MANITOBA HEALTH

WEEKLY WEST NILE VIRUS SURVEILLANCE REPORT (WEEK 27)

The 'Weekly West Nile Virus Surveillance Report' outlines the most current surveillance data and is posted weekly on the website (www.gov.mb.ca/health/wnv) during the summer season. Surveillance data are subject to change and will be updated accordingly as new information becomes available.

Manitoba Health conducts surveillance for West Nile virus (WNV) within human, mosquito & horse populations annually:

- **Mosquito**: Mosquito surveillance is conducted twice per week between mid-May and mid-September (weather dependent) in a number of southern Manitoba communities. In Manitoba WNV testing is conducted on *Culex tarsalis* mosquitoes, the principal vectors of WNV, and both mosquito numbers and infection rates (i.e. positive mosquito pools*) are reported.
    - Communities chosen for mosquito trap placement were selected based on population density, local evidence of prior WNV activity and representative geographic distribution.
- **Human**: Human WNV surveillance is conducted throughout the year (January – December) by Cadham Provincial Laboratory and Canadian Blood Services, with all data reportable to Manitoba Health.
    - Human cases are included in the Weekly WNV Surveillance Report based on the date they are reported to Manitoba Health. Case classification information is not included in this report.
- **Horse**: Surveillance of WNV in horses is conducted by Manitoba Agriculture Food and Rural Initiatives (MAFRI) with cases reported to Manitoba Health as detected.

The risk of WNV transmission is expected to be present throughout southern Manitoba each year and mosquito trapping provides a localized estimate of WNV risk. The absence of traps in a community or region does not imply that there is no risk of WNV in those locations. Further, low *Culex tarsalis* numbers and/ or infection rates should not be interpreted as zero risk. Residents and visitors are strongly encouraged to protect themselves from mosquito bites throughout the season even in areas with no mosquito traps or low WNV activity.

The accumulation of Degree Days* are recorded throughout the season as there is a general correlation between increased and/ or rapid accumulation of Degree Days and WNV transmission risk. Warmer temperatures associated with increased Degree Days serve to decrease mosquito development times, shorten the WNV incubation period and increase biting activity. All of which can increase the risk of WNV transmission, should other conditions also be favourable. Seasonally the greatest accumulation of Degree Days typically occurs in the southwestern portion of the province and along the Red River valley.

For additional West Nile virus information, including precautionary measures and symptoms, please consult the Manitoba Health WNV website (www.gov.mb.ca/health/wnv) or contact Health Links at 204-788-8200 (in Winnipeg) or toll free at 1-888-315-9257.

**** For a more detailed description of mosquito pool & degree days consult Appendix 2.***

- WNV Provincial Surveillance Data -

- To date (as of week 27*) there has been no WNV activity detected in Manitoba (Figure 1).
- A total of 272 *Culex tarsalis* mosquitoes were collected in Week 27 from twenty-two communities. *Culex tarsalis* were detected in all four southern Manitoba Health Regions (Table 1 & 2; Figure 2).

**** For a listing of CDC surveillance weeks and corresponding dates for 2013 please see Appendix 1.***

2012 Year-End WNV Surveillance Data*

- In 2012 a total of 39 human WNV cases were reported to Manitoba Health from all four southern Manitoba Health Regions (Interlake-Eastern, Prairie Mountain, Southern and Winnipeg).
- Twenty-nine (29) of the WNV human cases were classified as the less severe non-neurological syndrome, while ten (10) were classified as the more severe neurological syndrome.
- In 2012 a total of 116 WNV positive mosquito pools were collected from 25 communities across all four southern Manitoba Health Regions
- In 2012 seven WNV positive horses were reported from the Prairie Mountain and Southern Health Regions.

**** This summary section will be removed upon the detection of WNV activity in Manitoba.***

Table 1 – Average number of *Culex tarsalis* mosquitoes captured by Health Region (current to week 27)

Health Region	CDC Week															
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Interlake-Eastern	0.0	0.0	0.0	0.21	0.05	0.15	0.50									
Prairie Mountain	0.0	0.0	0.0	0.22	0.03	0.73	0.97									
Southern	0.0	0.0	0.0	0.17	0.18	3.24	7.65									
Winnipeg	0.0	0.0	0.0	0.12	0.15	0.35	0.81									
Provincial Average	**0.0**	**0.0**	**0.0**	**0.17**	**0.11**	**1.38**	**3.10**									
	Indicates that one or more positive mosquito pools were detected within the health region.															

