	99.00	
41334	CleanExcel	Contract Expense	3,235.00	
41335	C&R Wellness Works	Employee Assistance Program	240.00	
41336	Desert Alarm, Inc.	Repair & Maintenance	688.20	
41337	Desert Electric Supply	Repair & Maintenance	148.66	
41338	Employee Relations Network	Recruitment/Advertising	61.60	
41339	Equipment Direct, Inc.	Safety Expense	855.19	
41340	Fedak & Brown, LLP	Professional Fees	510.00	
41341	Fiesta Ford-Lincoln-Mercury	Offsite Vehicle Maintenance	222.55	
41342	GovConnection, Inc.	Maintenance Contracts	371.62	
41343	I-10 Chrysler Jeep Dodge Ram	Vehicle Parts & Supplies	577.54	
41344	Johnson Controls, Inc.	Capital Equipment Replacement	11,797.17	
41345	Jones, Anita	Professional Development	548.71	
41346	Liebert Cassidy Whitmore	Attorney Fees	8,909.00	
41347	Lucia, Jess	Tuition Reimbursement	387.10	
41348	Marlin Business Bank	Contract Expense	939.28	
41349	Molina, Antonio	Tuition Reimbursement	262.50	
41350	Morales, Graciela	Tuition Reimbursement	348.03	
41351	NAPA Auto & Truck Parts	Vehicle Parts & Supplies	714.41	
41352	Praxair Distribution, Inc.	Equipment Parts & Supplies	46.05	
41353	Pure Water Technology, Inc.	Employee Support	213.15	
41354	Refrigeration Supplies Distributor	Repair & Maintenance	205.84	
41355	Regents University Of California	Research Projects	58,456.00	
41356	Regents University Of California	Research Projects	38,934.00	
41357	Sam's Fence, Inc.	Repair & Maintenance	950.00	
41358	SoCo Group Inc., The	Motor Fuel & Oils	4,731.80	
41359	TCI Thermal Combustion Innovators, Inc.	Operating Supplies	314.46	
41360	UPS	Postage	131.80	
41361	USDA Agricultural Research Service	Research Projects	22,610.00	
41362	Verizon Wireless Services LLC	Maintenance Contracts	1,007.00	
41363	Vermillion Environmental	Repair & Maintenance	2,800.00	
41364	Walker, Douglas	MVCAC Committee Assignments Travel	738.94	
41365	Waxie Sanitary Supply	Maintenance & Supplies	215.55	
41366	Willdan Financial Services	Benefit Assessment Expense	7,012.40	
<b>Cash - First Foundation Bank Check Run Total to be Approved</b>				<b>178,995.05</b>
<b>Total Expenditures: December 8, 2017 to January 4, 2018</b>				<b>578,172.50</b>

Doug Walker, President

Shelley Kaplan, Treasurer

Coachella Valley Mosquito and Vector Control District  
 FINANCES AT A GLANCE  
 ALL FUNDS COMBINED  
 For the Month Ended December 31, 2017

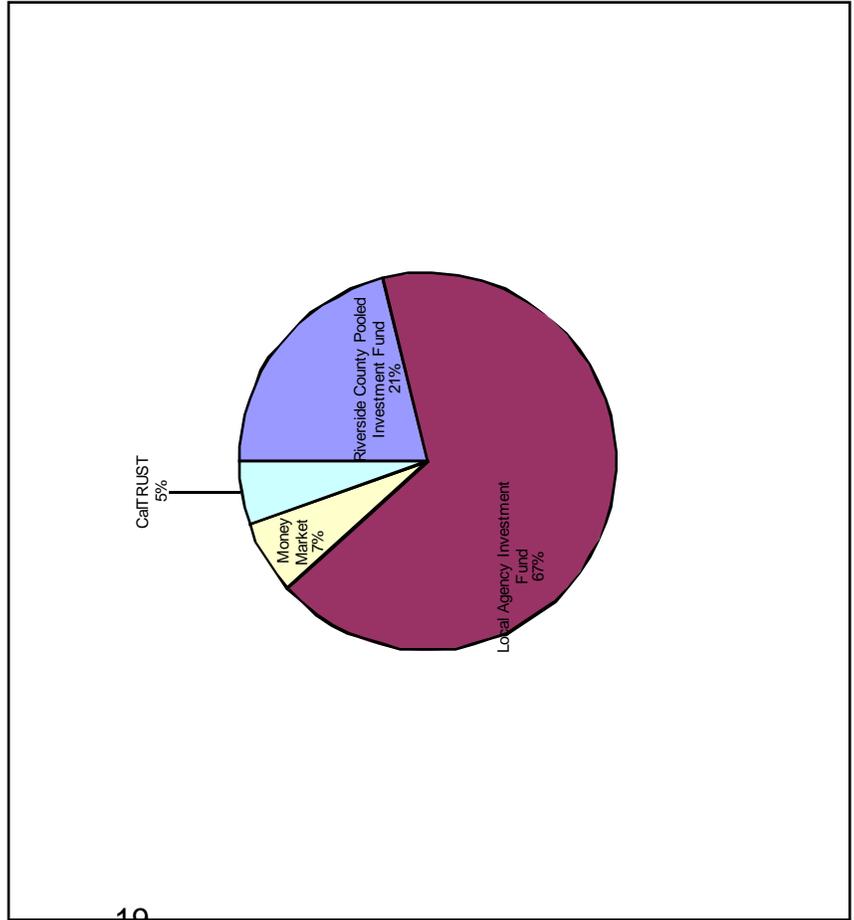
	Beginning of the Month	Change During the Month	End of the Month
INVESTMENTS	\$ 8,882,393	\$ 355,583	\$ 9,237,976
CASH	<u>\$ 318,825</u>	<u>(183,009)</u>	<u>\$ 135,816</u>
INVESTMENTS & CASH	<u>\$ 9,201,218</u>	<u>\$ 172,574</u>	<u>\$ 9,373,792</u>
CURRENT ASSETS	1,834,384	\$ -	1,834,384
FIXED ASSETS	10,878,714	\$ -	10,878,714
OTHER ASSETS	4,600,763	\$ -	4,600,763
TOTAL ASSETS	<u><u>\$ 26,515,079</u></u>	<u><u>\$ 172,574</u></u>	<u><u>\$ 26,687,653</u></u>
TOTAL LIABILITIES	\$ 5,517,326	\$ (110,417)	\$ 5,406,910
TOTAL DISTRICT EQUITY	20,997,753	282,991	21,280,744
TOTAL LIABILITIES & EQUITY	<u><u>\$ 26,515,079</u></u>	<u><u>\$ 172,574</u></u>	<u><u>\$ 26,687,653</u></u>
RECEIPTS		\$ 1,072,789	
CASH DISBURSEMENTS			
Payroll	\$ 528,796		
General Admin	\$ 371,419		
Total Cash Disbursements		\$ (900,215)	
NON-CASH ENTRIES:		\$ (0)	
Accrual Modifications -			
Changes in A/P, A/R & Pre-paid insurance			
Change during Month - Excess of Cash over Receipts & Non-Cash Adjustments		<u><u>\$ 172,574</u></u>	

**COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT  
INVESTMENT FUND BALANCES AS OF DECEMBER 31, 2017**

INSTITUTION	IDENTIFICATION	Issue Date	Maturity Date	YIELD	General Fund	Thermal Capital Fund	Equipment Fund	BALANCE
	<b>Investment Fund Balance</b>				8,237,934.95	458,361.45	541,679.30	\$ 9,237,976
L.A.I.F	Common Investments			1.23%	5,531,068	307,750	363,691	\$ 6,202,510
Riverside County	Funds 51105 & 51115			1.32%	1,737,195	96,658	114,228	\$ 1,948,081
CalTRUST	Medium Term Fund			1.49%	438,437	24,395	28,829	\$ 491,661
First Foundation	Market Rate			0.25%	531,234	29,558	34,931	\$ 595,723
	<b>Total Investments</b>				8,237,935	458,361	541,679	\$ <u>9,237,976</u>

**PORTFOLIO COMPOSITION AS OF DECEMBER 31, 2017**

WEIGHTED YIELD 1.20%



In compliance with the California Code Section 53646; the Finance Administrator of the Coachella Valley Mosquito and Vector Control District hereby certifies that sufficient liquidity and anticipated revenue are available to meet the District's budgeted expenditure requirements for the next six months.

Investments in the report meet the requirements of the Coachella Valley Mosquito and Vector Control District's adopted investment policy

Respectfully submitted

NOTED AND APPROVED

CVMVCD

Cash Journal - deposits

1000 - Cash - Investments

From 12/1/2017 Through 12/31/2017

Document N...	ID	Payee/Recipient Name	Transaction Description	Effective ...	Deposits
CD00047	USBANK	US Bank	Calcard Rebate	12/1/2017	5,053.04
CD00041	RIVERSIDEC...	Riverside County	Homeowners Exemption SH1	12/4/2017	6,060.77
CD00042	RIVERSIDEC...	Riverside County	Property Tax CY Secured 30% Advance	12/4/2017	1,054,227.22
CD00043	VCJPA	Vector Control Joint Powers Agency	Workers Comp Reimbursement	12/13/2017	520.00
CD00044	SYNGENTAC...	Syngenta Corp Protection LLC	Pesticide Rebate	12/15/2017	6,809.40
CD00045	JillOviatt	Jill Oviatt	Employee Reimbursement	12/19/2017	16.20
CD00046	FIRSTFOUN...	First Foundation Bank	Bank Interest	12/31/2017	102.53
Total 1000 - Cash - Investments					1,072,789.16
Report Total					1,072,789.16

CVMVCD  
Statement of Revenue and Expenditures  
From 7/1/2017 Through 12/31/2017

		Budget - Original	Current Year Actual	Budget Variance	Percent Total Budget Remaining - Original
<b>Revenues</b>					
4000	Property Tax - Current Secured	3,698,334.00	1,054,227.22	(2,644,106.78)	(71.49)%
4010	Property Tax - Curr. Supplmntl	30,000.00	0.00	(30,000.00)	(100.00)%
4020	Property Tax - Curr. Unsecured	141,427.00	145,598.63	4,171.63	2.95%
4030	Homeowners Tax Relief	46,936.00	6,060.77	(40,875.23)	(87.09)%
4070	Property Tax - Prior Supp.	18,500.00	0.00	(18,500.00)	(100.00)%
4080	Property Tax - Prior Unsecured	7,000.00	0.00	(7,000.00)	(100.00)%
4090	Redevelopment Pass-Thru	4,260,487.00	1,997.28	(4,258,489.72)	(99.95)%
4520	Interest Income - LAIF/CDs	100,000.00	43,616.57	(56,383.43)	(56.38)%
4530	Other Miscellaneous Receipts	63,000.00	238,687.51	175,687.51	278.87%
4551	Benefit Assessment Income	<u>1,620,638.00</u>	<u>0.00</u>	<u>(1,620,638.00)</u>	<u>(100.00)%</u>
	<b>Total Revenues</b>	<u>9,986,322.00</u>	<u>1,490,187.98</u>	<u>(8,496,134.02)</u>	<u>(85.08)%</u>
<b>Expenditures</b>					
<b>Payroll Expenses</b>					
5101	Payroll - FT	4,448,098.00	2,047,818.66	2,400,279.34	53.96%
5102	Payroll Seasonal	167,800.00	100,984.00	66,816.00	39.82%
5103	Temporary Services	6,900.00	6,900.00	0.00	0.00%
5105	Payroll - Overtime Expense	42,000.00	9,707.83	32,292.17	76.89%
5150	CalPERS State Retirement	490,340.00	247,294.09	243,045.91	49.57%
5155	Social Security Expense	286,090.00	134,784.13	151,305.87	52.89%
5165	Medicare Expense	66,909.00	32,385.36	34,523.64	51.60%
5170	Cafeteria Plan	1,030,961.00	500,267.46	530,693.54	51.48%
5172	Retiree Healthcare	342,420.00	133,339.08	209,080.92	61.06%
5180	Deferred Compensation	93,153.00	22,519.06	70,633.94	75.83%
5195	Unemployment Insurance	<u>34,669.00</u>	<u>4,686.48</u>	<u>29,982.52</u>	<u>86.48%</u>
	<b>Total Payroll Expenses</b>	<u>7,009,340.00</u>	<u>3,240,686.15</u>	<u>3,768,653.85</u>	<u>53.77%</u>
<b>Administrative Expenses</b>					
5250	Tuition Reimbursement	15,000.00	3,430.63	11,569.37	77.13%
5300	Employee Incentive	6,000.00	4,903.37	1,096.63	18.28%
5301	Employee Support	4,000.00	1,862.83	2,137.17	53.43%
5302	Wellness	2,500.00	0.00	2,500.00	100.00%
5305	Employee Assistance Program	2,800.00	1,588.00	1,212.00	43.29%
6000	Property & Liability Insurance	113,647.00	41,218.81	72,428.19	63.73%
6001	Workers Compensation Insurance	252,350.00	84,064.68	168,285.32	66.69%
6050	Dues & Memberships	23,530.00	15,132.50	8,397.50	35.69%
6060	Reproduction & Printing	22,600.00	1,488.81	21,111.19	93.41%
6065	Recruitment/Advertising	4,000.00	1,913.80	2,086.20	52.16%
6070	Office Supplies	17,900.00	8,253.52	9,646.48	53.89%
6075	Postage	8,000.00	4,167.11	3,832.89	47.91%
6080	Computer & Network Systems	5,000.00	2,445.08	2,554.92	51.10%
6085	Bank Service Charges	200.00	28.00	172.00	86.00%
6090	Local Agency Formation Comm.	1,100.00	1,184.22	(84.22)	(7.66)%
6095	Professional Fees	72,000.00	23,085.84	48,914.16	67.94%
6100	Attorney Fees	81,000.00	39,704.01	41,295.99	50.98%
6106	HR Risk Management	4,500.00	4,500.00	0.00	0.00%
6110	Conference Expense	39,600.00	11,885.49	27,714.51	69.99%
6115	In-Lieu	13,200.00	6,500.00	6,700.00	50.76%
6120	Trustee Support	4,000.00	1,325.70	2,674.30	66.86%
6200	Meetings Expense	2,000.00	915.41	1,084.59	54.23%

CVMVCD  
Statement of Revenue and Expenditures  
From 7/1/2017 Through 12/31/2017

	Budget - Original	Current Year Actual	Budget Variance	Percent Total Budget Remaining - Original	
6210	20,000.00	762.99	19,237.01	96.19%	
6220	40,000.00	640.00	39,360.00	98.40%	
6500	<u>88,440.00</u>	<u>14,356.60</u>	<u>74,083.40</u>	<u>83.77%</u>	
	Total Administrative Expenses	843,367.00	275,357.40	568,009.60	67.35%
	Utilities				
6400	105,000.00	46,393.18	58,606.82	55.82%	
6410	<u>11,300.00</u>	<u>3,783.29</u>	<u>7,516.71</u>	<u>66.52%</u>	
	Total Utilities	116,300.00	50,176.47	66,123.53	56.86%
	Operating				
7000	24,450.00	13,478.47	10,971.53	44.87%	
7050	20,550.00	8,704.54	11,845.46	57.64%	
7100	5,000.00	1,570.00	3,430.00	68.60%	
7150	36,200.00	17,379.19	18,820.81	51.99%	
7200	4,000.00	1,096.71	2,903.29	72.58%	
7300	42,000.00	14,134.58	27,865.42	66.35%	
7310	8,000.00	0.00	8,000.00	100.00%	
7350	12,500.00	3,244.40	9,255.60	74.04%	
7400	29,000.00	13,382.04	15,617.96	53.86%	
7420	6,000.00	5,851.41	148.59	2.48%	
7450	19,500.00	8,138.08	11,361.92	58.27%	
7500	1,700.00	70.98	1,629.02	95.82%	
7550	30,500.00	8,471.93	22,028.07	72.22%	
7570	22,000.00	0.00	22,000.00	100.00%	
7575	38,500.00	20,588.91	17,911.09	46.52%	
7600	60,200.00	20,994.69	39,205.31	65.13%	
7650	1,000.00	0.00	1,000.00	100.00%	
7675	153,100.00	55,472.12	97,627.88	63.77%	
7700	68,200.00	39,312.07	28,887.93	42.36%	
7750	9,400.00	1,638.59	7,761.41	82.57%	
7800	772,500.00	141,734.45	630,765.55	81.65%	
7850	145,500.00	31,550.00	113,950.00	78.32%	
8415	35,000.00	7,701.20	27,298.80	78.00%	
8487	5,000.00	1,245.09	3,754.91	75.10%	
8510	120,000.00	0.00	120,000.00	100.00%	
9000	<u>154,980.00</u>	<u>0.00</u>	<u>154,980.00</u>	<u>100.00%</u>	
	Total Operating	1,824,780.00	415,759.45	1,409,020.55	77.22%
	Contribution to Capital Reserves				
8900	<u>192,534.00</u>	<u>0.00</u>	<u>192,534.00</u>	<u>100.00%</u>	
	Total Contribution to Capital Reserves	<u>192,534.00</u>	<u>0.00</u>	<u>192,534.00</u>	<u>100.00%</u>
	Total Expenditures	<u>9,986,321.00</u>	<u>3,981,979.47</u>	<u>6,004,341.53</u>	<u>60.13%</u>
	Net revenue over/(under) expenditures	<u>1.00</u>	<u>(2,491,791.49)</u>	<u>(2,491,792.49)</u>	

