

Boulder County Mosquito Control District Integrated Mosquito Management Program 2022 Annual Report

Prepared for and in Cooperation with:

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Boulder County Mosquito Control District Integrated Mosquito Management Program

2022 Annual Report

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Program Objectives

Boulder County Mosquito Control District (BCMCD) and Boulder County Public Health Department (BCPH) contracted Vector Disease Control International, LLC (VDCI) to operate an Integrated Mosquito Management (IMM) program in 2022. The primary objective of BCMCD's IMM Program is to monitor and reduce mosquito populations through the use of environmentally sound control techniques in order to protect its residents from the threat of mosquito-borne diseases and suppress local populations of nuisance mosquitoes. VDCI prioritizes the detection and elimination of larval mosquitoes in aquatic habitats, in conjunction with the monitoring of adult mosquito populations through routine surveillance, in order to assess West Nile virus vector species abundance in the area.

Open communication is maintained by VDCI between the BCMCD, residents, HOAs, Property Management Companies, County and State Departments of Health & Environment, and surrounding municipalities in order to ensure that the highest level of mosquito control and epizootic response is achieved. This diligent and cooperative communication is important to the Boulder County Mosquito Control District mosquito management program and provides significant benefit to public health throughout the entire area.

VDCI's Commitment

Vector Disease Control International is a company built on the foundations of public health, ethics, professionalism, and technical expertise. VDCI is committed to providing our customers with scientifically based, environmentally sensitive and technologically advanced Integrated Mosquito Management (IMM) programs of the highest quality. All our employees are committed to excellence in vector control and public health and strive to improve the quality of human life in communities through public education and the control of mosquitoes and the diseases they can transmit. VDCI currently has programs across the state of Colorado, providing services for towns, cities, counties, homeowners associations, and encephalitis surveillance monitoring programs for county health departments.

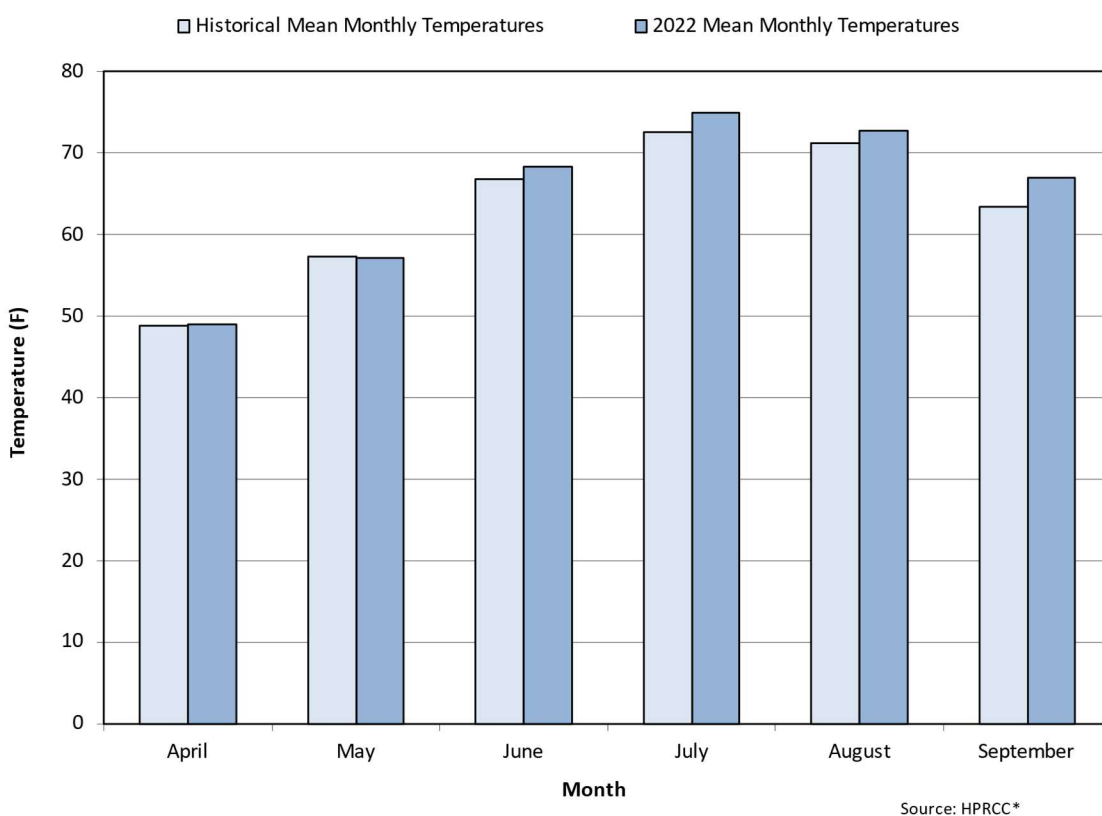
Vector Disease Control International, as the contractor for the Boulder County Mosquito Control District, will continue to use proven scientific Integrated Mosquito Management techniques to survey and control local mosquito populations using biorational larval controls and limited low-toxicity insecticide applications. All of the methods and materials used have been reviewed and registered by the US Environmental Protection Agency, the Centers for Disease Control, the Colorado Department of Agriculture and the American Mosquito Control Association.

2022 Season Perspective and Climate Data

At VDCI we have come to expect each Colorado summer to present a unique set of temperature, precipitation, irrigation, and human interactions that combine to create new and different challenges in both mosquito control and mosquito-borne disease proliferation. Boulder County is in a semi-arid environment with elevations in the BCMCD ranging from approximately 4,900 feet to 5,500 feet above sea level. The typical mosquito season for the BCMDC is from late April to September. Current and historical climate data from the National Oceanic Atmospheric Administration's (NOAA) High Plains Regional Climate Center's (HPRCC) Boulder, Colorado weather station was used to monitor regional temperature and precipitation patterns throughout the season.

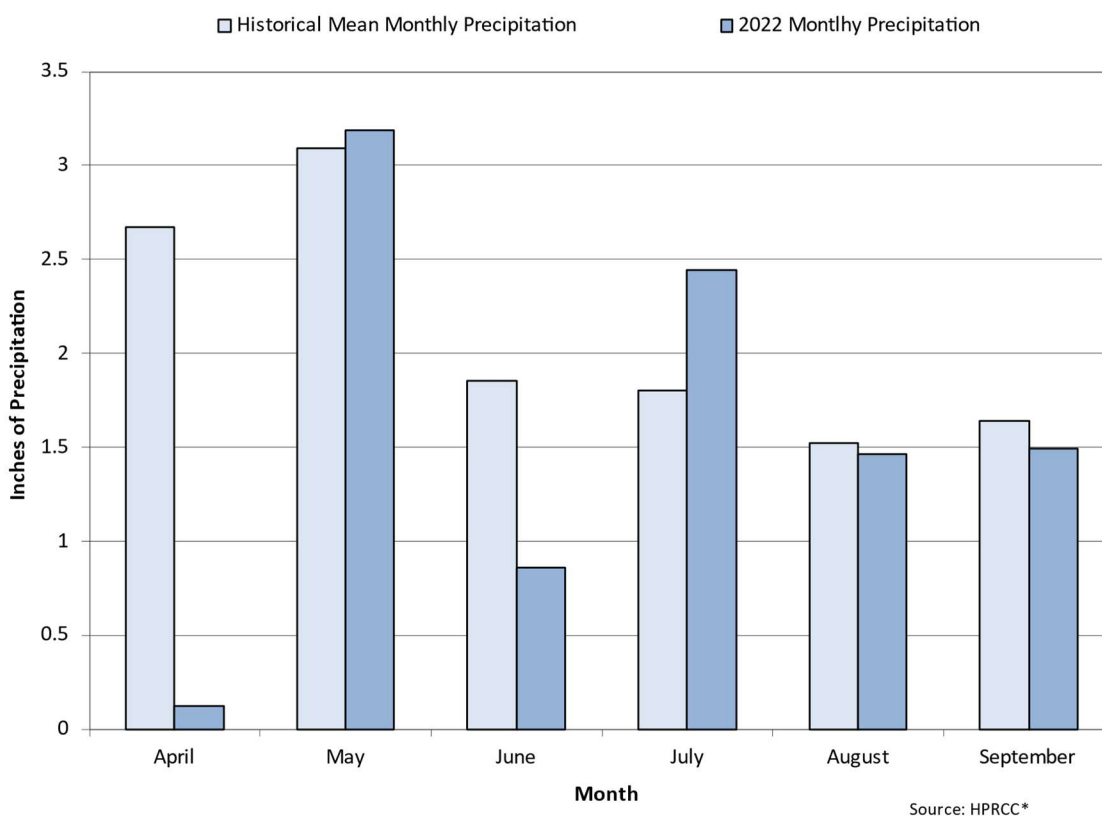
In 2022, every month of the mosquito season, except April and May, had temperatures above normal (**Figure 1**). The months of April and May were average while June thru September were all above normal. July and September experienced the highest deviation from average, +2.3°, and +3.6° degrees respectively. Overall, the 2022 season was approximately 22.9% warmer compared to 21.3% warmer in 2021. The end of the season saw a record high temperature of (97°) on September 8th and 10 days still recording >90° in September. Even with these above average daytime temperatures, wide fluctuations in day and night temperatures (39° on September 11th); a monthly overnight average of 50.9° (normal 48.1°) and change in photoperiod, triggered mosquito overwintering behavior and blood meal seeking (biting) declined by mid-September determined by low trap abundance.

Figure 1 2022 Monthly and Historical Mean Air Temperatures*



The historical averages for mean monthly precipitation indicate that April, May and June are usually the wettest months of the year. The most significant variation during the 2022 mosquito season was the month of April (0.12"), which received only 4.5% of normal precipitation (2.67"), making it the driest month of 2022 followed closely by June with 0.99" and September with 0.15" less than normal. Even though the monsoons resulted in 35.6% (2.44") more rain than normal (1.8") in July, the total accumulated precipitation from April through September of 9.56" was 23.9% lower than the historical average of 12.6" for the same monthly period (**Figure 2**). May was slightly above average (103.2%) and August received approximately 96.1% of normal precipitation, making those two months about normal for the mosquito season in 2022.

Figure 2 2022 Monthly and Historical Total Precipitation Data *



Early and abundant spring precipitation in April and May followed by a really wet July likely influenced the historically higher than average nuisance and vector mosquito populations during 2022 mosquito season. A wet April and May presumably elevated the abundance of nuisance mosquitoes normally seen early in the season and unusually high humidity in June and July contributed to the longevity of adult mosquitoes, especially vector species, resulting in a historical abundance of all mosquito species and contributing to high West Nile virus incidence than what is normally seen throughout the front range Metro area.

2022 West Nile Virus Season – United States

Since the introduction of West Nile virus to the United States in 1999, the virus has made a complete westward expansion to the West Coast. Starting in the Northeastern parts of the United States, the virus steadily spread through the South, the Midwest, the Rocky Mountain region and to the Western States. This extensive distribution is due to the ability of WNV to establish and persist in the wide variety of ecosystems present across the country. WNV has been detected in 65 different mosquito species in the U.S., though it appears that only a few *Culex* species drive epizootic and epidemic transmission (WNV Guidelines CDC 2013). Although West Nile virus has been endemic to the United States since 1999, researchers continue to seek an understanding for some of the factors which contribute to region specific spikes in vector abundance and human risk. We still do not understand why some humans develop West Nile fever while other infections develop into more serious West Nile encephalitis or West Nile meningitis cases. Additionally, physicians and researchers continue to seek answers to the variable recovery times and occurrence of deaths that result with some infections. WNV has expanded to the point that it can now

As of October 18th, 2022, a total of 46 states and the District of Columbia have reported West Nile virus infections in people, birds, or mosquitoes in 2022 (**Figure 3**). Overall, 766 cases of West Nile virus disease in humans have been reported to CDC. This is increase from the number of cases (725) reported in 2021 at this time last year. This is still a 4x increase compared to 174 cases in October 2020. Of these, 528 (68.9%) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 238 (31.1%) were classified as non-neuroinvasive disease (**Figure 4**). A total of 52 deaths have resulted from these infections compared to 35 deaths in 2021 at this time and 6 deaths in October 2020.

*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2022/activitybystate2022.html>



2022 West Nile Virus Season - Colorado

As of October 21st, 2022, the Colorado Department of Health and Environment has identified 195 cases of human West Nile virus (WNV) infections in Colorado (**Figure 5**) compared to 139 cases in 2021 (1.4x increase) and 13 deaths in 2022 compared to 6 in 2021. 62.5% of the WNV cases are considered neuroinvasive (such as meningitis or encephalitis) this year. The CDC reports 206 cases as of October 18th, 2022 with 15 (7.3%) asymptomatic blood donor, 117 (56.8%) neuroinvasive cases including symptoms of meningitis or encephalitis (including meningoencephalitis), and 74 (35.9%) non-neuroinvasive which includes cases where individuals are non-symptomatic or present with fever and other minor symptoms (**Figure 6**). So far, Colorado leads the nation in human cases and deaths for 2022. The CDC reports 12 deaths (**Figure 6**) associated with West Nile virus infections in Colorado during the 2022 season to date. The discrepancy between CDPHE data and CDC data is likely due to lag time in the communication between these entities.

Figure 5 Weekly WNV Human Case Count 2022 (Previous 5 Year Average)*

*CDPHE image <https://cdphe.colorado.gov/animal-related-diseases/west-nile-virus/west-nile-virus-data>

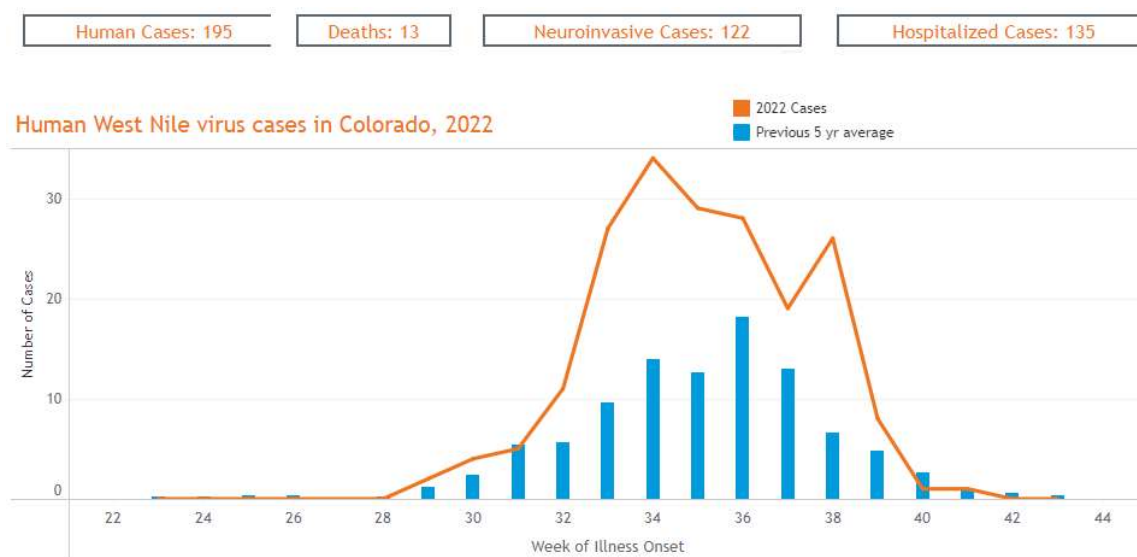


Figure 6 West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2022 (as of October 18th, 2022)*

*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2022/activitybystate2022.html>

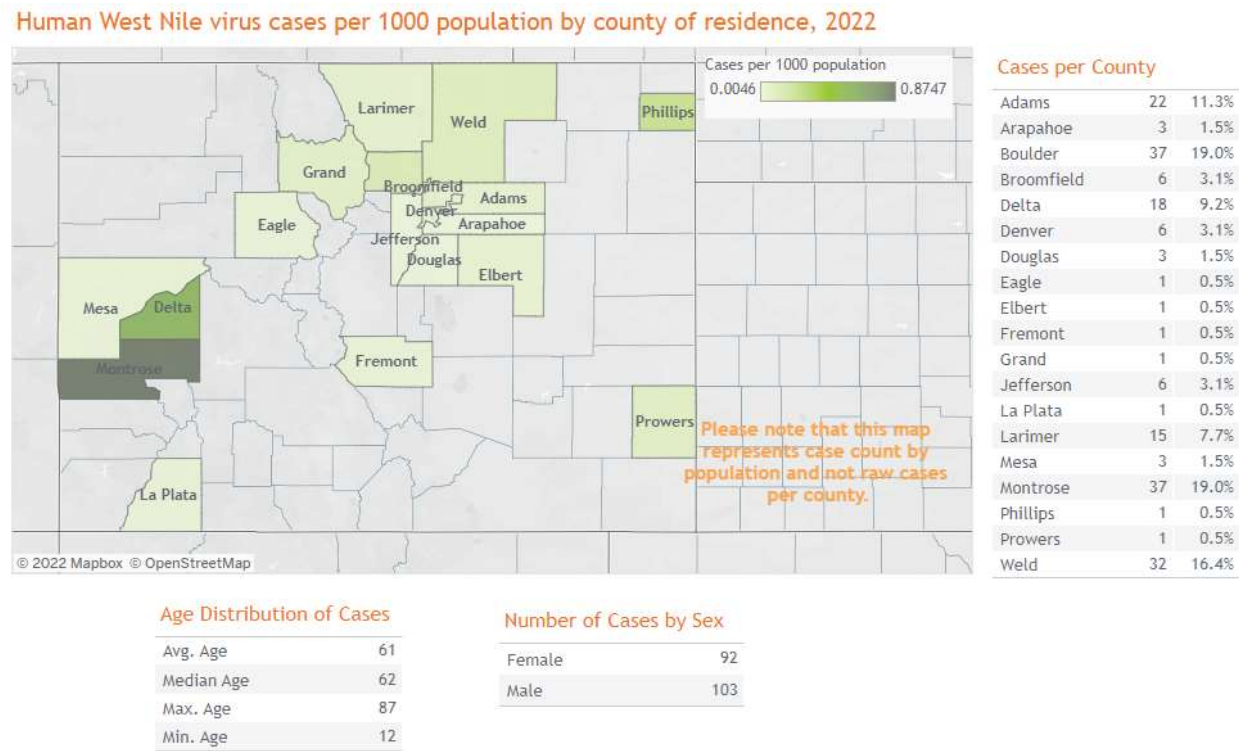
State	Neuroinvasive Disease Cases†	Non-neuroinvasive Disease Cases	Total cases	Deaths	Presumptive viremic blood donors‡
Colorado	117	74	191	12	15

2022 West Nile Virus Season - Boulder County

CDPHE data currently shows Boulder and Montrose Counties with the most West Nile virus human cases (19.0%) while Weld ranks 2nd with 16.4%, Adams rank 3rd with 11.3% followed by Delta County with 9.2%

of human cases. **(Figure 7).** For comparison, Boulder County had 10.9% of WNV human cases out of 20 counties reporting in 2021 and only 8.6% and 9 counties reporting in 2020.

Figure 7 **Colorado WNV Human Cases per 1000 population by County, 2022***
 *CDPHE image <https://cdphe.colorado.gov/animal-related-diseases/west-nile-virus/west-nile-virus-data>



Adult mosquito surveillance data, submitted mosquito pools, and the resulting WNV infection rates were used by BCPH throughout the season to calculate Vector Index (VI) levels in order to help BCMCD officials determine local areas of concern for public awareness and safety. The VI is a tool used by health officials that takes into account the presence and density of *Culex* mosquitoes and their WNV infection rates, resulting in an early indicator for the risk of human WNV infection. Once the VI reaches levels above 0.75, state and local health departments typically recommend communities take additional action to control both larval and adult mosquitoes, increase public awareness, and encourage personal protection measures.

The actual 2022 weekly Vector Index rates, as calculated by BCPH, for sentinel zones 1, 2 and 3 are illustrated below **(Table 1)**. WNV activity in 2022 was higher compared to 2021, and still very high compared to 2020. A percent increase in positive mosquito pools from 4.4% in 2020 to 31.3% in 2021 and to 42.4% in 2022 **(Table 3)**.

Table 1 Vector Index, Boulder County Sentinel Zones 1 - 3, 2022

Boulder County Vector Index 2022 ¹			
	Sentinel Zone 1 ²	Sentinel Zone 2 ³	Sentinel Zone 3 ⁴
Season Week	Vector Index	Vector Index	Vector Index
Week 26 (June 26-July 2)	0.00	0.00	0.00
Week 27 (July 3-9)	0.93	0.49	0.30
Week 28 (July 10-16)	1.22	0.00	1.95
Week 29 (July 17-23)	2.79	0.97	3.52
Week 30 (July 24 -July 30)	0.86	0.20	1.41
Week 31 (July 31 - August 6)	2.44	2.16	2.22
Week 32 (August 7-13)	0.55	0.47	1.17
Week 33 (August 14-20)	0.67	0.89	1.30
Week 34 (August 21-27)	2.85	1.05	0.00
Week 35 (Aug 28 - Sept 3)	0.47	0.40	0.48
Week 36 (Sept 4 - 10)	0.18	----	0.15
Week 37 (Sept 13 - 19)	0.00	----	0.40
1. Reported by BCPH as of September 26th, 2022			
2. Boulder County; 3. Longmont; 4. Erie, Lafayette, Louisville, Superior			

Larval Mosquito Control

Larval mosquito control is the foundation of the Boulder County Mosquito Control District's Mosquito Control program and can be an extremely effective way to manage mosquitoes, thereby reducing the number of potential disease vectors and annoyances associated with biting adults. Years of research and practical experience have shown that the most effective way to control mosquito populations is through an aggressive Integrated Mosquito Management (IMM) approach. This approach aims at using a variety of concepts, tools, and products to reduce mosquito populations to a tolerable level.