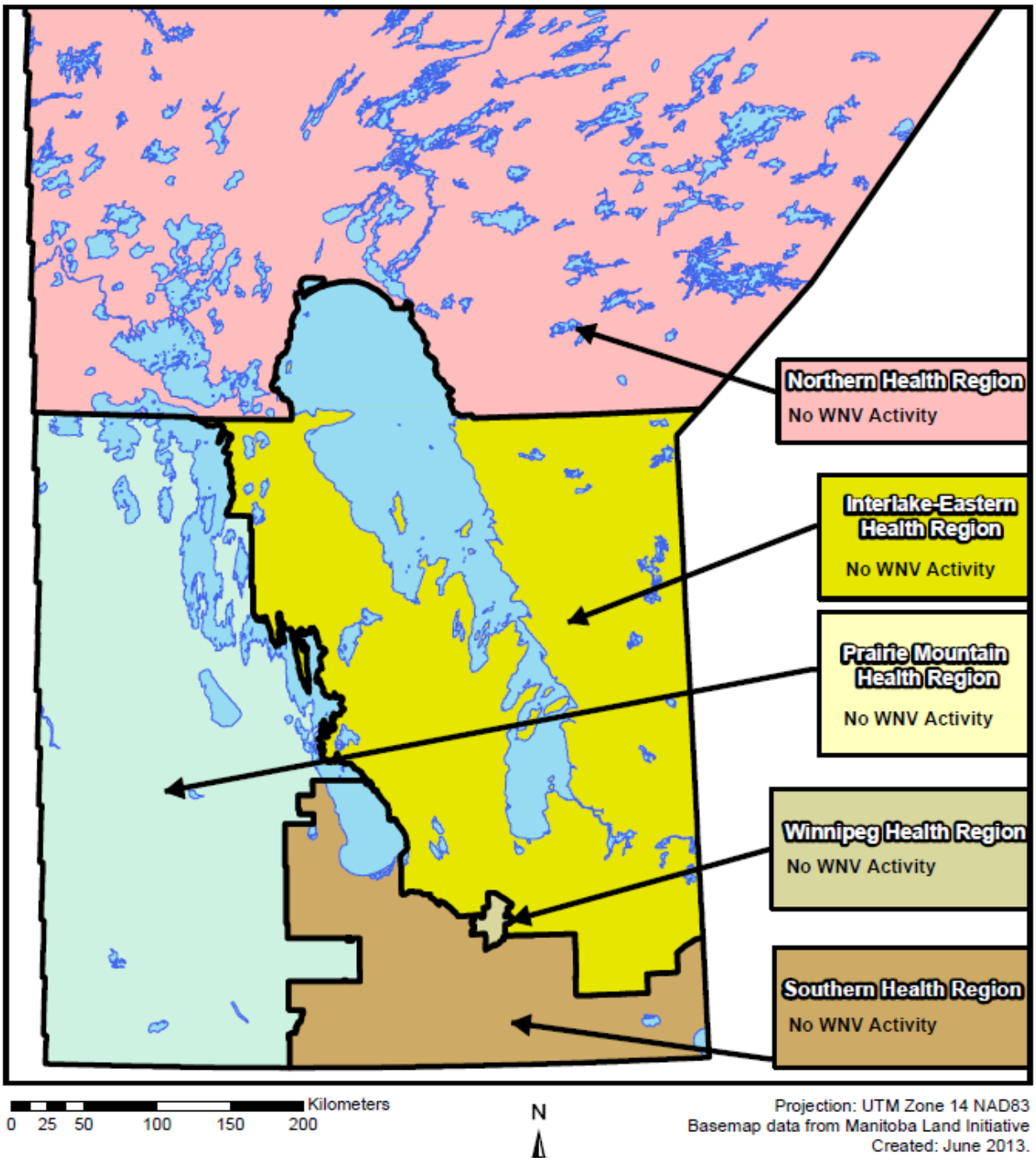


Figure 1 – WNV activity by Health Region within Manitoba (current to week 27).