CVMVCD  
Balance Sheet  
As of 12/31/2017  
(In Whole Numbers)

		Current Year
<b>Assets</b>		
Cash and Investments		
1000	Cash - Investments	9,237,976
1016	Petty Cash	500
1017	Petty Cash Checking	1,500
1025	First Foundation - General	11,967
1026	First Foundation - Payroll	121,849
	Total Cash and Investments	9,373,792
Current Assets		
1080	Interest Receivable	17,266
1085	Inventory	521,202
1168	Prepaid Insurance	253,890
1169	Deposits	1,042,025
	Total Current Assets	1,834,384
Fixed Assets		
1300	Equipment/Vehicles	1,685,368
1310	Computer Equipment	417,111
1311	GIS Computer Systems	301,598
1320	Office Furniture & Equipment	1,206,328
1330	Land	417,873
1335	Oleander Building	5,665,862
1336	Signage	23,651
1340	Structures & Improvements	3,026,126
1341	Bio Control Building	6,963,768
1342	Bio Control Equip/Furn	32,034
1399	Accumulated Depreciation	(8,861,005)
	Total Fixed Assets	10,878,714
Other Assets		
1520	Resources to Be Provided	3,514,102
1525	Deferred Outflows of Resources	1,086,661
	Total Other Assets	4,600,763
	Total Assets	26,687,653
<b>Liabilities</b>		
Short-term Liabilities		
Accounts Payable		
2015	Credit Card Payable	18,507
2020	Accounts Payable	33,444
2030	Accrued Payroll	(2,322)
2040	Payroll Taxes Payable	(675)
2185	Employee Dues	(29)
	Total Accounts Payable	48,925
	Total Short-term Liabilities	48,925

CVMVCD  
Balance Sheet  
As of 12/31/2017  
(In Whole Numbers)

		Current Year
Long-term Liabilities		
2100	Pollution Remediation Obligati	2,100,000
2110	OPEB Obligation	1,032,754
2200	Net Pension Liability	1,392,005
2210	Deferred Inflows of Resources	229,218
2500	Compensated Absences Payable	604,007
	Total Long-term Liabilities	5,357,984
	Total Liabilities	5,406,910
Fund Balance		
Non Spendable Fund Balance		
3920	Investment in Fixed Assets	10,698,793
3945	Reserve for Prepays & Deposit	1,053,466
3960	Reserve for Inventory	304,047
	Total Non Spendable Fund Balance	12,056,306
Committed Fund Balance		
3965	Public Health Emergency	3,328,774
	Total Committed Fund Balance	3,328,774
Assigned Fund Balance		
3910	Reserve for Operations	5,991,793
3925	Reserve for Future Healthcare Liabilities	994,582
3955	Thermal Remediation Fund	452,244
3970	Reserve for IT Replacement	195,714
3971	Reserve for Vehicle Replacement	762,192
3985	Reserve for Facility Capital Improvements	994,582
	Total Assigned Fund Balance	9,391,107
Unassigned Fund Balance		
3900	Fund Equity	(531,750)
	Total Unassigned Fund Balance	(531,750)
	Current YTD Net Income	(2,963,693)
	Total Current YTD Net Income	(2,963,693)
	Total Fund Balance	21,280,744
	Total Liabilities and Net Assets	26,687,653



**Coachella Valley Mosquito and Vector  
Control District**

**Staff Report**

**January 9, 2018**

**Agenda Item:** Informational Item

District Travel – **Crystal G. Moreno, Executive Assistant/Clerk of the Board**

**Background:**

**January 28-31, 2018: MVCAC Annual Conference (Monterey, CA)** ~ The annual MVCAC Conference provides quality public information, comprehensive mosquito and vector-borne disease surveillance, training to high professional standards, and effective legislative advocacy on behalf of California mosquito and vector control districts. MVCAC promotes cost effective methods of mosquito and vector control as a means to protect public health and safety. MVCAC actively promotes the safe and effective use of public health pesticides. MVCAC does this through legislative advocacy, public education and media relations.

**Requests to attend must be made by the JANUARY 2018 BOARD MEETING.**

**February 4-7, 2018: CSDA Leadership Academy (La Quinta, CA)** ~ This conference is based on CSDA's Special District Leadership Academy (SDLA) groundbreaking, curriculum-based continuing education program, which recognizes the necessity for the board and general manager to work closely toward a common goal. SDLA provides the knowledge base to perform essential governance responsibilities and is designed for both new and experienced special district board members.

**Requests to attend must be made by the JANUARY 2018 BOARD MEETING.**

**March 6-7, 2018: MVCAC Legislative Days (Sacramento, CA)** ~ Lobby Day provides an opportunity for District staff and trustees to meet with Legislators in Sacramento to foster relationships, share about the importance of mosquito and vector control in California, and discuss issues facing mosquito control in California and the Coachella Valley. This year lobby day will focus on issues related to mosquito research funding, Invasive Aedes, and potential legislation sponsored by MVCAC targeting the use of unmanned aerial vehicles for mosquito surveillance and control.

**Requests to attend must be made by the JANUARY 2018 BOARD MEETING.**



## Coachella Valley Mosquito and Vector Control District

### Staff Report

January 9, 2018

#### Agenda Item: Informational Item

Semi-annual research reports from the University of California, Riverside and Davis, and the USDA for 2017 – **Jennifer A. Henke, MS, Laboratory Manager**

#### Background:

The Research Department (Department 600) supports cooperative work with the University of California system and other research institutions for conducting mosquito-borne disease and vector research, optimizing control measures, and understanding of vector biology. The proposals include finding a new methodology for detecting arboviruses and controlling adult mosquitoes, using biological control organisms to target adult mosquitoes in storm water systems, examining new control strategies for adult mosquitoes, and releasing biological control organisms to help control red imported fire ants. Each of the proposals were approved by the Research Committee and later approved by the full Board of Trustees at the November 2016 Meeting.

As described in District's Research Funding Policy and Procedure, researchers are to provide semiannual progress reports. The reports are from the following proposals:

- 1. UC Davis (Dr. L. Coffey) – The proposal includes:**
  - a. Compare the effectiveness of scented sugar bait stations for arbovirus detection to the District's current methods.
  - b. Examine a new testing method for sugar bait stations and other surveillance samples for arboviruses.
  
- 2. UC Riverside (Dr. W. Walton) – The proposal includes:**
  - a. Examine the use of attractive toxic sugar bait stations with fungi as the toxic agent in storm drains
  
- 3. USDA (Dr. D. Oi) – The proposal includes:**
  - a. Examine the efficacy of water resistant baits as a control product for red imported fire ants.
  - b. Evaluate the establishment and spread of 3 types of biological control organisms (decapitating phorid flies, the microsporidian pathogen *Kneallihazia solenopsae*, and the virus SINV-3) released during the project funded in 2014-2015.

#### Exhibits:

- UC Davis Annual Research Report – Dr. Coffey
- UC Riverside Annual Research Report – Dr. Walton
- USDA Annual Research Report – Dr. Oi

**Project Title:** Sugar-baited detection and a field-deployable diagnostic for improved arbovirus surveillance in the Coachella Valley

**Aim 1A) Identify trapping sites in the Coachella Valley Mosquito and Vector Control District (CVMVCD) that are most likely to experience arbovirus activity (i.e. 'hotspots') from May through October, 2017.**

**1A Progress:** Trapping sites likely to show arbovirus activity in May to October 2017 were identified based on 2017 year-to-date WNV or SLEV positive chickens or mosquito pools, as well as locations with WNV or SLEV positive dead birds, chickens, or mosquitoes in 2016. SmartTraps will be placed at sites with highest activity, defined as WNV or SLEV detections in both birds and mosquitoes.

**Aim 1B) Place SmartTrap devices at sites identified in Aim 1A and compare arbovirus detection (fraction of viral RNA positive baits/total baits deployed) to conventional surveillance methods (minimum mosquito infection rates).**

**1B Progress:**

Laboratory Studies: The mechanical problems identified with the SmartTrap prototypes in the mid-year progress report were solved. A prototype was delivered to UC Davis for laboratory testing in July 2017. The prototype was presented to West Nile virus (WNV) and St. Louis encephalitis virus (SLEV) infected *Culex tarsalis* mosquitoes in biosafety level-3 (BSL-3) containment. The mosquitoes appeared disinterested in feeding on the sugar solution presented in the sugar baited chips on the SmartTrap; nevertheless, bait chips were presented to mosquitoes that had ingested infectious WNV or SLEV bloodmeals 1 week earlier. Each bait chip was presented for 24 hours before being replaced by a new chip. Unfortunately, the device presented an electronic error such that chips could not be processed. The problem also could not be solved remotely since the device was in BSL-3 containment and the Sandia engineers were at a remote site. The SmartTrap has since been removed from containment for the device to be returned to Sandia Laboratories to troubleshoot the electronic error. Other testing of SmartTraps at Sandia laboratories showed that the battery sustained operation of the traps for up to 1 month.

Field Studies: Our Sandia collaborators deployed SmartTrap prototypes at CVMVCD sites selected by Hugh Lothrop in September 2017. Unfortunately, the batteries in the traps shut down on the third day of the deployments. The Sandia engineers still have not figured out why. There were thunderstorms on the day the shutdowns were observed, although no evidence of water damage was detected.

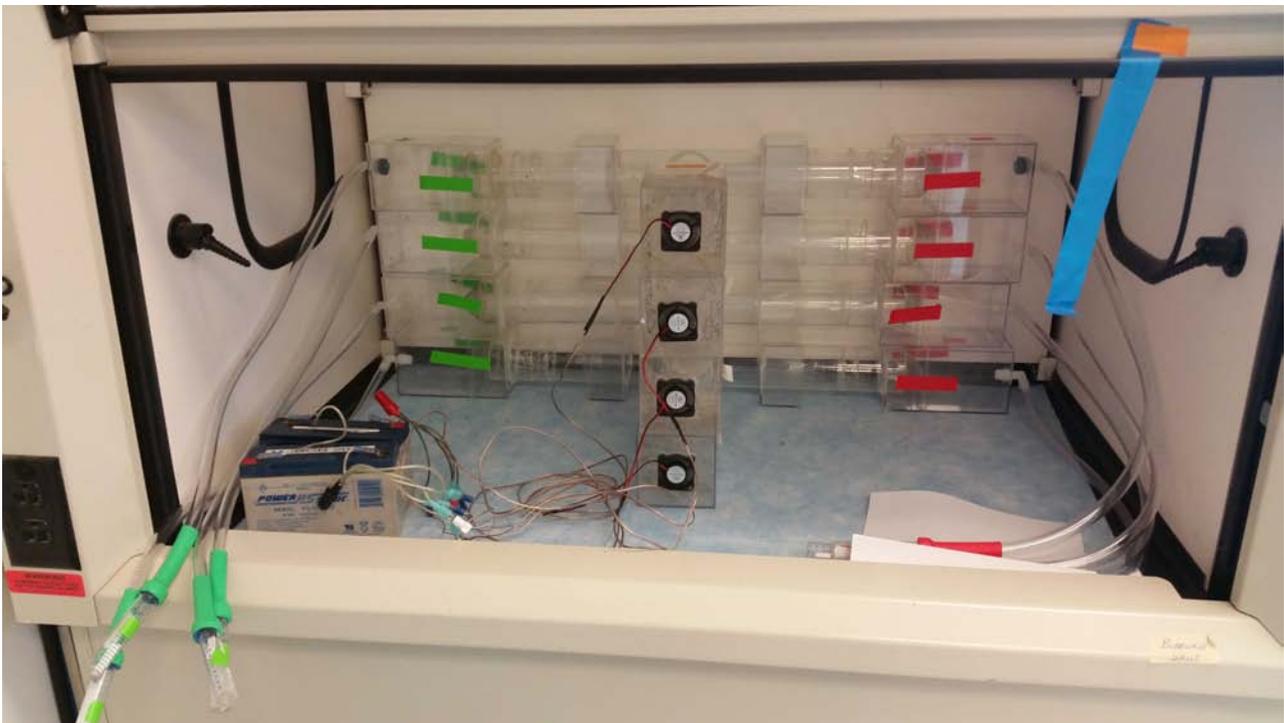
Provided the problems with the SmartTraps in both laboratory and field settings, we propose returning to the design of the system beginning with more laboratory experiments in an effort to improve the system. We are now considering a simpler 'proof of concept' of mosquitoes sugar-feeding on a soluble bait, such as a thin film of honey, dissolving the bait, and then adding it into a standard RT-LAMP reaction in a tube. Testing of RT-LAMP reactions shows that sensitivities are generally limited to 100-500 WNV or SLEV genome copies per reaction. Further research is needed to determine how often a mosquito deposits enough virus to be within the threshold for detection. Given these issues with the SmartTrap experienced in this project, we therefore decided to focus our 2018 project on sugar baited detection without the SmartTrap RT-LAMP system.

**Aim 2A) Screen floral odors as potential attractants for adult mosquitoes of both sexes in field trials.**

**2A Progress:**

**Floral Sampling and Chamber Construction:** Flowers from *Tamarix spp* and *Pluchea sericea* (arrowweed) were collected from along Lincoln Street south of 70th Avenue in Riverside. Flowers of *Lantana montevidensis* and a *Lantana* hybrid were collected from the landscape at the CVMVCD. Flowers of *Plumeria spp* were collected from a landscape in La Quinta.

Choice chambers (Figure 1) were constructed to test compounds identified by gas chromatography. The chambers were made of 2 inch ID acrylic tubes with a polystyrene box at the end of each arm of a 'T'. The current configuration has a 7 inch long base tube connected to a 24 inch top tube (12 inches each way from the intersection). The base tube has 2 vertical baffles to suppress escape behavior and allow mosquitoes to move according to scent stimuli. The box at the base of the T is the point of introduction. This box has a 12V 40mm cooling computer case fan that draws air through the chamber from both sides providing a chemical gradient. The tube entering the terminal boxes are covered with a screen cone to prevent return. Vinyl tubes 24 inches long are connected to hose barbs at the ends of the terminal boxes. The tubes terminate in a vial cap held by silicone sealant covered with a casing of heavy gauge color coded heat shrink tubing (green control and red treated). Polystyrene vials with the ends cut away and capped with metal screen were loaded with 1 by 0.5 cm segments of chemically dosed heavy filter paper. Vials were replaced with each new chemical. Chambers were placed in a fume hood to prevent contamination of the untreated side by escaped chemicals while the untreated hose drew clean air from outside the hood. Mosquitoes of both sexes were taken indiscriminately from the District's colony of *Cx. quinquefasciatus*.