Pre-season larval control work involved ground truthing GIS maps, remapping areas where new development and altered landscapes occurred. Hiring of seasonal field technicians began in April and continued into May. A less than normal contingent of returning technicians (7) and a difficult hiring season resulted in ½ the normal field technicians being hired for the 2022 season. VDCI began larval site inspections the first full week in May and VDCI's new technician classroom and field training was conducted during the week of May 16th. Additional field training by VDCI management and veteran employees lasted through May and full-time field activities were in effect by early June. Many sites were selected for monthly and/or residual larvicide treatments due to suboptimal staffing, with highly populated residential areas becoming the main focus for this season's inspection and larviciding activity.

In 2022, Vector Disease Control International performed 5,526 larval site inspections at 1,871 active breeding sites throughout the District. Of these individual inspections, 4,322 sites (78.2%) were wet upon inspection and 2,086 (37.7%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 2,032 (36.8%) larvicide applications in which 4,838.8 lbs. of VectoBac G (*Bti*), 1,672.4 lbs. of Vectolex FG (*Bs*), 112.6 lbs. of Altosid XRG (S-Methoprene), and 53.8 gallons of BVA 2 larvicide oil (**Table 2; Figures 8 and 9**) were applied to 879.2 acres of land within the Boulder County Mosquito Control District.



By comparison in 2021, Vector Disease Control International performed 9,178 larval site inspections at 1,871 active breeding sites throughout the District. Of these individual inspections, 7,142 sites (77.8%) were wet upon inspection and 2,541 (27.7%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 2,516 (27.4%) applications in which VDCI applied 4,111.0 lbs. of VectoBac G (*Bti*), 7,194.3 lbs. of Vectomax FG (*Bti+Bs*), 8.0 lbs. of Vectolex FG/WSP (*Bs*), 1.9 lbs. of Vectolex WDG (*Bs*), 8.1 lbs. of Altosid XRG (S-Methoprene), and 89.2 gallons of BVA 2 larvicide oil (**Table 2 and Figure 9**) to 1,026.5 acres of land within the Boulder County Mosquito Control District.

In 2020, VDCI performed 10,340 larval site inspections at 1,851 active breeding sites throughout the District. Of these individual inspections, 7,826 sites (75.7%) were wet upon inspection and 2,811 (27.2%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 2625 (33.5%) applications in which VDCI applied 4,193.7 lbs. of VectoBac G (*Bti*), 1068.0 lbs. of Vectolex FG (*Bs*), 8.4 lbs. of Vectolex WDG (*Bs*), 1 Altosid briquet (S-Methoprene), 14.0 oz. of Altosid XRG (S-Methoprene), and 70.4 gallons of BVA 2 larvicide oil (**Table 2 and Figures 9**) to 811.6 acres of land within the Boulder County Mosquito Control District.

Larval mosquito control can be achieved in several ways including biological, biochemical, chemical, and mechanical means. No single larvicide product will work effectively in every habitat where mosquito larvae are found, so a variety of products and methods should be employed. Additionally, although there are a variety of methods for reducing larval populations, some may have negative consequences that outweigh their benefits. Mechanical or physical habitat modification is a technique which VDCI uses on relatively small scale projects, as the area to be modified must be carefully reviewed.



VDCI's favored method of larval mosquito control is through the use of bacterial bio-rational products. The main product used by VDCI is a variety of bacteria (*Bacillus thuringiensis var. israeliensis*). *Bti*, as it is known, has become the cornerstone of mosquito control programs throughout the world. The benefits include its efficacy and lack of environmental impacts. When used in accordance with its label, successful control of mosquito larvae can be achieved without impact to non-target species such as other aquatic invertebrates, birds, mammals, fish, amphibians, reptiles, or humans. The label allows for the use of the product in the majority of the habitats throughout the service area. Another bacterial product closely related to *Bti* is *Bacillus sphaericus* (*Bs*). *Bs* provides similar benefits to *Bti* while also providing residual control of certain species of mosquitoes. It is used specifically in difficult to treat areas where *Culex* larvae are the predominant species due to its limitations and high cost.

Other larval control products include the insect growth regulator S-methoprene (Altosid), and light mineral oils (BVA 2 larvicide oil). Methoprene is a synthetic version of a juvenile growth hormone in larval mosquitoes. The hormone prevents the normal development of larval mosquitoes into pupae and adults, eventually causing death. VDCI limits the use of chemical larvicides to areas with little biodiversity, such as road side ditches, or areas that chronically produce high mosquito populations. They are only used after a thorough assessment has been made of any habitat where their use is being considered. Mineral oil is the only product effective in controlling mosquito pupae and therefore is an essential tool when pupae are present.

VDCI will provide native fathead minnows (*Pimephales promelas*) to residents, by request, that have a “closed system” habitat such as ornamental or small farm ponds that are isolated from streams or other watersheds so minnows cannot expand indiscriminately. VDCI received no requests for fathead minnows in 2022.

Table 2 2022 Summary of Larval Control Product Applications by Type

Larval Control Product Types	2018	2019	2020	2021	2022
<i>Bacillus thuringiensis israelensis (Bti)</i>					
Vectobac G (lbs) EPA Reg. #73049-10	2,129.5	5,201.8	4,193.7	4,111.0	4,838.8
<i>Bacillus thuringiensis israelensis (Bti) + Bacillus sphaericus (Bs)</i>					
Vectomax FG (lbs) EPA Reg. #73049-429	0.0	0.0	0.0	7,194.3	0.0
<i>Bacillus sphaericus (Bs)</i>					
Vectolex FG/WSP (lbs) EPA Reg. #73049-20	372.1	867.4	1,068.0	8.0	1,672.4
Vectolex WDG (lbs) EPA Reg. #73049-57	3.6	7.4	8.4	1.9	0.0
S-Methoprene					
Altosid Briquet (oz) EPA Reg. #2724-375	0.0	4.0	1.0	0.0	0.0
Altosid XRG (lbs) EPA Reg. #2724-451	1.1 oz	1 oz	14 oz	8.1	112.6
Mineral Oil					
BVA 2 Larvicide Oil (gal) EPA Reg. #70589-1	118.7	79.4	70.4	89.2	53.8

Figure 8 2022 Larval Site Inspections and Applications by Month

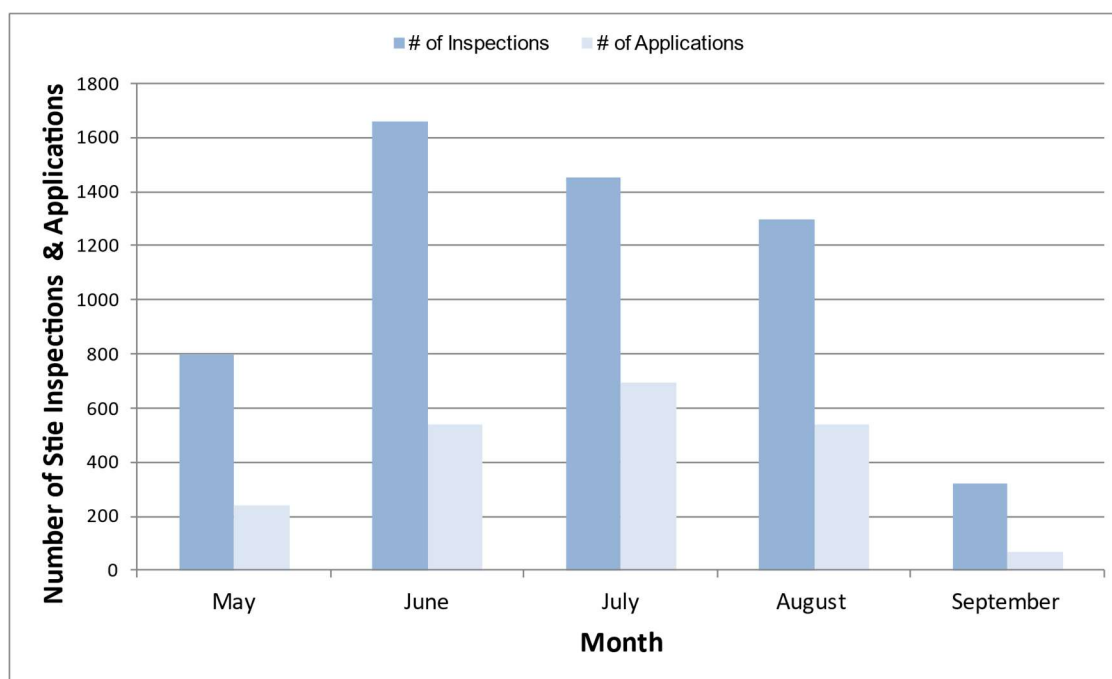
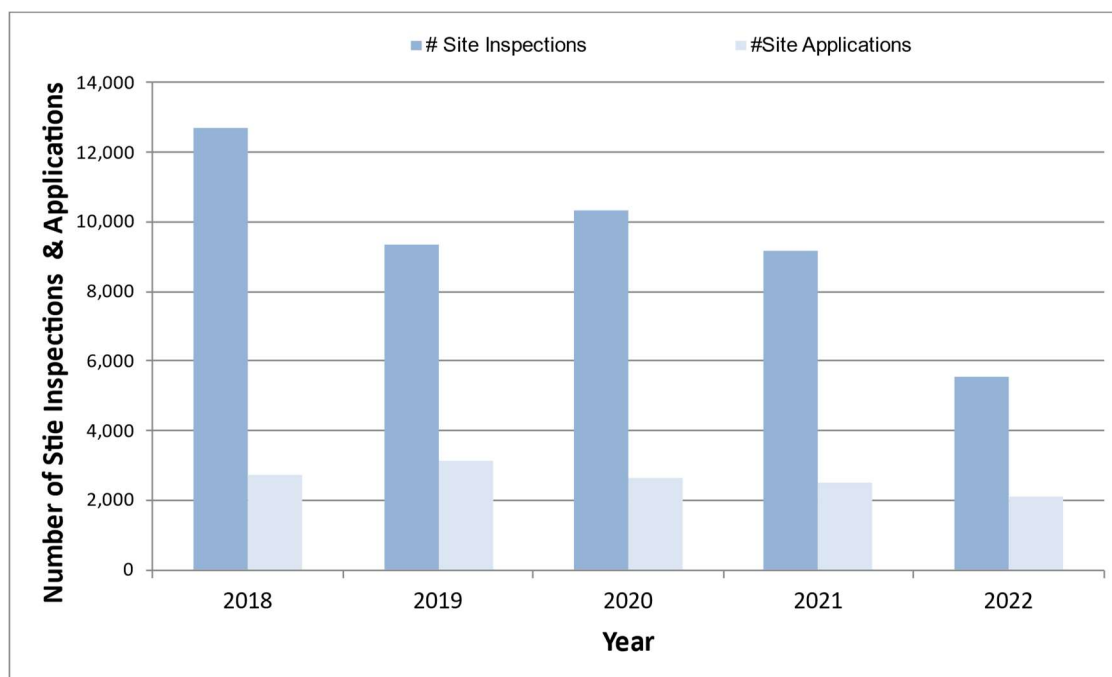


Figure 9 Comparison of Larval Site Inspections and Applications by Year



VDCI Adult Mosquito Surveillance and Laboratory





Information about mosquito abundance and species diversity is essential to any IMM program. Vector Disease Control International's most used adult mosquito surveillance tool is the CDC light trap which uses carbon-dioxide from dry ice as bait to attract female mosquitoes seeking a blood meal from a breathing animal. Once attracted by the CO₂, the mosquitoes are lured by a small light to a fan that pulls them into a net for collection. Traps are set overnight at carefully selected sites with abundant harborage. They are collected the following morning and returned to VDCI's laboratory, where the contents of the trap nets are counted and speciated by trained technicians.

In 2022, Vector Disease Control International monitored a statewide network of hundreds of weekly trap sites, collecting 764,561 adult mosquitoes that were counted and identified to species by the VDCI Surveillance Laboratories. An approximate 32.2% reduction compared to 1,127,553 in 2021 (and 516,629 in 2020). A total of 202,476 adult mosquitoes were counted and identified in the entirety of Boulder County in 2022 compared to 233,922 in 2021 and 166,058 in 2019. (City of Boulder is not included). While individual traps provide current seasonal information, trap data can be interpreted in the context of historical records for the same trap site if such data is available. Individual traps are also compared to other traps from around the region that were set on the same night and therefore exposed to similar weather conditions. Technicians working in the Surveillance Laboratories at Vector Disease Control International are trained to provide accurate species-level identification of both larval and adult mosquitoes.



Additionally, the VDCI Surveillance Laboratory conducts an intensive larval identification program with larval mosquito samples collected by field technicians. This information is now invaluable in targeting mosquito control efforts as we gain a greater understanding of the habitat types preferred by Colorado mosquito species and the seasonality of these habitats as sites for mosquito development.

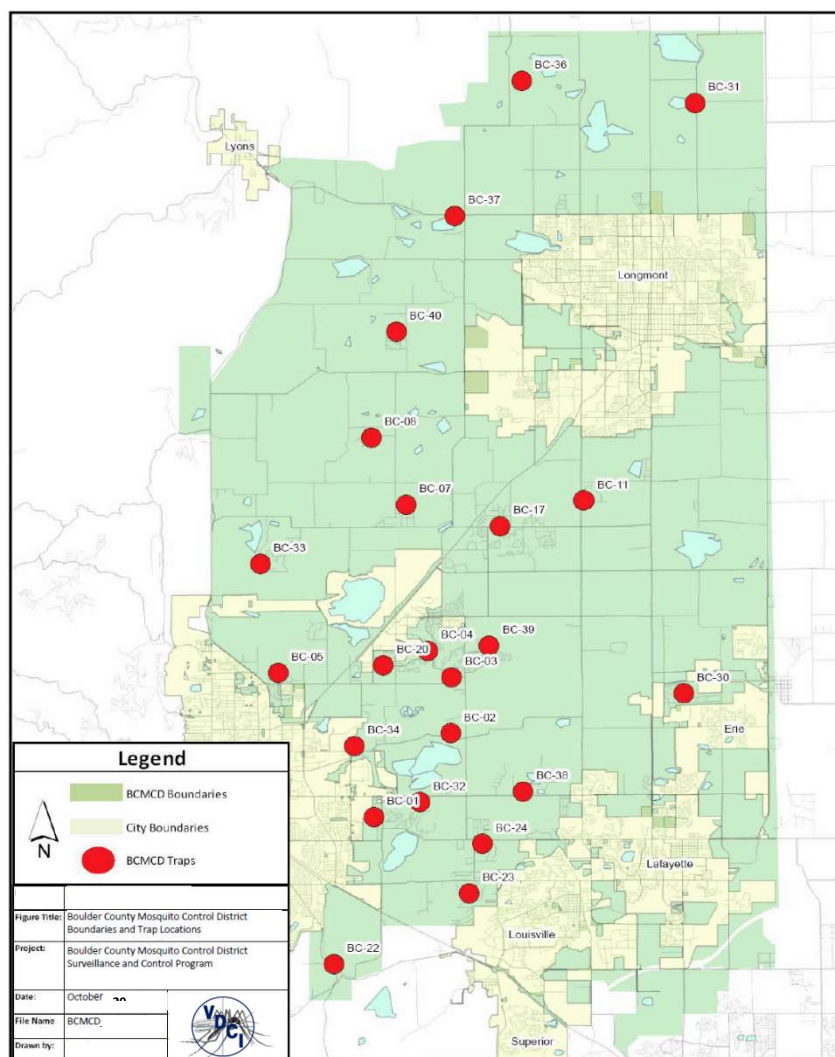
Specimens and data collected from these traps and larval identification are used in:

-  Determining the effect of larval control efforts. Each mosquito species prefers specific types of habitats for larval development. If a trap includes large numbers, it could indicate the presence of an unknown larval habitat and, based on the species identification and known habitat preference for that species, direct field technicians as to possible sources of the mosquitoes collected.
-  Determining larval and adult mosquito species. This helps to illustrate the threat of mosquito-borne disease amplification and transmission because different mosquito species can vector different diseases to people and animals.
-  Determining where adult control efforts were necessary. While mosquito eradication is impossible, significant population reduction is achievable. In places where larval control is insufficient, such as neighborhoods where adult mosquitoes have migrated in from outside of the control area, it may be necessary to use adulticide methods, such as ULV truck fogging or barrier sprays of harborage areas. Trap counts that exceed an acceptable threshold for an area may trigger adult control measures.
-  Surveillance for Mosquito-borne Disease. Historically, VDCI efforts were targeted primarily at controlling mosquito nuisance problems with limited disease surveillance. However, since the arrival of the West Nile virus in Colorado in August of 2002, the paradigm has shifted toward disease prevention and control. Accurate species identification of the mosquitoes in the traps is important when monitoring species population trends. It also is necessary for evaluating whether a population spike represents an actual increase in disease transmission potential or only an increased nuisance level.

BOULDER COUNTY SURVEILLANCE LIGHT TRAP DATA

In 2022, an average of 22 surveillance light traps monitored adult mosquito populations within the Boulder County Mosquito Control District on a weekly basis (**Figure 10**). Early season adult surveillance began with select sites (BC-02, 03, 04, 06, 07, 08, 09, 10, 11, 12, 13 & 14 traps) the week of May 30th. VDCI began full adult surveillance (22 traps) the week of June 1st and concluded on September 12th corresponding with low adult mosquito activity.

Figure 10 2022 BCMCD Boundaries and Trap Locations



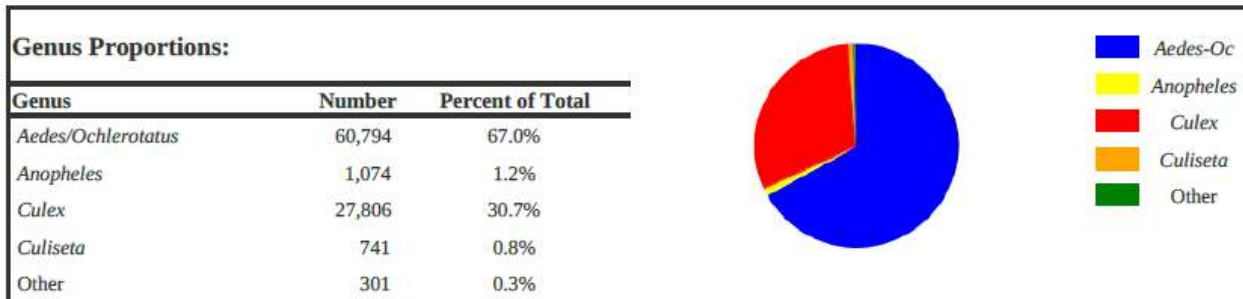
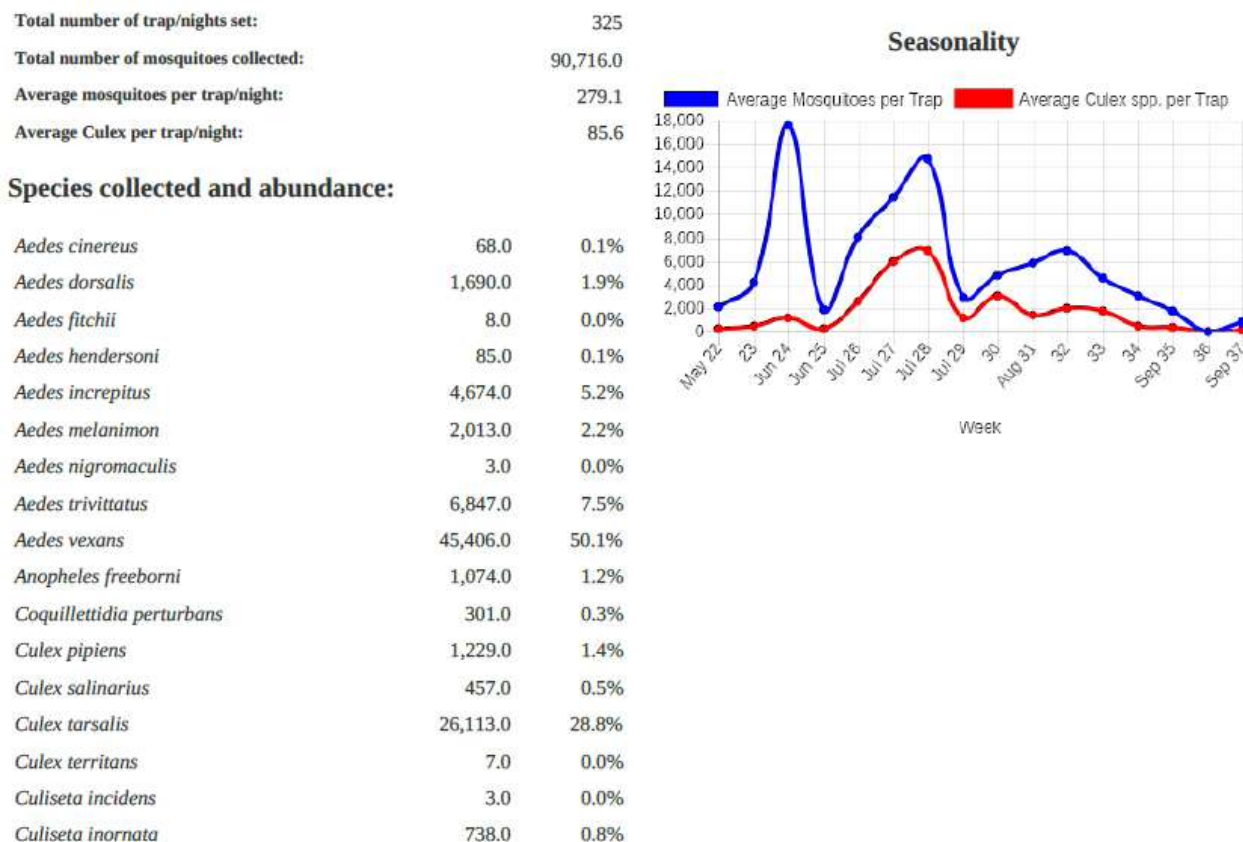
There were 325 CDC light surveillance trap nights set within Boulder County Mosquito Control District during the 2022 season. These traps collected a total of 90,716 mosquitoes. There was an average of 279.1 mosquitoes caught per trap per night and an average 85.6 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 60,794 (67.0%) *Aedes/Ochlerotatus spp.*, 1,074 (1.2%) *Anopheles spp.*, 301 (0.3%) *Coquillettidia spp.*, 27,806 (30.7%) *Culex spp.*, and 741 (0.8%) *Culiseta spp.* (**Figure 11**). Please refer to **Appendix A** for BCMCD Individual Light Trap Summaries.

