

**A MOSQUITO  
ABATEMENT  
PROPOSAL  
PREPARED FOR:**



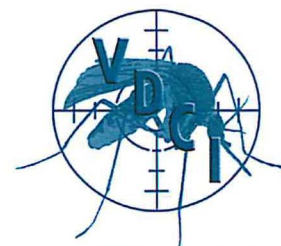
**Conway, AR**

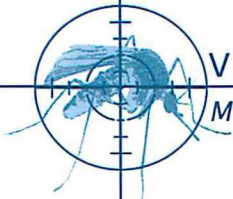
**City of Conway, AR  
1201 W Oak St  
Conway, AR 72032**

**March 2, 2016**

*Submitted by:*  
Vector Disease Control  
1320 Brookwood Drive, Suite H  
Little Rock, AR 72202  
[www.vdci.net](http://www.vdci.net)

Global Leaders in Mosquito Control





## Vector Disease Control International

*Mosquito Control Specialists*

Dear: Missy

Thank you for your time in speaking with me the other day and discussing your mosquito control program for Conway. I have prepared for you a proposal for mosquito abatement services to be conducted within the City limits of Conway, Arkansas. The enclosed proposal details all of the services that VDCI is capable of implementing within our integrated mosquito management programs.

VDCI's commitment to providing the best possible service to its customers is evident in everything we do. Our prior experience in performing mosquito operations in Arkansas has resulted in a working knowledge of the local mosquito species, breeding habitats and control measures that will be required to establish the best possible program for Conway. VDCI is a company built on the foundations of public health, ethics, professionalism, and technical expertise with the goal of creating true partnerships with local municipalities and residents. All of our employees are committed to excellence in vector control and public health and always strive to improve the quality of human life in communities through public education and the control of mosquitoes and other disease vectors.

We invite you to review our proposal to provide a full and complete Mosquito Abatement Services Program. I am excited to discuss your current program with you, and to see how we can tailor a program to fit the city's budget, and the needs of the residents. We are confident you will see that our qualifications, commitment to excellence and experience will allow for a successful and cost-effective partnership between our two agencies.

Thank you for your time, and we look forward to hearing from you in the near future.

Respectfully,

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## Summary of VDCI's Proposed Integrated Mosquito Management Program

### General Program Services

- Mapping of all Surveillance and Control Sites
- Logging all Service Requests and Activities in our Computer Database
- Answer Service Requests and Questions within 24hrs
- Public Education and Outreach Activities
- Program Quality Control
- Monthly and Yearly Reporting of all Program Activities
- Regulatory Compliance with County, State, and Federal Laws including the National Pollutant Discharge Elimination System (NPDES)
- Comprehensive Insurance Coverage

### Mosquito Surveillance Operations

- Regular Inspection and Mapping of all mosquito-breeding sites throughout the City
- Weekly Monitoring of CDC Light Traps
- Landing Rates performed throughout the City as needed
- Sort, Identify and Pool mosquitoes for viral testing with RAMP system
- Regular Monitoring of Weather Data to predict peak activity periods
- Recording and Mapping of all applicable surveillance data in our Computer Database for Routine Reporting to the City

### Larval Mosquito Control Operations

- Targeted application of larvicides to mosquito breeding sites throughout the City, daily as needed
- Targeted application of pupicide (Agnique MMF) to mosquito breeding sites containing a high proportion of mosquito pupae as needed
- Identify and report appropriate areas for source reduction projects
- Perform early season Aerial Larvicide Applications (max 300 acres)
- Recording and Mapping of all Larvicide Applications in our Computer Database for Routine Reporting

### Adult Mosquito Control Operations

- Conduct ground ULV adulticide applications as deemed necessary
- Perform backpack/Electrostatic barrier applications as needed or as requested by

the City or City Residents for special events, festivals, and activities

- Conduct Aerial Adulticide Applications with consultation from the City as needed
- Recording and Mapping of all Adulticide Applications in our Computer Database for Routine Reporting to the City