**Figure 1:** Stacked choice chambers used to determine attractiveness of floral compounds to mosquitoes.

**Chamber Attractant Trials:** Untreated trials with the chambers containing no chemicals ('control') were conducted to assess unstimulated dissemination for comparison with chemical treatments. Although trials of early configurations resulted in somewhat even numbers of *Cx. quinquefasciatus*, the movement of mosquitoes appeared to be driven by escape behavior resulting in rapid flight without hesitation. Tubes were elongated and baffles introduced to address this behavior. The ratios of the distribution of mosquitoes in chambers were used since variable numbers of mosquitoes were introduced into each

chamber. Data is presented for both sexes. Results for the current chamber design showed a bias for the right hand terminus although there were no apparent differences between left and right in the fume hood. Comparing averages of ratios for each trial with the overall average ratio for untreated trials, 4 of 6 chemicals tested (**Table 1**) attracted at least 1.5 times more mosquitoes than the control chambers containing no chemicals. These results are promising in that they indicate attractiveness of the chemicals tested. Furthermore, the residual nature of each chemical is important if it is to be useful in field applications. Trials involving sequential repetition over successive days with one initial application of chemical to the filter paper would indicate residual capacity. Seven more chemicals submitted for testing by Dr. Millar have yet to be processed. These will be subjected to the same protocol, after which sequential chamber attractivity trials will be conducted.

Chemical Attractant	Microliters	Average Ratio	Ratio to Control Average
Linalool	20	2.48	1.73
Linalool oxide	20	2.2	1.54
Phenylacetaldehyde	3.3	2.15	1.5
Eucalyptol	10	1.33	0.93
2-Methyl butanol	20	1.2	0.84
Methyl benzoate	10	2.34	1.63

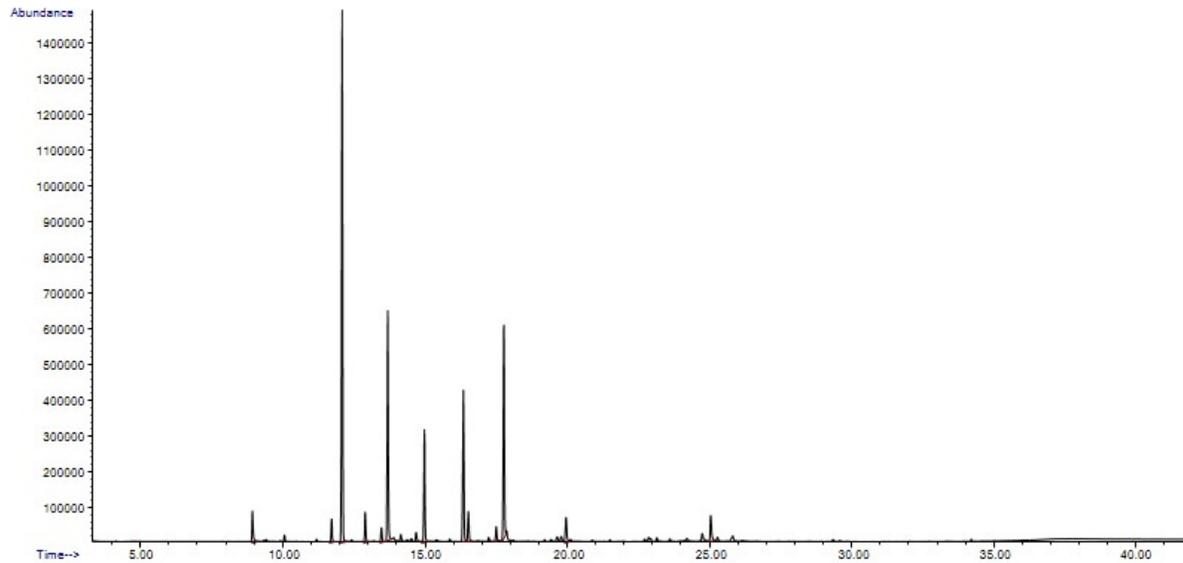
**Table 1:** Average ratios of *Culex quinquefasciatus* mosquito dissemination in chambers treated with chemicals compared to control untreated chambers.

**Aim 2B) Conduct preliminary analyses of crude floral odors that show attractiveness to mosquitoes in Aim 2A.**

**Aim 2B Progress:**

**Collection of Floral Volatiles.** Collections of volatiles from the headspace of flowers were carried out on five plant species. These consisted of *Pluchea sericea* (arrowweed), a *Plumeria* species, a *Tamarisk* species, and two species of *Lantana*. The collections were carried out in one-pint glass mason jars with air entering through charcoal filters and being removed via vacuum through a collector with roughly 50 mg of 50-200 mesh activated charcoal. The airflow passing through the jar was set to 500 mL/min. In all cases, the jars were almost completely filled with snipped floral material of the respective plant species, with the majority of the vegetative tissue removed. Collections were run for 24 hours, after which the collectors were eluted with 500  $\mu$ L of dichloromethane into 1/2 dram glass vials and stored in a freezer until analyzed.

**Analysis of Floral Volatiles.** The extracts of floral volatiles were analyzed on an Agilent 7820A gas chromatograph (GC) interfaced with an Agilent 5977E mass selective detector (MS). The GC was equipped with a HP-5MS column, and the temperature program consisted of a starting temperature of 40°C with an initial ramp of 4°C/minute to 160°C followed by a second ramp of 20°C/minute to 280°C. All samples were first run using split injections, and extracts that appeared to have lower concentrations of compounds were then analyzed again using splitless injection to get better sensitivity. A representative gas chromatogram of floral volatiles from a *Lantana* hybrid is shown in **Figure 2**.



**Figure 2:** Representative gas chromatogram of *Lantana* hybrid floral volatiles. Each peak corresponds to a different odor compound. Gas chromatogram are derived to identify compounds attractive to mosquitoes.

Compounds in each extract were tentatively identified by matching their spectra to those in the National Institute of Standards mass spectral database (**Table 2**). Where possible, identifications were then confirmed by matching the mass spectra and GC retention times to those of authentic standards. Work is continuing to identify the remaining compounds by interpretation of their mass spectra.

A sample of plumeria-scented “Fine Fragrance Mist” (Bath and Body Works) that was used on sugar baits deployed in the summers of 2015 and 2016 in Sacramento and Yolo Counties was also analyzed by collection of headspace volatiles with a solid phase microextraction device, followed by thermal desorption of the trapped volatiles directly into the GC-MS. However, approximately half of the compounds in this product were tentatively identified as being unnatural, made-made fragrance compounds, and so these analyses have not been pursued further at this time.

Flower species	# of compounds found in volatiles extracts	# tentatively identified through database matches
<i>Lantana</i> hybrid	13	11
<i>Lantana montevidensis</i>	53	43
<i>Tamarisk</i>	25	21
<i>Arrowweed</i>	11	9
<i>Plumeria</i>	21	17

**Table 2:** Compounds in volatile extracts from plants collected in Riverside County, California.

**Manuscripts for Publication:** We submitted a manuscript entitled *Scented Sugar Baits Enhance Detection of St. Louis Encephalitis and West Nile Viruses in Mosquitoes in Suburban California* to the Journal of Medical Entomology in December 2017. The work in that manuscript was partially funded by previous CVMVCD grants. The submitted manuscript is attached as an addendum to this progress report.

## *Annual Report, 2017: Attractive Toxic Bait Station Control of Mosquitoes in Underground Storm Drain Systems of the Coachella Valley*

William E. Walton, Ph.D., Bradley Mullens, Ph.D., Eric Huynh and David A. Popko, M.S.  
Department of Entomology, University of California, Riverside, CA 92521

### *Objectives:*

The goals of this project are to investigate the efficacy of an attractive toxic sugar bait (ATSB) station to transmit and promote mosquito-propagated (autodissemination) transmission of chemical and biological control agents against mosquitoes inhabiting underground storm drain systems (USDS). We propose (i) to develop an ATSB design that effectively attracts adult *Culex quinquefasciatus* mosquitoes and exposes them to control agents via contact and/or ingestion under laboratory conditions, (ii) to assess lethal and sublethal effects on mosquito life stages in laboratory exposure assays with an ATSB-based entomopathogenic fungus, biocidal/reproductive sterilizing agent, or insect growth regulator (IGR), and (iii) to determine the efficacy of multiple ATSB-based control agents against mosquito adults and immature stages at developmental sites in release and recapture trials under laboratory and field conditions.

### *ATSB Design Development*

Three important modifications were made to the ATSB design (Fig. 1) to increase pyriproxyfen (PPF) volume and longevity compared to previous models (Progress Report, June 2017) and tested during our studies this year. First, hanging mesh bags (~400 mL total) were incorporated into the ATSB design to expand PPF crystal storage and surface area. During studies this year, crystals in the moat underneath the bags appeared to dry more slowly, possibly due to runoff and/or reduced evaporation. Wet crystals critical to PPF transmission were present in much of the ATSB after two weeks of warm/dry weather in the September-October trial (discussion below). This modification was intended to provide a mechanism to prolong the effectiveness of the autodissemination station.

Second, to further curb the rate of PPF loss, each ATSB cover was modified with an internal crystal moat interspersed with wicked vial solutions. Four access flaps (1.5 cm x 2 cm) allowed addition of ~600 mL crystal/solution and minimal fluid loss with appreciable numbers of dead mosquitoes was evident after 2 weeks in the November field trial. In total, each ATSB stored at least 1 liter of PPF in both crystal and solution form at a variety of contact sites and produced mixed field efficacy results (discussion below). Although this design stored more PPF than previous designs, it was difficult to setup and cumbersome due to the number/type of isolated storage compartments.

Third, a simplified tube design with a single continuous system for crystal storage that holds at least 1 liter of PPF (Fig. 1) was developed and currently is being tested to address these problems. Four plastic tubes (length = 20 cm, inner diameter = 1.5 cm, volume = 35 cm<sup>3</sup>) inserted into the ATSB top connect the upper and lower crystal moat, which can be filled simultaneously at a variety of easily accessed locations. A complement of eight wicked plastic vials (4 lower, 4 upper) with solution is interspersed across crystal moats to provide additional

contact/reservoir sites. In a laboratory trial in a fume hood (which would enhance drying rates of crystals via air flow), the upper reservoir fed moist crystals via the tubes into the lower moat for several weeks during ATSB aging. Gravity-based movement of moist crystals was aided by rapid loss of crystal volume in the exposed lower moat and simulated disturbances (e.g. experimenter jostling). Month-long exposure assays with the tube ATSB design are scheduled in the laboratory and, pending the outcome, in field enclosures next year.

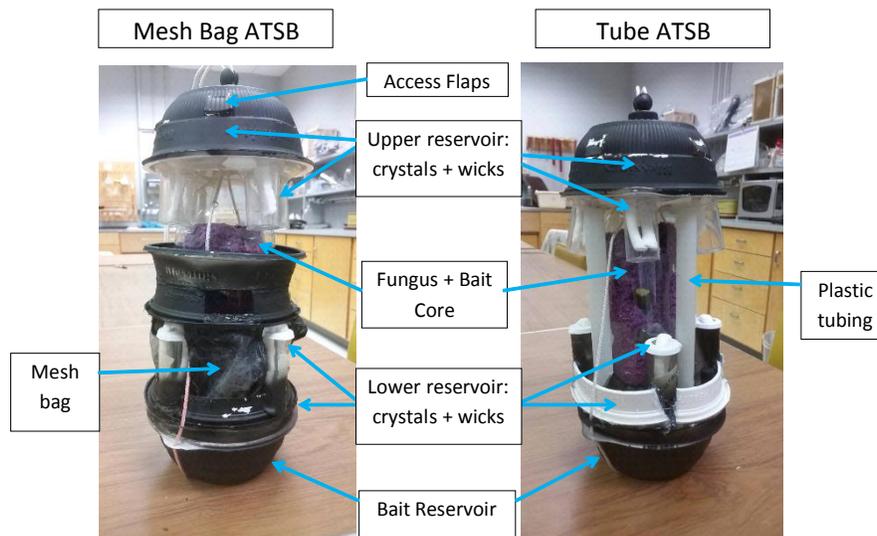


Figure 1. Comparison of ATSB designs deployed recently in the field (left) and the adaptation to an integrated reservoir system (right) currently being tested.

### *The Impact of Adult Sugar Starvation on Laboratory ATSB Efficacy: Lethal and Sublethal Effects and Multiple Mosquito Life Stages*

Because sources of sugar are limited in USDS, mosquitoes inhabiting USDS could have lower sugar reserves than do colony-raised mosquitoes. These nutritional differences could affect the efficacy of the autodissemination station. The impact of sugar feeding status of adult mosquitoes on ATSB efficacy was examined and results of these experiments are presented in Figure 2. During a 24 h pre-exposure period, a colony of 3-7-day-old host-seeking female *Culex quinquefasciatus* were either sugar-starved or fed continuously on a 10% sugar water solution. Thirty females of each pre-exposure feeding treatment were added to replicate cages with a single ATSB (mesh bag design; volume = 700 mL) containing either PPF (fungus powder in core) or water (no fungus in core). During a 2-day exposure, each cage also contained fourth instar larvae ( $n = 30$ ) provided with a standard volume of a food mixture (0.5 mL/day of 3:1 [v:v] ground rabbit chow:brewer's yeast) dispersed into a 300 mL glass bowl adjacent to the ATSB. Exposure and post-exposure adult mortality/infection and larval mortality/adult emergence were determined by standard methods discussed in previous reports. ATSB performance over time was assessed with three successive release/recapture trials performed at day 0, wk 1, and wk 2 of the experiment.

Across all experiments, sugar starvation in B/IGR-ATSB exposures boosted adult mortality roughly 20% (Tarone-Ware,  $\chi^2 = 15.14$ ,  $P < 0.001$ ), reduced mean survival time (MST) by 2 days (starved = 15 d vs. fed = 17 d), and increased infection rates by 10% (Tarone-Ware,  $\chi^2 =$

5.188,  $P = 0.023$ ). Sugar starvation also appreciably increased overall adult mortality by 10% in control ATSB exposures (Tarone-Ware,  $\chi^2 = 8.880$ ,  $P = 0.012$ ). Control ATSB exposures resulted in a small number of infections that were probably not linked to mosquito mortality since *Beauveria bassiana* was evident only in fed adults and not in the starved adult mosquitoes.

None of the exposed larvae emerged as adults from B/IGR-ATSB exposures (100% mortality) compared to a 30% average emergence rate among control exposures. Previous experiments found that > 90% of larvae should successfully emerge as adults in control treatments; the lower-than-expected emergence numbers were likely due to PPF contamination of rearing pans.

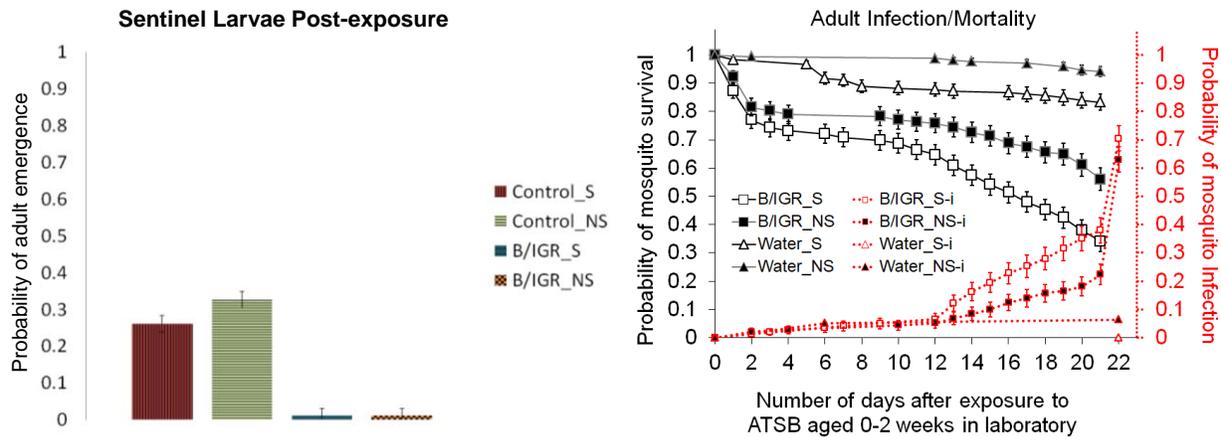


Figure 2. The impact of adult sugar starvation on ATSB (mesh bag design) efficacy (mean  $\pm$  SE) in the laboratory. Comparison of adult emergence (left) and host-seeking adult mortality and infection (right) with starved (S) and fed (NS) females exposed to either a fungus/chemical (B/IGR) or water (control) ATSB treatment. i = infection rate.

