

2003-2004 SANTA CLARA COUNTY CIVIL GRAND JURY

AN INQUIRY INTO THE VECTOR CONTROL DISTRICT WITH A FOCUS ON READINESS FOR WEST NILE VIRUS

Summary

Prompted by news reports projecting that the West Nile virus will reach Northern California by the summer of 2004, the 2003-2004 Santa Clara County Civil Grand Jury (Grand Jury) inquired into the operations of the county's Vector Control District (Vector Control) and, briefly, into the Public Health Department's role regarding West Nile virus. The inquiry left the Grand Jury satisfied that Vector Control is well prepared for the prevention of West Nile virus and the Public Health Department is well prepared for educating the medical community about the detection and treatment of the virus in humans. Two findings and two recommendations are offered. The first is designed to elevate the profile of Vector Control so that its voice will be heard in matters that impact vector populations. The second is meant to strengthen Vector Control's hand when dealing with infractions.

The report that follows is also intended to educate the public about the virus and the agency, Vector Control, which is the county's first line of defense against it. At the time of the writing of this report, new deadly vector born illnesses, such as Mad Cow disease and Avian flu, have made headlines around the world. In light of these developments, it is important that the public be informed about an agency that all too often operates below the radar.

Background

After reading news reports about West Nile virus and noting that it was just a matter of time before it would reach Northern California, the Grand Jury began an internally generated inquiry into the county's preparedness for the virus. The Grand Jury visited both the Vector Control District and Public Health Department and had conversations with the manager of Vector Control and the Health Officer. These visits were followed by telephone conversations and extensive reading. The Grand Jury also contacted the Contra Costa County's Vector Control District.

It is important to note a definition at the outset. The word 'vector' comes from the Latin verb meaning 'to carry' and is generally defined as any organism that carries disease from one host to another. For the purposes of this report, the Grand Jury relies on the definition offered by Vector Control in its own literature: a vector is any animal capable of transmitting the causative agent

of a disease to humans or any animal producing human discomfort or injury. Mosquitoes constitute one of many vectors found in Santa Clara County.

The Virus

Although the West Nile virus was first isolated in Africa during the 1930s, and has long been present in Africa, Asia, and the Middle East, it is relatively new to the Western Hemisphere. It was detected in New York City in 1999, and has steadily moved both down the East Coast and westward. California reported its first human case in September of 2003. By November of 2003 there were two cases. The virus is passed to people and animals by bites from mosquitoes that have fed on infected birds.

The great majority of people who have West Nile virus will not experience any illness. However, about 20% of infected people – with the elderly being most susceptible – will develop mild flu-like symptoms such as fever, headache, body aches, and sometimes a skin rash on the trunk of the body and swollen lymph glands; these symptoms generally last a few days. A subset of these infected people will develop severe symptoms like a high fever, coma, convulsions, and paralysis. These symptoms last several weeks. Some neurological effects may be permanent, and in about 4% of cases the virus causes death. According to the Centers for Disease Control and Prevention, as of early 2004, there have been a total of 13,427 cases of West Nile virus in the United States resulting in 525 deaths.

While the Centers for Disease Control and Prevention have been working on a human vaccine for the virus, it doesn't expect to have one for another two to three years. Therefore, the best preventive measure against infection is to simply avoid being bitten by mosquitoes. However, experts caution that there really is no way to completely eliminate the possibility of contracting the virus without getting rid of every infected mosquito, clearly an impossible task. They warn that once the virus arrives in a locality, it is there to stay. Unfortunately, all the vectors of West Nile Virus can be found in Santa Clara County and one of the primary vectors is a mosquito that breeds in containers of standing water.

The Grand Jury interviewed the Health Officer in the Public Health Department responsible for educating the county's 5,000 doctors about detection and treatment of the disease. The Department is also charged with providing guidelines for collection and submission of laboratory specimens to the state authorities for testing. The Department is engaged in educating the public about preventive measures. The Grand Jury found that the Department is well prepared for educating physicians in the diagnosis and treatment of the viral infection.

The District

The Vector Control District is the agency responsible for preventing the virus from obtaining a foothold in the county. The goal is zero human cases.

