

Adult Mosquito Control Applications

Barrier Sprays and ULV Applications
Under Contract

“application”

- Each time materials are sprayed to control mosquitoes is an application of pesticides
- ***There are two techniques or types of applications that will control adult mosquitoes:***
 - *barrier treatments*
 - *Ulv applications*
- each type of application is billed separately

“application continued”

- Generally, each type of application will finish on the day it is started unless weather interrupts the process
- If situations arise causing the cancelation of the application rescheduling will occur as soon as possible
 - Conditions that might cancel an application include wind, rain, threat of rain, lightning, or cold temperatures

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truck mounted ulv applications

- Sprayers are mounted in trucks
- Controls for the sprayers are located in the cab
- Trucks drive perpendicular to the wind in an upwind direction
- Trucks will be driven at an average speed of 10 mph



example:



Benefits & Short Falls of ULV:

- +/- This provides immediate but short term knockdown of adult mosquitoes in the immediate vicinity
 - +/- After about 30 minutes there will be no lasting effect on remaining mosquitoes
- +/- Effectiveness is highly variable due to climatic conditions but typically results in an 80% reduction or better
- Not all areas can be accessed under any particular wind condition
- ULV spray will only address mosquitoes in the areas which are directly down wind of the truck
 - This leaves large areas outside of the spray block untreated especially in rural settings
 - Adult mosquitoes can fly 15 miles in search of blood meals
- Cass County Vector Control can generally only apply these materials on a weekly basis *if thresholds are met*

“barrier spraying applications”



- A barrier spray is considered a “mist,” as opposed to a ULV spray which is considered a “fog”
- Barrier spraying involves spraying surfaces (vegetation) that adult mosquitoes will later land on: Not spraying the actual mosquitoes in the air

more information on barrier sprays:



- Adult mosquitoes spend most of their time under vegetation during the day to avoid the sun
- The idea is to create a barrier between where mosquitoes are and where they are not wanted
 - Similar to spraying your property for ants or similar pests
- These applications provide residual control mosquitoes for up to 4 weeks

more information on barrier sprays:

- Spray is applied to leaves and vegetation
- Applications are made from the ground up to 6 feet high
- We don't intentionally spray bees or any other insect as the materials used are broad spectrum and will kill other, beneficial insects
- Vegetation immediately around bodies of water will not be sprayed as it is illegal to spray onto water

Barrier Spraying Techniques

- Applications to denser vegetation (i.g. shelterbelts) are more efficient at holding out mosquitoes than spraying "turf" or on the surface of mowed grass.
- Not all situations and properties offer conditions to make these applications successful
- Barrier applications take place during the daytime when mosquitoes are the most condensed in shady areas
- Often a backpack style ULV sprayer is used deep within harborage in conjunction with our barrier spray packs
 - Provides immediate knockdown effect similar to a truck mounted ULV applications

A typical barrier application areas: (light blue shaded)



Cost

Cost is determined by several factors:

Material cost

Man-hours to complete application

Transit time to and from application

Mileage to and from location

Mixing/Loading and Preparation time

Initiating an Application

- Contract holders are responsible for contacting Cass County Vector Control to set up any type of application
- The request must be made at least 24 hours before any pesticide is sprayed to allow for sufficient public notification and planning
- If both barrier spraying and Ulv applications are requested; either application will be completed as soon as is possible, and will often occur on separate days

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Initiating an Application

- Both ULV and barrier methods should give some immediate control but sometimes can not be made in the same day due to scheduling conflicts
 - As part of our barrier applications we now use a backpack ULV to spray dense foliage where mosquitoes will harbor during the day

Larviciding: The key to success

Grand Forks Public Health Dept.:

“Larviciding is the main component for a successful mosquito control program. Larviciding is the action taken to destroy mosquito larvae in stagnant water. Mosquito larvae left untreated develop into adult mosquitoes, which are a nuisance at best a public health threat in the worst case.”