Interactive effects between ATSB age and sugar starvation on adult success are presented in Figure 3. Compared to fed adults, starved adults exposed to a fresh fungus/chemical ATSB exhibited triple the infection rate (21 d: 60% vs. 18%) and nearly twice the mortality (21d: 90% vs. 50%) and speed-of-death (MST = 9 d vs. 15 d). Aged ATSB exposures (average of 1 and 2 week old) resulted less distinct differences in mortality (21 d: starved = 53% vs. fed = 41%) and infection (21 d: starved = 31% vs. fed = 22%) compared to fresh exposures. Interestingly, sublethal infections were widespread in 21-d fungus-exposed survivors and combined infection rates (sublethal + lethal outcomes) averaged about 70% regardless of adult feeding status or age of fungi (exception: fed adults + Wk1-ATSB = 43% total infection rate).

### UC Riverside Enclosure Field Trials

Two release/recapture trials with forty gravid female *Cx. quinquefasciatus* per pyramidal mesh enclosure were conducted at the ‘Midgville’ site on the UC Riverside campus in autumn 2017 (Fig. 4). Release and recapture methods for gravid adults and larvae were similar to those used for host-seeking adults and larvae in spring 2017 within the same eight replicated enclosures (see Progress Report, June 2017). The efficacy of the mesh bag ATSB (Fig. 1) against adults and larvae was assessed without (September trial) and with (November trial) a

secondary reservoir for crystal and solution storage. Temperature and relative humidity (CIMIS: Station 44 at UC Riverside) during the 5-day mosquito releases varied in May (means = 20°C, Rh = 70%), September/October (means = 22°C, Rh = 47%) and November (means = 17°C, Rh = 56%).

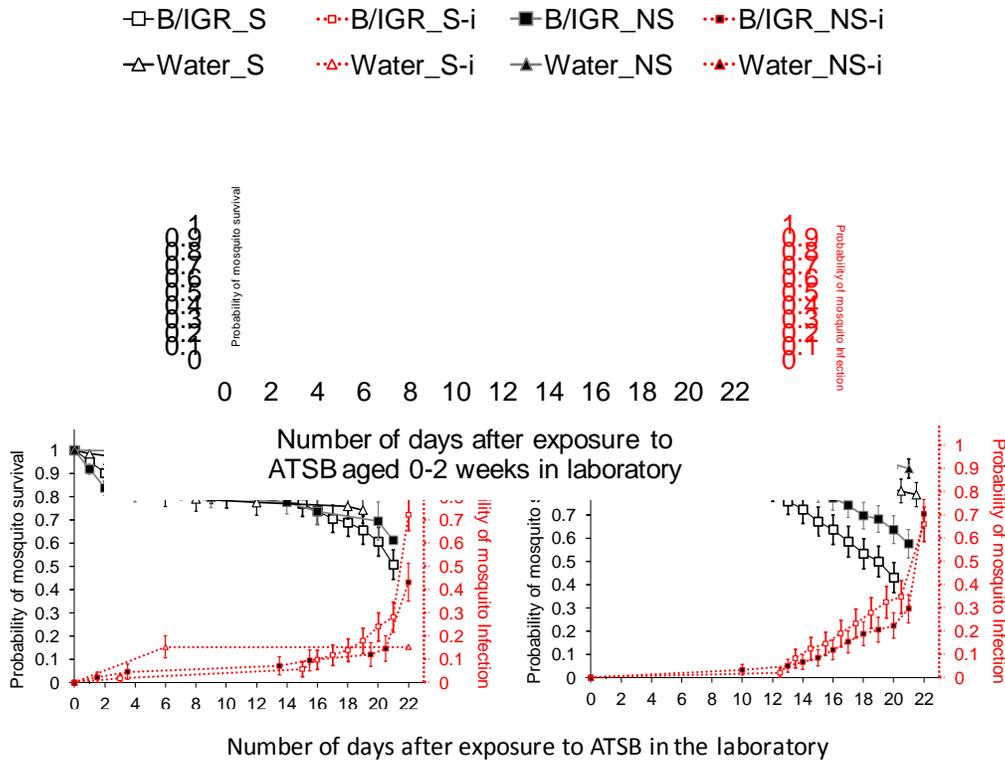


Figure 3. The impact of adult sugar starvation on adult mortality (mean  $\pm$  SE) and infection (i) during ATSB aging. B/IGR = fungus/chemical. S = starved. NS = not starved.

Around half of all adult females released during experiments were recaptured (PPF/BG-ATSB = 50%, control-ATSB = 54%) and the proportion of live and dead specimens varied across the studies (Fig. 4). Mortality at the end of exposure periods was on average nearly four times higher in PPF/BG (dead/live = 2.7) compared to control (dead/live = 0.7) enclosures. Exposure mortality was on average five times higher when a PPF/BG ATSB was fresh (dead/live = 12.4) compared to aged 1 and 2 weeks (dead/live = 2.4). No appreciable difference in the ratio of dead to live adult mosquitoes was linked to age of bait stations in control enclosures (fresh: 0.9 vs. aged 1.0) in the September/October trial. Unusually high adult mortality was evident in the November trial, when the only survivors to the exposure period were five females from a single control replicate.

*Beauveria bassiana* was detected in nearly 10% of all adults recovered from PPF/BG enclosures. Peak average infection rates were greater than 20% in two 2017 trials (May and September) and greater than 40% in two replicates aged 14 days (Sept. 2017). Infections were relatively rare in control enclosures (1% overall prevalence) where fungus-positive adults were encountered only in May (fresh) and November (14 d) of 2017.

Larvae developed into adults at a 30% reduced rate after exposure to PPF/BG (mean = 50%) compared to controls (mean = 80%). Aging of PPF/BG coincided with a 30% increase in mean adult emergence (fresh = 40% vs. aged = 70%), while aging was not associated with different

emergence rates in controls (fresh = 82% vs. aged = 93%). Adult emergence rates (arc-sine transformed) did not appear to be correlated to adult egg raft production in the PPF enclosures (linear regression:  $R^2 = 0.02$ ,  $f_{1,33} = 0.667$ ,  $P = 0.420$ ). Adult emergence in controls was lowest in November 2016 and September 2017 (fresh trial) and likely indicated PPF contamination.

Across all experiments, egg raft production onto bowls containing sentinel larvae was similar in the PPF/BG (mean = 41% of adult females) and control (mean = 43% of adult females) enclosures; however, inverse trends existed in the two experiments during autumn 2017. Mosquito oviposition in control cages (mean =  $31 \pm 4$  rafts) was greater than PPF/BG cages ( $21 \pm 8$  rafts) during September/October, while oviposition in PPF/BG cages ( $10 \pm 5$  rafts) was greater than control cages ( $4 \pm 3$  rafts) during November.

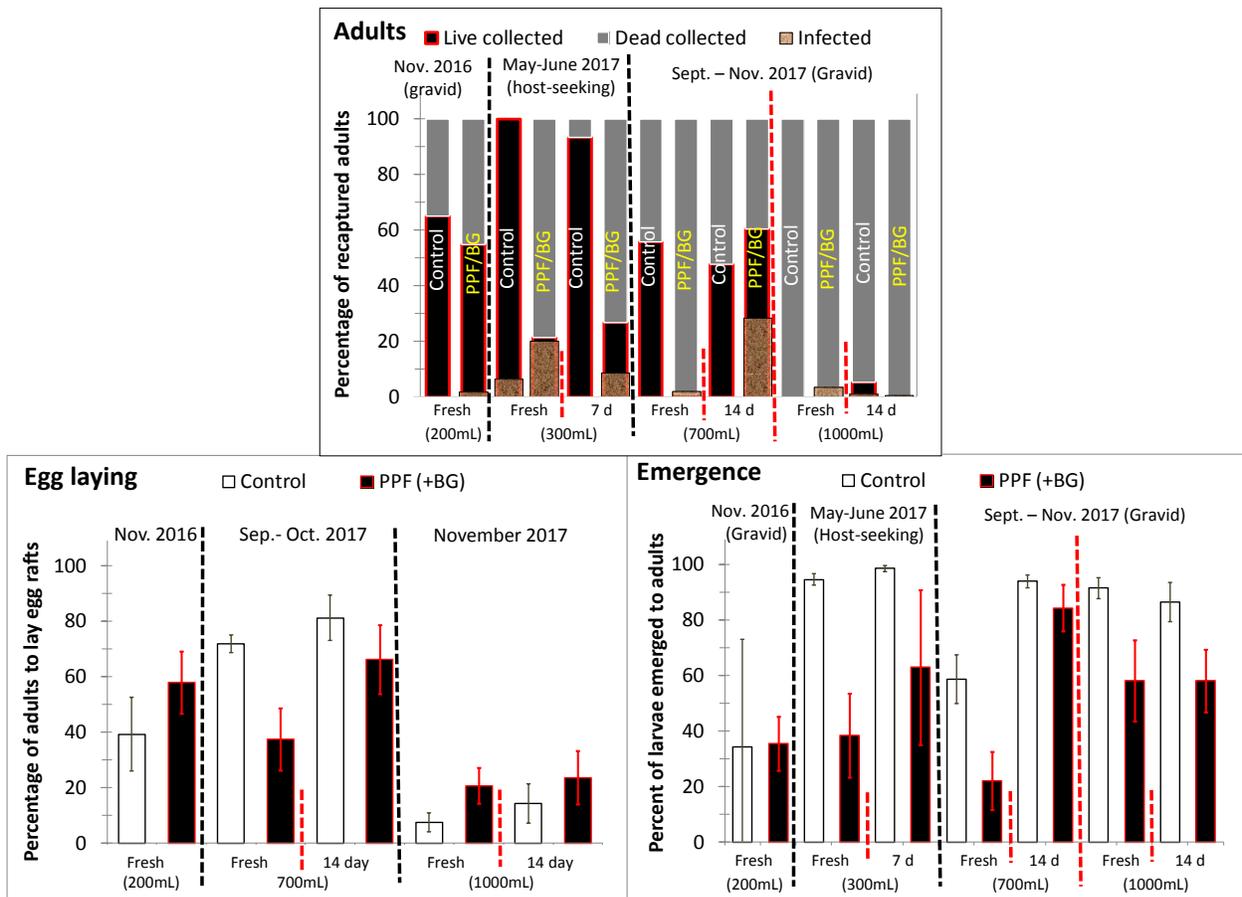


Figure 4. UC Riverside field enclosure experiment results 2016-2017. The abundance of recaptured live and dead adults with infection frequency (top) and mean ( $\pm$ SD) percent egg rafts (left, bottom) and larval emergence (right, bottom). PPF (+BG) = pyriproxyfen + *Beauveria bassiana*.

### Discussion

The attractive toxic sugar bait (ATSB) strategy can provide significant control of *Cx. quinquefasciatus* adults and larvae under experimental conditions that approximate those found in the underground storm drain system (USDS) of the Coachella Valley. The efficacy of a reservoir system that simplifies ATSB setup will be assessed over a month and results used to ensure the most persistent and practical design will be deployed at USDS sites in the Coachella

Valley beginning in spring 2018.

ATSB exposures have at times produced unexpected results and the exact mechanisms of adult and larval control via direct and autodisseminated routes are not yet fully understood. For instance, rapid-onset (1-3 d) adult mortality was common in *Cx. quinquefasciatus* exposed to pyriproxyfen (PPF) with and without *Beauveria bassiana* (BG), despite reports that PPF is not an effective contact-based adulticide. PPF-laced baits have been explored in preliminary tests and follow-up experiments are needed to clarify the activity of PPF as an ingestion-based adulticide.

Fresh PPF/BG exposures with rapid adult mortality are characterized by minimal BG sporulation and survivors lacking detectable infection. BG has been reported to be quiescent for several days post-entry as a mechanism to evade the host immune response and rapid host death may prevent proliferation and life cycle completion. The likelihood that fresh PPF acts as a mosquito deterrent to limit BG exposure is not considered high since bait feeding rates (indicated by red dye in the abdomen) appeared similar in the treatment and control. A negative fitness effect of PPF on BG was not assessed, although direct interaction between PPF and BG is limited by the protective plastic shell surrounding the inner core of the ATSB.

Recent experiments suggested BG efficacy is enhanced when adults are sugar-starved and PPF/BG-ATSB stations have aged at least two weeks. Sugar deprivation in wild mosquitoes within USDS would not be surprising given the lack of underground sugar sources (e.g. vegetation), not to mention an ATSB in close proximity to developmental sites might be a preferred option compared to less accessible aboveground sites. Aboveground aging of our ATSB stations appreciably dried PPF reservoirs and increased surviving adult abundance, which may have in turn increased transmission opportunities for BG that ultimately resulted in significant delayed-onset (1-2 weeks) mortality. Adulticidal properties of BG may be complementary to those of PPF and this type of dual control agent approach will be further tested in the upcoming trials within the USDS setting.

A reliance on adult mosquitoes to transmit PPF from ATSB to larval habitats via autodissemination may be problematic if variable environment conditions disrupt adult habitation and dispersal. For example, average egg raft production was reduced by 40% in November when average temperatures were 5°C colder compared to those in September/October. This temperature difference also coincided with contrasting egg rafts trends by treatment (Sept./Oct.: PPF/BG < controls vs. Nov.: PPF/BG > controls). Different humidity levels in November trials of fresh (mean Rh = 73%) and aged (mean Rh = 40%) ATSB stations may also have been a factor in the surprisingly similar adult emergence rates from fresh and aged biocide treatments. Egg raft numbers may indicate gravid adult activity and PPF transfer rates to ultimately predict larval emergence; however, such connections were not concretely established from our studies. More investigation is needed to clarify interactions between biotic and abiotic factors that could be used to establish guidelines for the timing and location of ATSB deployment. Certainly, the abilities of host-seeking females, gravid females, and males to transmit PPF and BG suggest redundant transfer cycles would occur in wild populations, which bodes well for the viability of an ATSB calibrated to balance adult and larval mosquito abatement strategies in the Coachella Valley.

Semiannual Research Progress Report #4 for CVMVCD grant:  
December 20, 2017

Fire ant IPM in the Coachella Valley: Improving fire ant bait efficacy in irrigated landscapes and monitoring fire ant biocontrol agents

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**Background Information from 2016.**

- Three water-resistant fire ant bait formulations were tested against laboratory fire ant colonies.
  - All three formulations caused an average 68-100% reduction in brood volumes after being either: a) soaked in water, b) soaked in water then allowed to air dry for 18-23 hours, or c) left dry. Reduced amounts of brood is indicative of effective delivery of the insect growth regulating active ingredient (pyriproxyfen) used in all tested baits.

**Summary of Activity January through December 2017.**

- Three water-resistant fire ant bait formulations were further tested in irrigated, potted plants infested with fire ant colonies after modifying methods to address probable colony escapes that occurred in 2016.
  - Colonies extracted from pyriproxyfen baited pots had worker brood reductions of 87 - 100%. However, results were confounded by the dramatic reduction in brood recovery from all treatments, including the control 4 - 7 weeks after treatment.
  - Another trial using laboratory reared colonies with a single queen had worker brood reductions of over 98% in all treated pots, relative to a 60 - 68% reduction in the control. However, there were symptoms of SINV-3 infection in the colonies which confounded results.
  - Fire ants fed on all bait formulations applied in piles even after irrigation directly soaked the bait.
  - A field test of a water resistant fire ant bait formulation was initiated in June at three locations in the Coachella Valley; baits were wetted with water soon after application.
  - Significant reductions in fire ant foraging were recorded 11 weeks (Sept.) after baits were applied for the water resistant and standard treatments when compared to the untreated control. Evaluations of brood reductions and caste shifts were inconclusive due the difficulty of sampling brood in the desert climate.
  - No significant differences in fire ant foraging were detected among all bait treatments and the untreated control, 21 weeks (Nov.) after bait applications.
- Solenosis invicta virus 3 (SINV-3) monitoring was conducted at the El Dorado and La Quinta Medical Center sites on May 7-8, 2017.
  - SINV-3 was detected in 24% and 13% of samples from El Dorado and La Quinta Medical, respectively.

