2019 Annual Report
Beaver Creek
Mosquito Control Program

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Mosquito Management
Operations

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VDCI's Commitment

VDCI 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 of our employees are committed to excellence in vector control and public health and always strive to improve the quality of human life in our 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, Indian reservations, and encephalitis surveillance monitoring programs for county health departments.

VDCI, as the contractor for Beaver Creek, will continue to use scientifically established Integrated Mosquito Management techniques to survey and control local mosquito populations using bio-rational 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.

Program Objectives

The primary objective of the Beaver Creek IMM Program is to reduce mosquito populations through the use of specific, environmentally sound, control techniques. VDCI prioritizes the detection and elimination of larval mosquitoes in aquatic habitats, in conjunction with the control of adult mosquito populations through routine barriers and aerial adulticide applications.

Open communication is maintained by VDCI and the residents of Beaver Creek in order to ensure that the highest level of mosquito control and epizootic response is achieved for these two adjacent programs. This communication is important to the mosquito management program and provides significant benefits to outdoor recreation and public health throughout the entire control area.

2019 Season Perspective

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 unique challenges in both mosquito control and mosquito-borne disease proliferation. The summer of 2019 started off with a record breaking high snowpack and cooler temperature conditions throughout Western Colorado. This led us to believe there would be a somewhat of a difficult mosquito season. High flows in Beaver Creek and high ground water on the mountain along with high temperatures throughout the summer led to a very long mosquito season.

Typically, the mosquitoes begin to emerge in late April and early May. In 2019, however, the cool spring temperatures and late snow melt led to a delayed initial emergence. Simply put, the mosquito season got a late start. The first larvae in Beaver Creek were observed in late-May. This was about two weeks later than nearby programs in Edwards and Gypsum. When

temperatures finally increased in June mosquito larvae began to emerge rapidly. The first large-scale hatch was the second week of June, about two weeks later than normal. This trend continued throughout the summer.

Larval Mosquito Control

Larval mosquito control can be achieved in several ways including biological, biochemical, chemical, and mechanical means. 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, called Source Reduction, is a technique which VDCI uses on relatively small scale projects, as the area to be modified and the extent to which the work will affect the surrounding area must be carefully reviewed. True biological controls, such as the introduction of predacious animal species, can also cause negative environmental impacts that outweigh the benefit of their control capacity.

VDCI's favored method of larval mosquito control is through the use of bacteria or biological control. 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. A broad 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* are the predominant species due to its limitations and cost.

Larval mosquito control is almost exclusively used as the control product for Beaver Creek. It reduces the number of potential disease vectors and annoyances associated with biting adults. It also greatly reduces the reproductive potential of the mosquito as they never have the opportunity to lay eggs and increase the overall population.

VDCI began larval site inspections in the low elevation areas of Beaver Creek in early May. These riparian areas were still too cold to produce larvae. No larvae were found during the early season inspections. We continued inspections through May and didn't find anything until the end of the month. This was a result of the typical early season species not having the opportunity to emerge as conditions were not ideal. By early June the temperatures increased and mosquitoes were emerging regularly.

In 2019, VDCI inspected and treated 25 sites in Beaver Creek. VDCI visited the sites once a week until late August. During these site visits the field technicians applied approximately 8 lbs. of VectoBac (Bti) to 3 acres of breeding sites along Beaver Creek and some of the margins along the golf course ponds. The main problem areas were the backwater holes along the creek on Beaver Creek and the melt water pools throughout the area. Many of these locations were not producing larvae in the past. It is likely a result of the abundance of snow from the winter. These locations were added to the maps and will be part of the weekly routine.

Adult Mosquito Control

The goal of VDCI is to provide all residents of the Beaver Creek program with the best options for effective modern mosquito management. The objective is to control mosquitoes in the larval stage, using biological control products. When mosquito complaints are received by the residents, VDCI used CDC and EPA approved adulticides to reduce adult mosquito populations. In 2019 VDCI utilized the water based product talstar to conduct 1 barrier treatment in Beaver Creek. This was at a residents house on Beaver Creek Drive. Approximately 1 ounces of Talstar was applied to these areas. This application was timed to provide additional control around the 4th of July and when complaints in certain areas were voiced.

There were no truck spray missions in Beaver Creek in 2019.