Table 2 – Average number of *Culex tarsalis* mosquitoes collected by surveillance community* in southern Manitoba – three week trend (current to week 27).

Health Region	Community	Week 27	Week 26	Week 25
Interlake-Eastern	Beausejour	0.00	0.00	0.00
	Gimli	0.00	0.00	0.00
	Oakbank	0.75	0.50	0.00
	Selkirk	1.75	0.00	0.00
	Stonewall	0.00	0.25	0.25
Prairie Mountain	Boissevain	1.33	2.50	0.25
	Brandon	0.67	0.00	0.00
	Carberry	2.00	1.00	0.00
	Dauphin	0.00	0.00	0.00
	Killarney	0.25	1.00	0.00
	Minnedosa	0.25	0.00	0.00
	Sioux Valley FN	1.75	0.00	0.00
	Souris	2.00	0.75	0.00
	Virden	0.50	2.00	0.00
Southern	Altona	2.75	3.50	0.00
	Carman	1.00	0.25	**0.50**
	Headingley	0.00	0.00	0.00
	Morden	**8.75**	**13.25**	**1.25**
	Morris	2.75	**3.75**	0.00
	Niverville	4.25	0.25	0.00
	Portage la Prairie	**61.00**	1.25	0.25
	Roseau River FN	0.00	0.00	0.00
	Ste. Anne	0.50	0.25	0.00
	Sandy Bay FN	0.75	3.25	0.00
	Steinbach	0.75	0.00	0.00
	Winkler	**5.50**	**11.50**	0.00
Winnipeg	East St Paul	0.00	0.50	0.00
	West St Paul	1.00	0.50	0.00
	Winnipeg	0.84	0.33	0.17

* Top three communities with the highest weekly average of *Culex tarsalis* are indicated in bold.