- Positive samples were collected beyond the release sites and the 2016 sampling locations.
- Phorid fly trapping at Monterey Country Club and La Quinta Medical Center was conducted on May 8, 2017.
  - A total of 47 flies and 2 species, *Pseudacteon obtusus* and *P. curvatus*, were collected at Monterey.
  - Flies were collected on the south slope of the wash for first time.
  - After 2 releases, flies were never collected at the La Quinta Medical Center site over a period of 2 years and 4 samplings. Thus, monitoring at this site will be discontinued.

## Water Resistant Baits

Prolonging the physical stability and palatability of fire ant baits exposed to water would markedly advance the ability to control fire ants in wet conditions. Efforts have been made to decrease the negative effects of precipitation and/or irrigation on fire ant baits that utilize a corn-grit carrier. Moisture renders corn-grit carriers mushy and unpalatable to fire ants. One example of water-resistant baits (Hsip bait), replaces the corn-grit with dried distiller's grains solubles (DDGS) (Kafle et al 2010). Another approach protects the corn-grit carrier from moisture by spraying the corn protein zein on standard fire ant bait (J. Chen, personal communication). Three water-resistant fire ant bait formulations (Hsip, Zein, Ars) plus a standard fire ant bait (Esteem) and a control bait (Table 1) were evaluated in 2016 on laboratory colonies of red imported fire ants, *Solenopsis invicta*.

Table 1. Baits tested for water-resistance.

Bait	% AI	Carrier	Manufacturer
Hsip	0.5% pyriproxyfen	DDGS	Chung Hsi Chemical
Zein	0.5% pyriproxyfen	corn grit	ARS Stoneville, MS
Ars	0.5% pyriproxyfen	corn grit	ARS Stoneville, MS
Esteem	0.5% pyriproxyfen	corn grit	Valent
Control	0.0% no active ingred.	corn grit	---

## Water Resistant Baits – Irrigated nursery pots

Based on the results of the laboratory studies conducted in 2016, all four pyriproxyfen (0.5%) bait formulations and a control of 20% once-refined soybean oil absorbed onto pregel defatted corn grit were tested in irrigated, potted boxwood shrubs that contained a fire ant colony. The methods used for the irrigated potted plants in 2016 were as follows: Bait (10 g /pot) was applied in a pile under a micro-sprinkler immediately before water sprayed on the bait for 10 minutes (Fig. 1). Thereafter the sprinkler was on for 10 minutes at 8 am, 12 noon, and 4 pm, for seven days, which was an irrigation cycle used by a local nursery. For each 10 minute spray, 1.5 liters (0.4 gal) of water was applied. Pots were contained in fluoned-lined trays to prevent ant escapes and held for 6-7 weeks outdoors under a covered lanai to allow for the appearance of pyriproxyfen effects. Frozen crickets, 10% (w/v) sugar solution, and water were added to the pots 48 hr after baiting to provide sustenance to fire ant colonies. Fire ants were extracted from the pots by cutting the trunk at the soil line, placing the root ball in a bucket, and slowly dripping water into the bucket until the accumulating water forced the ants out of the root ball. The size of the extracted colonies was determined by visually estimating the number of living ants based on photos of known numbers of fire ants in nest cells and comparing the worker brood volume (not the reproductive caste brood) to photos of measured brood volume. Colonies also were examined for the presence of their queen.

Fig. 1. Bait pile under micro-sprinkler.

The recovery of fire ant colonies from the irrigated potted plants was confounded by the inconsistent volume of brood extracted from the control treatment. We suspected colonies may have been escaping due to the relatively large volume of water the plants were receiving and the length of time plants were held outdoors before evaluation. Thus, in 2017 methods were modified by 1) reducing the irrigation cycle to 2 minutes, three times per day resulting in less saturation of the soil while still thoroughly wetting the bait; and 2) extracting colonies within a week after the irrigation regime ended,

and rearing the colonies in the lab to observe the effects of baiting at 4-6 weeks after treatment which is the typical time that the insect growth regulating effects of pyriproxyfen on brood are observable.

Results of the first trial with the modified protocol are presented in Tables 2 and 3. There was a drastic reduction in worker brood volume and worker numbers in all treatments including the control. Percent reduction in work brood, which is the earliest indicator of pyriproxyfen impact, was very high in the controls (89%) with no evidence of recovery. The presence of reproductive brood, indicative of pyriproxyfen effects, was seen in the Hsip treatment where it was the only type of brood recovered, unlike the other baits. Worker counts were also lower than expected, but not to the same degree as the brood. Field collected colonies with several queens were used in this trial, and due to the potential of alate queens losing their wings, it was difficult to distinguish which reproductives were viable, reproducing queens.

Table 2. Percent reduction of worker brood volume from the initial brood volume 4 to 7 weeks after initial bait access (2017 trial 1).

Treatment	Worker brood (ml)	Percent reduction in worker brood			
	0 week	4 week	5 week	6 week	7 week
Ars	25	92.0	99.8	98.0	100.0
Hsip	20	100.0	100.0	100.0	98.8
Zein	15	86.7	96.7	96.7	98.3
Esteem	25	98.0	100.0	100.0	99.0
Control	9	88.9	88.9	97.2	100.0

Table 3. The number of living worker ants 4 to 7 weeks after initial bait access (2017 trial 1).

Treatment	Number of worker ants				
	0 week	4 week	5 week	6 week	7 week
Ars	15,000	3,000	4,000	4,000	1,000
Hsip	5,000	1,500	3,000	2,500	1,500
Zein	10,000	2,500	4,000	2,500	3,500
Esteem	10,000	1,000	2,000	1,000	2,000
Control	5,000	1,500	2,000	2,000	2,000

A further modification of using laboratory reared fire ant colonies that have a single, viable queen was implemented in a second trial. Results of this trial had good recovery of worker ants after colonies were extracted from the potted plants, however brood recovery was moderate and by week 5 percent reduction in worker brood ranged from 98 – 100% in the treated pots while the control had a 60% decrease (Table 4). In the Hsip and Esteem treatments, only reproductive brood was observed, which indicated the pyriproxyfen was having an impact. Week 7 had similar reductions in worker brood (Table 4). Worker reductions ranged from 67 – 80% in the baited pots while the control had a 50% reduction. Queens were recovered from the control, Esteem and ARS treated pots and they were present through week 7. It should be noted that symptoms of SINV3 were present and may have contributed to the declines in brood and workers which included the control that had a queen. Thus, the possible presence of SINV3 and the limited recovery of brood and queens, clouded the interpretation of these results.

Despite the difficulties of the irrigated potted plant trials in 2016 and 2017, the fire ants were observed foraging on the water soaked baits between irrigation cycles. The Hsip bait dried quickly, and thus more easily carried by the ants. Future trials on water resistant fire ant bait carriers in potted plants will use faster acting, non-IGR active ingredients to reduce the need to evaluate worker brood production for 6 - 8 weeks. Instead, comparisons of worker ant survivorship should provide more consistent data on bait efficacy.

Table 4. Percent reduction of worker brood volume from the initial brood volume, and the number of living worker ants 5 and 7 weeks after initial bait access (trial 3).

Treatment	Worker brood (ml)	Percent reduction in worker brood		Number of worker ants		
	0 week	5 week	7 week	0 week	5 week	7 week
Ars	25	98.3	99.2	4,000	2,000	1,000
Hsip	20	100.0	100.0	4,000	3,000	1,200
Zein	15	100.0	100.0	3,000	2,500	1,000
Esteem	25	100.0	100.0	3,000	2,500	600
Control	9	60.0	68.0	4,000	5,000	2,000

#### Water Resistant Baits – Field study in Coachella

Based on the laboratory and pot tests, Hsip (Erasant) bait and the standard Esteem fire ant baits were selected for the field trial in the Coachella Valley that was initiated on June 20, 2017. The CVMVCD staff identified several potential test sites of which four locations in the cities of Indio, Bermuda Dunes, and La Quinta were selected for the study. In Indio, the Doug York Plaza, and grassy lots at the corner of Smurr St., Miles Ave., & Indio Blvd; and the north lot at Towne St & Bliss Ave were used for two replicates. In Bermuda Dunes, the grass area of the Desert Oasis Healthcare (JFK Medical) building was replicate 3. In La Quinta, the grounds of the Arnold Palmer Restaurant served as the fourth replicate. At Doug York Plaza and JFK Medical, small plots (ca. 3478 - 6600 sq. ft.) were treated, while at the grass lots in Indio, a 15 ft. wide band was treated along the perimeter sidewalks. At Arnold Palmer Restaurant, an 8-10 foot wide band was applied to the perimeter of seven sand traps, as well as along the front driveway curb. The Doug York and JFK plots had visible fire ant nests within the turf area, while the sites where band treatments were made, fire ant nests were generally visible along the sidewalk/curb and sand trap edges.

Treatments consisted of 1) the Hsip (Erasant) water resistant bait, 2) Esteem fire ant bait (standard), both broadcasted at a rate of 1.5 lbs. per acre, and 3) the Esteem bait placed as discrete ½ teaspoon piles in a grid pattern in the plots or at fixed intervals in the band applications, again at 1.5 lbs. per acre. A single replicate of the Hsip bait dispensed in discrete piles was applied along the driveway curb at Arnold Palmer Restaurant. Immediately after the broadcast applications, bait was sprayed with water using a handheld pump sprayer to moisten bait since sprinklers would generally be on at night and prior to sunrise. However, after bait was applied at Arnold Palmer on June 22 (ca. 11 am) sprinklers went on. When bait was dispensed in piles, each pile was immediately sprayed until wet with the handheld sprayer. Bait applications were made on June 21-22, and temperatures ranged from 84 to low 100s °F. Broadcast and band bait applications were made with a battery powered, handheld spreader (Wizz, Scotts Co. LLC, Marysville, OH.) with spreader settings at 2.5 for Hsip bait and 2.75 for Esteem. A Pesticide Research Authorization (#1705082) was obtained from the California Dept. of Pesticide

Regulation. A notice of intended pesticide application and the experimental trial report form were submitted to the Riverside County Agriculture Commissioner. After the last test evaluation, an experimental pesticide use report was submitted to the California Dept. of Pesticide Regulation and the Riverside County Agriculture Commissioner.

A day before baits were applied, a transect of 10 Vienna sausage or hotdog slices was set in each plot and fire ants on the slices counted after 30-45 minutes. This sampling method served as an indicator of fire ant population levels based on fire ant foraging activity. Foraging activity was quantified by assigning a rating value of 0 – 10 which corresponded to visual counts of fire ants on each hotdog slice (Table 5). In addition, approximately five fire ant nests, or mounds, per plot were examined and assigned a population index rating (PI), which is a visual rating estimate of the number of adults and presence or absence of worker brood in a fire ant nest (Lofgren & Williams 1982). The PI is useful in evaluating insect growth regulating (IGR) baits because it accounts for effects on brood development. Evaluations were conducted 11 (Sept. 5) and 21 weeks (Nov. 13) after treatment to allow time for the effects of the IGR pyriproxyfen to be observable in the brood and to reflect reductions in workers based on foraging activity.

Table 5. Rating scale that corresponded to the number of fire ants on a food lure of hotdog slices which provided an estimate of fire ant foraging activity as an indicator of fire ant population levels.

No. ants:	0	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100+
Rating:	0	1	2	3	4	5	6	7	8	9	10

Significant percent reductions in fire ant foraging occurred in all bait treatments 11 weeks after baits were applied (Table 5). The average percent reduction over all baited plots was 47% lower than the foraging at the start of the test, while foraging activity increased in the control. The non-significant difference in foraging between the water resistant Hsip treatment and the standard Esteem bait (either broadcast or piled) suggested that water resistant formulation did not improve bait efficacy even after wetting. However, reductions in adult workers from IGR active ingredients can take several months, and in the intervening time other factors such as the immigration of new colonies could confound results. Foraging activity in all treated sites did not differ from the control by week 21 (Table 6). This nonsignificant difference could be partially attributed to very low foraging activity in the control plot at the Doug York Plaza site which occurred for unknown reasons.

Changes in the population index (PI) were not reported because we could not accurately determine the presence or absence of brood in the plots especially at weeks 0 and 11. Nests were difficult to locate in the desert climate, and when nests were located, brood could not be consistently found prior to baiting to serve as a baseline. Nests and brood were a little more visible in week 21, due to cooler weather and ample irrigation for the fall grass reseeding. Nevertheless, without accurate PIs at week 0, comparisons among treatments could not be confidently made.

Observations of Esteem bait piles 2.5 to 6 hours after application and wetting with the water sprayer, the piles dried hard in the sun, however fire ants were seen on the bait pile (Fig. 2a). After sprinklers were operating, the Esteem bait pile rehydrated and became soft and mushy, and fire ants were seen feeding on the rehydrated piles (Fig. 2b). Fire ants were observed foraging on Esteem bait piles during and immediately after sprinklers were on at about 1 pm. Air temperature was 107 °F and humidity (unmeasured) felt high in the irrigated turf. Perhaps high humidity at the soil surface would permit fire ant foraging despite the high air temperatures. In the single replicate of Hsip bait applied in piles application along a driveway (Arnold Palmer site), there were foraging reductions of 57 and 39%

for weeks 11 and 21, respectively, and fire ants were foraging on the bait piles. Results from the lab tests and observations in the pot and field study indicated that standard fire ant bait formulation will be foraged upon after sprinkler irrigation and can still be efficacious. Of course, confirmation is needed in further field testing.

Table 6. Average (n=4) percent reduction in ratings of fire ant foraging on food lures (hotdog rating) 11 and 21 weeks after application of water resistant (Hsip) and standard (Esteem) fire ant baits at four sites in the Coachella Valley, California. The Esteem was applied by broadcasting or by placing small piles in a grid pattern. All baits were wetted with water after application. Initial foraging ratings were conducted 1 day before bait applications. Negative percent reductions indicate an increase in fire ant activity.

Treatment	Week 0 Avg. Hotdog Rating	Week 11	Week 21
Esteem broadcast	5.8a*	51.1a	62.3a
Hsip (Erasant)	7.8a	44.5a	70.1a
Esteem piled	6.9a	43.8a	31.6a
Control (untreated)	6.6a	-1.3b	42.8a

\*Means followed by the same letter within a column are not significantly different by analysis of variance and Ryan-Einot-Gabriel-Welsch Multiple Range Test ( $\alpha=0.05$ ).



Fig. 2. a) Fire ants foraging on a dry, hard Esteem fire ant bait pile. b) Fire ants foraging on Esteem bait pile that was rehydrated with sprinkler irrigation.

## Fire Ant Biological Control Monitoring

### Solenopsis invicta virus-3.

Fire ants were inoculated with *Solenopsis invicta* virus-3 (SINV3) at the El Dorado site on June 11, 2014 and at the La Quinta Medical Center site on Jan. 26 and Oct. 22, 2015. Surveys conducted in 2014 and 2015 revealed that the virus had established at both sites and continued to persist and spread based on sampling in May 2016. The most recent survey conducted on May 7 - 8, 2017 indicated that SINV3 was present at both the El Dorado and the La Quinta Medical Center sites. At El Dorado, SINV3 was detected in 24% (8/33) of the samples which were collected in transects that traversed the original inoculation and monitoring plots between the irrigation cannons (4 positive/19 samples =21%) and areas beyond the original release plots (4/14=28.6%). These areas included the north ditch that parallels the non-inoculated plots C2 and C3. The positive samples were collected farther from the inoculated plot than previous detections. At the La Quinta Medical site, SINV3 was found in 13% (2/15) of the samples. Positive samples were obtained from fire ant nests located on the south end of Washington St. and on the Caleo Bay Alzheimer's Care facility property. SINV3 is persisting at both sites despite the reduced irrigation in 2016.

### Phorid fly monitoring.

Releases of the little decapitating fly *Pseudacteon curvatus* and the larger decapitating fly *Pseudacteon obtusus* were made at the Monterey Country Club on May 15-16 and Nov. 6-7, 2014. Releases also were made at the La Quinta Medical Center site on Nov. 6-7, 2014. Both species were confirmed to have established in 2015 at Monterey. On May 8, 2017, ARS and CVMVCD personnel deployed 12 phorid fly traps (Fig. 3) at Monterey and 4 traps at La Quinta Medical Center to monitor their spread and determine establishment at each site, respectively.