## Public Service Requests

- Provide a toll free "Hotline" for residents to report mosquito issues
- Prepare and distribute mosquito and WNV educational brochures to residents
- Respond to service requests within 24 hrs of receiving request
- Remediate mosquito problems appropriately in response to every service request

## Reporting

- Enter all surveillance and control data into VDCI's database each week
- Integrate GPS and GIS data into easy to read maps and reports
- Prepare and submit comprehensive monthly and annual reports of all surveillance and control activities
- Prepare and maintain all appropriate permits and pesticide use reports

**Contact Information**

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## Company Profile

Vector Disease Control International, LLC (VDCI) is committed to providing the best possible service to our customers and this dedication is evident in everything we do. We strive to improve the quality of human life in communities through education, surveillance and the control of mosquitoes and other disease vectors. We are also committed to research and the use and support of application technologies. VDCI is a company built on the foundations of public health, ethics, professionalism, and technical expertise. Many of our staff come from the field of public health and have directed mosquito control districts all over the country. At all times, we will conduct business through partnerships with our customers in a manner that protects the environment and the welfare of local residents.

Founded in 1992 with a single contract in central Arkansas, VDCI is headquartered in Little Rock, AR. Starting with the simple idea to provide municipalities with the products and services needed to run effective mosquito control programs, VDCI now has nearly 20 years experience in the field of public health. In late 2010, Vector Disease Control, Inc. began a strategic transition and has re-branded itself as Vector Disease Control International, LLC. This transition is expected to strengthen our capacity to compete in the global market place. As of 2011, VDCI no longer operates as Vector Disease Control, Inc. Our continued growth and development nationally and internationally will increase our capacity to offer a seamless supply of products and equipment to each of the programs we service. In this new decade, VDCI has an unrivaled sense of commitment and will strive to continue to provide the most efficacious and scientifically sound mosquito surveillance and control programs possible based on the American Mosquito Control Association (AMCA) and Centers for Disease Control and Prevention (CDC) guidelines for managing quality mosquito control programs within each municipality that we service.

Because it is often impossible to eradicate all mosquitoes given their behavior patterns, resilient nature and enormous breeding potential, our goal is to manage mosquito populations within tolerable levels and simultaneously help prevent possible outbreaks of mosquito-borne diseases. To achieve this goal, we use a combination of the most effective methods of controlling mosquitoes including surveillance, public education, biological control and the use of insecticides. Inspection of the treatment area coupled with collections from mechanical traps enable us to determine which species of mosquito are present, their population size and locations. This information is critical for determining when, where, and how often larvicides and adulticides need to be applied.

The employees of VDCI recognize and readily accept the special considerations and responsibilities inherent in the use of ground and aerial larviciding and adulticiding techniques within a mosquito control program, including a West Nile virus outbreak. As a private entity working for the city, VDCI looks forward to developing a close working relationship with all appropriate city officials, and, as such, will work with and support the city in all surveillance, application and public relation decisions. With our fleet of over 100 trucks and 10 fixed-wing aircraft, we are able to provide both aerial and ground applications

in any situation nationwide. We take great pride in the ability of our programs to protect the public's health from mosquitoes and the diseases they may transmit.

## Detailed Description of the Program

### I. Inspection and Surveillance

The cornerstone of any successful mosquito control operation is its surveillance program. VDCI uses the most up-to-date and widely accepted surveillance tools available to the industry. Proper identification of mosquito species and knowledge of their bionomics focuses control efforts on the areas of concern. Many different surveillance tools can be used to develop a clear picture of mosquito problems including CDC light traps, gravid traps, landing rates, egg surveys, Ovi traps and dipper counts. VDCI's staff is experienced in all aspects of mosquito surveillance. All of the appropriate surveillance methods will be used to develop a true picture of the current mosquito population dynamics, and with this information, an effective and efficient control plan will be implemented.