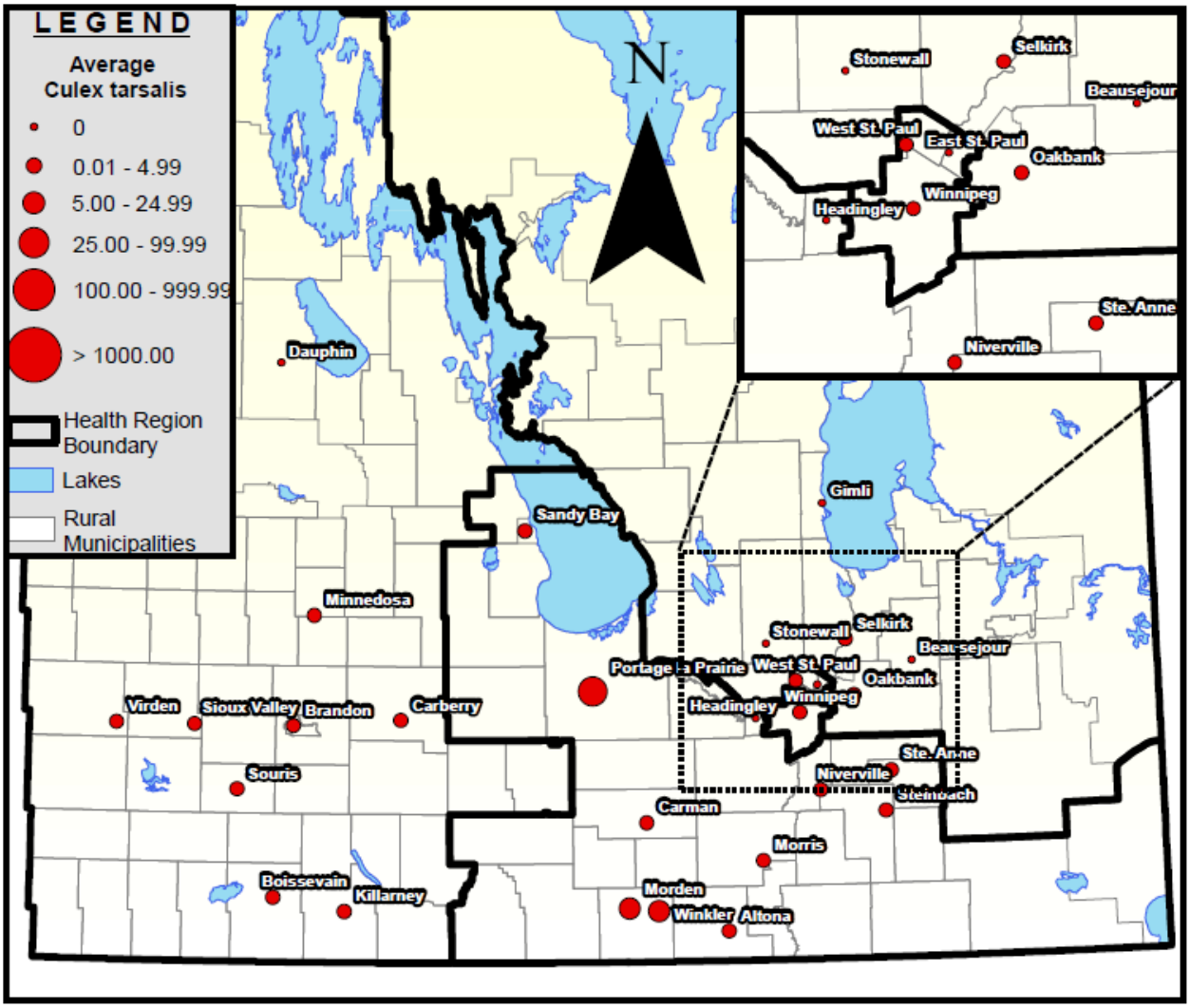
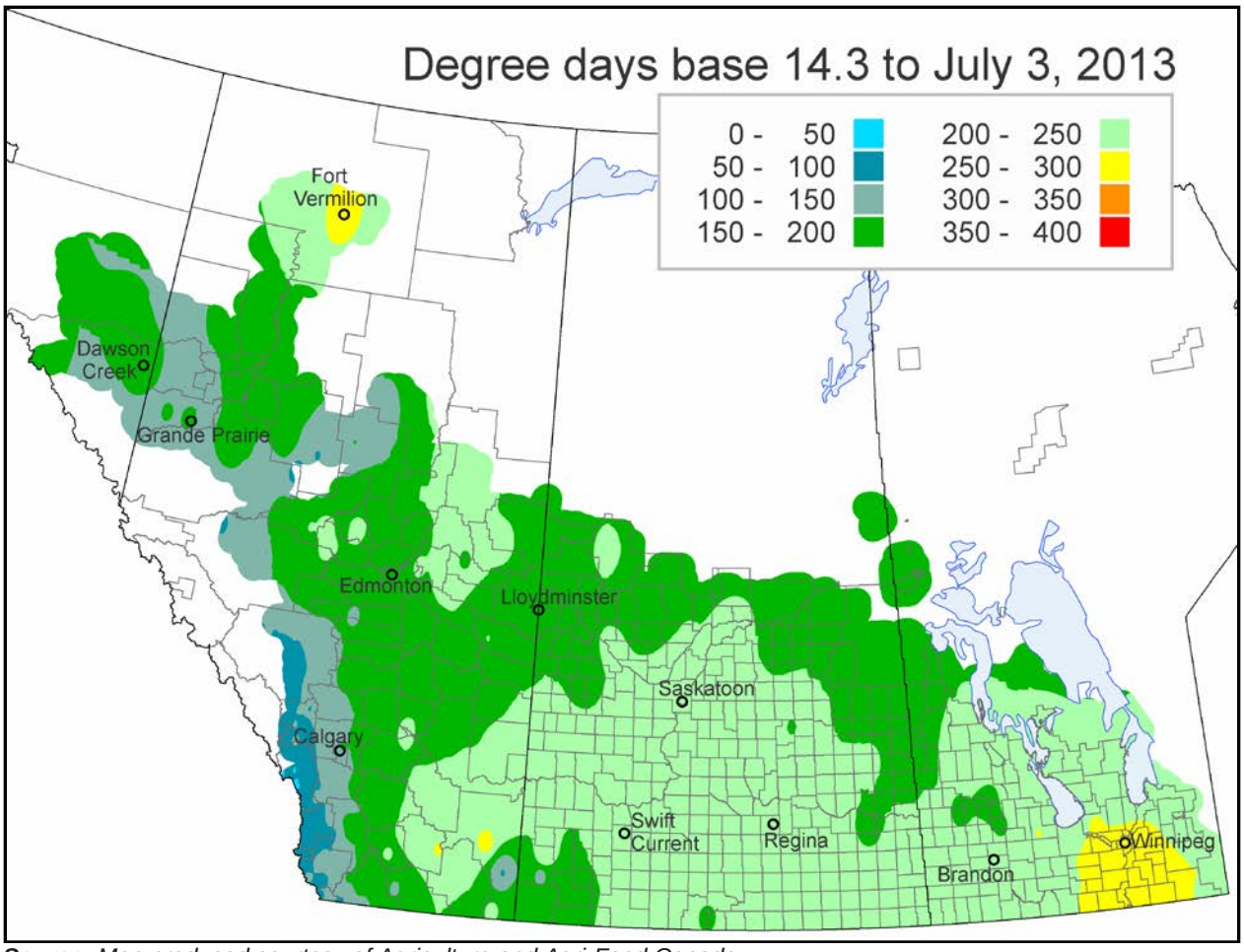


