DIVISION OF PUBLIC HEALTH
DPH CONTRACT 27436
AMENDMENT #11

The Department of Health Services, on behalf of the Division of Public Health and Eau Claire City/County Health Department agree to amend their original agreement for the BRACE program (Profile 150500) as follows:

REVISION: SECTION 5. SERVICES

Additional projects to be completed as detailed in attached Exhibit(s).

Adjustment will be made to the Community Aids Reporting System (CARS) based on the information in the table below.

Agency #	Agency Type	Profile #	Current Contract Level	Contract Change Amount	New Contract Level	Funding Period
256321	660	150500	$5,045	$6,258	$11,303	9/30/2015-9/29/2016

All other terms and conditions of the original agreement remain unchanged.

GRANTOR's Authorized Representative
Chuck J. Warzecha
Administrator / Deputy Administrator, Division of Public Health
Department of Health Services

10/17/16
Date

Proposal to: Wisconsin Department of Health Services, Division of Public Health, BRACE program

Climate and Vector-borne Disease Surveillance Program: 2016

Lieske Giese
Health Department Director
Eau Claire City-County Health Department

The Building Resilience Against Climate Effects (BRACE) program is a CDC grant that was developed to assist states to develop and implement effective response to climate change. For this proposal, we will execute surveillance of invasive ticks and tick seasonal activity.

This grant should only be used for surveillance, educational, and prevention and control activities during the 2016 season and **not for administration purposes.**

Goal: Quantify the prevalence of *Borrelia burgdorferi* variants associated with more severe disease and tick phonological patterns and research intervention strategies to reduce either prevalence or overall population.

In the eastern United States, there are two hotspots for Lyme Disease transmission. One is in the western Wisconsin/Minnesota region and the other is along the Atlantic Seaboard. There are striking differences in the seasonal occurrence (phenology) of tick stages between the two regions. Ticks have 3 mobile stages. The first stage is the larva, which molts into a nymph, which in turn become adults. In the Northeast, nymphs appear in the spring and early summer and are infecting reservoirs with the pathogen while they feed at this time. Larvae do not appear until August, when they feed on the same reservoirs and become infected. In the upper Midwest, larvae and nymphs usually peak at the same time of the year, in June, with a much smaller cohort of larvae appearing in August. Importantly, these phenological differences correlate with the prevalence of different strain variants of *B. burgdorferi*, with those associated with more severe disease occurring with greater frequency in the Northeast. This may be because of the long lag time between tick stages, which selects for strains of *Borrelia* that can remain in the reservoir for extended periods of time.

The difference in tick phenology is thought to be a reflection of the different climates in the two regions, with a shorter period that is permissive for host seeking in the Midwest. Changing climate may result in a shift to a more northeastern-like pattern of activity, which might select for more virulent pathogen variants. During the 1990s, academia documented some instances of NE-like patterns in locations in southern Wisconsin but these appeared to be unstable. More recently, colleagues have reported similar results from their work here. To better understand the potential for altered tick phenology and pathogen virulence, we propose two goals:

1) Continue standardized collections of black-legged ticks (referred to locally as deer ticks) to monitor seasonal patterns of abundance of subadult stages at accessible locations in Eau Claire county. Collections will occur at parks including Lowes Creek and Big Falls and some neighborhoods that have had collections in the past near Eau Claire and Fall Creek. Collections will be done through drag sampling of the vegetation as described above. In this case, sampling will occur at all times where temperatures are appropriate for questing when snow is not on the ground (potentially April-December). Sampling will be done at least 2 times/month.

2) Document the current pattern of pathogen virulence genotypes and provide the information to UW Madison for data analysis. Genotypes can be readily determined by analysis of the spacer region of the 16S-23S ribosomal RNA genes (RST). The State Lab of Hygiene and professors at UW Eau Claire and UW Madison have trained our team on analysis to build this capacity in our public health lab.

3) During Years 2 and 3 of the Wisconsin BRACE grant, the Eau Claire City-County Health Department conducted a vector-borne disease investigation in the Northwestern part of Wisconsin by collecting two years of baseline field data related to deer tick (*Ixodes scapularis*) populations and the infective incidence of ticks carrying Lyme Disease (*Borrelia burgdorferi*) variants. During Year 4, BRACE will fund Eau Claire Environmental Health continue collections and to compile and analyze the tick data and submit a written report to the Wisconsin BRACE Program by February of 2016. An amended report including the Year 4 data will be submitted at the end of the funding period.

4) Prepare a literature review summary of current intervention techniques for reducing infection prevalence or overall population of deer ticks by the end of the grant period.