A total of 17 species were represented in 2022 in BCMCD. No exotic/introduced species (such as Asian Tiger Mosquitoes) were collected this season.

By comparison, in 2021 there were 352 CDC light surveillance trap nights set within Boulder County Mosquito Control District during the 2022 season. These traps collected a total of 82,257 mosquitoes. There was an average of 233.7 mosquitoes caught per trap per night and an average 77.6 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 52,029 (63.3%) *Aedes/Ochlerotatus spp.*, 1,707 (2.1%) *Anopheles spp.*, 409 (0.5%) *Coquillettidia spp.*, 27,329 (33.2%) *Culex spp.*, and 783 (1.0%) *Culiseta spp.*

In 2020 there were 352 CDC light surveillance trap nights set within Boulder County Mosquito Control District. These traps collected a total of 89,472 mosquitoes. There was an average of 254 mosquitoes caught per trap per night and an average 40 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 80.6% (72,087) *Aedes/Ochlerotatus spp.*, 2.0% (1,824) *Anopheles spp.*, 0.9% (821) *Coquillettidia spp.*, 15.9% (14,189) *Culex spp.*, and 0.6% (551) *Culiseta spp.*

Figure 11 2022 Boulder County Mosquito Control District Light Trap Composite Data



WEST NILE VIRUS MOSQUITO SAMPLE TESTING RESULTS - BOULDER COUNTY

VDCI and BCMCD used the adult mosquito data collected to help determine local areas of concern for public awareness and safety as well as to monitor the local vector mosquito populations. Many local health departments have moved towards mosquito-based surveillance indicators to assess the weekly risk of West Nile transmission and guide response decisions for adult mosquito control applications. The vector index and infection rate is derived by testing the mosquitoes VDCI collects for the presence of West Nile virus. This value is closely monitored by the CDPHE and local health departments to evaluate the risk posed by the vector mosquito population.

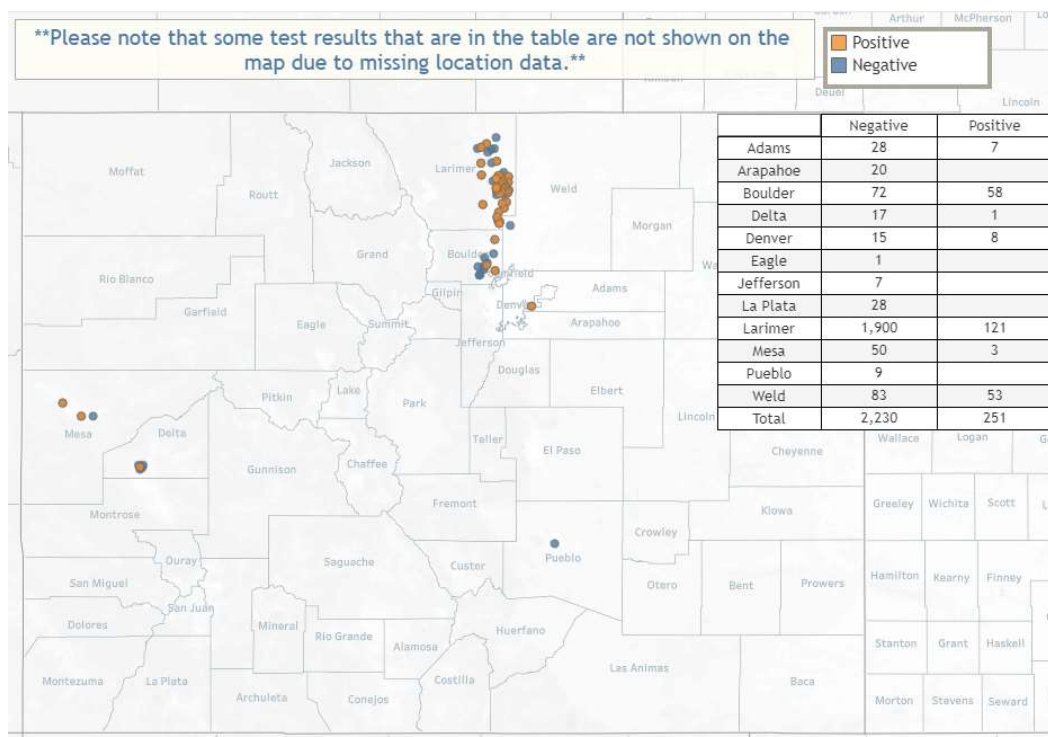
As defined in the CDC guidelines for West Nile virus surveillance, prevention and control, the vector index (VI) is an estimate of the number of West Nile virus infected mosquitoes in an area. This number can serve as a human health risk value. An operational value of 0.75, which was derived from the comparison of historical data for human infections, as well as relative abundance and infection in mosquitoes, serves as an indicator of high risk for West Nile virus transmission to humans in the corresponding area. As the value of the vector index increases there is a corresponding risk of human disease and this value can be used to offset epidemics.

Due to budget cutbacks associated with West Nile virus surveillance in recent years, the CDPHE does not have the ability to test mosquitoes from every trap set across the state. As a result, there is select testing done within three sentinel zones in Boulder County. *Culex species* mosquito samples are sent to CDPHE for WNV testing on a weekly basis as part of the state's Sentinel Encephalitis Surveillance program (**Figure 12**), which VDCI is contracted separately through BCPH to perform.

As of September 26th, 2022, CDPHE reported 251* positive mosquito pools from Colorado Sentinel Zones compared with 290 in 2021 which was approximately 4x increase over 66 in 2020. Larimer County had the highest number of West Nile virus positive mosquito pools (121) while Boulder County ranked 2nd with 61 positive pools followed by Weld and Denver Counties with 53 and 8 respectively. The first Colorado West Nile virus positive mosquito sample pool in 2022 was the week of June 27th (week 26) in Weld County followed by Boulder County the week of July 4th (week 27) and the City of Boulder the week of July 11th (week 28) (**Figure 12**). (*unsure if this is most recent CDPHE WNV website testing information as it conflicts with BCPH reporting)

Figure 12 Number of Colorado Positive WNV Specimens 2022*

*CDPHE image <https://cdphe.colorado.gov/animal-related-diseases/west-nile-virus/west-nile-virus-data>



BOULDER COUNTY PUBLIC HEALTH ADULT MOSQUITO SENTINEL ZONES

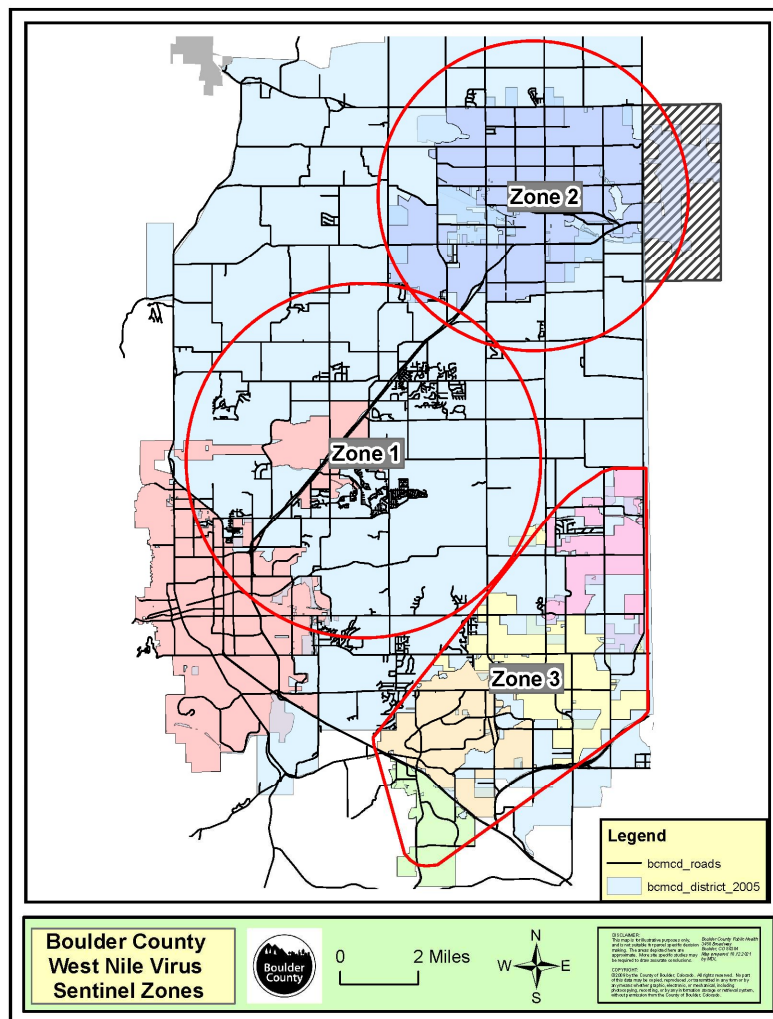
The Sentinel Encephalitis Surveillance Program was funded by the Colorado Department of Public Health and Environment and Boulder County Public Health in 2022. VDCI maintained the sentinel system with five surveillance traps at permanent locations in each of three Boulder County Sentinel Zones: Boulder County (BCZ1); City of Longmont (BCZ2); Town of Erie, City of Lafayette, City of Louisville, Town of Superior (BCZ3) (**Figure 13**). The sentinel CDC light traps were set once a week from June 6th (week 23) to September 12th, 2022 (week 37) with WNV sentinel pool testing starting June 27th (week 26) and ending September 12th, 2022 (week 37).

As of September 26th, 2022 (week 39), CDPHE tested a total of 144 mosquito pools from Boulder County Sentinel Zones. Of the tested mosquito pools, 61 pools tested positive for West Nile virus in all three sentinel zones in 2022 (**Table 3**). In 2022, the first Boulder County West Nile virus positive mosquito sample pools (5) occurred on July 3rd (week 27) in all three zones (two weeks earlier than 2021) compared to (3) pools on July 19th (week 29) in zones BCZ1 and BCZ2 in 2021 and one (1) pool on August 3rd (week 32) in BCZ3 in 2020. (**Table 1; Figures 12 and 13**).

Table 3 Total Submitted and Positive Mosquito Pools, BCPH Sentinel Zones, 2014-2022

Positive WNV Mosquito Pools (BCPH Testing Only)									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
# Submitted	131	132	145	188	189	206	114	144	144
# Positive	16	10	21	15	11	8	5	45	61
% Positive	12.2	7.6	14.5	8.0	5.8	3.9	4.4	31.3	42.4

Figure 13 Boulder County Public Health Sentinel Surveillance Zone Map



ADULT MOSQUITO CONTROL

The goal of Vector Disease Control International is to provide our customers with the best options for safe, effective, modern mosquito management. The primary emphasis of the BCMCD Integrated Mosquito Management Program is to control mosquitoes in the larval stage, using safe biological control products. When mosquito counts surpass nuisance and disease threshold numbers of adult mosquitoes, VDCI utilizes least toxic and EPA and CDC approved adulticides to reduce mosquito populations in the BCMCD.

In 2022, BCPH and VDCI continued to use a week to week evaluation of the adult mosquito populations and utilized approximately 250 as a threshold for nuisance mosquitoes and 50 for vector-disease mosquitoes in the Boulder County Mosquito Control District. BCPH's 2018 - 2021 week to week evaluation suggested that an approximate threshold of 50 adult *Cx. tarsalis* be implemented again for the 2022 season. Additionally, a continuing weekly evaluation of several factors was utilized to determine if a neighborhood or spray zone were to have ULV adult control operations conducted June through September. These factors included: the current weekly trap species diversity and abundance (*Aedes* vs. *Culex spp.*), previous weekly trap species diversity and abundance (*Aedes* vs. *Culex spp.*), was the trap diversity and abundance (*Aedes* vs. *Culex spp.*) declining or increasing, did the trap numbers decline the following week naturally or due to ULV adult control, the volume of resident annoyance calls from a neighborhood or spray zone area, the County human population density around the trap, and WNV activity in the area.

BCPH plans to further analyze current and historic adult surveillance and County WNV epidemiology data to aid in the evaluation of recommended threshold numbers for other Boulder County municipalities. Threshold recommendations might be for total adults, a separate *Aedes spp.* threshold and/or separate *Culex spp.* threshold for the 2022 season.

2022 ULV ADULT CONTROL OPERATIONS

During the 2022 season a total of 549.7 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticide Aqua Perm-X UL 30-30 (Active Ingredient – Permethrin) (**Figure 14 and 15**). In addition, a total of 8 gallons of Wisdom TC (Active Ingredient – Bifenthrin) were applied as a daytime adult barrier application. A detailed summary of adulticide applications, by neighborhood, can be found in **Appendix C**.

By comparison, in the 2021 season a total of 475.8 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticide Aqua Perm-X UL 30-30, Aqua-Kontrol® 30-30 or PermaSease UC (Active Ingredient – Permethrin) (**Figure 15**). In addition, a total of 14 gallons of Talstar Pro or Wisdom TC (Active Ingredient – Bifenthrin) were applied as a daytime adult barrier application.

In the 2020 season a total of 343.3 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticide Aqua-Kontrol® 30-30 or PermaSease UC (Active Ingredient – Permethrin) (**Figure 15**). In addition, a total of 8 gallons of Talstar Pro or Wisdom TC (Active Ingredient – Bifenthrin) were applied as a daytime adult barrier application.

VDCI uses state of the art technology, calibrated application timing, and least-toxic products to minimize non-target impacts. Adult mosquito control applications are accomplished using Ultra Low Volume (ULV) spray equipment and performed after dusk when the majority of mosquito species are most active. This type of equipment produces droplets averaging 10-25 microns in diameter and allows for a minimal amount of product to be put into the environment. These treatments take place in the evening when mosquitoes are flying in the greatest numbers and non-target insect activity (for example, day-flying pollinators like bees) is greatly reduced. Using this application technique, the overall goal of minimal environmental impact and effective adult control is achieved in the targeted area.



Figure 14 **2022 ULV Adulticide Miles by Month**

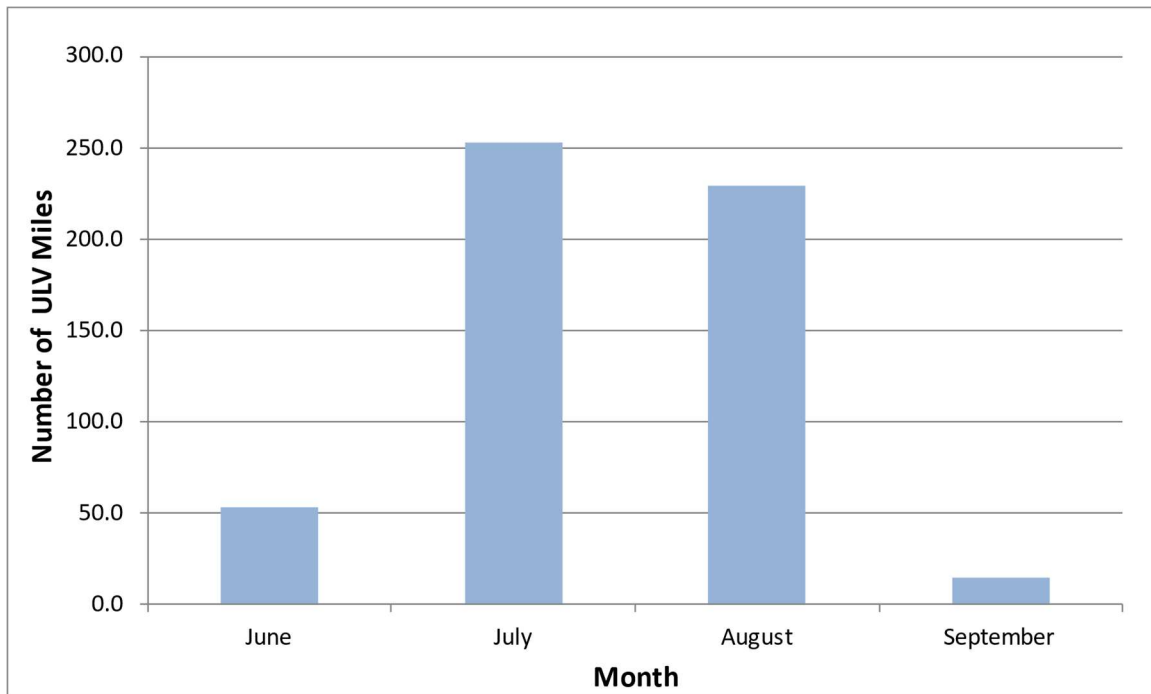
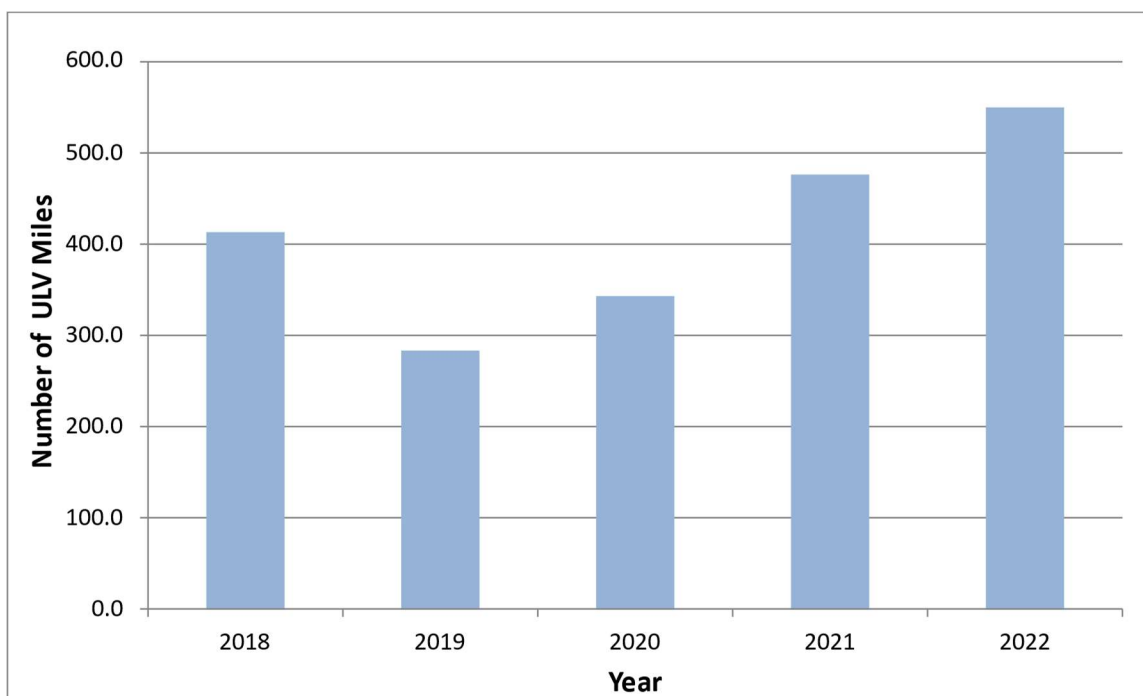


Figure 15 Comparison of ULV Adulticide Miles by Year



CALL NOTIFICATION & SHUTOFF SYSTEM

Both VDCI and the BCMCD acknowledge that adult mosquito control can be a sensitive matter to many residents; therefore, a Spray Shutoff and/or Notification request option was available to the public. Residents were able to call VDCI's MosquitoLine™ or submit a website request to be notified before adult control applications were performed and/or request that the ULV sprayer be shutoff in front of their address.

With the electronic website submission system in place for the last years, VDCI did not mail or email ULV notification renewal letters to Boulder County residents for the 2022 season. The majority of new and renewal website shut off and/or notification submissions were received during May and June. The 2022 season concluded with 99 households of which 54 were shutoff and notification and 78 were notification only. 135 residents did not renew ULV adult control shut off and/or call notification requests. Residents on the shutoff and notification list were notified 48-24 hours in advance when their community was scheduled to be fogged. VDCI used an automated service to contact residents by phone or text message and listed weekly ULV adult control operations on VDCI's website, www.vdci.net/colorado-schedules, which utilized Google Calendar and Maps. In 2022, VDCI completed 517 BCMCD automated notification calls.

By comparison, in 2021 VDCI mailed out 95 and emailed 158 letters to all Boulder County shutoff and notification households to establish a current list for the 2021 season. The 2021 season shutoff and notification list concluded with 198 households of which 14 were shutoff only, 71 were shutoff and notification and 113 were notification only. In 2021, VDCI completed 1,341 BCMCD notification calls.

Public Relations and Education

VDCI is dedicated to providing strong Public Outreach and Education Programs to residents in all of our communities. Citizen complaints, inquiry, information and satisfaction surveys can aid in evaluating the effectiveness of a program. VDCI constantly looks for ways to better serve the communities we work with and encourages both the citizen and local media involvement in order to increase the effectiveness of our programs. We have clearly demonstrated that commitment and belief by proactively serving Boulder County Mosquito Control District (and all of our contracted communities) with numerous innovative programs, activities and services.