A total of 47 flies of either *Pseudacteon obtusus* or *P. curvatus* were collected at Monterey. For the first time flies were collected on the south slope of the wash. The majority of the flies were trapped west of the Monterey Ave. overpass. Thirty-three of the 47 flies were *P. curvatus*, and interestingly 3 were males which are not typically collected. Thus, it is evident that the fire ant decapitating flies are established and continue to spread at this location.

Fig. 3. Phorid fly trap. Inverted pizza box stand coated with tangle-foot will catch phorids attracted to fire ants contained in petri dish by fluon (white film).

Flies were not collected at La Quinta Medical Center. This continues the pattern of the previous four surveys at this release site of no evidence of establishment (Table 2). While irrigated turf with fire ants nests were present, this site was along a busy street (Washington St.) with relatively narrow, median strip-like, green space, and limited diversity in vegetation for fly harborage. Sampling will be discontinued at this location.

Table 2. Fire ant decapitating phorid flies collected at release sites in Coachella Valley, CA. Releases were predominately *Pseudacteon curvatus*, instead of *Pseudacteon obtusus*.

Site	Release dates	Survey dates					
		6/11/14	10/28-29/14	1/27/2015	5/13-14/2015	5/4-5/2016	5/8/2017
Monterey	5/16/14 11/6-7/14	0	<i>P. obtusus</i> : 2 male	<i>P. obtusus</i> : 1 female	<i>P. obtusus</i> : 19 male, 5 female <i>P. curvatus</i> : 1 female	<i>P. obtusus</i> : 4 male	<i>P. obtusus</i> : 11 m, 3 f <i>P. curvatus</i> : 30 female 3 male
Sonrisa	5/15/14	0	0	0	0	na**	na**
La Quinta Medical Center	11/6-7/14	na*	na	0	0	0	0

\*na, not applicable; releases not made until Nov. 2014.

\*\*monitoring discontinued due to consistent absence of phorids and low fire ant nest densities.

Table 3. Milestones for water-resistant bait development and monitoring fire ant biocontrol agents in the Coachella Valley.

Year / Quarter	Lab test water resist. baits	Outdoor testing baits FL	CA bait field trial: site selection	CA bait field trial: treat & sample	Biocontrol monitor
2016 Jan-Mar	Done				
2016 Apr-Jun	Done				Done
2016 Jul-Sep	Not needed	Done			
2016 Oct-Dec		Done			
2017 Jan-Mar			Done		
2017 Apr-Jun				Done	Done
2017 Jul-Sep				Done	
2017 Oct-Dec				Done	

#### References Cited.

- Kafle, L., W. J. Wu, and C. J. Shih. 2010. A new fire ant (Hymenoptera: Formicidae) bait base carrier for moist conditions. *Pest Management Science* 66: 1082-1088.
- Lofgren, C. S., and D. F. Williams. 1982. Avermectin B1a: Highly potent inhibitor of reproduction by queens of the red imported fire ant (Hymenoptera: Formicidae). *Journal of Economic Entomology* 75: 798-803.



**Coachella Valley Mosquito and Vector  
Control District**

**January 9, 2018**

**Staff Report**

**Agenda Item:** Informational Item  
Staff report from:

- Entomological Society of America Annual Conference, November 5-8, 2017 in Denver, CO

**Background:**

The Entomological Society of America Annual Meeting includes presentations on the latest research on a variety of insect topics. The theme, ignite. inspire. innovate., allowed for organizers to gather a variety of presentations for the four day meeting.

The Medical, Urban, and Veterinary Entomology section of ESA had presentations on the latest research completed on mosquitoes and other arthropods of importance to public health. I was able to attend talks on the latest control techniques for mosquitoes, including biocontrol using a fungus and barrier applications; host preference in mosquitoes and ticks; importance of chemical cues for fly oviposition; impact of diapause in mosquitoes; and discussions of products available for consumers to purchase for mosquito control.

**Attendees:**

Jennifer A. Henke, Laboratory Manager



**Coachella Valley Mosquito and Vector  
Control District**

**Staff Report**

**January 9, 2018**

**Agenda Item:** Informational Item

- MVCAC Planning Session, November 30 – December 1, 2017 in Emeryville, CA

**Background:**

The focus of the MVCAC Planning Session was:

- Review of 2017 planning goals and overview of 2018 goals and objectives for the Association
- Financial Planning – review current financials, reserves and investment matrix, NPDES financial, reserve policy, and financial resources
- Meetings – review of schedule for 2018 and beyond
- Legislative activities – *MVCAC Legislative Day Wednesday, March 7, 2018*
- Regulatory activities
- Training and Certification
- Invasive Species
- Engagement of other agencies at their meetings
- MVCAC renewal of contracts with service providers for the Association.
- MVCAC Communications and Public Relations
- Committees and liaisons for 2018

**Attendees:**

Doug Walker, Trustee, Southern Region Representative  
Jeremy Wittie, General Manager, President Elect  
Jennifer Henke, Laboratory Manager, Regulatory Affairs Chair  
Jill Oviatt, Public Information Manager, Public Relations Chair  
Wakoli Wekesa, Operations Manager, Research Chair

**Staff Recommendation:**

N/A

**Fiscal Impact:**

N/A

**Exhibits:**

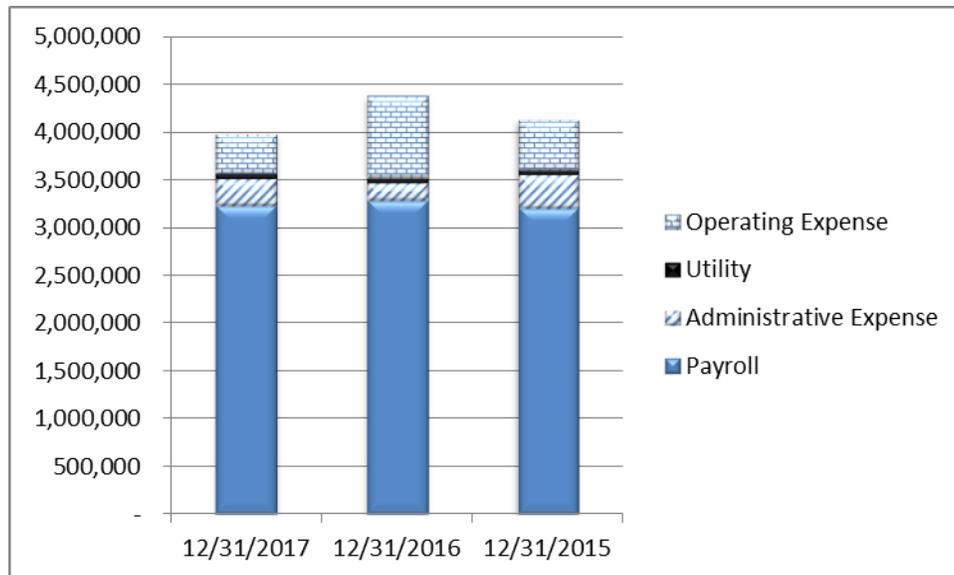
N/A

## FINANCE

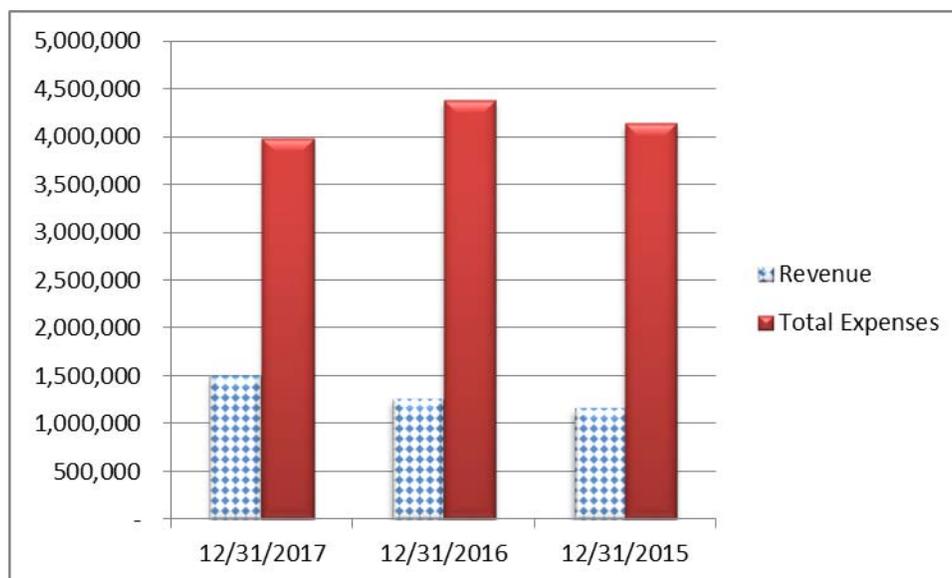
The financial reports show the balance sheet, receipts, and the revenue and expenditure reports for the month ending December 31, 2017. The revenue and expenditure report shows that the operating budget expenditure for July 1, 2017 to December 31, 2017 is \$3,981,979; total revenue is \$1,490,188 resulting in excess revenue over (under) expenditure for the year to December 31, 2017 of (\$2,491,791).

### THREE YEAR FINANCIALS

	12/31/2017	12/31/2016	12/31/2015
<b>Total Revenue</b>	<b>1,490,188</b>	<b>1,252,844</b>	<b>1,153,580</b>
Expenses			
Payroll	3,240,686	3,295,891	3,216,153
Administrative Expense	275,357	184,385	336,464
Utility	50,176	51,391	54,355
Operating Expense	415,759	848,048	529,356
<b>Total Expenses</b>	<b>3,981,979</b>	<b>4,379,715</b>	<b>4,136,328</b>
<b>Profit (Loss)</b>	<b>(2,491,791)</b>	<b>(3,126,871)</b>	<b>(2,982,748)</b>
Capital Expenses	0	496	5,948



**Figure 1 Three Year Expenditure**



**Figure 2 Three Year Revenue & Expenditure**

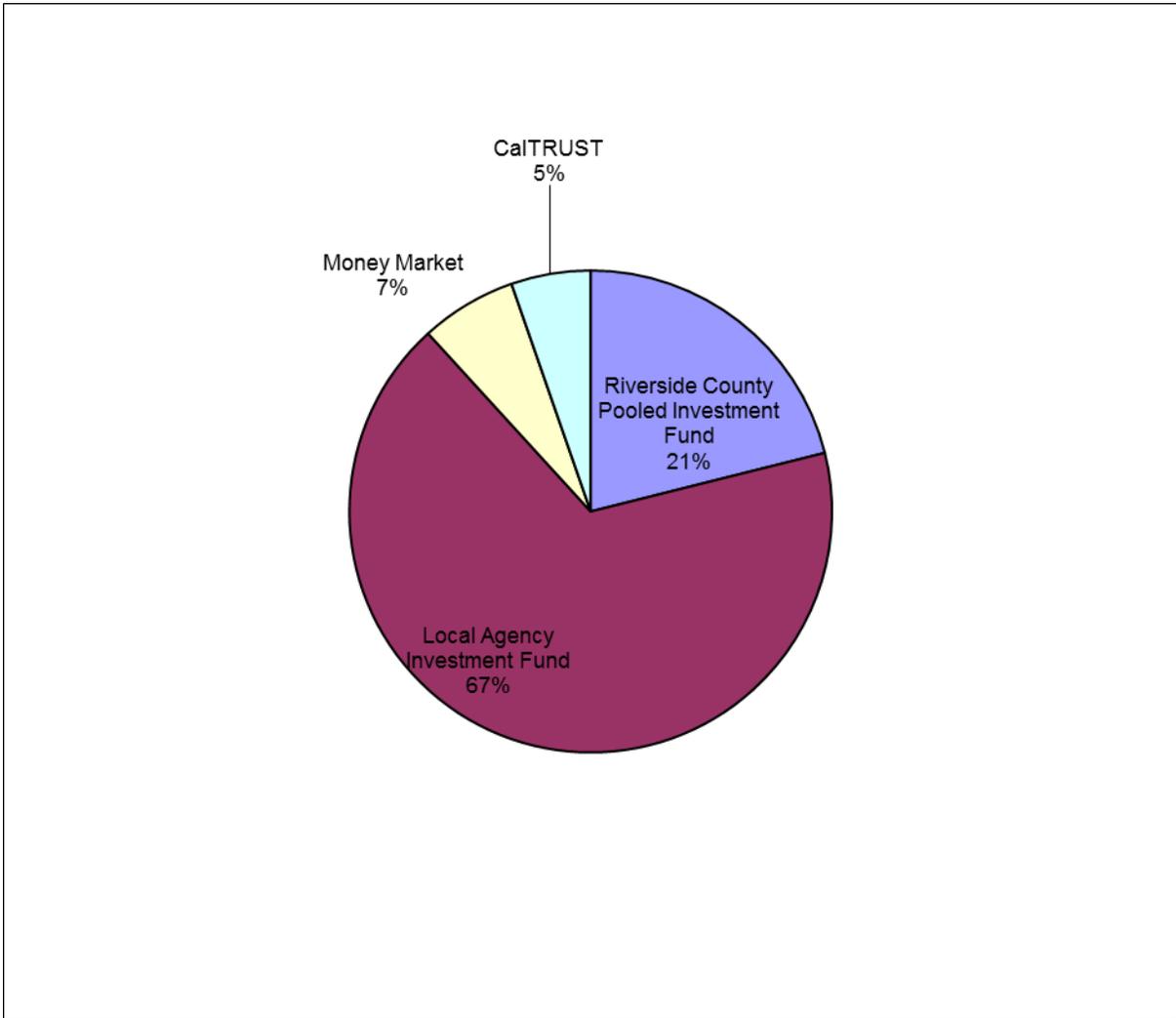
### THREE YEAR CASH BALANCE

<b>CASH BALANCES</b>	<b>12/31/2017</b>	<b>12/31/2016</b>	<b>12/31/2015</b>
Investment Balance	9,237,976	9,669,926	10,200,635
Checking Accounting	11,967	6,217	14,152
Payroll Account	121,849	68,916	84,862
Petty Cash	2,000	2,000	2,000
<b>TOTAL CASH BALANCES</b>	<b>9,373,792</b>	<b>9,747,059</b>	<b>10,301,649</b>

### DISTRICT INVESTMENT PORTFOLIO 12/31/2017

The District's investment fund balance for the period ending December 31, 2017 is \$9,237,976. The portfolio composition is shown in the pie chart. Local Agency Investment Fund (LAIF) accounts for 67% of the District's investments; the Riverside County Pooled Investment Fund is 21% of the total.

The LAIF yield for the end of December was 1.23% and the Riverside County Pooled Investment Fund was 1.32%; this gives an overall weighted yield for District investments of 1.20%.



**Figure 3 Investment Portfolio 12-31-17**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	0.66	0.67	0.66	0.64	0.65	0.61	0.60	0.56	0.56	0.54	0.53	0.52
2012	0.53	0.51	0.50	0.50	0.47	0.46	0.47	0.43	0.43	0.41	0.39	0.34
2013	0.33	0.34	0.33	0.32	0.32	0.32	0.32	0.32	0.31	0.30	0.32	0.29
2014	0.27	0.30	0.33	0.31	0.30	0.30	0.34	0.37	0.35	0.37	0.35	0.39
2015	0.37	0.40	0.36	0.35	0.37	0.39	0.41	0.41	0.43	0.43	0.44	0.46
2016	0.50	0.55	0.57	0.56	0.54	0.61	0.57	0.63	0.64	0.63	0.69	0.73
2017	0.74	0.75	0.81	0.91	0.92	0.99	1.04	1.00	1.07	1.10	1.13	1.20

**Figure 4 District Investments Weighted Yield**



**Coachella Valley Mosquito and Vector Control District**

**January 9, 2018**

**Staff Report**

**Agenda Item:** Items of General Consent

Approval to purchase one (1) ATV Track System-XT, in an amount not to exceed \$7,000.00, from Capital Replacement Budget Fund #8415.13.300 – from Mattracks Manufacturing Company – **Edward Prendez, Information Technology Manager**

**Background:**

This purchase request is for one (1) Mattrack ATV Track System-XT, which is to be outfitted on a Polaris Sportmans 4X4 ATV Utility Vehicle. The Mattrack ATV Track System is tank-like track system that bolts on in place of ordinary wheels. Track System converts a 4x4 ATV Utility Vehicle into a true all-terrain vehicle by distributing the utility vehicle’s weight across a greater surface area than the usual contact area of the tires. This additional surface area allows Vector Control Technician’s to maneuver in and out of Duck Club, Palm Row and Salton Sea Habitats without sinking or becoming stuck.