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 Edwards (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 line: (877) 276-4306 to accept calls from the public concerning:

- Information about mosquito biology and source reduction of mosquito habitats
- information on program components, operations and monitoring
- 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

- Opt-out of any adulticide spraying via a shut-off list
- Request notification when adulticide spraying is planned in their neighborhood
- Request health and safety information about mosquito control operations and pesticide products used in the Gunnison

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.

CALL NOTIFICATION & SHUTOFF SYSTEM

VDCI continues to maintain a comprehensive Call Notification & Shutoff database and will notify residents on the list when conducting ULV adulticide spray applications within 2 blocks of their property or within the effective ULV spray drift distance (300-500 ft depending on wind speed and direction). All Shutoff locations are mapped in ArcView GIS. Call & Shutoff forms are available online and may be submitted via mail or email.

Summary

We at VDCI feel we met the goals set forth or Beaver Creek in 2019. We minimized the use of chemicals and managed the mosquitoes almost exclusively with biological controls. The only exception was the barrier applied for a resident to provide additional coverage for the 4th of July.

The season presented some challenges with an abundance of water and high temperatures which led to a season long mosquito emergence throughout the program area. VDCI managed the mosquitoes by greatly increasing the larval control efforts.

VDCI looks forward to providing Beaver Creek with mosquito control in 2020.