#### A. Larval Mosquito Surveillance

Larval surveillance is one of the most important aspects of a mosquito control program. With continuous surveillance of larval habitats, mosquito population surges can be predicted and often abated through the well-timed application of larvicides. Additionally, knowledge of mosquito-breeding sites can increase adulticide efficacy because these areas can be selectively targeted before adult mosquitoes disperse to nearby areas.

Larval habitats (permanent water, temporary pools, drainage ditches, septic ditches, catch basins, artificial containers and tree holes) will be inspected regularly and mapped into a GIS database using GPS technology.

**Permanent Water** sites consist of habitat that remains inundated for an extended period of time. Examples of these sites would be lakes, rivers, retention ponds, swamps, etc. Permanent water sites will be inspected on a routine basis throughout the mosquito-breeding season. These areas are capable of producing large numbers of certain species of mosquitoes such as *Culex tarsalis*, *Coquilletidia perturbans* and various *Anopheles* species.

**Temporary Floodwater** is standing water that may exist for short periods of time after high water or rainfall. Examples of this type of habitat would include bottom lands, woodland pools, swales (low areas), drainage ditches, tire ruts, and depressions. Large numbers of mosquitoes can be produced in a short period of time from these sites. These areas must be inspected for the presence of larvae as soon as



possible after every substantial rainfall. Mosquitoes expected to be found at these sites include *Aedes vexans*, *Ochlerotatus nigromaculis* and *Ochlerotatus melanimon*.

**Artificial Containers/Tree Holes** are considered one of the most troublesome problems faced by a mosquito control operation. Artificial containers may occur county-wide and produce mosquitoes in every back yard. Anything that holds water can produce artificial container species. Old tires, cans, bottles, buckets, cups, pet water bowls, birdbaths, gutters, and swimming pools are some of the more common artificial containers. Some of the species that occur in artificial containers include *Culex quinquefasciatus*, *Culex tarsalis*, *Ochlerotatus melanimon*, *Culiseta incidens* and *Ochlerotatus dorsalis*. As private and public properties are inspected, container habitats will be checked and removed/emptied as needed.

**Septic Water Habitats** occur when water holding areas become polluted with high levels of organic matter. Examples of this type habitat would include oxidation ponds, ditches with sewage discharge or run off from decaying plant or animal life. Septic water can often produce the largest number of mosquitoes per unit of area. *Culex quinquefasciatus* is often the most common species found in this habitat, and is also a primary vector for West Nile virus in the United States. Routine management of this habitat type and the control of arbo-viral vectors will be vital to the public's health.

**Catch Basins** occur throughout urban areas and are capable of breeding numerous mosquito species. Of primary concern in these habitats again is *Culex quinquefasciatus*, the primary vector of West Nile virus. Although all catch basins may hold water at some point in time, not all catch basins are sites of prolific mosquito breeding. Improper drainage, poor design, and amount of rainfall can all contribute to the number of mosquitoes produced in catch basins. Catch basins will be assessed for mosquito breeding and where appropriate treated.

## **B. Adult Mosquito Surveillance**

Surveillance of adult mosquitoes should include several methods of collection to sample for nocturnal, diurnal, and crepuscular species. Adult mosquito surveillance helps to elucidate the mosquito distribution, density, and species composition throughout the control area. Furthermore, it can provide direct evidence of an increased risk of contracting mosquito-borne viruses. It is also crucial for the efficient and precise application of adulticides. All mosquito species found in an area are not attracted to the same trap type; therefore, the following combination of methods will be employed in the City.

**CDC (Centers for Disease Control) Miniature Light Traps** are lightweight, portable, battery operated traps that will be used throughout the county to assess local adult mosquito population abundance. These traps are baited with dry ice (a source of CO<sub>2</sub>) to

increase their appeal to host-seeking mosquitoes. This is the primary type of trap used by VDCI, as it attracts the widest variety of mosquito species. They are usually set on a weekly basis from mid-May through October in sites throughout the City.