Mattracks designs, engineers, manufactures, markets and distributes its track systems and all of its components out of its company’s headquarters based in Karlstad, MN. They are sole provides of the Mattrack System.

The Capital Outlay budget item for Fleet Maintenance – Mattrack purchases is \$6,314.00.

**Staff Recommendation:**

Approval to purchase one (1) ATV Track System-XT from Mattracks Manufacturing Company.

**Fiscal Impact:**

FY2017-18 Budget	Current Available Funds	Proposed Expense	Remaining Available Funds
<b>8415,13.300</b>			
<b>540,000</b>	<b>70,626</b>	<b>7,000</b>	<b>63,626</b>



**Coachella Valley Mosquito and Vector  
Control District**

**January 9, 2018**

**Staff Report**

**Agenda Item:** Items of General Consent

Approval to utilize Public Surplus as a third party marketplace to auction District Equipment, Vehicles and Furniture – **Edward Prendez, Information Technology Manager**

**Background:**

The District has selected to utilize a third party marketplace to attract a wider audience, increase revenue, and eliminate any appearance of conflict of interest. The District has identified three (3) vehicles, one (1) ATV and seven (7) utility vehicles to be auctioned off as part of the District's restructuring effort. Release of proposed vehicles to the third party marketplace will be determined when new vehicles are received in the new Fiscal Year 2017-2018.

The District contracted with Public Surplus to auction vehicles, utility equipment and trailers in 2017. Each item was open to the public via an on-line auction website, which was designed to be compliant with state and local regulations and policies. No cost was incurred by the District to process the sale of the excess equipment. All items were sold within the designated auction window.

<b>Light-Duty Trucks</b>					
<b>UNIT</b>	<b>MAKE</b>	<b>MODEL</b>	<b>STYLE</b>	<b>YEAR</b>	<b>MILEAGE</b>
127	Ford	F-150	Pickup 4X4	2006	73,037
161	Ford	F-150	Pickup 4X4	2008	75,596
163	Ford	F-150	Pickup 4X4	2008	94,067
<b>All-Terrain Vehicles (ATV)</b>					
<b>UNIT</b>	<b>MAKE</b>	<b>MODEL</b>	<b>STYLE</b>	<b>YEAR</b>	<b>MILEAGE</b>
105	Sportsman	800	ATV 4X4	2003	700 HRS
<b>Utility Vehicles</b>					
<b>UNIT</b>	<b>MAKE</b>	<b>MODEL</b>	<b>STYLE</b>	<b>YEAR</b>	<b>MILEAGE</b>
65	Carryall	Club Car	4.x2	1998	1501 HRS
68	EZ GO	E260	WKR 4X2	1996	241 HRS
88	Carryall	Club Car	2Plus 350	2002	1831 HRS
89	Carryall	Club Car	2Plus 350	2002	2515 HRS
80	EZ GO	E260	WKR 4X2	1996	170 HRS
146	Carryall	Club Car	4.x2	2007	773 HRS
147	Carryall	Club Car	4.x2	2007	2474 HRS

**Staff Recommendation:**

- Staff recommends utilizing Public Surplus as third party marketplace to ease the burden on District Staff to transport, show and answer questions from the public regarding the vehicle sales. Buyers of District Property will pay a premium of 7% or 10.5% depending upon the collection method.

	<p align="center"><b>Coachella Valley Mosquito and Vector Control District</b></p> <p align="center"><b>Staff Report</b></p>		<p align="center"><b>January 9, 2018</b></p>
<p><b>Agenda Item:</b> Items of General Consent</p> <p>Approval to extend the annual service agreement for security services for the District headquarters with Desert Resort Security Services, Inc. for one year, in an amount not to exceed \$875 per month, from Fund #7675.01.305, Contract Services – <b>David I’Anson, Administrative Finance Manager</b></p>			
<p><b>Background:</b></p> <p>The District has contracted with Desert Resort Security since 2013 and service has been satisfactory meeting all expectations. The District wishes to continue contracting with Desert Resort Security for an additional year.</p>			
<p><b>Staff Recommendation:</b></p> <ul style="list-style-type: none"> <li>• Staff recommends extending the professional service agreement for one year with Desert Resort Security Services, Inc., to perform security services in an amount not to exceed \$875 per month.</li> </ul>			
<p><b>Fiscal Impact:</b></p>			
<p align="center">FY2017-18 Approved Budget <b>7675.01.305</b></p>	<p align="center">Current Available Funds</p>	<p align="center">Proposed Expense</p>	<p align="center">Remaining Available Funds</p>
<p align="center"><b>\$69,400</b></p>	<p align="center"><b>\$36,042</b></p>	<p align="center"><b>\$10,500</b></p>	<p align="center"><b>\$25,542</b></p>
<p><b>Exhibits:</b> N/A</p>			

**SECTION  
12**



**NEW BUSINESS**



**Coachella Valley Mosquito and Vector  
Control District**

**January 9, 2018**

**Staff Report**

**Agenda Item:** New Business

Discussion and/or approval of General Manager Employment Agreement to be effective January 9, 2018 and 2017 Merit Pay - **ad hoc Negotiating Committee**

**Background:**

At the November 14, 2017 Board Meeting, the Board completed the General Manager annual evaluation. Subsequent to the Board Meeting, the General Manager met with an ad hoc Negotiations Committee comprised of President Doug Walker and Treasurer Shelley Kaplan. More specifically, the Committee met with Mr. Wittie on December 6<sup>th</sup>, 2017 to negotiate salary, benefits, and any other concerns and conditions of the current agreement. The ad hoc Negotiations Committee and Mr. Wittie reached an agreement subject to approval by the Board of Trustees.

Listed below are the proposed changes to Mr. Wittie's agreement:

1. Salary Increase

Current Salary	5% Salary Increase	Proposed Annual Salary
\$144,450	\$7,222.50	\$151,673.00

2. One time Special Merit pay of 2.5% = \$3,611.00

**Staff Recommendation:**

- That the Board take whatever action they deem appropriate.

**Fiscal Impact:**

N/A

**Exhibits:**

- Draft General Manager Agreement with Proposed Changes

**FIRST AMENDED AND RESTATED**

**EMPLOYMENT AGREEMENT**

**GENERAL MANAGER**

**(Jeremy Wittie)**

This First Amended and Restated Agreement is made and entered into effective this 9<sup>th</sup> day of January 2018, to amend the prior agreement entered into on the 10 day of January 2017, by and between the Coachella Valley Mosquito and Vector Control District ("District"), a special district, and Jeremy Wittie ("Employee"), and is made in consideration of the mutual promises contained herein. Collectively, the First Amended and Restated Agreement and the original agreement are referred to herein as the "Agreement"The District and Employee accordingly agree as follows:

Formatted: Superscript

**RECITALS**

WHEREAS, on November 10, 2015, at a duly noticed public meeting, the Board approved to retain the services of Jeremy Wittie as the District's General Manager.

WHEREAS, with the consensus of the Board of Trustees, Employee desires to continue serving as General Manager of the District pursuant to the terms and conditions set forth in this Agreement.

**ARTICLE 1. TERM OF EMPLOYMENT**

1.1 Position and Term of Employment. This Agreement shall be for three (3) years term commencing on January 1, 2017 and continuing through and including December 31, 2019, unless terminated pursuant to Article 1.2 or Articles 6 and 7 as set forth below. As General Manager, Employee agrees to perform all of the duties and functions of the General Manager position, as described in the General Manager Job Description attached hereto as Exhibit "A," and any such other duties as the Board of Trustees may assign from time to time during the term of this Agreement, or any extensions thereof. Employee hereby

agrees to perform the functions and duties of General Manager to the best of his ability and in an efficient, competent and professional manner, consistent with the standards in the industry and in compliance with all applicable laws, statutes and regulations.

1.2 Employment Status. The District has the right to terminate this Agreement and the employment of Employee at any time upon notice to Employee, with or without cause, but only in accordance with Articles 6 and 7 hereof. Employee has the right to terminate this Agreement and his employment as General Manager at any time upon notice to the District, with or without cause. The rights and duties set forth in this paragraph may not be modified in any way except by written agreement approved by the Board of Trustees and signed by the President of the Board of Trustees and Employee.

1.3 Acknowledgment. Employee hereby acknowledges and certifies he understands the termination rights of the District and that his employment by the District is at will as provided in Article 1.2 above and Articles 6 and 7 as set forth below.

1.4 Performance Reviews. During the term of this Agreement, Employee will be evaluated by the Board of Trustees in November. Provided that the District continues this Agreement, the District's Board of Trustees will use its good faith efforts to evaluate Employee's performance annually every November.

## ARTICLE 2. DUTIES AND OBLIGATIONS OF EMPLOYEE

2.1 Title and Description of Duties. Employee shall perform services as General Manager for the District, as described in the General Manager's Job Description attached hereto as Exhibit "A," subject to direction of the Board of Trustees. In that capacity, Employee shall do and perform all services, acts, or things necessary or advisable to fulfill the duties of General Manager and any other related duties as may be assigned from time to time, in an efficient, competent and professional manner, consistent with the standards in the industry and in compliance with all applicable laws, statutes and regulations.

(a) Employee shall at all times under this Agreement act in the best interests of District and shall perform all of his duties hereunder in an efficient,

competent and professional manner, consistent with the standards in the industry and in compliance with all applicable laws, statutes and regulations.

(b) Employee acknowledges that the position of General Manager is a full-time position and agrees to devote all the necessary time and attention to the District during the term of this Agreement. Accordingly, Employee shall not engage in any other business pursuits whatsoever, directly or indirectly, or render any services of a business, commercial or professional nature to any other person or organization, whether for compensation or otherwise, without the prior written consent of the Board of Trustees.

2.2 Variance of Duties. The District, by and through the Board of Trustees, expressly reserves the right to assign duties other than those set forth in the Job Description attached hereto as Exhibit "A" or to otherwise change the duties pertaining to the position of General Manager.

2.3 Return of Property. Upon the termination of Employee's employment under this Agreement, Employee shall immediately deliver to the District, all property in Employee's possession or control belonging to the District or to any of its constituents, in good condition.

2.4 Compliance with District Policies and Rules. In performing the functions and duties pursuant to this Agreement, unless specifically provided otherwise in this Agreement, Employee shall adhere to the District's Personnel Policy and Procedures Manual as it currently exists and as it may be modified from time to time.

2.5 Suspension. Employee may be suspended with or without pay at any time and for any reason, including for disciplinary reasons or for other just cause including, but not limited to inefficiency, incompetence, or mental incapacity, during the term of this Agreement at the direction of the Board of Trustees. Employee acknowledges that he has no rights to any appeal or hearing after a suspension by the District pursuant to this Article and to the extent that any such rights might apply as a matter of law or contract, hereby waives all of such rights.

### ARTICLE 3. OBLIGATIONS OF THE DISTRICT

3.1 General Description. The District shall provide Employee with the compensation and benefits specified in this Agreement.

3.2 Auto Allowance. Employee's duties require that Employee have transportation readily available for his unrestricted use during his employment with Employer, and, to the end of assuring that Employee has a vehicle available, Employee shall receive an automobile allowance of \$6,000.00 per year, payable in monthly installments in the regular payroll process.

3.3 Bonding. The District shall bear the full cost of any fidelity or other bonds required of Employee pursuant to this Agreement or any applicable law, rule, regulation or policy.

### ARTICLE 4. COMPENSATION OF EMPLOYEE

4.1 Annual Salary. As compensation for the services to be rendered by Employee hereunder, the District shall pay Employee bi-weekly an annual salary of One Hundred and Fifty One Thousand Six Hundred Seventy Two Dollars (\$151,637.00) ~~One Hundred Forty Four Thousand Four Hundred Fifty dollars (\$144,450.00)~~ payable in twenty six (26) equal installments (less any tax or other required payroll deductions) during the period of employment, prorated for any partial employment period, commencing January ~~94, 2018~~<sup>7</sup>. Employee's salary may be reviewed on an annual basis as a part of the performance evaluation process.

Employee's salary shall be identified in a publicly available pay schedule in accordance with the specific requirements of Title 2, California Code of Regulations, section 570.5.

### ARTICLE 5. EMPLOYEE BENEFITS

5.1 Holidays. Employee shall be entitled to nationally recognized holidays and one floating holiday as paid holidays annually as identified in the

District's Personnel Policy and Procedures Manual.

5.2 Vacation. Employee is eligible to receive vacation earned at the rate of twenty five (25) days or two hundred (200) hours per year. In the event Employee has not utilized all earned vacation by December 31st of each year, Employee may carry over the unused vacation to the following calendar year, provided Employee does not accrue more than forty (40) days or three hundred twenty (320) hours of vacation in any given calendar year. Employee may also cash out accrued vacation in excess of eighty (80) hours at any time per District policy. Employee will be paid for all earned Vacation upon termination of this Agreement.

5.3 Sick Leave. Employee is eligible to accrue sick leave earned at the rate of eight (8) hours monthly. Sick leave is accrued without limit. If Employee accumulates at least four hundred (400) hours of sick leave, Employee may cash out at a fifty percent (50%) reimbursement rate all sick leave hours in excess of four hundred (400) hours. After five years of continuous employment commencing with Employee's date of employment, Employee will be paid for fifty percent (50%) of earned sick leave upon termination of this Agreement. Upon Employee's retirement, Employee may convert accrued and unused sick leave to service credits pursuant to the applicable policies and regulations of the California Public Employees Retirement System.

5.4 Health Insurance. Employee shall be entitled to the highest level of health insurance coverage under the same terms that have been provided to either the California Teamsters Local 911, California School Employees Association or management level employees, provided that any change in such benefits are approved by the Board of Trustees.

5.5 Hours of Work; Administrative Leave. Employee shall be entitled to the benefits described in this section, provided that Employee complies with the obligations set forth herein. Employee is generally expected to be present at his place of employment during regular District office hours and Employee shall receive no overtime pay for any time or work beyond the regular or customary District business office hours or work days. In consideration of this obligation, Employee shall be allowed to take time off, with pay, as "Administrative Leave" equivalent to a cumulative total of ten (10) days per year, to be used at his discretion.

5.6 Longevity Pay. In addition to Employee's base pay, Employee shall be entitled to additional pay on an annual basis for each full year of employment with the District, beginning after the fifth full year of service. The payment eligibility schedule will be as follow:

- 1) 1-5 years = \$00.00 per year
- 2) 6-10 years = \$700.00 per year
- 3) 11-15 years = \$1,400.00 per year
- 4) 16-20 years = \$2,100.00 per year
- 5) 21-25 years = \$2,800.00 per year
- 6) 26-30 years = \$3,500.00 per year
- 7) Over 30 years = \$4,200.00 per year

5.7 Special Merit/Performance Bonus Pay. For any extraordinary or outstanding performance or service, as determined by the Board of Trustees, Employee may be eligible for a one-time lump sum payment separate and apart from Employee's then current base pay in an amount not to exceed five percent (5%) percent of Employee's total annual compensation as set forth in Article 4 of this Agreement. For his 2017~~6~~ performance, the Board of Trustees determined that employee is eligible for Special Merit Pay of 2.5% which is equal to Three Thousand Six Hundred Eleven Dollars (\$3,611.00)~~Three Thousand Three Hundred Seventy Five Dollars (\$3,375.00)~~

5.8 Pension. Employee shall be entitled to the highest level of pension benefits currently afforded to management employees provided that any change in such benefits is approved by the Board of Trustees.

5.9 Life Insurance. Employee shall be entitled to the highest level of life insurance benefits afforded to any District employee union or management level employee, provided that any change in such benefits is approved by the Board of Trustees.

