USE OF GIS/GPS TECHNOLOGY IN MARICOPA COUNTY - VECTOR CONTROL (MCVC)

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WHAT IS GPS?

-GPS (Global Positioning System) is an aerospace technology that uses satellites and ground equipment to determine position anywhere on Earth.

-GPS is the most significant recent advance in navigation and positioning technology.

-In the past, the stars were used for navigation.

-Today's world requires greater accuracy. The new constellation of artificial stars provided by the Global Positioning System serves this important need.
GIS or Geographical Information System, is any system that captures, stores, analyzes, manages, and presents data that are linked to a location.

Comprehensive GIS require a means of:
- Data input, from maps, aerial photos, satellites, surveys, and other sources
- Data storage, retrieval, and query
- Data transformation, analysis, and modeling, including spatial statistics
- Data reporting, such as maps, reports, and plans
West Nile Virus Outbreak Facts

- American WNV outbreak begins in 1999
- End of 2004 – WNV reported in Arizona
- Maricopa County Vector Control Program created and later develops into a division of Environmental Services Department
- MCVC Primary Mission: Mosquito Population Control
Final 2008 West Nile Virus Activity in the United States

January 1, 2008 through December 31, 2008 as reported to CDC’s ArboNET system for public health protection.

Click on the map for a printer friendly version.

[Map showing West Nile Virus activity in the United States]

- Indicates human disease case(s).
- Avian, animal or mosquito infections.

For example: CA 445, WA 3, OR 16, etc.
2009 West Nile Virus Activity in the United States (Reported to CDC as of December 8, 2009)

Click on the map for a printer friendly version.
2008 Maricopa County WNV Infection Data
2009 Maricopa County WNV Infection Data

Positive Mosquito Samples & Human Cases
Sample of GIS Application (Automatic Vehicle Location-AVL)
Sample of GIS Application (Automatic Vehicle Location-AVL)
Sample of GIS Application (Automatic Vehicle Location-AVL)
GIS USED IN ADULTICIDE OPERATION

Stages in Adulticide Treatment:

- Setting the overnight CO$_2$ traps
- Delivering trap samples to the lab
- Running RAMP tests on all trap exceedences
- Releasing the lab report
- Identifying the areas to be fogged
- Updating the Maricopa County website
- Notifying the chemical-sensitive people
- Performing the actual adulticide application
Overnight CO₂ Trapping

Trap is set in the area where public health hazard has been indicated by citizen complaints (*Special Trap*) or it is a known mosquito activity location (*Routine Trap*)
While setting the trap, the field technician will record the location details including GPS, habitat or land use.
Mosquito Sample Delivery
Laboratory WNV Triggers

- Any *Culex tarsalis* or *quinquefasciatus* sample larger than 30 mosquitoes/trap/night
- Any ‘floodwater’ mosquitoes (*Psorophora columbiae*) sample larger than 300 mosquitoes/trap/night
- RAMP (Rapid Analyte Measurement Platform)- check WNV traces on mosquito pools. RAMP will test only *Culex* mosquitoes
Identifying the area to be fogged
Chemical Sensitive Notification

MedVoice File Transfer
Electronic Transfer Upload

Please enter the location and name of the file you wish to transfer. For example, to upload a file from your local hard drive named "Appointments.txt" that is located in a directory called "Transfer", you should enter "C:\Transfer\Appointments.txt".

If you do not know the specific location or name of the file, you may select the "Browse" button to find your file.

Once you have selected your file, please choose the "Send Files" button at the bottom of the form to send the file.

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## Maricopa County Website Update

### Calendar Maintenance

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### Modify Event ID: 6749

**Enter a Calendar Event**

- **Dept.**
  - Fogging / West Nile

- **Title**
  - Mosquito Adulticiding

- **Description (3000 char max)**
  - Mosquito spraying for (Thursday July 17th, 2008) will be conducted in Arlington, Chandler, Gila Bend, Gilbert, Mesa, Queen Creek and unincorporated areas in Maricopa County. The area in Arlington is within an area around the water treatment plant 1 mile west of Gila Bend Blvd south of Watermelon Rd (Map B C080525). Exceeds flood water mosquito control.