**Gravid Traps** are lightweight, portable, battery operated traps that use putrid water as an attractant for ovipositing mosquitoes. They are ideal for collecting *Culex* mosquitoes that oviposit in these habitats, and are often a useful tool in the early detection of West Nile virus. Gravid traps may be set each week from mid-May through October throughout the City.

**Landing Rates** are performed by field staff and are instrumental in determining which species of mosquitoes are actively feeding on humans in an area. Inspectors establish areas throughout the county where they can expose themselves as bait and count the number mosquitoes landing on them in a given time (usually one to ten minutes). These counts will be conducted throughout the City as needed (a.m. or p.m.).

## II. Control Measures

At VDCI, we use insecticides approved by the Environmental Protection Agency (EPA) for the control of larval and adult mosquitoes. These safe, effective insecticides can be delivered by means of ground or aerial application equipment. VDCI operates one of the largest privately owned fleets of full time mosquito control aircraft in the U.S. Aerial applications of insecticides over populated areas within the City are performed using twin engine, instrument-rated aircraft as required by the Federal Aviation Administration (FAA). We also operate a fleet of over 100 trucks and ATVs equipped with ULV aerosol generators and/or power sprayers capable of a quick response to any mosquito outbreak. All of our equipment, both ground and aerial, are equipped with the latest in GPS/GIS technology to provide detailed reporting on all applications.

### A. Source Reduction

Large scale drainage projects are important in reducing mosquito habitat. Although VDCI does not attempt drainage projects, we will work closely with local agencies in identifying drainage problems. VDCI also conducts neighborhood source reduction campaigns. Our technicians conduct house-to-house inspections as needed to reduce the production of urban mosquitoes (such as *Culex quinquefasciatus*) and will educate homeowners on ways to identify and remove mosquito production sources to control backyard production, as well as how to help themselves and their families by using personal protection such as repellent, proper clothing and window screens.

**B. Biological Control of Larval Mosquitoes**

Biological control of mosquitoes ranges from naturally occurring organisms such as birds, bats, fish, dragonflies, copepods and mosquito larvae, to artificially introduced organisms such as *Bacillus thuringiensis var israelensis* (Bti) and *Bacillus sphaericus*. Although few of the biological control agents occurring in nature are available to mosquito control specialists, the introduction and replenishment of *Gambusia affinis* (the mosquito fish) affords good control in pools, ponds, ditches, and drainage canals. The most widely used and environmentally sound biological agent is Bti. This larvicide became commercially available in 1978 and has become the larvicide of choice by VDCI. Bti is available in liquid, granular, and time-release formulations and poses little threat of resistance development.

When mosquito larvae are detected in an area, they are preferentially controlled through the application of Bti. Dependent upon the conditions present, granular, liquid or time-release Bti formulations may be applied.

**C. Chemical Control of Larval Mosquitoes**

Chemical control of larval mosquitoes is carried out when and where biological control is not feasible. Altosid, an insect growth regulator (IGR), can be used in any mosquito-producing area where extended control is desired. These areas can be treated on a 30-150 day schedule once positive production is found. Control of mosquitoes found in tire piles and catch basins throughout the county can be treated at 30-day intervals using Altosid. Any use of non-biological larvicides is closely monitored and mosquito species exposed are tested for any evidence of resistance. Chemical larvicides may be used in briquette, granular, and liquid forms depending upon treatment needs and habitat type.