Figure 2 – Average number of *Culex tarsalis* mosquitoes collected across southern Manitoba during week 27.



Source: *Map produced courtesy of Agriculture and Agri-Food Canada.*

Figure 3 - Degree day accumulations, as of week 27, across the Prairie Provinces.

Table 3 – Total number of human WNV cases*, by Health Region of residence, reported to Manitoba Health by laboratories (current to week 27)

Health Region	CDC Week																Totals
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Interlake-Eastern	0	0	0	0	0	0	0										**0**
Prairie Mountain	0	0	0	0	0	0	0										**0**
Southern	0	0	0	0	0	0	0										**0**
Winnipeg	0	0	0	0	0	0	0										**0**
Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

***** Note that cases are presented by week reported to Manitoba Health, adjustments may be made as more details (such as exposure CDC week) become available through follow-up investigation.

Table 4 – Total number of *Culex tarsalis* mosquito pools tested during the 2013 season by health region (current to week 27)

RHA	CDC Week																Totals
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Interlake-Eastern	0	0	0	2	1	2	4										**9**
Prairie Mountain	0	0	0	5	1	9	15										**30**
Southern	0	0	0	6	5	22	24										**57**
Winnipeg	0	0	0	4	4	9	9										**26**
Weekly Totals	**0**	**0**	**0**	**17**	**11**	**42**	**52**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**122**

Table 5* – Total number and percentage of WNV positive *Culex tarsalis* mosquito pools by Health Region (current to week 27)

Health Region	CDC Week																Totals
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Interlake-Eastern	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)										
Prairie Mountain	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)										
Southern	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)										
Winnipeg	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)										
Weekly Totals	**0 (0)**	**0 (0)**	**0 (0)**	**0 (0)**	**0 (0)**	**0 (0)**	**0 (0)**										

***** Note that numbers outside brackets represent positive pools, numbers within represent the percentage of total pools that tested positive for WNV.

Table 6 – Comparison of year-to-date cumulative and year-end total West Nile virus in Manitoba (current to week 27)

	Cumulative (Year-to-Date) Amount		Year End Totals	
Year	**Positive Mosquito Pools**	**Human WNV Cases**	**Positive Mosquito Pools**	**Human WNV Cases**
2013	**0**	**0**	***TBD***	***TBD***
2012	2	3	116	39
2011	0	0	0	0
2010	2	0	20	0
2009	0	0	2	2
2008	0	1	41	12
2007	122	19	948	587
2006	3	3	171	51
2005	0	1	193	58
2004	0	0	57	3
2003	4	0	290	143

- WNV Activity in Canada and the U.S. -

Canada:

- As of week 27 a total of two WNV positive mosquito pools and one WNV positive bird have been detected (both in Ontario). Aside from this there is no additional evidence of WNV activity in Canada (Table 7).