## ARTICLE 6. TERMINATION OF EMPLOYMENT

6.1 This Agreement and the employment of Employee shall terminate under the following conditions:

- (a) The death of Employee.
- (b) The permanent disability of Employee so that Employee is unable to perform the essential duties of the job, with or without reasonable accommodation.
- (c) Upon receipt by Employee of twenty four (24) hours prior written notice from the Board of Trustees or its designee that the District intends to terminate Employee's employment for "good cause." The District has "good cause" to terminate the employment of Employee if:
  - 1) Employee fails or refuses to faithfully and diligently perform the usual and customary duties of employment;
  - 2) Employee fails or refuses to comply with the policies, standards and/or rules of the District which from time to time may be changed;
  - 3) Employee violates any term or condition of this Agreement; or
  - 4) It is determined that Employee has been convicted of a felony, acted in an unethical or fraudulent manner, or has engaged in an act which would constitute bribery, perjury, embezzlement, fraud, or other such malfeasance or has acted in such a manner as to bring discredit to the District.
- (d) Upon receipt by Employee of twenty four (24) hours prior written notice from the Board of Trustees or its designee that Employee's employment is being terminated without good cause.
- (e) Employee resigns. Employee may resign at any time upon giving thirty (30) days written notice to the President of the Board of Trustees. Upon such resignation, Employee shall only be entitled to salary and benefits through the completion of the thirty (30) day notice period.
- (f) Employee acknowledges that he has no rights to any appeal or hearing after a termination of this Agreement by the District pursuant to this Article and to the extent that any such rights might apply as a matter of law or contract, hereby waives all of such rights.

## ARTICLE 7. COMPENSATION UPON TERMINATION

7.1 Termination Without Good Cause. In the event Employee's employment is terminated without good cause, the District agrees to pay Employee as severance an amount equal to the monthly base salary of Employee for three months, in accordance with Government Code sections 3511.2 and 53260. In addition, Employee shall be entitled to receive COBRA (Consolidated Omnibus Budget Reconciliation Act of 1985) coverage at District expense for the same duration as the severance payment pursuant to Government Code section 53261, and thereafter for a combined total of 18 months at Employee's expense or until such time as Employee is re-employed in any capacity, whichever occurs first. In consideration of the above, Employee agrees to execute a comprehensive release of all claims and agrees that there shall not be any entitlement to any other compensation or payment of any kind from the District (other than unused Vacation or Sick Leave as outlined in Section 5.2) in connection with the termination of Employee's employment without cause.

7.2 Termination of Employment for Good Cause. In the event the District believes Employee's employment should be terminated for good cause, the District shall pay Employee whatever salary is due up to Employee's date of discharge plus the value of any accrued but unused vacation and sick leave Employee may have up to the date of termination. Employee's sole remedy in such event is to meet with the Board in open or closed session upon Employee's request for a non-evidentiary name clearing which cannot result in Employee's reinstatement.

7.3 Termination of Employment as a Result of Death or Permanent Disability. If Employee dies, or is permanently disabled as that phrase is defined in Articles 6.1 (a) and (b), Employee's employment terminates immediately. Except for payment of unpaid wages and payment for accrued and unused sick leave in accordance with Sections 5.2 and 5.3, and for any benefits that may continue by law as payable to Employee's spouse or dependents, Employee is not entitled to receive any further wages or benefits.

## ARTICLE 8. PROVISIONS OF GOVERNMENT CODE SECTIONS 53243.3-53243.4

8.1 In the event that the District provides paid leave to Employee pending an investigation of a crime involving abuse of his office or position covered by

Government Code section 53243.4, and should that investigation lead to a conviction, the Employee shall fully reimburse District for any salary provided for that purpose.

8.2 In the event that the District provides funds for the legal criminal defense of Employee pending an investigation of a crime involving an abuse of his office or position covered by Government Code section 53243.4, and should that investigation lead to a conviction, the Employee shall fully reimburse the District for any funds provided for that purpose.

8.3 In the event that the District provides a cash settlement related to the termination of Employee as defined in the terms of this Agreement and Employee subsequently is convicted of a crime involving abuse of office or position covered by Government Code section 53243.4, Employee shall fully reimburse the District for any funds provided for that purpose.

8.4 "Abuse of office or position" is defined in Government Code section 53243.4 to mean either of the following:

(a) An abuse of public authority, including, but not limited to, waste, fraud, and violation of the law under color of authority.

(b) A crime against public justice, including, but not limited to, a crime described in Title 5 (commencing with Section 67), Title 6 (commencing with Section 85) or Title 7 (commencing with Section 92) of Part 1 of the Penal Code.

#### ARTICLE 9. GENERAL PROVISIONS

9.1 Notices. Any notices to be given by either party to the other shall be in writing and may be transmitted either by personal delivery or by mail, registered or certified, postage prepaid with return receipt requested. Mailed notices shall be addressed to the last known address for each of the parties, but each party may change that address by written notice in accordance with this section. Notices delivered personally shall be deemed communicated as of the date of actual receipt; mailed notices shall be deemed communicated as of five (5) days after posting, if by mail.

9.2 Attorney's Fees and Costs. If any legal action is necessary to

enforce or interpret the terms of this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees, costs, and necessary disbursements in addition to any other relief to which that party may be entitled. This provision shall be construed as applicable to the entire Agreement.

9.3 Entire Agreement. This Agreement supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of Employee by the District, and contains all of the covenants and agreements between the parties with respect to Employee's employment in any manner whatsoever. Each party to this Agreement acknowledges that no representations, inducements, promises, or agreements, orally or otherwise, have been made by any party, or anyone acting on behalf of any party, which are not embodied herein, and that no other agreement, statement, or promise not contained in this Agreement shall be valid or binding.

9.4 Modifications. Any modification of this Agreement will be effective only if it is in writing, is approved by the District and Employee, and signed by each of parties to this Agreement.

9.5 Review by Legal Counsel. Employee acknowledges the opportunity for review and has been advised to seek review of this Agreement by legal counsel prior to its execution.

9.6 Effect of Waiver. The failure of either party to insist on strict compliance with any of the terms, covenants, or conditions of this Agreement by the other party shall not be deemed a waiver of that term, covenant, or condition, nor shall any waiver or relinquishment of any right or power at any one time or times be deemed a waiver or relinquishment of that right or power for all or any other times.

9.7 Partial Invalidity. If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remaining provisions shall nevertheless continue in full force without being impaired or invalidated in any way.

9.8 Law Governing Agreement. This agreement shall be governed by and construed in accordance with the laws of the State of California.

9.9 Compliance with Laws. Employee shall comply with all local, state and federal laws and regulations applicable to the services required hereunder.

9.10 Non-Discrimination. Employee acknowledges and agrees to comply with the District's nondiscrimination policies which are set forth in the District's Personnel Policies, Procedures & Regulations Manual, as they may be amended from time to time.

9.11 Ownership of Documents. Upon completion of any document or report required to be provided by Employee in the course of performing any of the services described in this Agreement, or upon earlier termination of this Agreement, all completed original documents and/or reports and any designs, drawings, calculations, diskettes, computer files, notes, and other related materials prepared or produced in connection with such documents or reports shall become the sole property of the District and may be used and/or reused on any other project by the District without the permission of Employee.

9.12 Confidential Employee Status.

(a) Employee shall be deemed a "confidential employee" since Employee will be privy to information leading to decisions of management that relate to employer-employee relations at the District and Employee will have access to certain confidential information that will be used to contribute to the development of official positions of management.

(b) Any and all documents and information obtained from the District by Employee in the performance of services under this Agreement shall be kept strictly confidential by Employee unless public disclosure of same is otherwise required by law.

(c) The reports, records, documents and other materials prepared by Employee in the performance of services under this Agreement shall not be publicly disclosed by Employee unless such disclosure is otherwise required by law.

(d) Employee shall not disclose to any other entity or person any information regarding the activities of the District except as required by law or as authorized by the Board of Trustees.

9.13 Non-Liability of District Officers and Employees. No officer or

employee of the District shall be personally liable to Employee in the event of any default or breach by the District for any amount which may become due to Employee or for any breach of any obligation of the terms of this Agreement.

9.14 Interpretation. This Agreement shall not be interpreted against either party on the grounds that one of the parties was solely responsible for preparing it or caused it to be prepared as both parties were involved in drafting it.

9.15 Captions and Headings. The captions and headings contained in this Agreement are provided for identification purposes only and shall not be interpreted to limit or define the content of the provisions described under the respective caption or heading.

9.16 Rights and Remedies. Except with respect to rights and remedies expressly declared to be exclusive in this Agreement, the rights and remedies of the parties are cumulative and the exercise by either party of one or more of such rights or remedies shall not preclude the exercise by it, at the same or different times, of any other rights or remedies for the same default of any other default by the other party.

9.17 Venue. All proceedings involving disputes over the terms, provisions, covenants or conditions contained in this Agreement and all proceedings involving any enforcement action related to this Agreement shall be initiated and conducted in the applicable court or forum in Riverside County, California.

EMPLOYER:

Coachella Valley Mosquito and Vector Control District

APPROVED by the Governing Board of the Coachella Valley Mosquito and Vector Control in open session at a Regular Board meeting pursuant to Government Code sections 53262 and 54956(b).

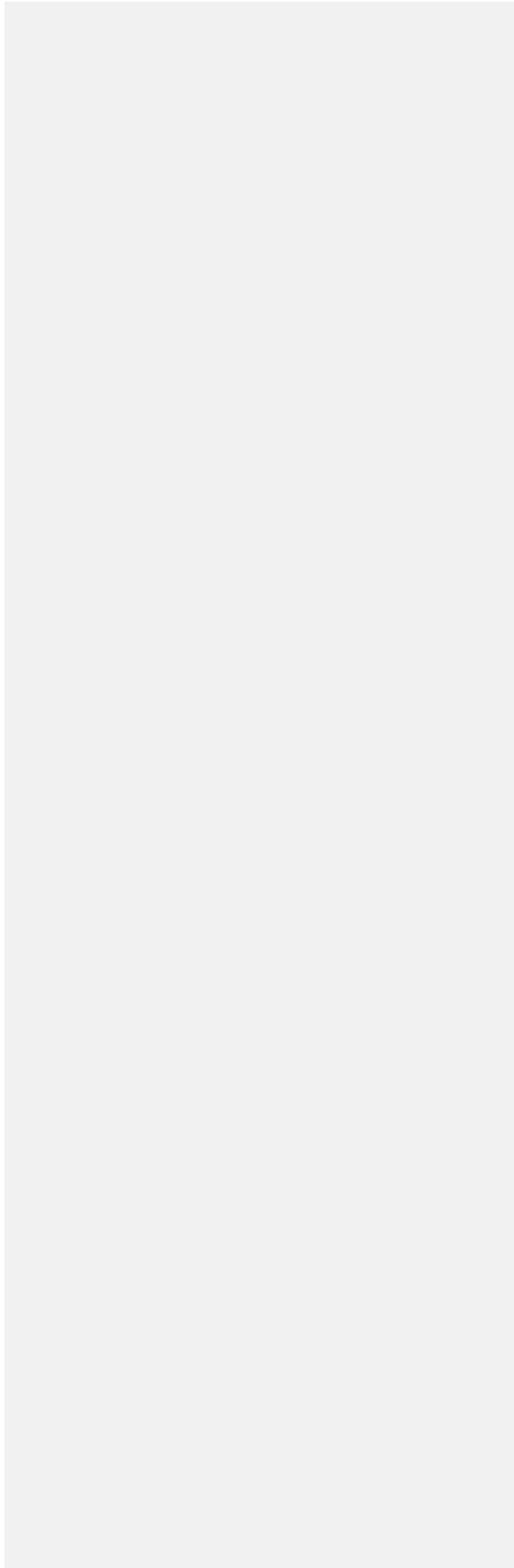
By: \_\_\_\_\_ Dated: \_\_\_\_\_  
Doug Walker  
Title: President

APPROVED AS TO FORM:

By: \_\_\_\_\_ Dated: \_\_\_\_\_  
M. Katherine Jenson,  
General Counsel

EMPLOYEE:

By: \_\_\_\_\_ Dated: \_\_\_\_\_  
Jeremy Wittie





**Coachella Valley Mosquito and Vector  
Control District**

**Staff Report**

**January 9, 2018**

**Agenda Item:** New Business

Nomination and election of Board Officers for the 2018 Calendar Year – **ad hoc Nomination Committee**

**Background:**

The Nominating Committee (Trustees *De Klotz, Hassett, and Walker*) was appointed at the November 13, 2017, Board Meeting by the Board President in accordance with the District's Bylaws for the purpose of recommending a slate of Board officers for the 2018 calendar year. Pursuant to Health and Safety Code section 2027(a), the Board is required to elect its officers at the first meeting in January each year or every other year. The Board's Bylaws currently provide officer terms of one year, and each officer shall serve not more than four (4) consecutive full terms in the office to which elected. In order to be eligible to hold office, the Trustee must have served as a Trustee for one calendar year.

The four officer positions are tasked with the following duties pursuant to the Bylaws:

**President:** When necessary, the President shall be the official representative of the District. He/she shall have the power to appoint committees and such other powers, as may be delegated by the Board, from time to time. The President is encouraged to appoint ad hoc committees whenever appropriate. The President shall be responsible for opening meetings promptly and for administering the business of the day, expeditiously and with appropriate order and decorum. The President shall sign all acts, orders, resolutions and proceedings of the Board.

**Vice-President:** In the absence of the President, the Vice President shall assume duties of the President.

**Secretary** – The Secretary shall assist the President as necessary. In the absence of the President and Vice-President, the Secretary shall assume the duties of the President. It shall be the duty of the Secretary to authenticate, by his/her signature when necessary, all the acts, orders, and proceedings of the Board.

**Treasurer** – The Treasurer shall assist the President as necessary. In the absence of the President, Vice-President and Secretary, the Treasurer shall assume the duties of the President. The Treasurer shall also be responsible for management of the District's financial affairs.

*Note that the Bylaws also call for the appointment of a **Parliamentarian** by the President, to assist with parliamentary procedure during Board meetings.*

To facilitate the process of electing new officers, the Nominating Committee has developed a slate of candidates for the offices of the President; Vice-President; and Secretary/Treasurer to be considered by the Board of Trustees, as follows:

President: Trustee Shelley Kaplan  
Vice-President: Trustee Doug Hassett  
Secretary: Trustee Franz De Klotz  
Treasurer: Trustee Clive Weightman

(Attached is information regarding the background of each of the candidates)

Each Board Member will have the opportunity to nominate other candidates from the floor. This slate, if elected, would serve for the 2018 calendar year. Under the Brown Act, the votes must be taken in open session, since secret ballots are not permitted.

**Staff Recommendation:**

- Staff recommends that the Board approve the nominated slate as presented.

**Fiscal Impact:**

- N/A

**Exhibits:**

- N/A

**To: Board of Trustees**

**Subject: Nominations for Officers CVMVCD Board of Trustees**

The Nominating Committee reviewed the possible candidates for the officer positions for the Vector Control Board for 2018. A survey was sent out to all qualifying Trustees to see who was interested in serving in an executive position.

As a result, we recommend the following slate of Trustees to fill the officer positions for 2018; the following Trustees have expressed their willingness to serve in these capacities.

**President: Shelley Kaplan**

Trustee Kaplan has served on the Board since April of 2013 and serves as a councilmember for the City of Cathedral City. He has served as the Board Treasurer since 2016 and has also served on a number of ad hoc committees. The Nominating Committee believes the District's interests will best be served by Trustee Kaplan filling the position of President.

**Vice President: Doug Hassett**

Trustee Hassett, appointed by the City of La Quinta, has served on the Board of Trustees since 2015. He served as Vice President in 2017 and has served as chair of the ad hoc Thermal Committee. This committee is nominating Trustee Hassett for Vice President.

**Secretary: Franz De Klotz**

Trustee De Klotz, appointed by the County at Large, has served on the Board since 2017. He has voiced his interest on serving in an executive capacity. This committee is nominating Trustee De Klotz for Secretary of the Board.

**Treasurer: Clive Weightman**

Trustee Weightman, appointed by the City of Indian Wells, has served on the Board since 2017. He served on the Finance Committee this past year and has expressed interest in taking a more active role by serving as Treasurer. This committee is nominating Trustee Weightman for Treasurer.

Respectfully submitted by the Nominating Committee:

- Franz De Klotz
- Doug Hassett
- Doug Walker