Customer service is always a high priority for VDCI. We take pride in training each and every technician so that they have the knowledge to provide residents with the correct answers to their questions. Each field technician spends part of their day responding to resident concerns in their work area. This in-field customer service personalizes the mosquito control program, provides VDCI with local information on mosquito activity and presents a valuable opportunity to educate our residents about mosquito biology and control.

MosquitoLine™

VDCI maintains a toll-free telephone for Colorado, (877) 276-4306 and a local line (303) 466-1892 to accept calls from the public concerning:

- ✧ Information requests about mosquito biology and source reduction of mosquito habitats
- ✧ Information on program components, operations and monitoring
- ✧ Seasonal West Nile virus activity
- ✧ Personal protection options for mosquito annoyances and West Nile virus risk
- ✧ Reports about mosquitoes and possible larval mosquito habitats
- ✧ Requests to perform larvicide applications and/or opt-out of any adulticide spraying
- ✧ Request notification when adulticide spraying is planned in their neighborhood
- ✧ Request health and safety information about mosquito control operations and pesticide products used

VDCI has provided Mosquito Hotlines to the residents in communities which we are contracted to also reduce workload by municipal personnel. This enables direct communication and response by mosquito control employees to resident's concerns about West Nile virus and larval site activity and treatment. VDCI maintains a log of calls received and will summarize call activity in monthly and annual reports.

In 2022 Vector Disease Control International received approximately 75 phone calls from residents of BCMCD. Most of these calls 30 were for adult mosquito complaints. Of the rest, 12 calls were requests for habitat assessment, 33 calls were requests for general information or other reasons and 99 requests for ULV adult control shut off and/or call notification (website submission) were received (**Table 4; Figure 16 and 17**).

By comparison, in 2021 Vector Disease Control International received approximately 140 phone calls from residents of BCMCD. Most of these calls (98) were for adult mosquito complaints. Of the rest, 13 calls were requests for habitat assessment, 29 calls were requests for general information or other reasons and 198 requests for ULV adult control shut off and/or call notification (website and or letter submission) were received (**Figure 17**).

In 2020 Vector Disease Control International received approximately 176 phone calls from residents of BCMCD. Most of these calls (106) were for adult mosquito complaints. Of the rest, 27 calls were requests for habitat assessment, 43 calls were requests for general information or other reasons and 269 requests for ULV adult control shut off and/or call notification (website submission) (**Figure 17**). One habitat call resulted in a new larval site being added to the program.

Table 4 2022 Mosquito Control Calls by Category

Call Category	2022	
	Number of Calls	Percentage
Adult Complaint	30	17.2%
Habitat Assessment	12	6.9%
General Info/Other	33	19.0%
ULV Shutoff/Notification*	54	31.0%
ULV Notification*	45	25.9%
Total	174	100.0%
*VDCI website submissions		

Figure 16 2022 Mosquito Control Calls by Month

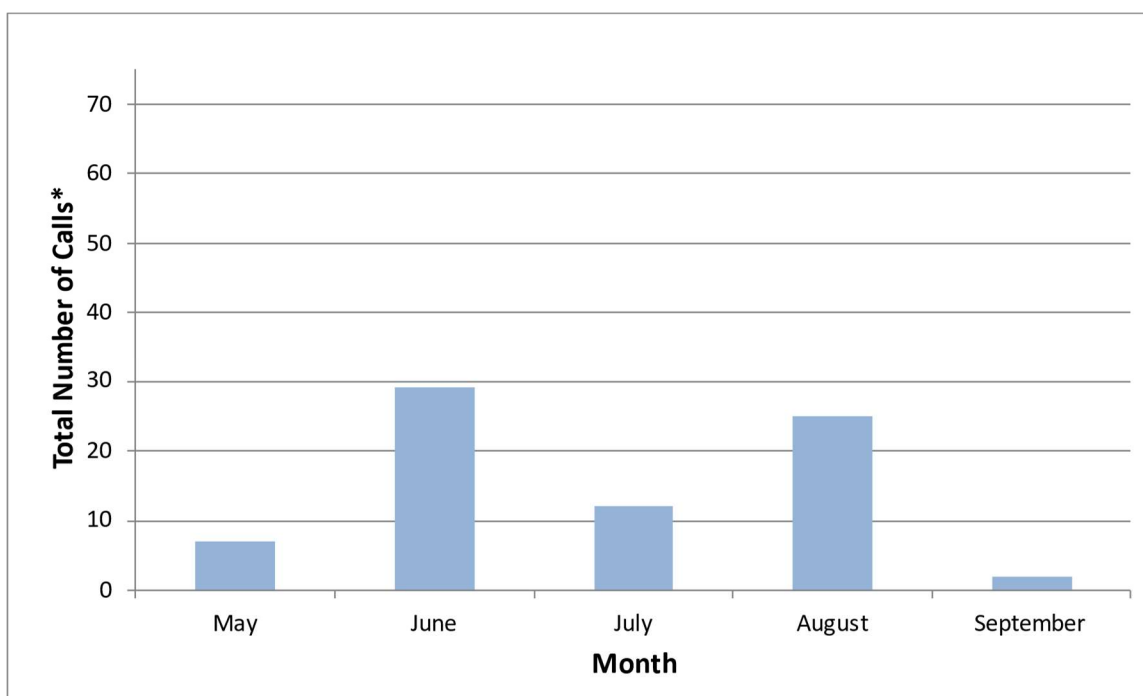
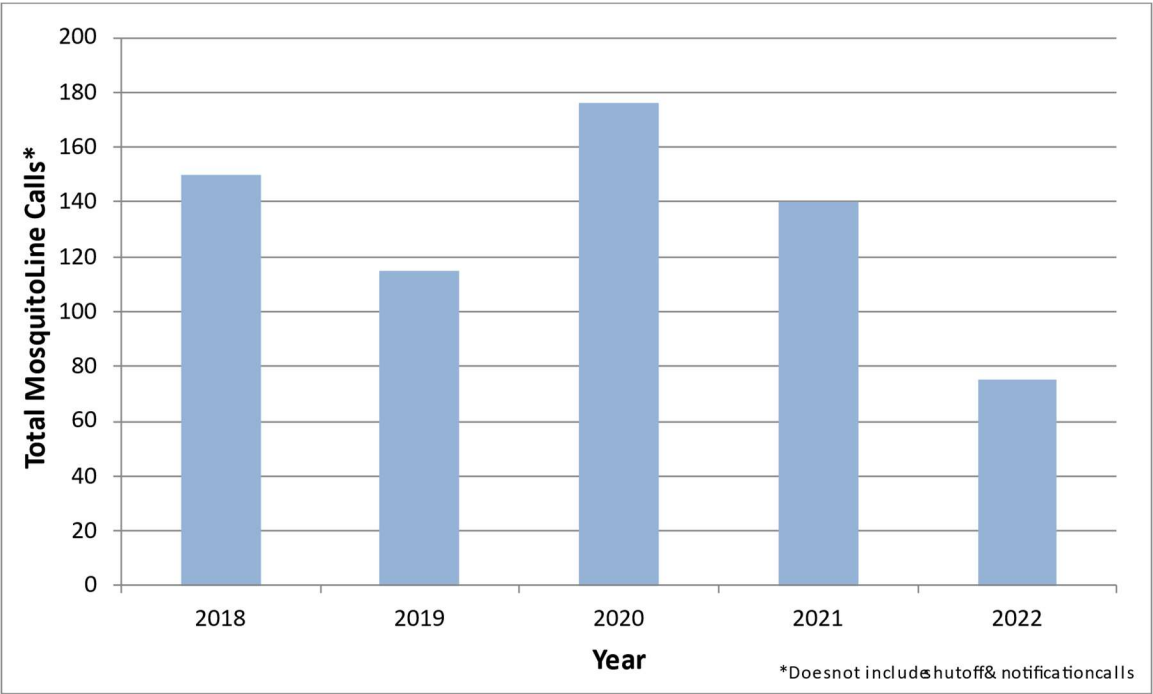


Figure 17 Comparison of Mosquito Control Calls by Year



*Appendix A: Boulder County Mosquito Control District Individual
Light Trap Summaries*

BC-02

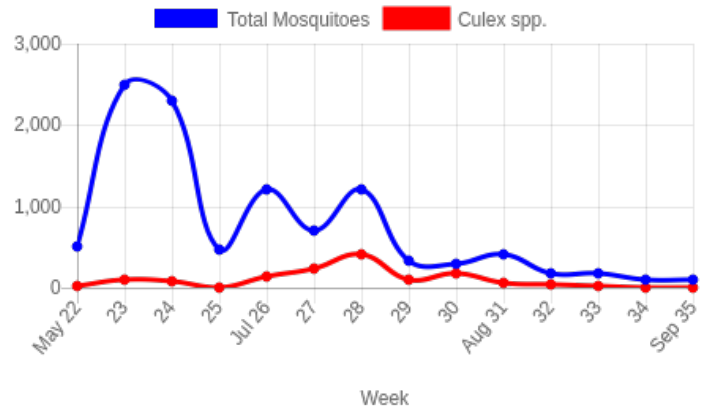
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Cottonwood Kennels
 GPS: 40.03469988689677, -105.18324997276066

Total number of trap/nights set: 15.0
 Total number of mosquitoes collected: 10,476.0
 Average mosquitoes per trap/night: 698.4
 Average Culex per trap/night: 94.0

Species collected and abundance:

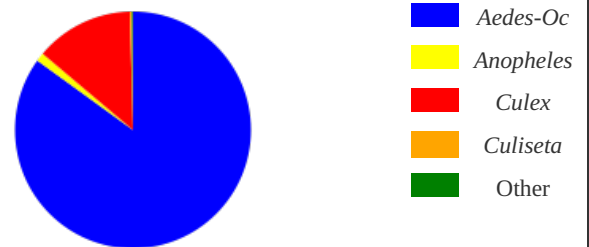
<i>Aedes cinereus</i>	4.0	0.0%
<i>Aedes dorsalis</i>	1.0	0.0%
<i>Aedes hendersoni</i>	18.0	0.2%
<i>Aedes increpitus</i>	2,886.0	27.5%
<i>Aedes melanimon</i>	146.0	1.4%
<i>Aedes trivittatus</i>	169.0	1.6%
<i>Aedes vexans</i>	5,676.0	54.2%
<i>Anopheles freeborni</i>	123.0	1.2%
<i>Coquillettia perturbans</i>	14.0	0.1%
<i>Culex pipiens</i>	19.0	0.2%
<i>Culex salinarius</i>	19.0	0.2%
<i>Culex tarsalis</i>	1,372.0	13.1%
<i>Culiseta inornata</i>	29.0	0.3%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	8,900.0	85.0%
<i>Anopheles</i>	123.0	1.2%
<i>Culex</i>	1,410.0	13.5%
<i>Culiseta</i>	29.0	0.3%
Other	14.0	0.1%



BC-03

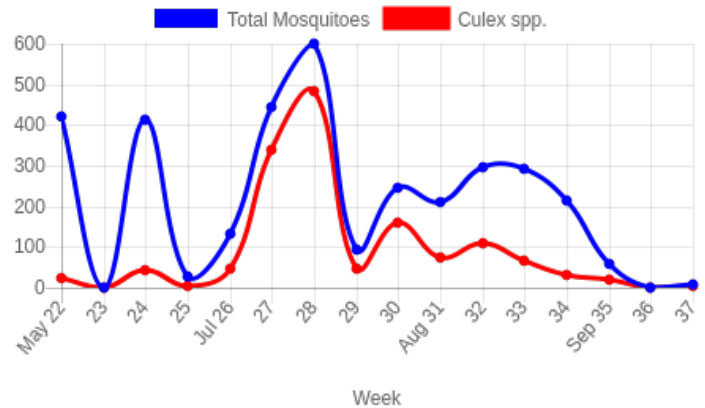
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Gunbarrel SE - Pali Way
 GPS: 40.05284991156167, -105.18390007317066

Total number of trap/nights set: 15.0
 Total number of mosquitoes collected: 3,459.0
 Average mosquitoes per trap/night: 230.6
 Average Culex per trap/night: 96.7

Species collected and abundance:

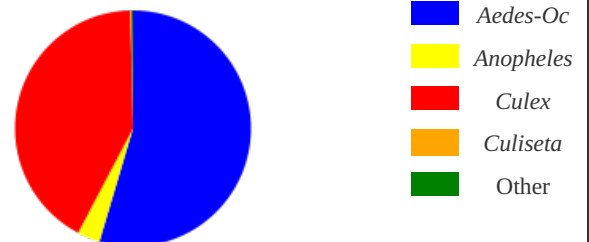
<i>Aedes dorsalis</i>	4.0	0.1%
<i>Aedes fitchii</i>	1.0	0.0%
<i>Aedes increpitus</i>	525.0	15.2%
<i>Aedes melanimon</i>	28.0	0.8%
<i>Aedes trivittatus</i>	17.0	0.5%
<i>Aedes vexans</i>	1,313.0	38.0%
<i>Anopheles freeborni</i>	108.0	3.1%
<i>Coquillettidia perturbans</i>	7.0	0.2%
<i>Culex pipiens</i>	71.0	2.1%
<i>Culex salinarius</i>	27.0	0.8%
<i>Culex tarsalis</i>	1,353.0	39.1%
<i>Culiseta inornata</i>	5.0	0.1%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,888.0	54.6%
<i>Anopheles</i>	108.0	3.1%
<i>Culex</i>	1,451.0	41.9%
<i>Culiseta</i>	5.0	0.1%
Other	7.0	0.2%



BC-04

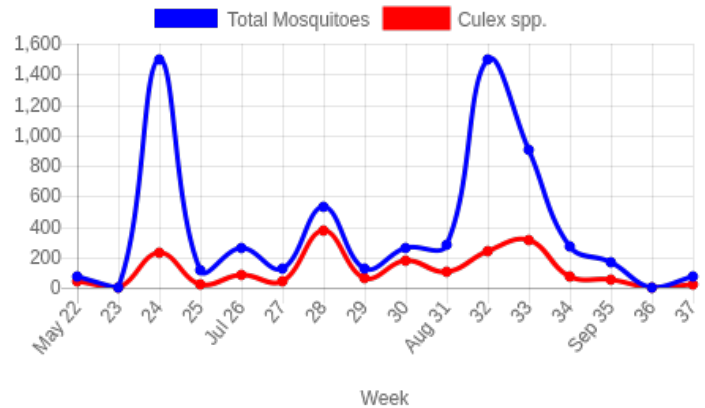
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Gunbarrel NW - Red Fox Hills
 GPS: 40.06164995704901, -105.19394997507334

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 6,192.0
 Average mosquitoes per trap/night: 387.0
 Average Culex per trap/night: 116.6

Species collected and abundance:

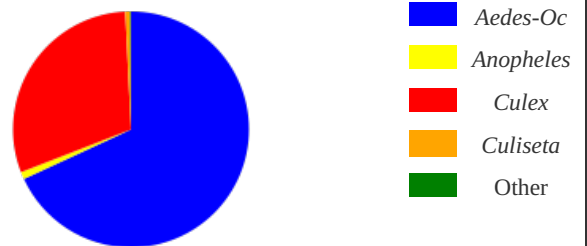
<i>Aedes dorsalis</i>	275.0	4.4%
<i>Aedes increpitus</i>	262.0	4.2%
<i>Aedes melanimon</i>	91.0	1.5%
<i>Aedes trivittatus</i>	6.0	0.1%
<i>Aedes vexans</i>	3,583.0	57.9%
<i>Anopheles freeborni</i>	62.0	1.0%
<i>Coquillettia perturbans</i>	6.0	0.1%
<i>Culex pipiens</i>	417.0	6.7%
<i>Culex salinarius</i>	104.0	1.7%
<i>Culex tarsalis</i>	1,344.0	21.7%
<i>Culiseta inornata</i>	42.0	0.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	4,217.0	68.1%
<i>Anopheles</i>	62.0	1.0%
<i>Culex</i>	1,865.0	30.1%
<i>Culiseta</i>	42.0	0.7%
Other	6.0	0.1%



BC-05

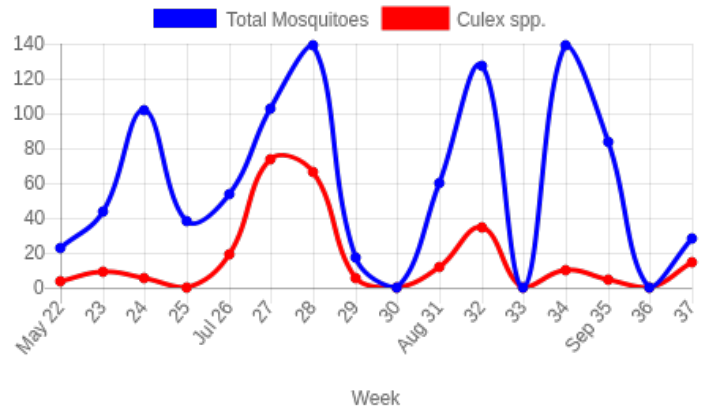
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Orange Orchard
 GPS: 40.05409998143732, -105.2547999098897

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 958.0
 Average mosquitoes per trap/night: 68.4
 Average Culex per trap/night: 18.6

Species collected and abundance:

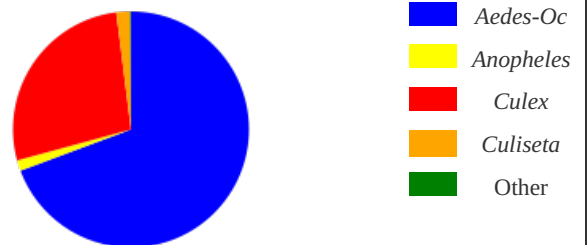
<i>Aedes increpitus</i>	19.0	2.0%
<i>Aedes melanimon</i>	1.0	0.1%
<i>Aedes trivittatus</i>	8.0	0.8%
<i>Aedes vexans</i>	636.0	66.4%
<i>Anopheles freeborni</i>	14.0	1.5%
<i>Coquillettidia perturbans</i>	1.0	0.1%
<i>Culex pipiens</i>	9.0	0.9%
<i>Culex salinarius</i>	3.0	0.3%
<i>Culex tarsalis</i>	249.0	26.0%
<i>Culiseta inornata</i>	18.0	1.9%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	664.0	69.3%
<i>Anopheles</i>	14.0	1.5%
<i>Culex</i>	261.0	27.2%
<i>Culiseta</i>	18.0	1.9%
Other	1.0	0.1%



BC-07

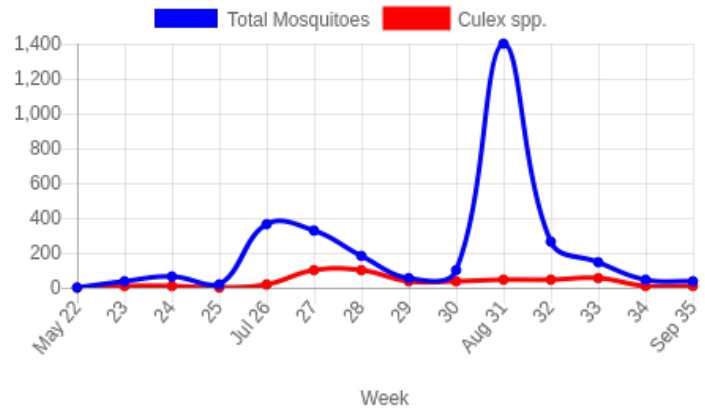
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Brigadoon Glen/Left Hand Creek
 GPS: 40.10855006351473, -105.20234998315573

Total number of trap/nights set: 15.0
 Total number of mosquitoes collected: 3,044.0
 Average mosquitoes per trap/night: 202.9
 Average Culex per trap/night: 30.7

Species collected and abundance:

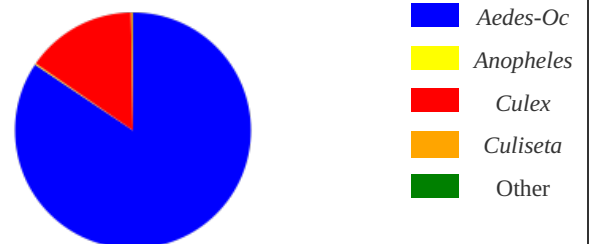
<i>Aedes dorsalis</i>	21.0	0.7%
<i>Aedes hendersoni</i>	1.0	0.0%
<i>Aedes increpitus</i>	1.0	0.0%
<i>Aedes melanimon</i>	10.0	0.3%
<i>Aedes trivittatus</i>	1,621.0	53.3%
<i>Aedes vexans</i>	916.0	30.1%
<i>Anopheles freeborni</i>	5.0	0.2%
<i>Coquillettidia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	1.0	0.0%
<i>Culex salinarius</i>	2.0	0.1%
<i>Culex tarsalis</i>	458.0	15.0%
<i>Culiseta inornata</i>	7.0	0.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,570.0	84.4%
<i>Anopheles</i>	5.0	0.2%
<i>Culex</i>	461.0	15.1%
<i>Culiseta</i>	7.0	0.2%
Other	1.0	0.0%



BC-08

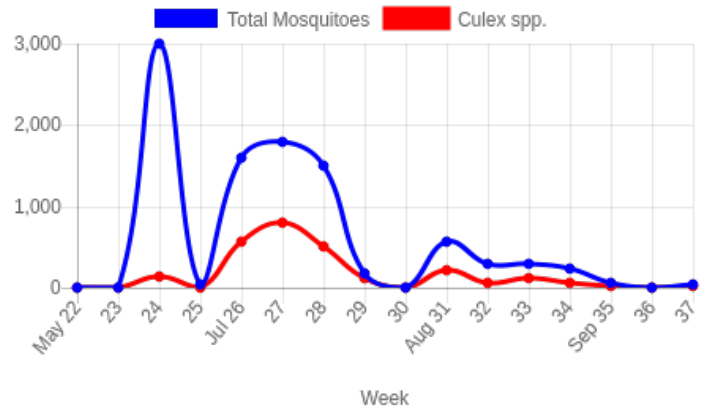
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Boulder Hills
 GPS: 40.13065002302139, -105.21675009280443