Larviciding is conducted using a variety of equipment and methods as follows:

- 1. Backpack Applicators and Spreaders** are used where vehicle access is unavailable. Tire piles, swales, retention ponds, backyards, etc. can be treated with this type of equipment.
- 2. Power Sprayers and Spreaders** are mounted on All Terrain Vehicles (ATV) or trucks. The holding tanks carry from 15 to 100 gallons of larvicide. These mechanisms can be used with all types of larvicide and in most habitat types, such as ditches, swales, septic ditches, etc. Parks, golf courses, and ball fields can be treated quickly when surveillance indicates the presence of mosquito larvae.
- 3. Aerial Applications**, if necessary, can be accomplished using a single engine aircraft when areas too large for other application techniques are encountered.

Pastures, orchards, swamps and inaccessible backwater areas can be quickly and efficiently treated with the proper utilization of air power.

#### **D. Control of Mosquito Pupae**

Once a mosquito enters the pupa stage of its life cycle, most larvicides are no longer effective due to their modes of action. When mosquito pupae are located during inspections, VDCI uses Agnique MMF (Mono-molecular Film) as its primary control product. Agnique MMF coats the water's surface with a one molecule thick layer that prevents the mosquito pupae from penetrating the surface with their breathing tubes (siphons), which suffocates them quickly and efficiently.

#### **E. Chemical Control of Adult Mosquitoes**

Chemical control of adult mosquitoes is used whenever and wherever it is determined that mosquito populations have reached unacceptable levels. Surveillance, source reduction, larviciding, and public education are used to reduce the quantity, and application frequency, of adulticides that are needed. However, the end result of integrated mosquito management is often the application of adulticides. The chemical adulticides used are always as safe and as environmentally friendly as possible. Additionally, VDCI always takes care to avoid developing resistance to pesticides in local mosquito populations. VDCI will apply only EPA and Mississippi State registered public health pesticides labeled for mosquito control such as deltamethrin, bifenthrin, resmethrin, permethrin, and natural pyrethrin.

Pesticides are mixed, and spray equipment calibrated, so that the proper application rates are applied. All hand-held, ATV-mounted, truck-mounted and aerial adulticide equipment is calibrated and droplet size (MMD) tests are conducted routinely to insure the most efficient kill rates with each application.

Adulticiding is conducted using two primary techniques:

- 1. ULV (Ultra-low Volume) Spraying.** ULV spraying is a technique developed specifically for mosquito control that utilizes aerosol sprayers, designed and calibrated to produce droplets that fall within a specific size range, to apply extremely low quantities of pesticide within the control area. VDCI uses only the most advanced hand-held, ATV-mounted, truck-mounted and aerial ULV application equipment. All of our vehicles are equipped with GPS tracking units capable of delineating the spray routes of each vehicle. Detailed maps, graphically illustrating the application data, can be produced after each spray operation. VDCI's larvicide trucks have the capacity to serve as adulticide vehicles as needed. Hand-held and ATV-mounted ULV adulticide equipment may be used to supplement truck-mounted equipment. Smaller areas such as residences, camps, golf courses, parks, and special events can be treated with handheld equipment. VDCI's aerial adulticide fleet is second to none. Our

twin engine, fixed-wing aircraft are capable of applying any registered adulticide over congested areas as required by the FAA. Our experience and success in urban mosquito spraying with aircraft is unsurpassed in the industry. In the unlikely event aerial application of adulticides is required, VDCI can quickly respond to any requests by government agencies to do so.

2. **Residual Barrier Applications.** VDCI uses only the safest, public health approved methods and pesticides whenever we make residual adulticide applications. Backpack applicators or hand-held sprayers are used to apply these long lasting adulticides to vegetation, exterior surfaces of buildings, or virtually anywhere else that adult mosquitoes rest. When the adult mosquitoes land on these treated surfaces, they absorb the pesticide and die. Barrier treatments are an important part of VDCI's integrated mosquito control programs, especially in areas with high potential for disease transmission to humans.

### III. Disease Monitoring

The goal of VDCI's mosquito-borne disease surveillance program is to detect mosquito-borne viruses in local bird and mosquito populations before sufficient amplification of virus can occur. After virus is detected, management practices can be discussed and implemented thereby reducing the number of infected mosquitoes and simultaneously reducing the risk of human transmission.