Attachments

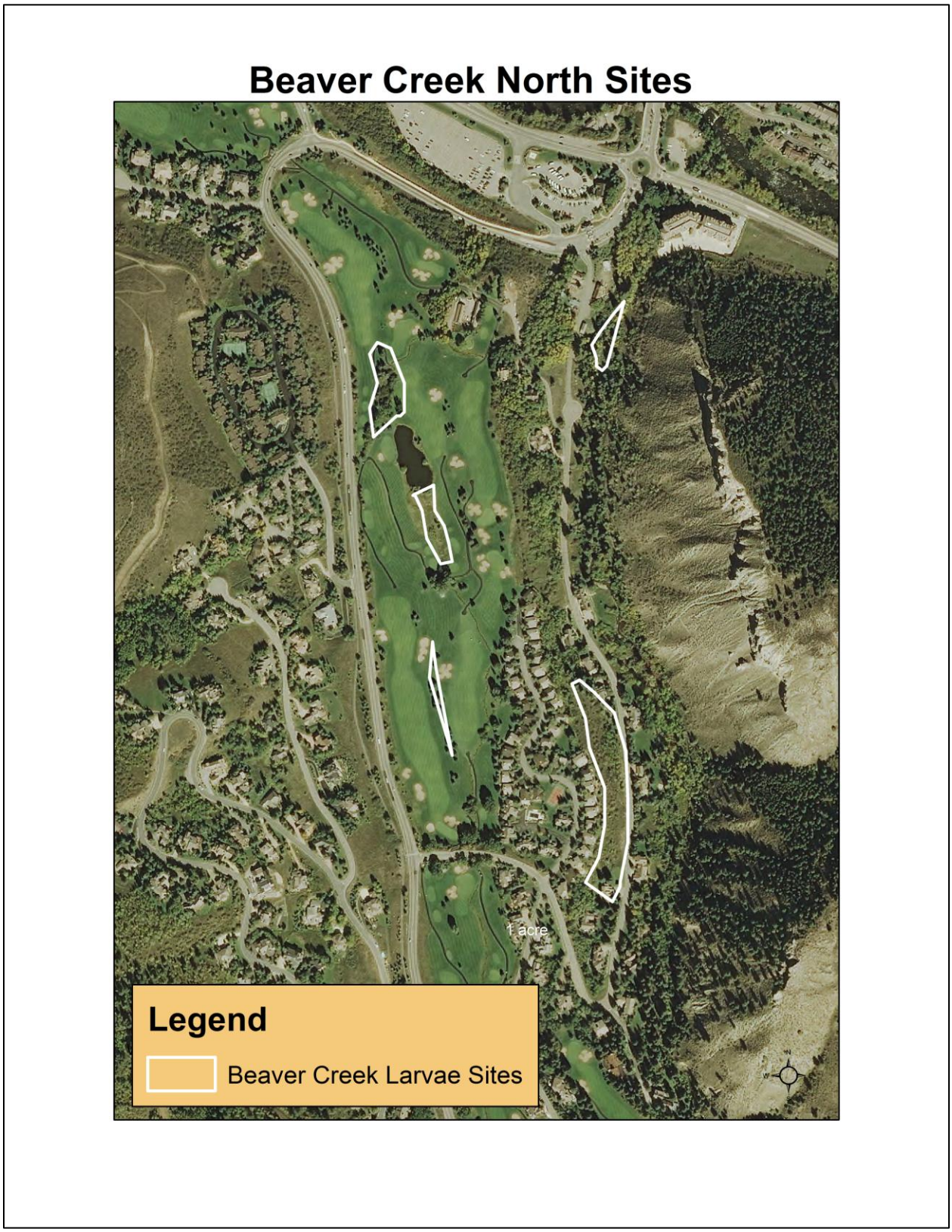

Figure 1 Beaver Creek larvacide areas

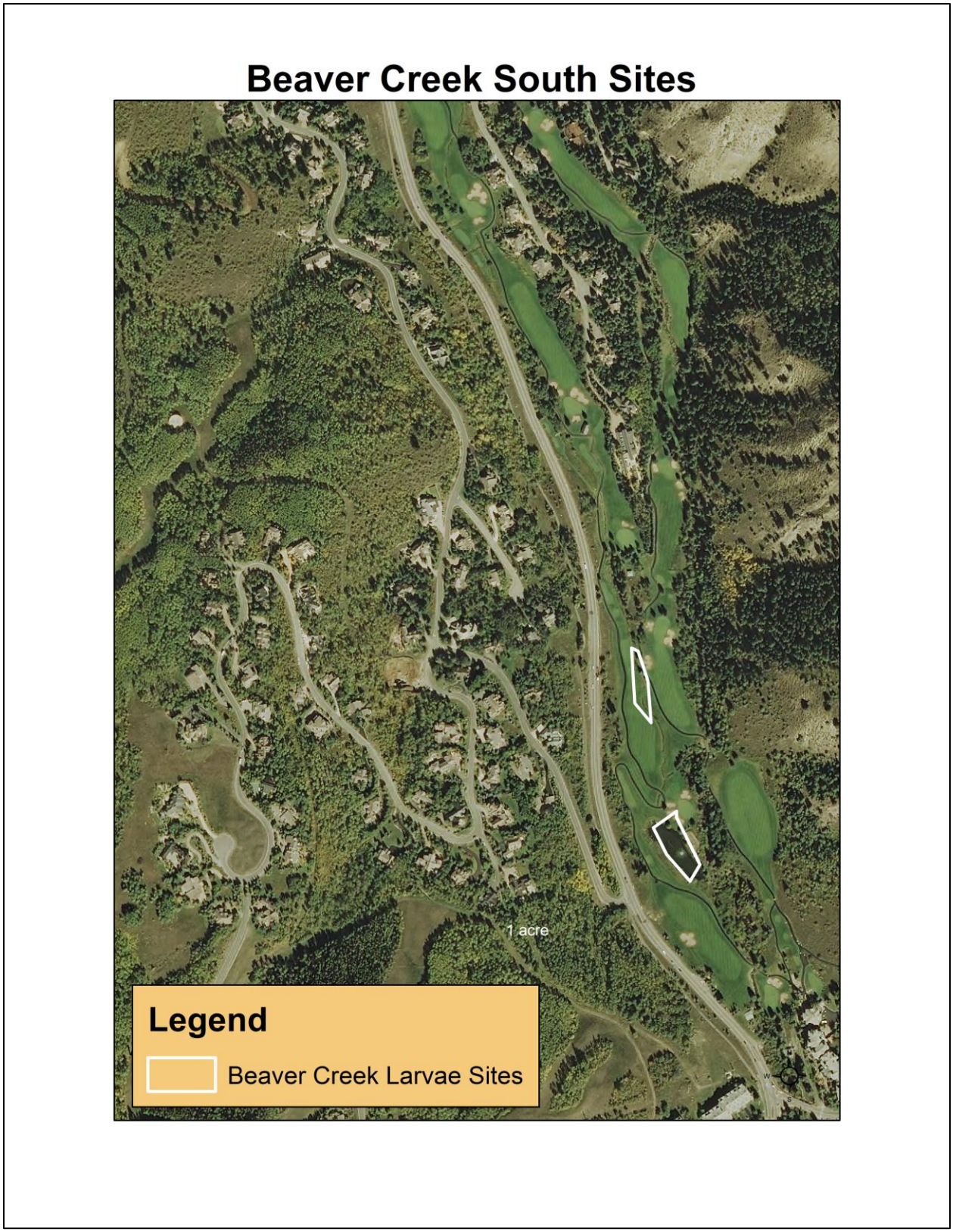

Figure 2 South larave sites