It is interesting to note that the very first efforts at vector control in California began in 1915 after passage of the Mosquito Abatement Act. San Mateo County, plagued by mosquitoes breeding in the marshes lining the bay, was the site of these initial vector control efforts. Santa

Clara County soon followed with its own Matadero Mosquito Abatement District in 1918 and has been proactive in controlling the populations of mosquitoes, ticks, fleas, lice, flies, spiders, rodents, bats, raccoons, skunks, fox, coyotes, bobcats and more ever since. There are fourteen different species of mosquitoes alone in the county, each with its own habitat and feeding pattern. The state now has 51 vector control districts.

Santa Clara County's Vector Control organized itself into a dependent special district in 1988 and charged a service fee for its activities. In 1998 it became legally separated from the county, (a benefit assessment dependent special district), but still administered by the county. Currently, the Vector Control District reports directly to the county's Department of Environmental Health, which in turn reports to the Environmental Resource Agency. Vector Control submits an annual report to its Board of Trustees, the County Board of Supervisors and pays the county for its administrative overhead expenses.

Vector Control uses a system of assessment units, benefit zones, benefit units, and benefit factors to figure out what each property owner pays. Depending upon the use of the property and the amount of service dispensed, a parcel receives a specific level of vector control benefit. Assessment units are assigned in proportion to the benefit received. Moreover, the District recently lowered its benefit assessment 80% for parcels east of the Mt. Hamilton Diablo Range where thousand acre ranches predominate. This results in an east of ridge-west of ridge division in Vector Control's assessment procedures and is reflected in two different rate ranges. These different assessments are reflected in annual rates that vary from \$.67 to \$5.08 per parcel for the zone east of Mt. Hamilton and \$3.35 to \$27.02 for the zone west of Mt. Hamilton. However, the great majority of landowners pay \$5.08 annually per parcel on their property tax bill. There has been no increase in rates since 1997 and this is the first year that Vector Control has had to dip into its reserves to operate.

Vector Control doesn't have much budget flexibility. Proposition 218 of the State Constitution prevents the Vector Control from charging more per parcel for land with higher appraised values. Moreover, any increase in assessments must be voted on by all parcel owners, with votes weighted by the size of the parcels. Lastly, county and city owned properties are exempt from the assessment.

Collecting each year from all property owners, Vector Control is entirely self-financed. With about 442,000 parcels in the county, Vector Control raises almost \$2.7 million. Another \$10,000-\$12,000 is generated through property splits and zoning changes that designate parcels to a higher assessment rate. Interest off reserve accounts provides additional funds. Currently, Vector Control has an operating and maintenance budget of approximately \$3 million. This translates into a recent operating loss of approximately \$200,000 a year. It has capital reserves of about \$4 million, half of which will go toward a new service yard for storage and maintenance on Berger Drive in San Jose. The county will contribute about \$1 million toward this new, closer facility. Vector Control is independently audited on an annual basis.

Discussion

The Grand Jury was particularly interested in Vector Control's mosquito control activities, especially with regard to West Nile virus. Vector Control maintains a zero tolerance policy toward the virus; its goal is to prevent any human cases in the county. Its mosquito abatement activities account for about 40% of the current budget. Since all fifteen towns and cities belong to the District, its 30 professional and technical staff members are responsible for the entire 1,312 square miles in the county, making it geographically the largest of the ten Bay Area vector control districts. Activities include monitoring 300 miles of streams, 5,000 acres of marshlands, and 27,000 storm drain catch basins.