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 9,606.0
 Average mosquitoes per trap/night: 600.4
 Average Culex per trap/night: 165.3

Species collected and abundance:

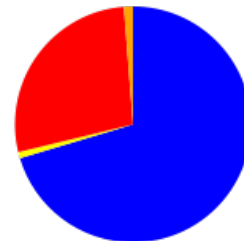
<i>Aedes dorsalis</i>	242.0	2.5%
<i>Aedes fitchii</i>	5.0	0.1%
<i>Aedes hendersoni</i>	1.0	0.0%
<i>Aedes increpitus</i>	232.0	2.4%
<i>Aedes melanimon</i>	293.0	3.1%
<i>Aedes trivittatus</i>	2,415.0	25.1%
<i>Aedes vexans</i>	3,572.0	37.2%
<i>Anopheles freeborni</i>	83.0	0.9%
<i>Culex pipiens</i>	34.0	0.4%
<i>Culex salinarius</i>	8.0	0.1%
<i>Culex tarsalis</i>	2,598.0	27.0%
<i>Culex territans</i>	5.0	0.1%
<i>Culiseta incidens</i>	2.0	0.0%
<i>Culiseta inornata</i>	116.0	1.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	6,760.0	70.4%
<i>Anopheles</i>	83.0	0.9%
<i>Culex</i>	2,645.0	27.5%
<i>Culiseta</i>	118.0	1.2%
Other	0.0	0.0%



BC-11

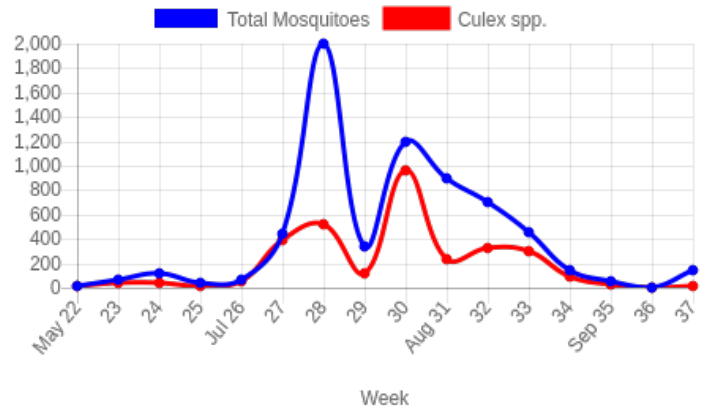
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Niwot East - Majestic Road
 GPS: 40.1099998900239, -105.13030014932157

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 6,676.0
 Average mosquitoes per trap/night: 417.3
 Average Culex per trap/night: 198.2

Species collected and abundance:

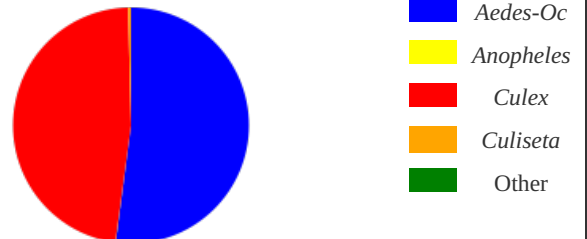
<i>Aedes dorsalis</i>	338.0	5.1%
<i>Aedes increpitus</i>	1.0	0.0%
<i>Aedes melanimon</i>	47.0	0.7%
<i>Aedes trivittatus</i>	21.0	0.3%
<i>Aedes vexans</i>	3,070.0	46.0%
<i>Anopheles freeborni</i>	3.0	0.0%
<i>Culex pipiens</i>	56.0	0.8%
<i>Culex salinarius</i>	44.0	0.7%
<i>Culex tarsalis</i>	3,071.0	46.0%
<i>Culiseta inornata</i>	25.0	0.4%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,477.0	52.1%
<i>Anopheles</i>	3.0	0.0%
<i>Culex</i>	3,171.0	47.5%
<i>Culiseta</i>	25.0	0.4%
Other	0.0	0.0%



BC-17

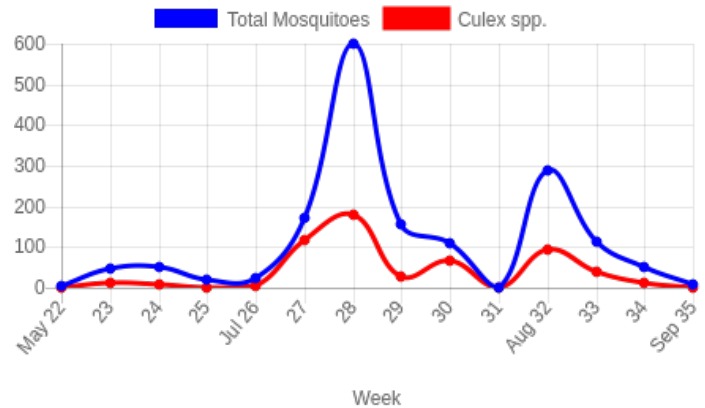
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Niwot Central
 GPS: 40.10180003989972, -105.16405005007982

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 1,653.0
 Average mosquitoes per trap/night: 118.1
 Average Culex per trap/night: 40.4

Species collected and abundance:

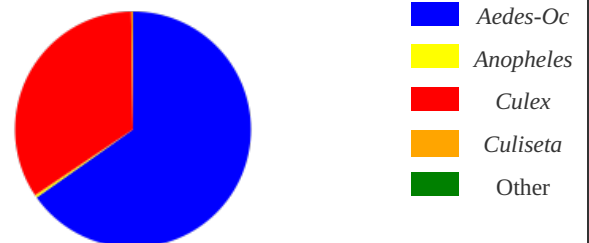
<i>Aedes dorsalis</i>	8.0	0.5%
<i>Aedes increpitus</i>	9.0	0.5%
<i>Aedes melanimon</i>	6.0	0.4%
<i>Aedes trivittatus</i>	16.0	1.0%
<i>Aedes vexans</i>	1,039.0	62.9%
<i>Anopheles freeborni</i>	6.0	0.4%
<i>Culex pipiens</i>	15.0	0.9%
<i>Culex salinarius</i>	5.0	0.3%
<i>Culex tarsalis</i>	545.0	33.0%
<i>Culiseta inornata</i>	4.0	0.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,078.0	65.2%
<i>Anopheles</i>	6.0	0.4%
<i>Culex</i>	565.0	34.2%
<i>Culiseta</i>	4.0	0.2%
Other	0.0	0.0%



BC-20

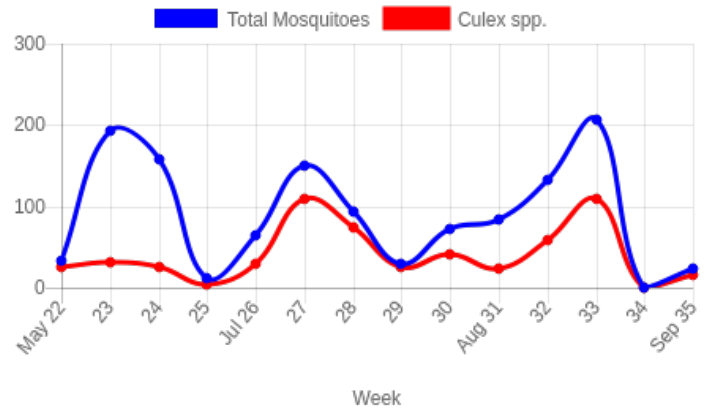
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Willows/Gunbarrel Commons Park
 GPS: 40.05679996173248, -105.21199990063906

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 1,253.0
 Average mosquitoes per trap/night: 89.5
 Average Culex per trap/night: 40.8

Species collected and abundance:

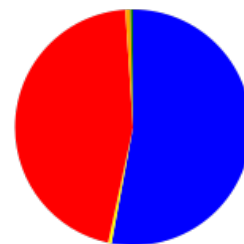
<i>Aedes dorsalis</i>	4.0	0.3%
<i>Aedes increpitus</i>	47.0	3.8%
<i>Aedes melanimon</i>	4.0	0.3%
<i>Aedes trivittatus</i>	4.0	0.3%
<i>Aedes vexans</i>	604.0	48.2%
<i>Anopheles freeborni</i>	6.0	0.5%
<i>Coquillettia perturbans</i>	4.0	0.3%
<i>Culex pipiens</i>	111.0	8.9%
<i>Culex salinarius</i>	38.0	3.0%
<i>Culex tarsalis</i>	422.0	33.7%
<i>Culiseta inornata</i>	9.0	0.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	663.0	52.9%
<i>Anopheles</i>	6.0	0.5%
<i>Culex</i>	571.0	45.6%
<i>Culiseta</i>	9.0	0.7%
Other	4.0	0.3%



BC-22

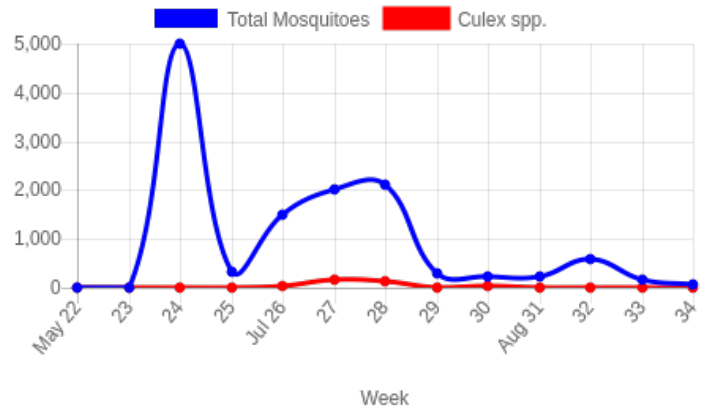
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: South Boulder Creek at Marshall Rd
 GPS: 39.95944874334226, -105.23227907717228

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 12,561.0
 Average mosquitoes per trap/night: 897.2
 Average Culex per trap/night: 28.1

Species collected and abundance:

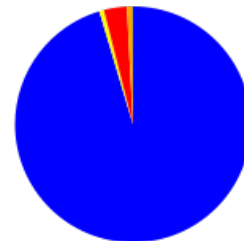
<i>Aedes cinereus</i>	23.0	0.2%
<i>Aedes dorsalis</i>	9.0	0.1%
<i>Aedes fitchii</i>	2.0	0.0%
<i>Aedes hendersoni</i>	42.0	0.3%
<i>Aedes increpitus</i>	323.0	2.6%
<i>Aedes melanimon</i>	616.0	4.9%
<i>Aedes trivittatus</i>	266.0	2.1%
<i>Aedes vexans</i>	10,703.0	85.2%
<i>Anopheles freeborni</i>	81.0	0.6%
<i>Coquillettia perturbans</i>	6.0	0.0%
<i>Culex pipiens</i>	12.0	0.1%
<i>Culex salinarius</i>	7.0	0.1%
<i>Culex tarsalis</i>	374.0	3.0%
<i>Culiseta inornata</i>	97.0	0.8%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	11,984.0	95.4%
<i>Anopheles</i>	81.0	0.6%
<i>Culex</i>	393.0	3.1%
<i>Culiseta</i>	97.0	0.8%
Other	6.0	0.0%



■ *Aedes-Oc*
■ *Anopheles*
■ *Culex*
■ *Culiseta*
■ Other

BC-23

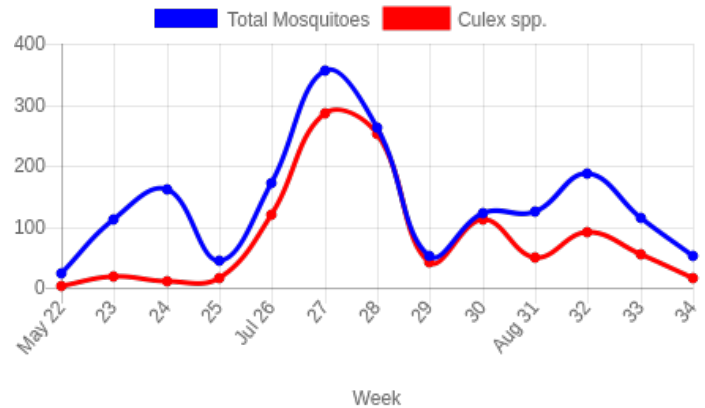
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Louisville - Spanish Hills
 GPS: 39.98264987357784, -105.17714995890856

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 1,786.0
 Average mosquitoes per trap/night: 127.6
 Average Culex per trap/night: 76.7

Species collected and abundance:

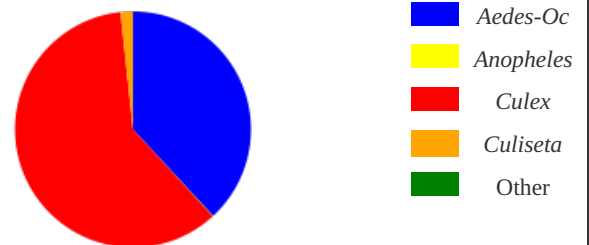
<i>Aedes dorsalis</i>	5.0	0.3%
<i>Aedes increpitus</i>	5.0	0.3%
<i>Aedes melanimon</i>	136.0	7.6%
<i>Aedes trivittatus</i>	4.0	0.2%
<i>Aedes vexans</i>	531.0	29.7%
<i>Anopheles freeborni</i>	1.0	0.1%
<i>Culex pipiens</i>	62.0	3.5%
<i>Culex salinarius</i>	24.0	1.3%
<i>Culex tarsalis</i>	988.0	55.3%
<i>Culiseta inornata</i>	30.0	1.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	681.0	38.1%
<i>Anopheles</i>	1.0	0.1%
<i>Culex</i>	1,074.0	60.1%
<i>Culiseta</i>	30.0	1.7%
Other	0.0	0.0%



BC-24

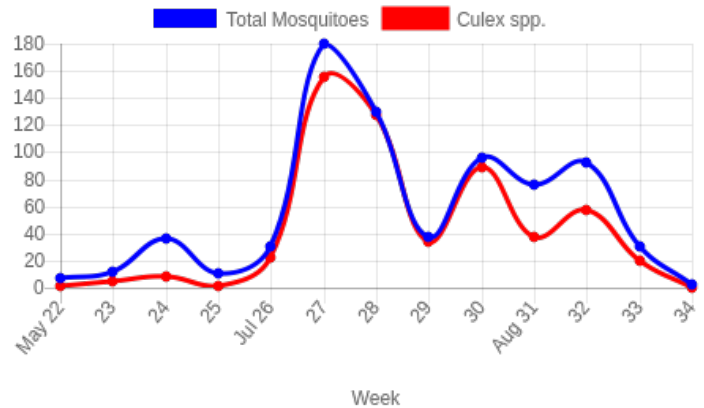
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Louisville - Wewoka Drive
 GPS: 39.998750058526376, -105.17175000160933

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 741.0
 Average mosquitoes per trap/night: 52.9
 Average Culex per trap/night: 39.8

Species collected and abundance:

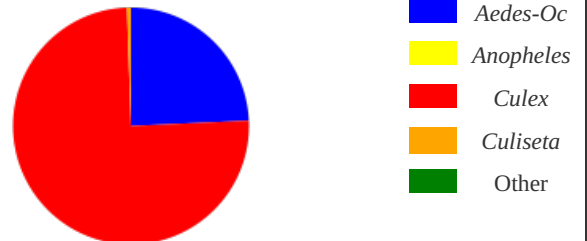
<i>Aedes dorsalis</i>	5.0	0.7%
<i>Aedes melanimon</i>	36.0	4.9%
<i>Aedes trivittatus</i>	1.0	0.1%
<i>Aedes vexans</i>	138.0	18.6%
<i>Culex pipiens</i>	5.0	0.7%
<i>Culex salinarius</i>	2.0	0.3%
<i>Culex tarsalis</i>	550.0	74.2%
<i>Culiseta inornata</i>	4.0	0.5%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	180.0	24.3%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	557.0	75.2%
<i>Culiseta</i>	4.0	0.5%
Other	0.0	0.0%



BC-30

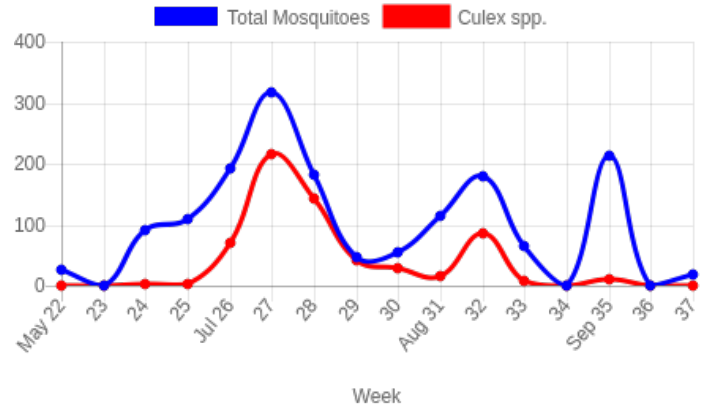
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Brownsville - Random Court
 GPS: 40.04734994769696, -105.08964993059634

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 1,612.0
 Average mosquitoes per trap/night: 115.1
 Average Culex per trap/night: 45.0

Species collected and abundance:

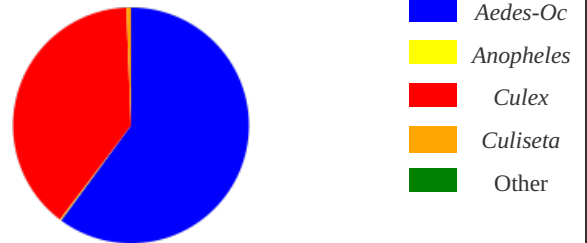
<i>Aedes dorsalis</i>	32.0	2.0%
<i>Aedes increpitus</i>	2.0	0.1%
<i>Aedes melanimon</i>	25.0	1.6%
<i>Aedes trivittatus</i>	9.0	0.6%
<i>Aedes vexans</i>	901.0	55.9%
<i>Anopheles freeborni</i>	3.0	0.2%
<i>Culex pipiens</i>	14.0	0.9%
<i>Culex salinarius</i>	3.0	0.2%
<i>Culex tarsalis</i>	613.0	38.0%
<i>Culiseta inornata</i>	10.0	0.6%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	969.0	60.1%
<i>Anopheles</i>	3.0	0.2%
<i>Culex</i>	630.0	39.1%
<i>Culiseta</i>	10.0	0.6%
Other	0.0	0.0%



BC-31

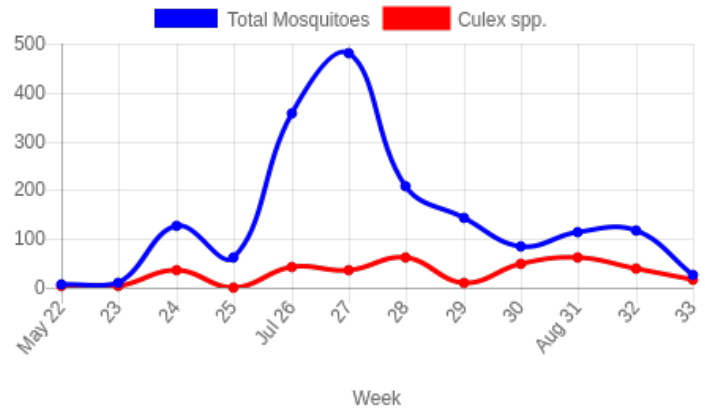
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Divide Reservoir
 GPS: 40.23899997117141, -105.08389994502066

Total number of trap/nights set: 13.0
 Total number of mosquitoes collected: 1,738.0
 Average mosquitoes per trap/night: 133.7
 Average Culex per trap/night: 27.9

Species collected and abundance:

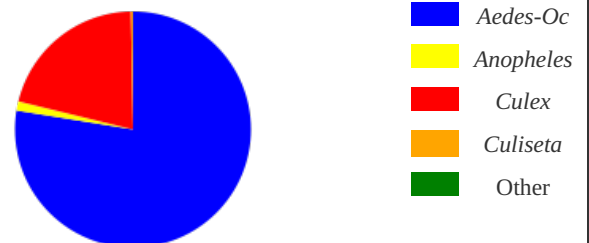
<i>Aedes dorsalis</i>	69.0	4.0%
<i>Aedes increpitus</i>	2.0	0.1%
<i>Aedes melanimon</i>	71.0	4.1%
<i>Aedes nigromaculis</i>	3.0	0.2%
<i>Aedes trivittatus</i>	335.0	19.3%
<i>Aedes vexans</i>	868.0	49.9%
<i>Anopheles freeborni</i>	22.0	1.3%
<i>Culex pipiens</i>	6.0	0.3%
<i>Culex tarsalis</i>	357.0	20.5%
<i>Culiseta inornata</i>	5.0	0.3%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,348.0	77.6%
<i>Anopheles</i>	22.0	1.3%
<i>Culex</i>	363.0	20.9%
<i>Culiseta</i>	5.0	0.3%
Other	0.0	0.0%