#### A. West Nile Virus Surveillance

Typically, mosquito-borne viruses can first be detected in bird populations, followed by detection in mosquitoes after the virus has had the opportunity to establish itself locally in birds. Of primary concern is the recent introduction of WNV. The principle mosquito species involved in the transmission of WNV are those in the genus *Culex*, especially *Cx. quinquefasciatus* and *Cx. tarsalis*. These mosquitoes are very abundant in the northwestern United States. *Cx. quinquefasciatus* mosquitoes are primarily found in urban areas because the larvae live in water with high organic content, such as sewer drains, catch basins, settling lagoons, and similar areas, while *Cx. tarsalis* mosquitoes are primarily found in rural areas near irrigated pastures and croplands. Therefore, separating these mosquitoes from others in collections will be important for purposes of surveillance and monitoring. Sorting and identification of the mosquitoes collected in the CDC light traps and the gravid traps is conducted by VDCI staff. In addition, VDCI has the ability to test mosquito pools for WNV with the new Rapid Analyte Measurement Platform (RAMP) bioassay which provides timely identification of WNV-infected mosquito pools for increased response capability.

#### B. Response to Mosquito-borne Diseases

Contact with local health agencies will be maintained during the mosquito control season. Reports regarding the presence of infectious mosquito-borne diseases will be made available to those agencies. Regular contact will be maintained with state

and federal health agencies in order to project possible regional health concerns. Any finding of local significance will immediately be reported to the proper City and County officials in addition to the required routine reporting.

VDCI will work closely with all of the appropriate agencies to implement the best response to any findings of mosquito-borne diseases within the City. The presence of mosquito-borne pathogens within the City will result in one or more responses or interventions by VDCI only after consultation and discussion with the appropriate officials.

#### **IV. Public Education**

Public relations and education are an important part of VDCI's community involvement. We have programs suited for civic groups, church groups, school groups, and government organizations. We feel that an educated public is extremely important to the successful implementation of any mosquito control program and our presentations and workshops can be tailored to any topic of particular interest or need. VDCI's operations are open to the public, tour groups, school groups, or anyone interested in mosquito control. Press releases can be issued to inform the public of the progress of the mosquito control program during the mosquito control season.

Additionally, brochures and fact sheets are available detailing the actions that individuals can take to both protect themselves from adult mosquitoes and to reduce the mosquito production areas within their immediate surroundings. Information is included concerning contact individuals and local telephone numbers to call for service requests and additional mosquito information.

#### **V. Service Requests and Citizen Complaints**

The public is encouraged to call the VDCI's local office, toll free, with service requests. All complaint calls are recorded and used to help identify mosquito problem areas. Service requests are used as a secondary indicator of where mosquito populations are high and causing human annoyance problems. These calls enable us to pinpoint localized problem areas and to target larval and adult control operations and increase overall control effectiveness. In each instance of a call, a technician is dispatched to the area within 24 hours, and all appropriate actions, ranging from removal of tires and other debris, applying larvicide when larvae are present, or making targeted applications of adulticide, are undertaken.

#### **VI. Reporting**

The officers and staff of VDCI are very cognizant that we work for specific public municipalities. Although we are a private entity, we are able to operate much like a

department within the City. We work diligently to establish seamless working relationships with each and every governing body we work for.

All mosquito surveillance, disease monitoring, and mosquito control activity is documented and reported monthly throughout the mosquito season.. VDCI employs state of the art GPS tracking for all pesticide applications we make and can of produce detailed maps of each area that is treated.

Attached are examples of surveillance reports and post application maps that VDCI has prepared in other municipalities.