- **Start Date**
  - 7/17/2008

- **Start Time**
  - 10:00 PM
West Nile Virus in Maricopa County

Maricopa County Departments of Public Health and Environmental Services work closely to protect residents of Maricopa County against West Nile Virus (WNV).

In our efforts, Environmental Services has the tough job of locating areas where there is a lot of mosquito activity, catching these mosquitoes and then testing them to see if they have the virus. They also respond to all complaints related to green pools, stagnant water, dead birds and of course mosquitoes. Using such tools as mosquito testing, Environmental Services is the front line in informing residents know where WNV is in the county.

Public Health works with Environmental on the human side of the virus. Working with hospitals throughout the county, Public Health does human surveillance trying to find hot spots in the Valley and monitoring any patients that come in with potential WNV symptoms.

Together both departments work to educate the public about what they can do to protect themselves and their family from contracting WNV.

Today's Fogging Schedule
Mosquito Adulticide

Upcoming Fogging Schedule
- Mosquito Adulticide - 4/30/2010
- Mosquito Adulticide - 4/4/2010

West Nile Virus :: News

Mosquitoes are "in the works" "Fight the Bite" on Labor Day: 9/4/2009
Mosquito breeding season is still in its peak. The heat and recent monsoon rains provide ideal breeding grounds for mosquitoes. It is essential to follow necessary recommendations to eliminate mosquitos. More Details

Maricopa County Confirms First Human Case of WNV in 2009 7/16/2009
The 2009 West Nile Virus season has started here in Arizona. Today, the Maricopa County Department of Public Health and Arizona Department of Health Services confirmed that a woman in her 40s is the More Details
Mosquito Adulticide

Fogging / West Nile

You have reached the Maricopa County Vector Control Mosquito Fogging Informational line. Weather conditions, circumstances and time permitting, the following areas are scheduled to be fogged on Saturday April 3, 2010 during the time frame of 10 pm to 5 am Saturday evening /Sunday morning.

Mosquito spraying for Saturday April 3, 2010 will be conducted in Gilbert, Phoenix and Tempe.

The area in Gilbert is within an area from Guadalupe Rd to Elliot Rd and from Greenfield Rd to Higley Rd (p160 D010610) (Exceeds population thresholds in the area)

The first area in Phoenix within an area from Union Hills to Bell Rd and from 7th Street to 7th Ave (p04 A040332) (Exceeds population thresholds in the area)

The second area in Phoenix within an area from Loop Highway 161 to Union Hills Dr and from 7th Ave to 19th Ave (p04 A040330) (Exceeds population thresholds in the area)

The first area in Tempe is within an area from Baseline Rd to Guadalupe Rd and from Rural Rd to McClintock Dr (p166 D010402) (Exceeds population thresholds in the area)

The second area in Tempe is within an area from Baseline Rd to Guadalupe Rd and from Rural Rd to McClintock Dr (p166 D010402) (Exceeds population thresholds in the area)

Your call is appreciated.

Date: 4/3/2010
Time: 10:00 PM - 5:00 AM
Equipment Used in Adulticide

Fogging Truck

Radar Gun

Fogger Pump
Fogger Pump On/Off (DataMaster II)
Conclusion: Benefits of GIS

- Increases adulticide application efficiency
- Reduces required reporting time
- Increases field-work control
- Improves customer service
- Provides a better organized surveillance
- Reduces costs
- Provides real-time mapping of adulticide areas through the use of DataMaster
Resources

- http://www.maricopa.gov/Public_Health/HotTopics/wnv/
- http://www.maricopa.gov/EnvSvc/VectorControl/
- http://www.cdc.gov/ncidod/dvbid/westnile/
- http://www.cmmcp.org/adulticide.htm
QUESTIONS?