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## 2023-2027 Cochise County Vector Surveillance Proposal

### Project Area

Cochise County is located in the southeast corner of the state of Arizona and is bordered by Hidalgo County, New Mexico to the east, Santa Cruz and Pima Counties in the West, Graham and Greenlee Counties to the north, and the state of Sonora, Mexico to the South. According to the 2020 census, the five major cities in Cochise County are Sierra Vista (population: 43,398), Douglas (population: 16,307), Bisbee (5,203), Benson (4,878), and Willcox (3,533).



## Project Scope

In an effort to provide important public health information, Arbo Scientific will provide Cochise County with comprehensive vector and arboviral surveillance for four years by setting mosquito collection traps bi-weekly for 14 weeks between the months of April and October for the years 2023, 2024, 2025, 2026, and 2027. Traps will be set and collected within a 24 hour period. Collected specimens will be transported back to the Arbo Scientific lab in Tucson, Arizona to be sorted and identified to species and sex. Utilizing advanced technologies such as real-time quantitative polymerase chain reaction (RT-qPCR), the mosquito species common to the project area that pose significant risk to public health may be tested for the following potential viruses: *Aedes aegypti* specimens will be tested for dengue, Zika, and chikungunya



Sorting trap collections to species and sex.

viruses; and *Culex spp.* specimens will be tested for St. Louis encephalitis and West Nile virus.

Cochise County will be provided with full trap count data and viral testing results within one week after the collection date. Weather sensors will be deployed at many of the sites and will provide accurate temperature and relative humidity data at the site level. Sensors will be downloaded once per year and weather information will be provided to the county.

## Trap and Trap Dispersal

Trapping locations will be identified with Cochise Health and Social Services for 21 traps that will reside in a fixed location for the season in order to provide accurate comparative data. 3 supplemental traps will be available for deployment in areas that have been identified as problem areas or areas that receive mosquito complaints. In between trapping years, fixed locations will be reevaluated if mosquito trap counts are minimal.



BG Sentinel surveillance trap.

## Trap Breakdown

Description	Trap Count
Fixed Location Trap	21
Supplemental Trap	3
Total Traps	24

## Trap Dispersal by City

City	Number of Traps
Sierra Vista	5
Bisbee / Naco	4
Douglas / Pirtleville	5
Willcox	2
Benson / St. David	3
Elfrida	1
Sunsites	1

## Amendment of Work Scope

Arbo Scientific recognizes that mosquito vector and arbovirus risks may change over time. Invasive species and imported diseases to the area may necessitate adapting mosquito surveillance needs. Additional long-term routine surveillance trapping sites and/or disease assays may be amended for the base scope of work at the request of Cochise County and will be quoted at time of request.

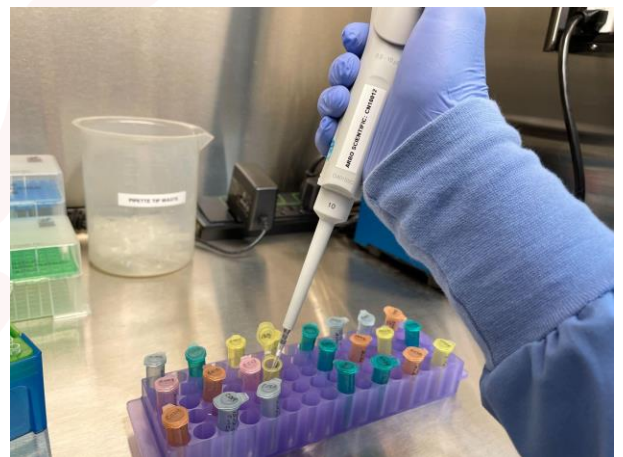
## Emergency and Additional Surveillance Trapping and Virus Testing

In the event Cochise County wishes to add additional short-term trapping beyond the base scope of work or in the event of a public health emergency, Arbo Scientific can provide additional trapping, testing, and support to the County.

- Adult Mosquito Surveillance
  - \$245 per event which includes trap set, collection, speciation, and sorting to sex.
- Virus Testing
  - \$30 per pool, per disease assay (For *Culex* spp. mosquitoes: \$30 West Nile virus and \$30 St. Louis encephalitis would total \$60 per pooled sample up to 50 mosquitoes. For *Aedes aegypti* mosquitoes: \$30 dengue (each serotype), \$30 Zika, and \$30 chikungunya would total \$180 per pooled sample up to 50 mosquitoes).



Common WNV and SLEV vector *Culex quinquefasciatus*.



Viral RNA extraction.

## Pricing and Payment

Item	Cost per Year				
	2023	2024	2025	2026	2027
<b>General services</b> <ul style="list-style-type: none"> <li>• Transportation</li> <li>• Liability / Auto / Professional Insurance Coverage</li> <li>• Geographical information systems data</li> <li>• Comprehensive database and report generation</li> <li>• Submittal to ArizonaSurv</li> <li>• Public relations and community outreach</li> </ul>					
<b>Adult Mosquito Surveillance</b> <ul style="list-style-type: none"> <li>• Vector trapping</li> <li>• Species / sex Identification and sorting</li> <li>• Site determination</li> <li>• Attractants - CO2 and human volatile compounds</li> <li>• Weather sensing</li> </ul>	<b>\$108,537</b>	<b>\$112,879</b>	<b>\$117,394</b>	<b>\$122,089</b>	<b>\$126,973</b>
<b>Arboviral Surveillance</b> <ul style="list-style-type: none"> <li>• Protocol development</li> <li>• Reagents, RNA extraction, primers, probes, consumables</li> <li>• Testing (qPCR)</li> </ul>					
<b>Total Cost</b>	<b>\$587,872</b>				

## Points of Contact

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*Aedes aegypti* photo documentation during speciation.