### **VII. Quality Control**

Through prior and existing QA experience, VDCI will implement an active quality assurance system to ensure that all our work is performed to the highest possible standards of operational safety and efficacy. VDCI has a very stringent policy on maintaining the aerial and ground equipment to the highest level. We conduct routine inspections of all operational aspects of our surveillance and control programs. Our staff are trained, licensed and permitted as required on an annual basis. VDCI will monitor spray quality and deposition as required. A full report on all calibrations prior to and during spray missions can be made available if requested in a timely manner. VDCI maintains records of all quality control activities as required by the National Pollutant Discharge Elimination System (NPDES) Pesticide General Permit, and all other applicable laws and regulations.

### **VIII. EPA National Pollutant Discharge Elimination System (NPDES) Permits**

On October 31<sup>st</sup>, 2011 , the United States Environmental Protection Agency (EPA) released a Final National Pollutant Discharge Elimination System (NPDES) permit that regulates and authorizes certain pesticide applications under the Clean Water Act. The Pesticide General Permit (PGP) will regulate applications of pesticides into or near the waters of the United States to control **mosquitoes**, aquatic weeds and algae, aquatic nuisance animals, and forest canopy pests.

VDCI has been actively involved in understanding the upcoming NPDES regulation and how it will affect the mosquito control industry throughout the United States. We have commented on every phase of the EPA's draft permit and are actively working with the EPA to assure compliance in each of our programs.

As always, we will ensure all of our operations are conducted with complete compliance to all regulations, including the upcoming NPDES regulation, and will fully support each community within which we work. As such, VDCI, as the responsible party for all pesticide applications, is proposing to be the primary NPDES permit holder.

To meet the current technology-based limitations in the permit, VDCI will: (1) use the "lowest effective amount of pesticide product per application" and optimize the frequency of such applications; (2) perform regular maintenance activities to reduce leaks, spills and unintended discharges; and (3) clean, calibrate and maintain application equipment on a regular basis. Additionally, as proposed herein, we will implement all appropriate integrated pest management (IPM) practices. The IPM practices as described in the current PGP involve identifying pests, addressing effective management of the identified pests, and following specified procedures for pesticide application.

In most cases, the data and records required in the current PGP are no more than what VDCI currently maintains for our programs in Mississippi. However, VDCI will review each of our record sheets and database forms to ensure the proper data is being recorded. In addition, we will have on file a documented IPM plan, auditable records of thresholds for treatment, equipment maintenance & calibration, application data, and an updated Pesticide Discharge Management Plan. All data will be reported annually to the EPA and maintained for a minimum of 3 years.



## Key Program Staff

**Daniel Markowski, Ph.D.**, Chief Operating Officer, works diligently to ensure that all aspects of the contracts meet VDCI's rigorous mosquito surveillance and control standards. Dr. Markowski is a graduate of Memphis State University (B.S. Biology) and the University of Rhode Island (M.S. Zoology; Ph.D. Biological Sciences). He has been involved in pest control practices since the mid 1980's. Most recently, he directed New York City's Vector Control Program in 2001 and 2002 before accepting his current position with VDCI. Beginning in 2003, he served a 3-year term as the American Mosquito Control Association's North Atlantic Regional Director.

**Kris New**, Regional Director, will be responsible for the initial setup of the program, and will be the liaison between VDCI and the City. Kris holds a B.S. Degree from Mississippi State University in Agricultural Engineering, along with 9 years experience in the mosquito industry. He holds pesticide certifications from multiple states including Mississippi and is also OSHA-30 certified. Kris began working for VDCI in 2008 and has supervised mosquito control operations in central Mississippi and in Alabama. Kris resides in Brandon, Mississippi.

In addition to the personnel listed above, VDCI employs one of the most educated and experienced staffs in the professional mosquito control industry. Many of our supervisory staff have earned Bachelors of Science and Masters of Science degrees in Biology or Entomology. Our staff has a broad level of experience ranging from former product sales representatives to former governmental program directors to research biologists. VDCI's operational staff are licensed and/or certified to apply pesticides used for public health mosquito control in multiple states.