For its operations, Vector Control divides the county into thirteen smaller districts. Field workers have located between 500 and 600 inventory sources of mosquitoes in the county; these are places where, based on historical data, mosquitoes are likely to breed. In Northern California's relatively mild climate, the county's fourteen different mosquito species make the breeding season last all year, with the hardy salt marsh mosquito breeding during the winter months. Staff visit high risk sources once a week, sometimes checking strategically located traps; other sources are visited once or twice a month. Prevention focuses on the larval and pupae stages of the insect and involves eradicating the water and vegetative conditions that are conducive to breeding. Detection of the virus involves trapping and testing adult mosquitoes, setting out sentinel chickens (serving as 'lookouts' for the virus) that are routinely bled to look for viral antibodies, as well as testing birds and horses for infection. Biological measures of control use natural predators like harmless bacteria and mosquito eating fish known, appropriately enough, as mosquito fish. As a last resort, staff employ chemical agents such as synthetic hormones. Since mosquito larvae are a food source for shore birds, and mosquito fish are said to threaten the red-legged frog, Vector Control must temper its work with environmental sensitivity in these habitats. In addition to these approaches, Vector Control takes very seriously its role in educating the public about the mosquito breeding potential of even small areas of standing water and personal protection measures that can be taken against mosquitoes. Finally, Vector Control has established a detailed risk assessment plan and response program for normal, emergency and epidemic conditions for West Nile virus.

Vector Control faces a budget squeeze if it is to maintain its current level of service. It has been in the same facilities since 1992 - rather cramped offices which, when it moved into them twelve years ago, were termed "temporary quarters." Optimally, it would like to build new ones. More than twenty years ago it inherited from the Department of Health the use of a maintenance and storage yard in Mountain View. Moreover, as a result of recent discussions with the Water Quality Control Board, it is faced with the possibility of doing its own water quality monitoring before, during, and after its abatement activities. This will add to its cost of operating. The Grand Jury learned that the district is considering mailing a survey to parcel owners to determine public response to a rate increase. If approved, it would be the first increase since 1997.

It is a tribute to the success of this low profile group that there are so very few mosquitoes for citizens to complain about. In fact, one might argue that if residents were swatting more mosquitoes, Vector Control would be a much more visible agency. In addition to mosquito control, Vector Control has five other program areas. They are: rodent control, miscellaneous

vector control, vector-borne disease surveillance, urban wildlife management, and educational services.

Two current activities indicate the important role Vector Control plays in maintaining our health and quality of life. The first is the federally driven project to restore 40,000 acres of wetlands around the bay, including 16,500 acres of industrial salt ponds in the south bay. Known as the South Bay Salt Pond Restoration, it is the largest restoration project in the United States after the Everglades project in Florida. Wetland restoration needs to be designed to produce healthy tidal-action marshes that will minimize mosquito breeding conditions while also protecting the mosquito larvae food source for shore birds. It is important that Vector Control have a seat at the table. Currently, the Alameda Vector Control District represents vector control interests on the Local Governance Committee. Our Vector Control District is working on gaining a seat on the Salt Pond Restoration Project's Scientific Committee.

The second project was prompted by the Clean Water Act and involves the installation of storm water runoff collection devices – known in the vector business as structural BMPs – at Cal Trans locations and construction sites. Specially designed containers collect runoff and allow heavy metals, pesticides, and other pollutants to percolate out. However, the standing water in the container might easily become a breeding ground for mosquitoes. Structures need to be designed so that they drain in less than 72 hours, thus denying a habitat to mosquitoes. Vector Control has a seat at the table with Cal Trans and the regional Water Quality Control Board when these new collection devices are discussed. Indeed, recent studies based on experiences in Southern California reveal a need for better communication and more collaboration between water quality people and vector control folks.

As it now stands, Vector Control basically invites itself onto various boards and committees. While it is learning to be more proactive in seeking a stakeholder voice, it has to consistently fight against being relegated to a seat in the peanut gallery.

The Grand Jury found that Vector Control's enforcement powers can be strengthened and the citation/appeal process accelerated when public health is at risk. At this time, Vector Control lacks the authority to immediately issue administrative citations to people who, for example, maintain standing water containers on their property. The process currently in place can be both time-consuming and expensive, with a preliminary finding of nuisance, a first notice of violation, a second notice, a transmittal letter to the Board of Supervisors that now costs the District \$900 to process, a scheduled public hearing before the Board, and a third notice if the Board decides to support Vector Control's finding. All steps combined can take anywhere from one month to four months or more. Meantime, the standing water remains a potential, if not by this time an actual, mosquito breeding ground.