Adulticides are not the only answer

- Ineffectiveness
 - Killing mosquitoes in the open air is much more difficult than killing a brood of mosquito larvae in standing water
 - Adult mosquitoes aren't confined to small areas as are larvae and pupae
 - Difficulty
 - Applying adulticides usually involves a large, expensive sprayer to distribute the material
 - Can't be applied by hand like most larvicides
 - Safety
 - Adulticides are generally much more concentrated forms of pesticides
 - Safety is more of a concern when applying adulticides than larvicides
- Larvicides are more ecologically friendly

“Despite the impressive technologic achievements of the past several decades, which resulted in the development of residual adulticides, synthetic chemotherapeutic agents, and the potential use of antimalarial vaccines, the following 40-year-old quotation retains validity: ‘In light of present knowledge, the most desirable approach to the control...is through an attack on the...vector. This usually involves either the prevention of mosquito breeding or the control of vectors in the larval stages. The most desirable method of control is to eliminate permanently mosquito-breeding areas or to render them unsuitable for the production of mosquitoes.’”

- -Kitron, Uriel and Andrew Spielman “Reviews of Infectious Diseases” Vol 11, No. 3 (May-Jun., 1989) pp. 391-406. The University of Chicago Press.
- U.S. Public Health Service and Tennessee Valley Authority. Malaria control on impounded water. Washington, DC; U.S. Government Printing Office, 1947.

For information regarding standing water mosquito control contacts and cost please contact the number provided.

These services are available under contract but will require significant investment including labor costs and materials

Larval mosquito control is the best way to improve conditions in any area.

Why are contracts for additional service needed?

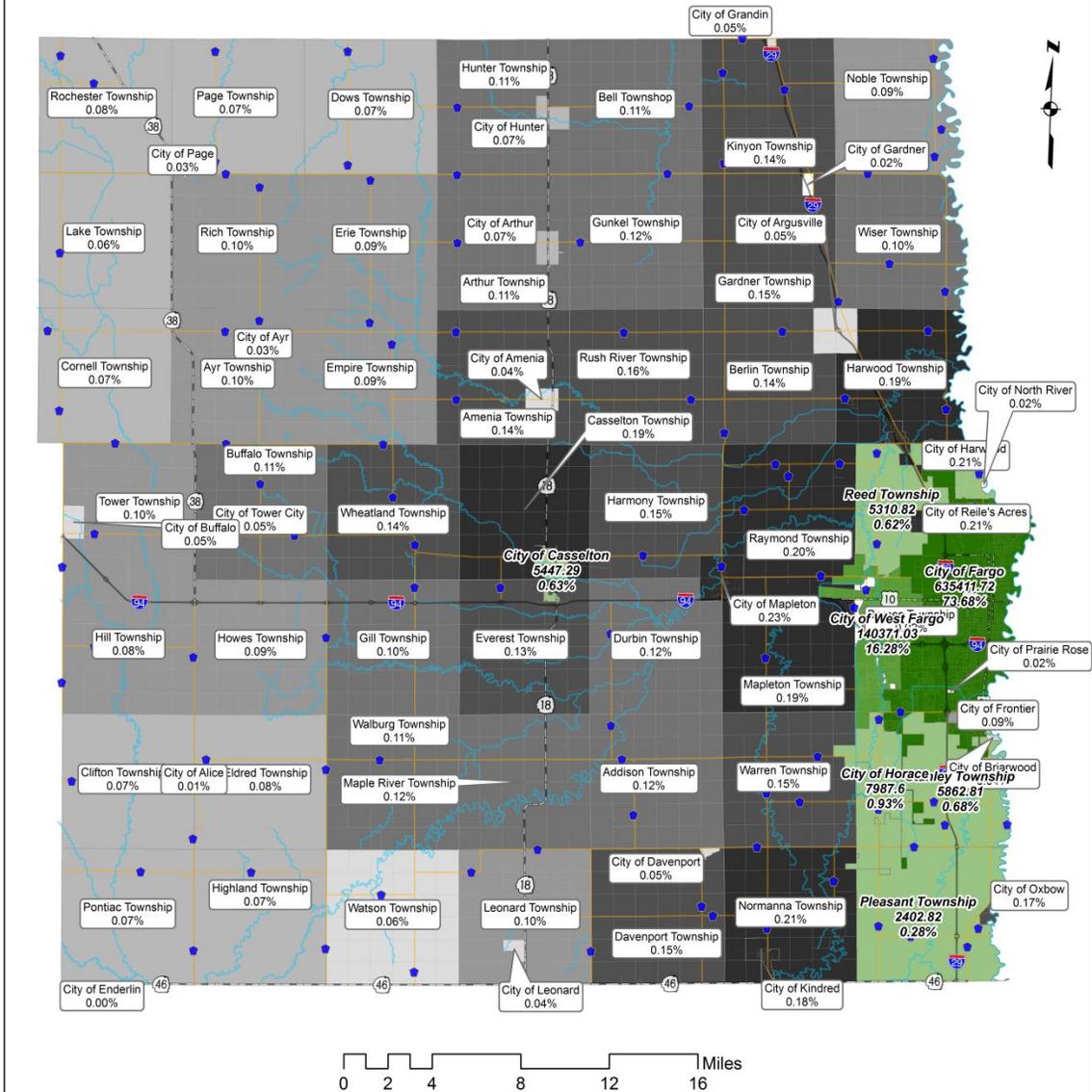
- Mosquito control is expensive. The mill levy for Cass County Vector Control is at a State mandated maximum of 1 mill (or properties taxable valuation multiplied by 0.001). That means that for every \$100,000 dollars of True and Full Value each property is assessed; \$4.50 of property tax is dedicated to mosquito control annually.
- The reality in Cass County is that there are too many potential breeding sites and far too much land for any type of program to fully cover all standing water or places adult mosquitoes exist. The current minimum cost to treat an acre of standing water in a ditch, pasture, or field is about \$15 for pesticides alone.