## Experience

Vector Disease Control International is a nationwide mosquito/vector control service provider, with mosquito surveillance and control operations in the following states:

Arkansas	12 Full Service IPM Contracts
California	4 Countywide Aerial Agreements
Florida	5 Countywide Aerial Agreements
Idaho	Statewide Aerial Contract 8 Countywide Aerial Agreements
Illinois	6 Full Service IPM Contracts 3 Full Service IPM Contracts
Louisiana	2 Parish Service Agreements 2 Full Service IPM Contracts
Mississippi	2 Full Service IPM Contracts
Ohio	1 Full Service IPM Contract
Oregon	3 Countywide Aerial Agreements
Pennsylvania	Statewide Aerial Adulticide Contract 1 Full Service IPM Contracts
Texas	Harris County Aerial Agreement
Utah	3 Countywide Aerial Agreements
Washington	2 Countywide Aerial Agreements
Wyoming	2 Countywide Aerial Agreement

VDCI's staff represents a highly trained and select group of proven mosquito control professionals that are capable of responding to mosquito-related emergencies in all areas of the United States. These scientists and mosquito control experts enable VDCI to enter an area and immediately monitor for mosquitoes and mosquito-borne diseases, assess the mosquito control needs, and take the appropriate steps to minimize the impact of these mosquitoes or diseases on the local human population. With 10 aircraft, over 100 ground vehicles, and mobile surveillance and control teams; VDCI can respond to all mosquito surveillance and control needs virtually anywhere in the United States within hours.

**References****City of Jonesboro, AR (Full IPM Contract)**

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**Blytheville, AR (Full IPM Contract)**

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(T) 870-763-3602

**Jackson, Mississippi (Full IPM Contract)**

Darion Warren, Infrastructure Mgt.  
P.O. Box 17  
219 South President Street  
Jackson, Mississippi 39205  
(601) 960-1168  
dwarren@city.jackson.ms.us

**Allen Parish Mosquito Abatement District (Full IPM Contract)**

Mr. Brian Tilley, President  
248 Airport Road  
Oakdale, Louisiana 71463  
(318) 215-0029

*Additional references can be made available upon request.*

**Proposal Pricing (2 options)**

The amounts listed are **all-inclusive with no additional charges or costs**, except aerial services (as noted below). All required contract tasks listed including Mosquito Surveillance Activities (Larval and Adult), Larviciding, Adulticiding and Education, Disease Monitoring, Regulatory Compliance and Report Generation as defined in this proposal and detailed below will be performed for the specified amounts. If requested, VDCI is prepared to provide a full and complete presentation of all services and associated costs to the City of Conway.

**Option 1**

<b>Full Service Integrated Mosquito Management Program</b>	
<b>Program Establishment and Administration</b>	
<b>GIS/GPS Mapping</b>	
<b>Database Development, Management, and NPDES Reporting</b>	
<b>Larval Mosquito Surveillance</b> Daily Inspections of all Habitat types with GIS Mapping	
<b>Adult Mosquito Surveillance</b> CDC Miniature Light Traps (3 weekly Traps as needed) Gravid Traps (3 weekly Traps as needed) Landing Rate Counts (as needed)	
<b>Disease Monitoring</b> Routine disease Testing for West Nile Virus on Mosquito Pools per Week	
<b>Larval Mosquito Control</b> Source Reduction (as needed) Granular and Liquid Bti Applications (daily as needed) Granular and Briquet Methoprene Applications (daily as needed) Pupacide Applications (daily as needed)	
<b>Public Education</b> Develop Presentations, Brochures, and Fact Sheets for Residents	
<b>Adult Mosquito Control</b> Handheld ULV Applications (as needed) ATV ULV Applications (as needed) Truck ULV Applications (as needed)	
<b>TOTAL PROGRAM COST</b>	<b>\$150,000</b>