During its inquiry, the Grand Jury learned that for the past year Contra Costa County Vector Control has been able to eliminate the delay in removing public nuisances that threaten public health – like standing water – while preserving the citizen's right to a fair process and appeal. The citation, abatement and appeal process is taken out of the hands of the Board of Supervisors and is given to the city where the problem is located. Contra Costa Vector Control District has gone to the cities and obtained legal permission to issue administrative citations on behalf of the

city to violators of city ordinances. There is a series of graduated fines for first, second, third, etc. offenses, indefinitely. Fines can grow to as high as \$1,000 per day. The change to the new citation process involved broadening the cities' definition of 'public nuisance' to include vector breeding situations and expanding existing summary abatement authority to emergency vector situations that constitute an immediate threat to public health and/or safety. After the city specifically requests an abatement of the nuisance, the Contra Costa Vector Control's field employees are then empowered to begin immediate cleanup of the site, without notice or hearing. A lien on the property and an assessed fine pay for the abatement procedure, and the city reimburses the Vector Control for a portion or all of the abatement costs. When there is no threat to public safety, hearings can be scheduled to contest the citation. While not all cities in Contra Costa County have signed up, the five that did passed resolutions to give Contra Costa Vector Control this new authority. In fact, Contra Costa Vector Control provided the necessary language for the resolution in some cases. Contra Costa Vector Control issues the citations, while the cities collect the fines and handle the appeal process. Contra Costa Vector Control charges the cities \$79 per hour for their citation work, charges not to exceed the amount collected.

Conclusions

The Grand Jury concluded its inquiry satisfied that the Santa Clara County's Vector Control District has a well developed plan to meet the threat of the West Nile Virus. Vector Control deserves recognition for a past job well done and public support for both a more visible presence on decision-making boards that might have an impact on vector issues and strengthened enforcement authority.

Finding I

Vector Control's input is important to two current projects, the South Bay Salt Pond Restoration and the Cal Trans placement of storm water collection devices. If not designed properly, each of these projects could lead to an increase in the county's mosquito population.

Recommendation I

The Grand Jury recommends that the Board of Supervisors, as Vector Control's Board of Trustees, should establish a policy of promoting Vector Control's participation in projects that impact the county's vector population. This includes not only local projects, but also regional, state and even national activities that have local ramifications for vector populations.

Finding II

Vector Control currently lacks the authority to issue administrative citations for public nuisances that pose an immediate threat to health and safety. Contra Costa County's Vector Control District provides a good model for achieving that authority.

Recommendation II

The Grand Jury recommends that Vector Control petition the cities and towns in Santa Clara County for the authority to issue administrative citations for public nuisances that pose an immediate threat to health and safety. Contra Costa County's recently instituted system provides a model that might be adapted for use in Santa Clara County.

PASSED and **ADOPTED** by the Santa Clara County Civil Grand Jury on this 18th day of March 2004.

Richard H. Woodward
Foreperson

References

Documents

The Grand Jury obtained the following documents, many undated, from the District Managers of the Santa Clara County and Contra Costa County Vector Control Districts and from the Public Health Officer of Santa Clara County.

Administrative Citation Procedures, Contra Costa County, January 30, 2003, DRAFT.

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Centers for Disease Control and Prevention, “Stormwater Management and Vector Breeding Habitats.”

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Initial Santa Clara County Mosquito-Borne Virus Surveillance and Response Plan, September, 2002.

Physician Alert, West Nile Virus publication.

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Santa Clara County Vector Control District Audit Report, June 30, 2003.

Santa Clara County Vector Control Assessment, Final Engineer’s Report, July 30, 1996

Suggested Language Concerning Nuisance for Inclusion in City Ordinances, Contra Costa County, January 30, 2003, DRAFT.

“The Dark Side of Stormwater Management: Disease Vectors Associated with Structural BMPs,” Stormwater.

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Interviews

District Manager of Santa Clara County Vector Control District, November 13, 2003, January 28, 2004 and February 9, 2004.

District Manager of Contra Costa County Vector Control District, November 18, 2003.
Public Health Officer, November 18, 2003.