For every \$1000 of revenue Vector Control generates from property taxes considering labor, materials, pesticide and overhead; there are resources to treat under 25 acres of standing water. That is approximately 20 miles of 10 foot wide ditch- for a single treatment. There are 7035 miles of ditches in the county between the Federal, State, County and Township roads. There are over 5000 ditch miles along side township roads alone.

A single round of treatment for larval mosquitoes generally exhausts the proportionate budget for every rural township's entire year and only controls mosquitoes in the water for approximately five to seven days. This amount of proportionately treatable acres pales in comparison to the number of breeding sites possible.

If you were to look purely at adult control efforts or "truck spraying" as the sole source of control; considering labor, materials, overhead, and pesticides - every \$1000 in taxes revenue allows for only about 500-1000 acres of area to be sprayed just one time. Every square mile contains 640 acres. To spray all of Cass County's approximate 1760 square miles via a truck would cost over \$500,000 in material alone for one countywide application and would only eliminate mosquitoes for a day or two. Spraying via aircraft would be several million dollars per application and would only eliminate mosquitoes for a day or two. To spray all of Cass County's 36,000 properties that have residential structures would take weeks to complete each "round" and ultimately would still be a failure for a vast majority of households as it would be weeks between applications.

2011 Vector Control Revenue



Legend

Jurisdictions Contributing less than \$2,000		Jurisdictions Contributing Greater than \$2,000	
Black	1425.64 - 2000.00	Light Green	\$2.97 - \$2000.00
Dark Gray	1048.04 - 1425.64	Medium Green	\$2,402.82 - \$7,987.60
Medium Gray	857.02 - 1048.04	Dark Green	\$140,371.03 - City of West Fargo
Light Gray	677.23 - 857.02	Very Dark Green	\$635,411.72 - City of Fargo
Very Light Gray	482.16 - 677.23		
White	212.47 - 482.16		
White	2.97 - 212.47		

<http://www.casscountynd.gov/county/depts/Vector/residents/Pages/Revenue.aspx>

- For additional information:
 - Please Contact Cass County Vector Control
 - 701-298-2382
 - pratherb@casscountynd.gov
 - Or via US Mail:
 - Cass County Vector Control
 - 1201 Main Ave. West
 - West Fargo, ND 58078