BC-33

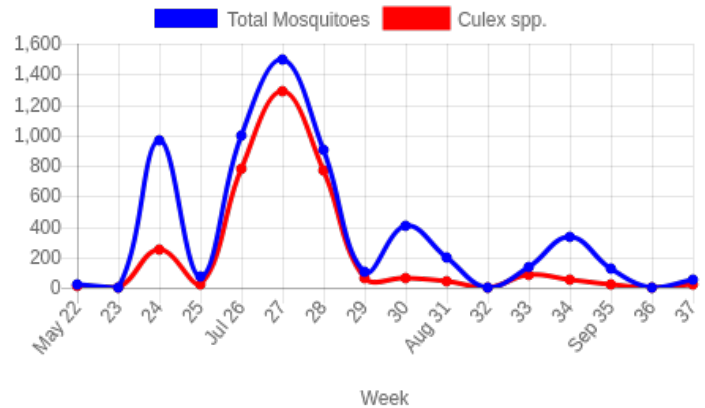
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Lake Valley Estates
 GPS: 40.0896500025398, -105.2624998614192

Total number of trap/nights set: 15.0
 Total number of mosquitoes collected: 5,832.0
 Average mosquitoes per trap/night: 388.8
 Average Culex per trap/night: 230.9

Species collected and abundance:

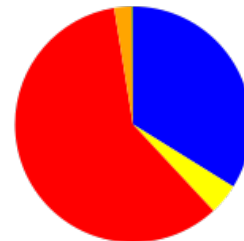
<i>Aedes cinereus</i>	40.0	0.7%
<i>Aedes dorsalis</i>	11.0	0.2%
<i>Aedes hendersoni</i>	1.0	0.0%
<i>Aedes increpitus</i>	49.0	0.8%
<i>Aedes melanimon</i>	20.0	0.3%
<i>Aedes trivittatus</i>	171.0	2.9%
<i>Aedes vexans</i>	1,682.0	28.8%
<i>Anopheles freeborni</i>	246.0	4.2%
<i>Coquillettidia perturbans</i>	6.0	0.1%
<i>Culex pipiens</i>	101.0	1.7%
<i>Culex salinarius</i>	33.0	0.6%
<i>Culex tarsalis</i>	3,329.0	57.1%
<i>Culiseta incidens</i>	1.0	0.0%
<i>Culiseta inornata</i>	142.0	2.4%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,974.0	33.8%
<i>Anopheles</i>	246.0	4.2%
<i>Culex</i>	3,463.0	59.4%
<i>Culiseta</i>	143.0	2.5%
Other	6.0	0.1%



■ *Aedes-Oc*
■ *Anopheles*
■ *Culex*
■ *Culiseta*
■ Other

BC-34

Season: 05/01/2022 - 09/30/2022

Trap Type: CDC Light Trap

Location: Cline Trout Farm

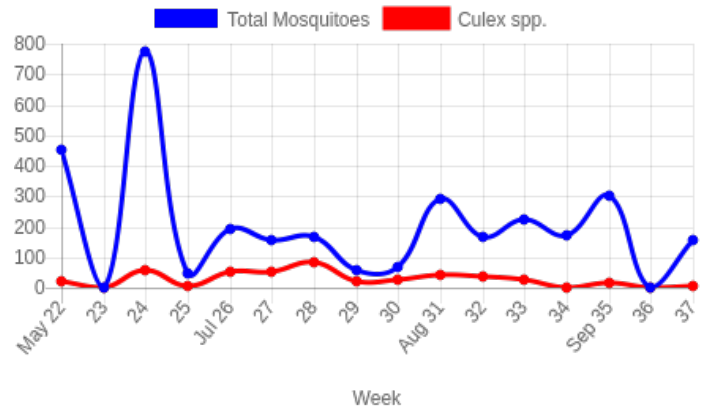
GPS: 40.032999959590526, -105.22269990295172

Total number of trap/nights set: 16.0
Total number of mosquitoes collected: 3,223.0
Average mosquitoes per trap/night: 201.4
Average Culex per trap/night: 28.3

Species collected and abundance:

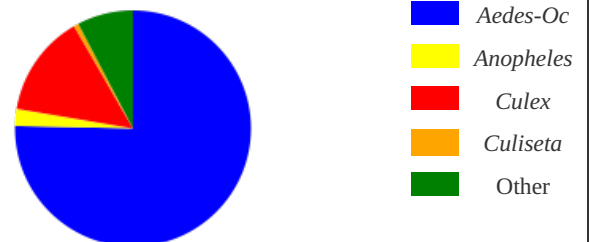
<i>Aedes dorsalis</i>	2.0	0.1%
<i>Aedes hendersoni</i>	3.0	0.1%
<i>Aedes increpitus</i>	200.0	6.2%
<i>Aedes melanimon</i>	17.0	0.5%
<i>Aedes trivittatus</i>	554.0	17.2%
<i>Aedes vexans</i>	1,652.0	51.3%
<i>Anopheles freeborni</i>	75.0	2.3%
<i>Coquillettidia perturbans</i>	247.0	7.7%
<i>Culex pipiens</i>	41.0	1.3%
<i>Culex salinarius</i>	13.0	0.4%
<i>Culex tarsalis</i>	398.0	12.3%
<i>Culiseta inornata</i>	21.0	0.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,428.0	75.3%
<i>Anopheles</i>	75.0	2.3%
<i>Culex</i>	452.0	14.0%
<i>Culiseta</i>	21.0	0.7%
Other	247.0	7.7%



BC-36

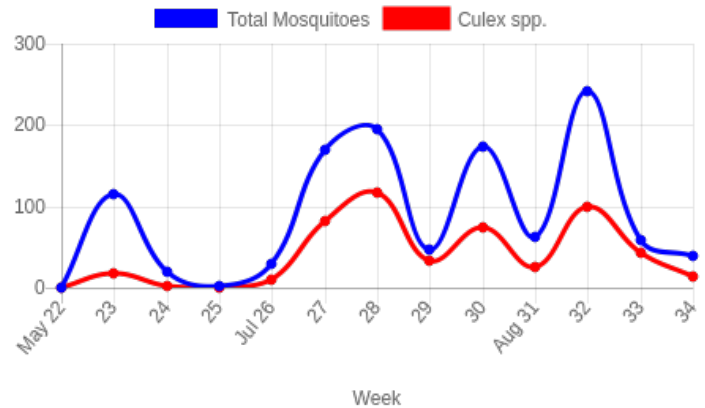
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Yellowstone Road
 GPS: 40.2467999152123, -105.15225000679492

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 1,154.0
 Average mosquitoes per trap/night: 82.4
 Average Culex per trap/night: 37.0

Species collected and abundance:

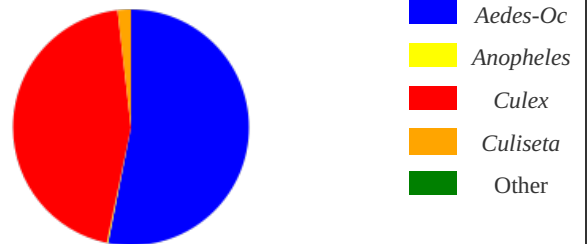
<i>Aedes dorsalis</i>	8.0	0.7%
<i>Aedes hendersoni</i>	1.0	0.1%
<i>Aedes increpitus</i>	5.0	0.4%
<i>Aedes melanimon</i>	96.0	8.3%
<i>Aedes trivittatus</i>	90.0	7.8%
<i>Aedes vexans</i>	413.0	35.8%
<i>Anopheles freeborni</i>	2.0	0.2%
<i>Culex pipiens</i>	5.0	0.4%
<i>Culex salinarius</i>	1.0	0.1%
<i>Culex tarsalis</i>	512.0	44.4%
<i>Culiseta inornata</i>	21.0	1.8%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	613.0	53.1%
<i>Anopheles</i>	2.0	0.2%
<i>Culex</i>	518.0	44.9%
<i>Culiseta</i>	21.0	1.8%
Other	0.0	0.0%



BC-37

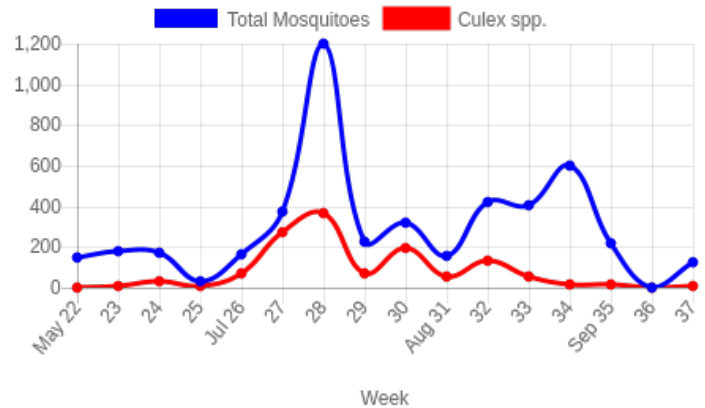
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Burch Reservoir
 GPS: 40.2025501103469, -105.18224984407425

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 4,737.0
 Average mosquitoes per trap/night: 296.1
 Average Culex per trap/night: 82.3

Species collected and abundance:

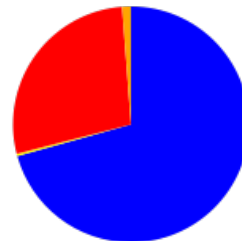
<i>Aedes cinereus</i>	1.0	0.0%
<i>Aedes dorsalis</i>	17.0	0.4%
<i>Aedes hendersoni</i>	7.0	0.1%
<i>Aedes increpitus</i>	72.0	1.5%
<i>Aedes melanimon</i>	24.0	0.5%
<i>Aedes trivittatus</i>	920.0	19.4%
<i>Aedes vexans</i>	2,307.0	48.7%
<i>Anopheles freeborni</i>	15.0	0.3%
<i>Coquillettia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	27.0	0.6%
<i>Culex salinarius</i>	20.0	0.4%
<i>Culex tarsalis</i>	1,268.0	26.8%
<i>Culex territans</i>	2.0	0.0%
<i>Culiseta inornata</i>	56.0	1.2%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,348.0	70.7%
<i>Anopheles</i>	15.0	0.3%
<i>Culex</i>	1,317.0	27.8%
<i>Culiseta</i>	56.0	1.2%
Other	1.0	0.0%



BC-39

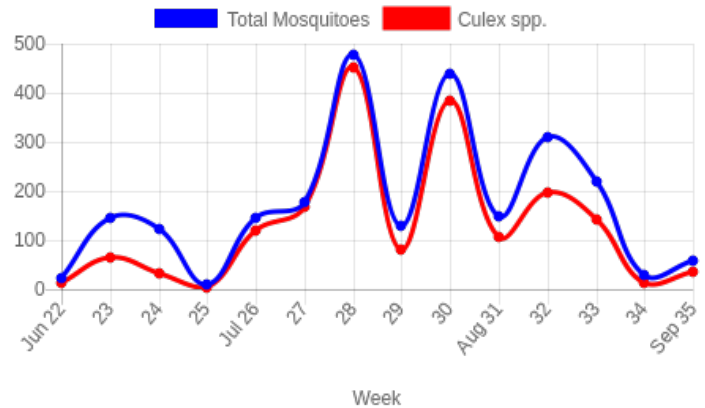
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Heatherwood
 GPS: 40.062150077142704, -105.16924984753132

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 2,429.0
 Average mosquitoes per trap/night: 173.5
 Average Culex per trap/night: 129.1

Species collected and abundance:

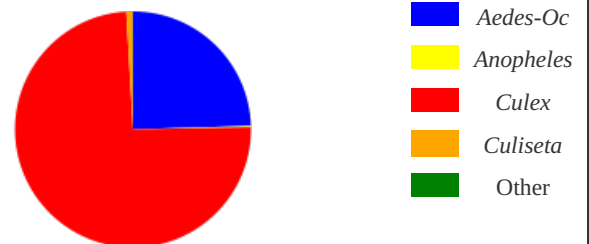
<i>Aedes dorsalis</i>	86.0	3.5%
<i>Aedes increpitus</i>	1.0	0.0%
<i>Aedes melanimon</i>	64.0	2.6%
<i>Aedes trivittatus</i>	7.0	0.3%
<i>Aedes vexans</i>	438.0	18.0%
<i>Anopheles freeborni</i>	4.0	0.2%
<i>Coquillettia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	82.0	3.4%
<i>Culex salinarius</i>	31.0	1.3%
<i>Culex tarsalis</i>	1,694.0	69.7%
<i>Culiseta inornata</i>	21.0	0.9%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	596.0	24.5%
<i>Anopheles</i>	4.0	0.2%
<i>Culex</i>	1,807.0	74.4%
<i>Culiseta</i>	21.0	0.9%
Other	1.0	0.0%



BC-40

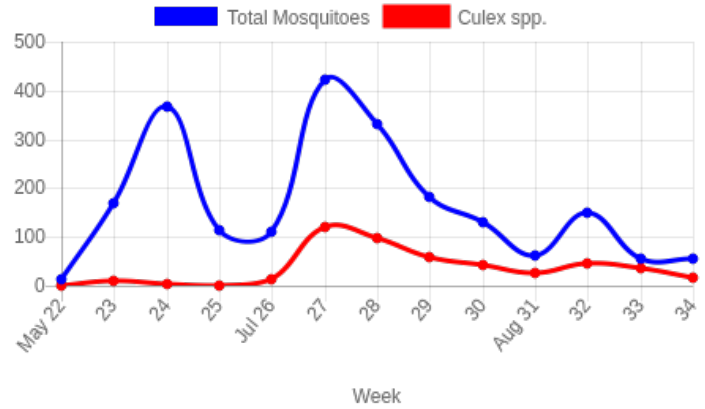
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Chance Acres
 GPS: 40.15964996228525, -105.20589988678694

Total number of trap/nights set: 14.0
 Total number of mosquitoes collected: 2,158.0
 Average mosquitoes per trap/night: 154.1
 Average Culex per trap/night: 34.0

Species collected and abundance:

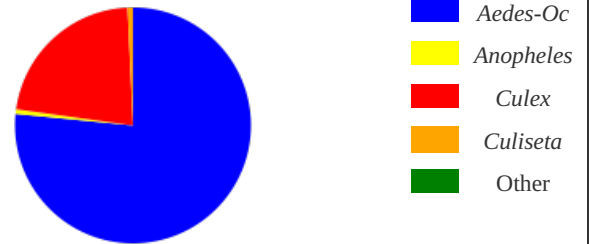
<i>Aedes dorsalis</i>	80.0	3.7%
<i>Aedes hendersoni</i>	2.0	0.1%
<i>Aedes increpitus</i>	9.0	0.4%
<i>Aedes melanimon</i>	14.0	0.6%
<i>Aedes trivittatus</i>	160.0	7.4%
<i>Aedes vexans</i>	1,387.0	64.3%
<i>Anopheles freeborni</i>	14.0	0.6%
<i>Culex pipiens</i>	5.0	0.2%
<i>Culex salinarius</i>	4.0	0.2%
<i>Culex tarsalis</i>	467.0	21.6%
<i>Culiseta inornata</i>	16.0	0.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,652.0	76.6%
<i>Anopheles</i>	14.0	0.6%
<i>Culex</i>	476.0	22.1%
<i>Culiseta</i>	16.0	0.7%
Other	0.0	0.0%



BC-47

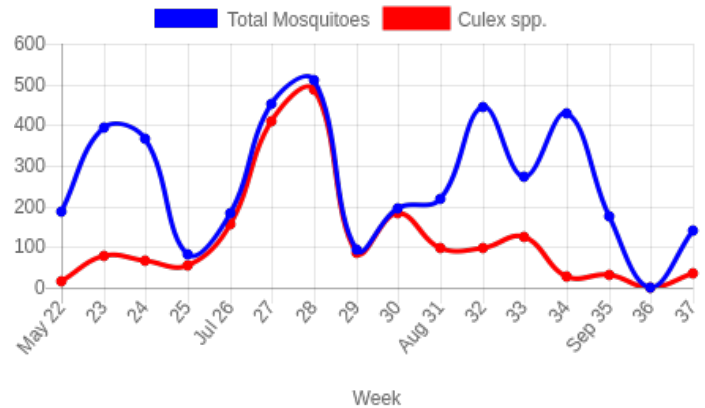
Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Baseline Heights - Chinook Way
 GPS: 40.00951213723779, -105.19707709550858

Total number of trap/nights set: 16.0
 Total number of mosquitoes collected: 4,142.0
 Average mosquitoes per trap/night: 258.9
 Average Culex per trap/night: 122.2

Species collected and abundance:

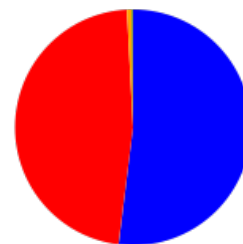
<i>Aedes dorsalis</i>	361.0	8.7%
<i>Aedes increpitus</i>	11.0	0.3%
<i>Aedes melanimon</i>	171.0	4.1%
<i>Aedes trivittatus</i>	6.0	0.1%
<i>Aedes vexans</i>	1,603.0	38.7%
<i>Anopheles freeborni</i>	1.0	0.0%
<i>Coquillettia perturbans</i>	4.0	0.1%
<i>Culex pipiens</i>	88.0	2.1%
<i>Culex salinarius</i>	36.0	0.9%
<i>Culex tarsalis</i>	1,831.0	44.2%
<i>Culiseta inornata</i>	30.0	0.7%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,152.0	52.0%
<i>Anopheles</i>	1.0	0.0%
<i>Culex</i>	1,955.0	47.2%
<i>Culiseta</i>	30.0	0.7%
Other	4.0	0.1%



■ *Aedes-Oc*
■ *Anopheles*
■ *Culex*
■ *Culiseta*
■ Other

BC-49

Season: 05/01/2022 - 09/30/2022

Trap Type: CDC Light Trap

Location: Burke Lake

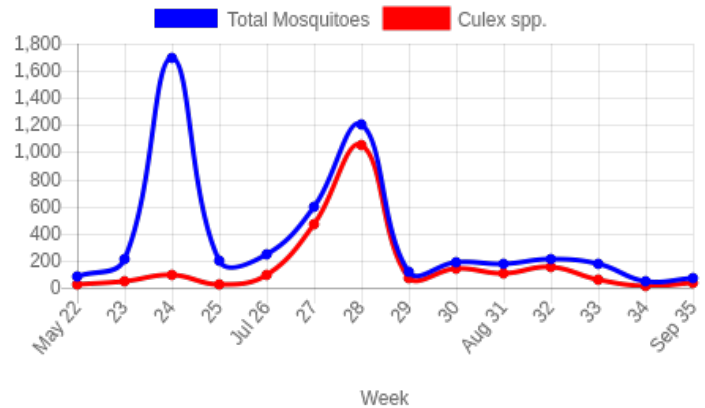
GPS: 40.016343976114676, -105.14925733208656

Total number of trap/nights set: 15.0
Total number of mosquitoes collected: 5,234.0
Average mosquitoes per trap/night: 348.9
Average Culex per trap/night: 159.9

Species collected and abundance:

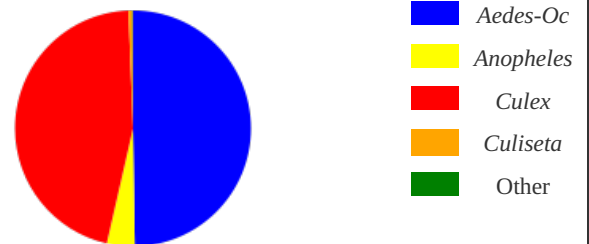
<i>Aedes dorsalis</i>	105.0	2.0%
<i>Aedes hendersoni</i>	9.0	0.2%
<i>Aedes increpitus</i>	13.0	0.2%
<i>Aedes melanimon</i>	97.0	1.9%
<i>Aedes trivittatus</i>	47.0	0.9%
<i>Aedes vexans</i>	2,333.0	44.6%
<i>Anopheles freeborni</i>	200.0	3.8%
<i>Coquillettidia perturbans</i>	3.0	0.1%
<i>Culex pipiens</i>	47.0	0.9%
<i>Culex salinarius</i>	33.0	0.6%
<i>Culex tarsalis</i>	2,318.0	44.3%
<i>Culiseta inornata</i>	29.0	0.6%

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,604.0	49.8%
<i>Anopheles</i>	200.0	3.8%
<i>Culex</i>	2,398.0	45.8%
<i>Culiseta</i>	29.0	0.6%
Other	3.0	0.1%



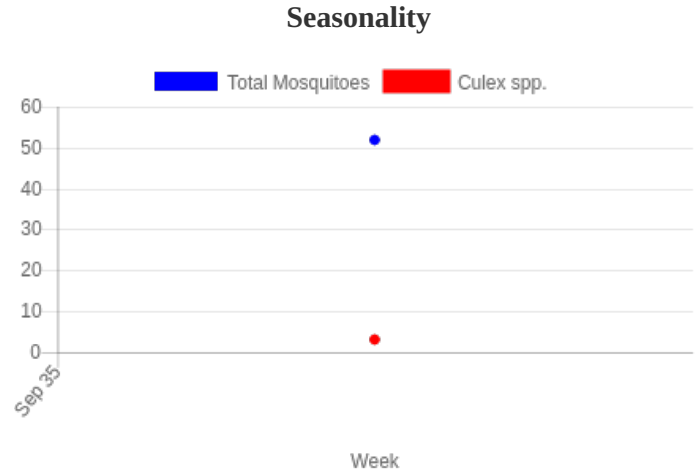
F4 Sombrero Marsh

Season: 05/01/2022 - 09/30/2022
 Trap Type: CDC Light Trap
 Location: Sombrero Marsh
 GPS: 40.01072294147664, -105.2092308551073

Total number of trap/nights set: 1.0
 Total number of mosquitoes collected: 52.0
 Average mosquitoes per trap/night: 52.0
 Average Culex per trap/night: 3.0

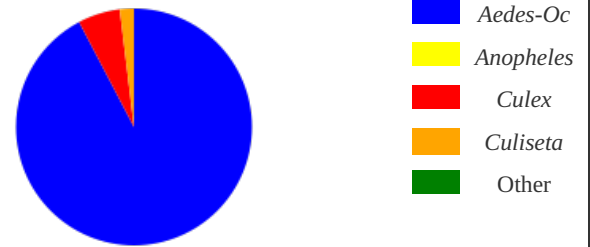
Species collected and abundance:

<i>Aedes dorsalis</i>	7.0	13.5%
<i>Aedes vexans</i>	41.0	78.8%
<i>Culex pipiens</i>	1.0	1.9%
<i>Culex tarsalis</i>	2.0	3.8%
<i>Culiseta inornata</i>	1.0	1.9%



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	48.0	92.3%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	3.0	5.8%
<i>Culiseta</i>	1.0	1.9%
Other	0.0	0.0%



*Appendix B: Adult Sample Pool Test Results for West Nile Virus
Positive Location*



Arboviral Surveillance Results

Start Date: 06/01/2022 End Date: 09/30/2022

Boulder County Mosquito Control District

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area BC-06 Test Results								
BC-08	06/26/2022	CDC Light Trap	06/27/2022	BC01145	<i>Culex tarsalis</i>	3	Negative	RT-PCR
BC-08	07/03/2022	CDC Light Trap	07/06/2022	BC01150	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-08	07/03/2022	CDC Light Trap	07/06/2022	BC01151	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-08	07/10/2022	CDC Light Trap	07/13/2022	BC01166	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-08	07/17/2022	CDC Light Trap	07/20/2022	BC01181	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-08	07/24/2022	CDC Light Trap	07/27/2022	BC01195	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-08	07/24/2022	CDC Light Trap	07/27/2022	BC01197	<i>Culex tarsalis</i>	33	Negative	RT-PCR
BC-08	08/01/2022	CDC Light Trap	08/02/2022	BC01210	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-08	08/07/2022	CDC Light Trap	08/09/2022	BC01225	<i>Culex tarsalis</i>	44	Negative	RT-PCR
BC-08	08/14/2022	CDC Light Trap	08/16/2022	BC01241	<i>Culex tarsalis</i>	57	Negative	RT-PCR
BC-08	08/21/2022	CDC Light Trap	08/24/2022	BC01255	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-08	08/28/2022	CDC Light Trap	08/30/2022	BC01270	<i>Culex tarsalis</i>	57	Negative	RT-PCR
BC-08	09/04/2022	CDC Light Trap	09/06/2022	BC01279	<i>Culex tarsalis</i>	14	WNV+	RT-PCR
BC-08	09/12/2022	CDC Light Trap	09/13/2022	BC01286	<i>Culex tarsalis</i>	17	Negative	RT-PCR
Treatment Area BC-08 Test Results								
BC-11	06/26/2022	CDC Light Trap	06/27/2022	BC01145	<i>Culex tarsalis</i>	11	Negative	RT-PCR
BC-11	07/03/2022	CDC Light Trap	07/06/2022	BC01152	<i>Culex tarsalis</i>	53	WNV+	RT-PCR
BC-11	07/10/2022	CDC Light Trap	07/13/2022	BC01167	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/17/2022	CDC Light Trap	07/20/2022	BC01182	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	07/24/2022	CDC Light Trap	07/27/2022	BC01196	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	07/24/2022	CDC Light Trap	07/27/2022	BC01197	<i>Culex tarsalis</i>	32	Negative	RT-PCR
BC-11	07/31/2022	CDC Light Trap	08/02/2022	BC01211	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	07/31/2022	CDC Light Trap	08/02/2022	BC01212	<i>Culex tarsalis</i>	65	WNV+	RT-PCR

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
BC-11	08/07/2022	CDC Light Trap	08/09/2022	BC01224	<i>Culex tarsalis</i>	2	Negative	RT-PCR
BC-11	08/07/2022	CDC Light Trap	08/09/2022	BC01225	<i>Culex tarsalis</i>	10	Negative	RT-PCR
BC-11	08/07/2022	CDC Light Trap	08/09/2022	BC01226	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	08/07/2022	CDC Light Trap	08/09/2022	BC01227	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	08/14/2022	CDC Light Trap	08/16/2022	BC01242	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	08/14/2022	CDC Light Trap	08/16/2022	BC01243	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	08/21/2022	CDC Light Trap	08/24/2022	BC01254	<i>Culex tarsalis</i>	17	Negative	RT-PCR
BC-11	08/21/2022	CDC Light Trap	08/24/2022	BC01256	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	08/21/2022	CDC Light Trap	08/24/2022	BC01257	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	08/21/2022	CDC Light Trap	08/24/2022	BC01258	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	08/28/2022	CDC Light Trap	08/30/2022	BC01269	<i>Culex tarsalis</i>	33	WNV+	RT-PCR
BC-11	08/28/2022	CDC Light Trap	08/30/2022	BC01271	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-11	09/04/2022	CDC Light Trap	09/06/2022	BC01279	<i>Culex tarsalis</i>	26	WNV+	RT-PCR
BC-11	09/12/2022	CDC Light Trap	09/13/2022	BC01286	<i>Culex tarsalis</i>	11	Negative	RT-PCR
Treatment Area BC-10 Test Results								
BC-03	06/26/2022	CDC Light Trap	06/27/2022	BC01145	<i>Culex tarsalis</i>	1	Negative	RT-PCR
BC-03	07/03/2022	CDC Light Trap	07/06/2022	BC01149	<i>Culex tarsalis</i>	40	Negative	RT-PCR
BC-03	07/10/2022	CDC Light Trap	07/13/2022	BC01164	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	07/17/2022	CDC Light Trap	07/20/2022	BC01179	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	07/24/2022	CDC Light Trap	07/27/2022	BC01194	<i>Culex tarsalis</i>	41	WNV+	RT-PCR
BC-03	07/31/2022	CDC Light Trap	08/02/2022	BC01209	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	08/07/2022	CDC Light Trap	08/09/2022	BC01224	<i>Culex tarsalis</i>	63	Negative	RT-PCR
BC-03	08/14/2022	CDC Light Trap	08/16/2022	BC01239	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	08/14/2022	CDC Light Trap	08/16/2022	BC01240	<i>Culex tarsalis</i>	31	WNV+	RT-PCR
BC-03	08/21/2022	CDC Light Trap	08/24/2022	BC01254	<i>Culex tarsalis</i>	48	Negative	RT-PCR
BC-03	08/28/2022	CDC Light Trap	08/30/2022	BC01269	<i>Culex tarsalis</i>	11	WNV+	RT-PCR
BC-03	09/04/2022	CDC Light Trap	09/06/2022	BC01278	<i>Culex tarsalis</i>	6	Negative	RT-PCR
BC-03	09/12/2022	CDC Light Trap	09/13/2022	BC01285	<i>Culex tarsalis</i>	2	Negative	RT-PCR
Treatment Area BC-11 Test Results								
BC-05	07/03/2022	CDC Light Trap	07/06/2022	BC01149	<i>Culex tarsalis</i>	19	Negative	RT-PCR
BC-05	07/10/2022	CDC Light Trap	07/13/2022	BC01165	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-05	07/17/2022	CDC Light Trap	07/20/2022	BC01180	<i>Culex tarsalis</i>	65	Negative	RT-PCR

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
BC-05	07/24/2022	CDC Light Trap	07/27/2022	BC01194	<i>Culex tarsalis</i>	6	WNV+	RT-PCR
BC-05	08/07/2022	CDC Light Trap	08/09/2022	BC01225	<i>Culex tarsalis</i>	11	Negative	RT-PCR
BC-05	08/14/2022	CDC Light Trap	08/16/2022	BC01240	<i>Culex tarsalis</i>	34	WNV+	RT-PCR
BC-05	08/28/2022	CDC Light Trap	08/30/2022	BC01269	<i>Culex tarsalis</i>	4	WNV+	RT-PCR
BC-05	09/04/2022	CDC Light Trap	09/06/2022	BC01278	<i>Culex tarsalis</i>	5	Negative	RT-PCR
BC-05	09/12/2022	CDC Light Trap	09/13/2022	BC01285	<i>Culex tarsalis</i>	12	Negative	RT-PCR
Treatment Area BC-13 Test Results								
BC-47	06/26/2022	CDC Light Trap	06/27/2022	BC01145	<i>Culex tarsalis</i>	50	Negative	RT-PCR
BC-47	07/03/2022	CDC Light Trap	07/06/2022	BC01149	<i>Culex tarsalis</i>	6	Negative	RT-PCR
BC-47	07/03/2022	CDC Light Trap	07/06/2022	BC01152	<i>Culex tarsalis</i>	12	WNV+	RT-PCR
BC-47	07/03/2022	CDC Light Trap	07/06/2022	BC01153	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-47	07/03/2022	CDC Light Trap	07/06/2022	BC01154	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-47	07/10/2022	CDC Light Trap	07/13/2022	BC01168	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-47	07/17/2022	CDC Light Trap	07/20/2022	BC01183	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-47	07/24/2022	CDC Light Trap	07/27/2022	BC01194	<i>Culex tarsalis</i>	18	WNV+	RT-PCR
BC-47	07/24/2022	CDC Light Trap	07/27/2022	BC01198	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-47	07/31/2022	CDC Light Trap	08/02/2022	BC01213	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-47	08/07/2022	CDC Light Trap	08/09/2022	BC01228	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-47	08/14/2022	CDC Light Trap	08/16/2022	BC01241	<i>Culex tarsalis</i>	8	Negative	RT-PCR
BC-47	08/14/2022	CDC Light Trap	08/16/2022	BC01244	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-47	08/21/2022	CDC Light Trap	08/24/2022	BC01259	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
BC-47	08/28/2022	CDC Light Trap	08/30/2022	BC01269	<i>Culex tarsalis</i>	9	WNV+	RT-PCR
BC-47	09/04/2022	CDC Light Trap	09/06/2022	BC01278	<i>Culex tarsalis</i>	30	Negative	RT-PCR
BC-47	09/12/2022	CDC Light Trap	09/13/2022	BC01285	<i>Culex tarsalis</i>	32	Negative	RT-PCR

Total Pools Tested: 75 Total Mosquitoes Tested: 3194 Total Negative: 45 Total Positive: 30



Arboviral Surveillance Results

Start Date: 06/01/2022 End Date: 09/30/2022

Longmont

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LM - Longmont Test Results								
LM-03	06/26/2022	CDC Light Trap	06/27/2022	BC02146	<i>Culex tarsalis</i>	9	Negative	RT-PCR
LM-03	07/03/2022	CDC Light Trap	07/06/2022	BC02155	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-03	07/03/2022	CDC Light Trap	07/06/2022	BC02156	<i>Culex tarsalis</i>	2	Negative	RT-PCR
LM-03	07/10/2022	CDC Light Trap	07/13/2022	BC02169	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/10/2022	CDC Light Trap	07/06/2022	BC02170	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LM-03	07/17/2022	CDC Light Trap	07/20/2022	BC02184	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/24/2022	CDC Light Trap	07/27/2022	BC02199	<i>Culex tarsalis</i>	44	Negative	RT-PCR
LM-03	07/31/2022	CDC Light Trap	08/02/2022	BC02214	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/07/2022	CDC Light Trap	08/09/2022	BC02229	<i>Culex tarsalis</i>	50	WNV+	RT-PCR
LM-03	08/21/2022	CDC Light Trap	08/24/2022	BC02260	<i>Culex tarsalis</i>	62	Negative	RT-PCR
LM-03	08/28/2022	CDC Light Trap	08/30/2022	BC02272	<i>Culex tarsalis</i>	26	WNV+	RT-PCR
LM-03	09/04/2022	CDC Light Trap	09/06/2022	BC02280	<i>Culex tarsalis</i>	27	Negative	RT-PCR
LM-17	07/03/2022	CDC Light Trap	07/06/2022	BC02156	<i>Culex tarsalis</i>	13	Negative	RT-PCR
LM-17	07/10/2022	CDC Light Trap	07/13/2022	BC02170	<i>Culex tarsalis</i>	40	Negative	RT-PCR
LM-17	07/17/2022	CDC Light Trap	07/20/2022	BC02185	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-17	07/24/2022	CDC Light Trap	07/27/2022	BC02200	<i>Culex tarsalis</i>	52	WNV+	RT-PCR
LM-17	07/31/2022	CDC Light Trap	08/02/2022	BC02215	<i>Culex tarsalis</i>	44	Negative	RT-PCR
LM-17	08/07/2022	CDC Light Trap	08/09/2022	BC02229	<i>Culex tarsalis</i>	12	WNV+	RT-PCR
LM-17	08/14/2022	CDC Light Trap	08/16/2022	BC02245	<i>Culex tarsalis</i>	31	WNV+	RT-PCR
LM-17	08/21/2022	CDC Light Trap	08/24/2022	BC02261	<i>Culex tarsalis</i>	25	WNV+	RT-PCR
LM-17	08/28/2022	CDC Light Trap	08/30/2022	BC02272	<i>Culex tarsalis</i>	4	WNV+	RT-PCR
LM-17	09/04/2022	CDC Light Trap	09/06/2022	BC02280	<i>Culex tarsalis</i>	6	Negative	RT-PCR
LM-28	06/26/2022	CDC Light Trap	06/27/2022	BC02146	<i>Culex tarsalis</i>	10	Negative	RT-PCR
LM-28	07/03/2022	CDC Light Trap	07/06/2022	BC02156	<i>Culex tarsalis</i>	50	Negative	RT-PCR

Vector Disease Control International
7230 W. 118th Pl Unit C
Broomfield, CO 80020

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-28	07/10/2022	CDC Light Trap	07/13/2022	BC02171	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/17/2022	CDC Light Trap	07/20/2022	BC02186	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/24/2022	CDC Light Trap	07/27/2022	BC02199	<i>Culex tarsalis</i>	19	Negative	RT-PCR
LM-28	07/24/2022	CDC Light Trap	07/27/2022	BC02201	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/31/2022	CDC Light Trap	08/02/2022	BC02215	<i>Culex tarsalis</i>	21	Negative	RT-PCR
LM-28	07/31/2022	CDC Light Trap	08/02/2022	BC02216	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-28	08/07/2022	CDC Light Trap	08/09/2022	BC02229	<i>Culex tarsalis</i>	3	WNV+	RT-PCR
LM-28	08/07/2022	CDC Light Trap	08/09/2022	BC02230	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	08/07/2022	CDC Light Trap	08/09/2022	BC02231	<i>Culex tarsalis</i>	13	Negative	RT-PCR
LM-28	08/07/2022	CDC Light Trap	08/09/2022	BC02232	<i>Culex tarsalis</i>	15	WNV+	RT-PCR
LM-28	08/14/2022	CDC Light Trap	08/16/2022	BC02246	<i>Culex tarsalis</i>	39	WNV+	RT-PCR
LM-28	08/21/2022	CDC Light Trap	08/24/2022	BC02260	<i>Culex tarsalis</i>	3	Negative	RT-PCR
LM-28	08/21/2022	CDC Light Trap	08/24/2022	BC02261	<i>Culex tarsalis</i>	1	WNV+	RT-PCR
LM-28	08/21/2022	CDC Light Trap	08/24/2022	BC02262	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-28	08/21/2022	CDC Light Trap	08/24/2022	BC02263	<i>Culex tarsalis</i>	18	WNV+	RT-PCR
LM-28	08/28/2022	CDC Light Trap	08/30/2022	BC02273	<i>Culex tarsalis</i>	48	WNV+	RT-PCR
LM-28	09/04/2022	CDC Light Trap	09/06/2022	BC02281	<i>Culex tarsalis</i>	26	Negative	RT-PCR
LM-34	06/26/2022	CDC Light Trap	06/27/2022	BC02146	<i>Culex tarsalis</i>	30	Negative	RT-PCR
LM-34	07/03/2022	CDC Light Trap	07/06/2022	BC02157	<i>Culex tarsalis</i>	54	WNV+	RT-PCR
LM-34	07/10/2022	CDC Light Trap	07/13/2022	BC02172	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/17/2022	CDC Light Trap	07/20/2022	BC02187	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-34	07/24/2022	CDC Light Trap	07/27/2022	BC02200	<i>Culex tarsalis</i>	6	WNV+	RT-PCR
LM-34	07/24/2022	CDC Light Trap	07/27/2022	BC02202	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	07/31/2022	CDC Light Trap	08/02/2022	BC02217	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-34	08/07/2022	CDC Light Trap	08/09/2022	BC02231	<i>Culex tarsalis</i>	52	Negative	RT-PCR
LM-34	08/14/2022	CDC Light Trap	08/16/2022	BC03246	<i>Culex tarsalis</i>	2	WNV+	RT-PCR
LM-34	08/14/2022	CDC Light Trap	08/16/2022	BC03247	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-34	08/21/2022	CDC Light Trap	08/24/2022	BC02261	<i>Culex tarsalis</i>	39	WNV+	RT-PCR
LM-34	08/28/2022	CDC Light Trap	08/30/2022	BC02272	<i>Culex tarsalis</i>	1	WNV+	RT-PCR
LM-34	08/28/2022	CDC Light Trap	08/30/2022	BC02273	<i>Culex tarsalis</i>	17	WNV+	RT-PCR
LM-34	09/04/2022	CDC Light Trap	09/06/2022	BC02281	<i>Culex tarsalis</i>	5	Negative	RT-PCR

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-42	06/26/2022	CDC Light Trap	06/27/2022	BC02146	<i>Culex tarsalis</i>	15	Negative	RT-PCR
LM-42	07/03/2022	CDC Light Trap	07/06/2022	BC02157	<i>Culex tarsalis</i>	11	WNV+	RT-PCR
LM-42	07/03/2022	CDC Light Trap	07/06/2022	BC02158	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	07/10/2022	CDC Light Trap	07/13/2022	BC02173	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	07/17/2022	CDC Light Trap	07/20/2022	BC02188	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	07/24/2022	CDC Light Trap	07/27/2022	BC02200	<i>Culex tarsalis</i>	4	WNV+	RT-PCR
LM-42	07/24/2022	CDC Light Trap	07/27/2022	BC02203	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-42	07/31/2022	CDC Light Trap	08/02/2022	BC02218	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LM-42	08/07/2022	CDC Light Trap	08/09/2022	BC02232	<i>Culex tarsalis</i>	50	WNV+	RT-PCR
LM-42	08/14/2022	CDC Light Trap	08/16/2022	BC02245	<i>Culex tarsalis</i>	34	Negative	RT-PCR
LM-42	08/14/2022	CDC Light Trap	08/16/2022	BC02246	<i>Culex tarsalis</i>	24	WNV+	RT-PCR
LM-42	08/21/2022	CDC Light Trap	08/24/2022	BC02263	<i>Culex tarsalis</i>	47	WNV+	RT-PCR
LM-42	08/28/2022	CDC Light Trap	08/30/2022	BC02272	<i>Culex tarsalis</i>	29	WNV+	RT-PCR
LM-42	09/04/2022	CDC Light Trap	09/06/2022	BC02281	<i>Culex tarsalis</i>	18	Negative	RT-PCR
Total Pools Tested: 69 Total Mosquitoes Tested: 2541 Total Negative: 37 Total Positive: 32								



Arboviral Surveillance Results

Start Date: 06/01/2022 End Date: 09/30/2022

City of Louisville

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LO-01 Test Results								
LO-01	06/26/2022	CDC Light Trap	06/27/2022	BC03148	<i>Culex tarsalis</i>	20	Negative	RT-PCR
LO-01	07/03/2022	CDC Light Trap	07/06/2022	BC03162	<i>Culex tarsalis</i>	36	Negative	RT-PCR
LO-01	07/10/2022	CDC Light Trap	07/13/2022	BC03176	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LO-01	07/17/2022	CDC Light Trap	07/20/2022	BC03191	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	07/24/2022	CDC Light Trap	07/27/2022	BC03208	<i>Culex tarsalis</i>	19	Negative	RT-PCR
LO-01	07/31/2022	CDC Light Trap	08/02/2022	BC03220	<i>Culex tarsalis</i>	45	Negative	RT-PCR
LO-01	08/08/2022	CDC Light Trap	08/09/2022	BC03237	<i>Culex tarsalis</i>	19	Negative	RT-PCR
LO-01	08/14/2022	CDC Light Trap	08/16/2022	BC03251	<i>Culex tarsalis</i>	38	WNV+	RT-PCR
LO-01	08/21/2022	CDC Light Trap	08/24/2022	BC03268	<i>Culex tarsalis</i>	47	Negative	RT-PCR
LO-01	08/28/2022	CDC Light Trap	08/30/2022	BC03276	<i>Culex tarsalis</i>	3	Negative	RT-PCR
LO-01	09/04/2022	CDC Light Trap	09/06/2022	BC03284	<i>Culex tarsalis</i>	7	WNV+	RT-PCR
LO-01	09/12/2022	CDC Light Trap	09/13/2022	BC03288	<i>Culex tarsalis</i>	4	WNV+	RT-PCR
LO-08	06/26/2022	CDC Light Trap	06/27/2022	BC03148	<i>Culex tarsalis</i>	12	Negative	RT-PCR
LO-08	07/03/2022	CDC Light Trap	07/06/2022	BC03162	<i>Culex tarsalis</i>	14	Negative	RT-PCR
LO-08	07/10/2022	CDC Light Trap	07/13/2022	BC03177	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LO-08	07/17/2022	CDC Light Trap	07/20/2022	BC03192	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LO-08	07/24/2022	CDC Light Trap	07/27/2022	BC03208	<i>Culex tarsalis</i>	17	Negative	RT-PCR
LO-08	07/31/2022	CDC Light Trap	08/02/2022	BC03223	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LO-08	08/07/2022	CDC Light Trap	08/09/2022	BC03237	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LO-08	08/14/2022	CDC Light Trap	08/16/2022	BC03249	<i>Culex tarsalis</i>	2	WNV+	RT-PCR
LO-08	08/14/2022	CDC Light Trap	08/16/2022	BC03252	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LO-08	08/14/2022	CDC Light Trap	08/16/2022	BC03253	<i>Culex tarsalis</i>	6	WNV+	RT-PCR
LO-08	08/21/2022	CDC Light Trap	08/24/2022	BC03267	<i>Culex tarsalis</i>	11	Negative	RT-PCR
LO-08	08/21/2022	CDC Light Trap	08/24/2022	BC03268	<i>Culex tarsalis</i>	18	Negative	RT-PCR

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Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LO-08	08/28/2022	CDC Light Trap	08/30/2022	BC03276	<i>Culex tarsalis</i>	11	Negative	RT-PCR
LO-08	09/04/2022	CDC Light Trap	09/06/2022	BC03284	<i>Culex tarsalis</i>	18	WNV+	RT-PCR
LO-08	09/12/2022	CDC Light Trap	09/13/2022	BC03288	<i>Culex tarsalis</i>	5	WNV+	RT-PCR
Total Pools Tested: 27 Total Mosquitoes Tested: 767 Total Negative: 15 Total Positive: 12								



Arboviral Surveillance Results

Start Date: 06/01/2022 End Date: 09/30/2022

City of Lafayette

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LA-01 Test Results								
LA-11	06/26/2022	CDC Light Trap	06/27/2022	BC03147	<i>Culex tarsalis</i>	26	Negative	RT-PCR
LA-11	07/03/2022	CDC Light Trap	07/06/2022	BC03161	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/03/2022	CDC Light Trap	07/06/2022	BC03162	<i>Culex tarsalis</i>	15	Negative	RT-PCR
LA-11	07/10/2022	CDC Light Trap	07/13/2022	BC03175	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/17/2022	CDC Light Trap	07/20/2022	BC03190	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/24/2022	CDC Light Trap	07/27/2022	BC03207	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LA-11	07/24/2022	CDC Light Trap	07/27/2022	BC03208	<i>Culex tarsalis</i>	8	Negative	RT-PCR
LA-11	07/31/2022	CDC Light Trap	08/02/2022	BC03221	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/31/2022	CDC Light Trap	08/02/2022	BC03222	<i>Culex tarsalis</i>	15	WNV+	RT-PCR
LA-11	08/07/2022	CDC Light Trap	08/09/2022	BC03235	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LA-11	08/07/2022	CDC Light Trap	08/09/2022	BC03236	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/07/2022	CDC Light Trap	08/09/2022	BC03237	<i>Culex tarsalis</i>	21	Negative	RT-PCR
LA-11	08/07/2022	CDC Light Trap	08/09/2022	BC03238	<i>Culex tarsalis</i>	28	Negative	RT-PCR
LA-11	08/14/2022	CDC Light Trap	08/16/2022	BC03249	<i>Culex tarsalis</i>	20	WNV+	RT-PCR
LA-11	08/14/2022	CDC Light Trap	08/16/2022	BC03250	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/14/2022	CDC Light Trap	08/16/2022	BC03251	<i>Culex tarsalis</i>	27	WNV+	RT-PCR
LA-11	08/21/2022	CDC Light Trap	08/24/2022	BC03266	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/21/2022	CDC Light Trap	08/24/2022	BC03267	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LA-11	08/28/2022	CDC Light Trap	08/30/2022	BC03277	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LA-11	09/04/2022	CDC Light Trap	09/06/2022	BC03283	<i>Culex tarsalis</i>	56	Negative	RT-PCR
LA-11	09/12/2022	CDC Light Trap	09/13/2022	BC03288	<i>Culex tarsalis</i>	25	WNV+	RT-PCR

Total Pools Tested: 21 Total Mosquitoes Tested: 892 Total Negative: 14 Total Positive: 7

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Arboviral Surveillance Results

Start Date: 06/01/2022 End Date: 09/30/2022

Town of Erie

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area ER-02 Test Results								
ER-03	06/26/2022	CDC Light Trap	06/27/2022	BC03147	<i>Culex tarsalis</i>	13	Negative	RT-PCR
ER-03	07/03/2022	CDC Light Trap	07/06/2022	BC03159	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/03/2022	CDC Light Trap	07/06/2022	BC03160	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/03/2022	CDC Light Trap	07/06/2022	BC03163	<i>Culex tarsalis</i>	3	WNV+	RT-PCR
ER-03	07/10/2022	CDC Light Trap	07/13/2022	BC03174	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/17/2022	CDC Light Trap	07/20/2022	BC03189	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
ER-03	07/24/2022	CDC Light Trap	07/27/2022	BC03204	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/24/2022	CDC Light Trap	07/27/2022	BC03205	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
ER-03	07/24/2022	CDC Light Trap	07/27/2022	BC03206	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
ER-03	07/31/2022	CDC Light Trap	08/02/2022	BC03219	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/31/2022	CDC Light Trap	08/02/2022	BC03220	<i>Culex tarsalis</i>	20	Negative	RT-PCR
ER-03	08/07/2022	CDC Light Trap	08/09/2022	BC03233	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
ER-03	08/07/2022	CDC Light Trap	08/09/2022	BC03234	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
ER-03	08/14/2022	CDC Light Trap	08/16/2022	BC03248	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/14/2022	CDC Light Trap	08/16/2022	BC03249	<i>Culex tarsalis</i>	43	WNV+	RT-PCR
ER-03	08/21/2022	CDC Light Trap	08/24/2022	BC03264	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/21/2022	CDC Light Trap	08/24/2022	BC03265	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/28/2022	CDC Light Trap	08/30/2022	BC03274	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
ER-03	08/28/2022	CDC Light Trap	08/30/2022	BC03275	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/28/2022	CDC Light Trap	08/30/2022	BC03276	<i>Culex tarsalis</i>	6	Negative	RT-PCR
ER-03	09/04/2022	CDC Light Trap	09/06/2022	BC03282	<i>Culex tarsalis</i>	60	Negative	RT-PCR
ER-03	09/12/2022	CDC Light Trap	09/13/2022	BC03287	<i>Culex tarsalis</i>	31	WNV+	RT-PCR

Total Pools Tested: 22 Total Mosquitoes Tested: 1151 Total Negative: 13 Total Positive: 9

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Arboviral Surveillance Results

Start Date: 06/01/2022 End Date: 09/30/2022

Town of Superior

Trap Location	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area SU-01 Test Results								
SU-04	06/26/2022	CDC Light Trap	06/27/2022	BC03148	<i>Culex tarsalis</i>	18	Negative	RT-PCR
SU-04	07/03/2022	CDC Light Trap	07/06/2022	BC03163	<i>Culex tarsalis</i>	62	WNV+	RT-PCR
SU-04	07/10/2022	CDC Light Trap	07/13/2022	BC03178	<i>Culex tarsalis</i>	65	Negative	RT-PCR
SU-04	07/17/2022	CDC Light Trap	07/20/2022	BC03193	<i>Culex tarsalis</i>	65	Negative	RT-PCR
SU-04	07/24/2022	CDC Light Trap	07/27/2022	BC03208	<i>Culex tarsalis</i>	21	Negative	RT-PCR
SU-04	07/31/2022	CDC Light Trap	08/02/2022	BC03222	<i>Culex tarsalis</i>	50	WNV+	RT-PCR
SU-04	08/07/2022	CDC Light Trap	08/09/2022	BC03238	<i>Culex tarsalis</i>	37	Negative	RT-PCR
SU-04	08/14/2022	CDC Light Trap	08/16/2022	BC03253	<i>Culex tarsalis</i>	59	WNV+	RT-PCR
SU-04	08/21/2022	CDC Light Trap	08/24/2022	BC03267	<i>Culex tarsalis</i>	53	Negative	RT-PCR
SU-04	08/28/2022	CDC Light Trap	08/30/2022	BC03276	<i>Culex tarsalis</i>	8	Negative	RT-PCR
SU-04	09/04/2022	CDC Light Trap	09/06/2022	BC03284	<i>Culex tarsalis</i>	34	WNV+	RT-PCR
SU-04	09/12/2022	CDC Light Trap	09/13/2022	BC03288	<i>Culex tarsalis</i>	20	WNV+	RT-PCR

Total Pools Tested: 12 Total Mosquitoes Tested: 492 Total Negative: 7 Total Positive: 5

Appendix C: Boulder County Mosquito Control District Adulticide Application Data



Ground Adulticide Applications

Start Date: 06/01/2022 End Date: 09/30/2022

Boulder County Mosquito Control District

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
BC ULV 61st to 75th & Valmont Rd Applications								
June 2022	06/15/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.2	5.3	193.4	1.5
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.4	6.0	217.1	1.7
	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.5	5.7	208.0	1.6
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.9	5.7	207.6	1.6
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.8	5.5	198.9	1.6
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.0	5.4	195.6	1.5
Total Aqua Perm-X UL 30-30 (General Use) Applied:								9.7
BC ULV 61st to 75th & Valmont Rd Totals:					42.9	33.6	1,220.6	9.7
BC ULV 61st & Valmont Rd Applications								
June 2022	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.3	3.0	109.8	0.9
Total Aqua Perm-X UL 30-30 (General Use) Applied:								0.9
BC ULV 61st & Valmont Rd Totals:					3.3	3.0	109.8	0.9
BC ULV 75th & Valmont Rd Applications								

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
June 2022	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.9	2.4	86.5	0.7
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>0.7</i>
<i>BC ULV 75th & Valmont Rd Totals:</i>					<i>3.9</i>	<i>2.4</i>	<i>86.5</i>	<i>0.7</i>

BC ULV Boulder Hills Applications

June 2022	06/15/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.8	4.2	151.3	1.2
	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.0	4.6	165.8	1.3
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.9	4.1	147.6	1.2
	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.3	4.4	158.9	1.3
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.6	4.2	153.4	1.2
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.5	4.2	153.8	1.2
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.6	4.3	156.7	1.3
	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.6	4.3	155.6	1.2
	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.5	4.1	149.8	1.2
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>11.1</i>
<i>BC ULV Boulder Hills Totals:</i>					<i>50.8</i>	<i>38.3</i>	<i>1,392.9</i>	<i>11.1</i>

BC ULV Brigadoon Glen/Rangeview/Oriole Applications

July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	10.2	6.4	233.4	1.9
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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	10.7	6.4	233.1	1.9
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	11.0	6.7	244.7	1.9
August 2022	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	11.5	6.7	241.8	1.9
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>7.5</i>
<i>BC ULV Brigadoon Glen/Rangeview/Oriole Totals:</i>					<i>43.4</i>	<i>26.2</i>	<i>953.0</i>	<i>7.5</i>

BC ULV Brownsville/Canfield Applications								
July 2022	07/07/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.9	6.4	232.3	1.8
	07/14/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.7	6.4	231.3	1.8
	07/21/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.8	6.0	218.2	1.7
August 2022	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.5	6.0	217.8	1.7
September 2022	09/07/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.4	6.1	221.8	1.8
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>8.9</i>
<i>BC ULV Brownsville/Canfield Totals:</i>					<i>48.3</i>	<i>30.8</i>	<i>1,121.4</i>	<i>8.9</i>

BC ULV Chance Acres Applications								
July 2022	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.0	2.2	78.2	0.6
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.0	2.2	78.5	0.6
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.3	1.8	66.2	0.6

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>1.8</i>
<i>BC ULV Chance Acres Totals:</i>					<i>8.2</i>	<i>6.1</i>	<i>222.9</i>	<i>1.8</i>
BC ULV Fairview Estates/Indian Hills/Spanish Hills/Paragon Estates Applications								
July 2022	07/12/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.5	6.2	224.7	1.8
	07/19/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.8	6.0	219.3	1.7
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.5	6.4	232.7	1.9
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>5.3</i>
<i>BC ULV Fairview Estates/Indian Hills/Spanish Hills/Paragon Estates Totals:</i>					<i>25.9</i>	<i>18.6</i>	<i>676.7</i>	<i>5.3</i>
BC ULV Gunbarrel Green Applications								
June 2022	06/15/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.5	5.3	192.3	1.5
	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.2	5.6	204.7	1.6
July 2022	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.4	5.3	191.6	1.5
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.4	5.3	193.4	1.5
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.5	4.5	162.5	1.3
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.4	5.4	194.9	1.6
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.3	5.2	189.4	1.5
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.3	5.1	185.4	1.5

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.8	4.9	178.2	1.4
	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.3	5.1	186.2	1.5
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>14.8</i>
BC ULV Gunbarrel Green Totals:					73.1	51.7	1,878.7	14.8

BC ULV Heatherwood Applications								
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.1	5.4	194.5	1.6
	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	0.1	0.0	1.5	0.0
	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	7.6	5.4	196.7	1.5
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.7	5.3	190.9	1.5
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.7	5.2	187.3	1.5
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.2	4.9	176.7	1.4
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.1	4.9	178.9	1.4
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.1	4.9	176.7	1.4
	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.1	4.8	172.6	1.4
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>11.7</i>
BC ULV Heatherwood Totals:					52.6	40.7	1,475.8	11.7

BC ULV Hillcrest Heights/Gaynor Lake Applications

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
July 2022	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.6	5.2	188.7	1.5
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.1	5.2	189.1	1.5
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.0	5.3	194.2	1.5
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.0	5.3	192.3	1.5
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.0	5.4	194.5	1.5
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	5.7	207.6	1.6
	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.3	6.0	217.4	1.7
	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.3	5.8	211.3	1.7
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>12.5</i>
BC ULV Hillcrest Heights/Gaynor Lake Totals:					67.5	43.9	1,595.1	12.5

BC ULV Hygiene/Hygiene Heights Applications								
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.1	4.1	147.6	1.2
	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.4	4.1	150.5	1.2
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.1	4.1	147.3	1.2
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.1	4.0	146.2	1.2
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.2	4.2	150.9	1.2
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.2	4.1	149.4	1.2

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.2	4.1	149.8	1.2
September 2022	09/07/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.2	4.1	150.5	1.2
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>9.5</i>
<i>BC ULV Hygiene/Hygiene Heights Totals:</i>					<i>49.5</i>	<i>32.8</i>	<i>1,192.2</i>	<i>9.5</i>
BC ULV Niwot LoBo Regional Trail Applications								
July 2022	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.6	1.3	45.5	0.4
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>0.4</i>
<i>BC ULV Niwot LoBo Regional Trail Totals:</i>					<i>1.6</i>	<i>1.3</i>	<i>45.5</i>	<i>0.4</i>
BC ULV Niwot North Applications								
July 2022	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.5	5.8	210.5	1.6
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.3	5.8	209.1	1.7
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.3	5.9	215.3	1.7
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>5.0</i>
<i>BC ULV Niwot North Totals:</i>					<i>25.1</i>	<i>17.5</i>	<i>634.8</i>	<i>5.0</i>
BC ULV Niwot Rd/Overbrook/Grange Park Applications								
July 2022	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.7	4.5	164.4	1.3
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>1.3</i>

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>BC ULV Niwot Rd/Overbrook/Grange Park Totals:</i>					5.7	4.5	164.4	1.3
BC ULV Niwot South Applications								
July 2022	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	9.3	6.7	245.1	1.9
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	6.0	218.5	1.7
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.9	6.5	234.9	1.9
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								5.5
<i>BC ULV Niwot South Totals:</i>					26.4	19.2	698.5	5.5
BC ULV North Rim/Lake Valley Estates Applications								
June 2022	06/15/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	5.3	192.3	1.5
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.8	4.6	168.4	1.3
	07/14/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.7	5.3	193.1	1.5
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.5	5.6	201.8	1.6
August 2022	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.5	5.5	201.1	1.6
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								7.6
<i>BC ULV North Rim/Lake Valley Estates Totals:</i>					40.6	26.3	956.6	7.6
BC ULV Park Lake Applications								
June 2022	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.1	76.4	0.6

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.0	71.3	0.6
	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.1	74.5	0.6
	07/19/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.1	74.9	0.6
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.0	72.7	0.6
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.0	72.7	0.6
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.1	74.5	0.6
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.9	2.1	76.4	0.6
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>4.7</i>
<i>BC ULV Park Lake Totals:</i>					<i>23.1</i>	<i>16.3</i>	<i>593.4</i>	<i>4.7</i>

BC ULV Red Fox Hills/Twin Lakes Applications								
June 2022	06/15/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.4	2.9	106.9	0.8
	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.1	2.9	103.6	0.8
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.3	3.0	110.5	0.9
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.3	2.9	104.4	0.8
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.3	2.9	103.6	0.8
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.6	2.9	105.8	0.8
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.3	2.9	104.0	0.8

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.2	2.5	107.4	0.8
	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.2	2.8	102.5	0.8
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>7.4</i>
<i>BC ULV Red Fox Hills/Twin Lakes Totals:</i>					<i>38.6</i>	<i>25.6</i>	<i>948.8</i>	<i>7.4</i>
BC ULV Ridglea Hills/Crestmoor/Baseline Heights Applications								
June 2022	06/22/2022	Elms at Meadow Vale HOA	Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.4	3.6	130.5	1.0
July 2022	07/06/2022	Elms at Meadow Vale HOA	Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	5.5	3.7	135.3	1.1
September 2022	09/07/2022	Elms at Meadow Vale HOA	Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.2	4.5	161.8	1.3
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>3.4</i>
<i>BC ULV Ridglea Hills/Crestmoor/Baseline Heights Totals:</i>					<i>17.0</i>	<i>11.8</i>	<i>427.6</i>	<i>3.4</i>
BC ULV Sombrero Ranch/Ridglea Hills/Crestmoor Applications								
July 2022	07/12/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.2	6.1	221.1	1.8
	07/19/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.3	6.5	236.7	1.9
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	6.6	239.6	1.9
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	6.5	236.3	1.9
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	6.6	238.9	1.9

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	6.5	236.7	1.9
	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	8.1	6.4	234.2	1.8
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>13.0</i>
BC ULV Sombrero Ranch/Ridglea Hills/Crestmoor Totals:					56.9	45.2	1,643.5	13.0

BC ULV South Meadows Applications								
June 2022	06/15/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.5	2.6	96.0	0.7
	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.4	2.2	78.9	0.6
July 2022	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.1	2.1	76.7	0.6
	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.1	2.1	77.1	0.6
	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.1	2.1	76.4	0.6
August 2022	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.1	2.1	77.8	0.6
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.1	2.2	78.2	0.6
	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.0	2.1	75.3	0.6
	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.0	2.1	75.3	0.6
	08/31/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.1	2.2	78.2	0.6
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>6.2</i>
BC ULV South Meadows Totals:					32.5	21.7	789.7	6.2

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
BC ULV Spanish Hills/Paragon Estates Applications								
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.7	3.4	124.0	1.0
August 2022	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	4.6	3.4	121.8	1.0
Total Aqua Perm-X UL 30-30 (General Use) Applied:								1.9
BC ULV Spanish Hills/Paragon Estates Totals:					9.3	6.8	245.8	1.9
BC ULV Stonehenge - float Applications								
July 2022	07/19/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.4	1.0	36.7	0.3
Total Aqua Perm-X UL 30-30 (General Use) Applied:								0.3
BC ULV Stonehenge - float Totals:					1.4	1.0	36.7	0.3
BC ULV Whitehawk Ranch/Shannon Estates - float Applications								
July 2022	07/19/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	3.4	2.5	92.0	0.7
Total Aqua Perm-X UL 30-30 (General Use) Applied:								0.7
BC ULV Whitehawk Ranch/Shannon Estates - float Totals:					3.4	2.5	92.0	0.7
BC ULV Willow Glen/Fox Run Applications								
June 2022	06/22/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.3	48.4	0.4
July 2022	07/06/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.3	48.4	0.4
	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.2	43.3	0.3
	07/19/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.3	46.9	0.4

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
August 2022	07/27/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.3	46.5	0.4
	08/03/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.3	46.9	0.4
	08/10/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.3	47.6	0.4
	08/18/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	1.8	1.3	46.9	0.4
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>3.0</i>
<i>BC ULV Willow Glen/Fox Run Totals:</i>					<i>14.6</i>	<i>10.3</i>	<i>374.9</i>	<i>3.0</i>
BC ULV Willows Applications								
July 2022	07/13/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.7	0.9	33.1	0.3
August 2022	08/24/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	2.7	0.8	30.5	0.2
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>0.5</i>
<i>BC ULV Willows Totals:</i>					<i>5.3</i>	<i>1.8</i>	<i>63.6</i>	<i>0.5</i>
BC ULV Yellowstone Road Applications								
July 2022	07/20/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.5	5.0	181.4	1.5
August 2022	08/17/2022		Aqua Perm-X UL 30-30 (General Use) (89459-76)	1:4	6.5	4.9	178.5	1.4
<i>Total Aqua Perm-X UL 30-30 (General Use) Applied:</i>								<i>2.9</i>
<i>BC ULV Yellowstone Road Totals:</i>					<i>12.9</i>	<i>9.9</i>	<i>360.0</i>	<i>2.9</i>
<i>Grand Totals:</i>					<i>783.7</i>	<i>549.7</i>	<i>20,001.4</i>	<i>158.0</i>



Ground Adulticide Applications

Start Date: 06/01/2022 End Date: 09/30/2022

Boulder County Mosquito Control District

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
BC Cline Trout Farm - Barrier Applications								
June 2022	06/16/2022		Wisdom TC (General Use) (5481-520)	1:128	0.0	0.0	0.1	4.0
July 2022	07/07/2022		Wisdom TC (General Use) (5481-520)	1:128	0.0	0.0	0.0	4.0
Total Wisdom TC (General Use) Applied:								8.0
BC Cline Trout Farm - Barrier Totals:					0.0	0.0	0.1	8.0
Grand Totals:					0.0	0.0	0.1	8.0