➢ Additional up to date Canadian WNV information can be obtained by consulting the Public Health Agency of Canada West Nile virus website at http://www.phac-aspc.gc.ca/wnv-vwn/index-eng.php

United States:

- As of Week 27 a total of fourteen (14) human WNV cases have been reported in the United States, including two deaths.
- As of Week 27 a total of 260 WNV positive mosquito pools, 68 WNV positive birds and 2 positive horses have been identified across the United States.
    - As of Week 27 Minnesota is reporting one WNV positive mosquito pool; South Dakota is reporting one human WNV case and three WNV positive mosquito pools (Table 7).

- Additional up to date U.S. WNV information can be obtained by visiting the United States Geological Survey's 'Arbonet – Website' at http://diseasemaps.usgs.gov/index.html

Table 7 – Positive human, mosquito, horse and bird West Nile Virus surveillance indicators across Canada and neighbouring US states as of Week 27.

Province/ State	Human Cases*	Positive Mosquito Pools	Veterinary ***	Birds
Manitoba	0	0	0	0
Saskatchewan	0	0	0	0
Alberta	0	N/A**	0	N/A
North Dakota	0	N/A	0	0
South Dakota	1	3	0	0
Minnesota	0	1	0	0
Ontario	0	2	0	1
British Columbia	0	0	0	0
Quebec	0	0	0	0
Maritimes	0	N/A	0	N/A
TOTAL	**1**	**6**	**0**	**1**

* Table numbers include travel related cases.
** Jurisdictions with N/A (not applicable) do not maintain regular surveillance.
*** Veterinary cases are primarily, but not all, horse cases.

- APPENDIX 1 -

Table 8 – CDC surveillance weeks

CDC Week Number	Dates	CDC Week Number	Dates
21	May 19 - May 25	**30**	July 21 - July 27
22	May 26 - June 1	**31**	July 28 - August 3
23	June 2 - June 8	**32**	August 4 - August 10
24	June 9 - June 15	**33**	August 11 - August 17
25	June 16 - June 22	**34**	August 18 - August 24
26	June 23 - June 29	**35**	August 25 - August 31
27	June 30 - July 6	**36**	September 1 - September 7
28	July 7 - July 13	**37**	September 8 - September 14
29	July 14 - July 20	**38**	September 15 - September 21

- Appendix 2 -

Average number of *Culex tarsalis* – This weekly value provides an estimate of the *Culex tarsalis* numbers and activity. The potential risk of WNV transmission is greater when more *Culex tarsalis* are present – should the virus itself be present and other conditions prove favorable. It is calculated by dividing the total number of *Culex tarsalis* mosquitoes captured in the specified area by the total number of trap nights for the week (a trap night is recorded for each night that a trap was operational).

EXAMPLE: 120 *Culex tarsalis* collected; 2 traps operating on 2 nights (= 4 trap nights); Average number = 120 (*Culex tarsalis*)/ 4 trap nights = 30.0

Degree Day – Degree days are a measurement of heat accumulation. The threshold temperature below which West Nile virus development does not occur (when in mosquitoes) is 14.3^{o}C. Degree days are calculated by taking the daily mean temperature and subtracting the cut-off threshold:

EXAMPLE: *Mean Temperature* = 19.3^{o}C; *Degree Day threshold* = 14.3^{o}C; 19.3 – 14.3 = 5.0 Degree Days.

During the season a running total of accumulated Degree Days is recorded. It is generally assumed that a total of 109 Degree Days are required for virus development to be completed and potential transmission to occur. The risk of transmission increases with increasing Degree Day accumulation. Moreover, consistently warmer temperatures will significantly shorten virus development time thereby increasing the potential risk of WNV transmission – should the virus itself be present and other conditions prove to be favorable.

Mosquito Pool – Mosquitoes of the same species, collected from the same trap on the same date are pooled together for the purposes of laboratory testing. *Culex tarsalis* mosquitoes collected from one trap on a given night are placed in pools of 1 – 50 mosquitoes for WNV testing. When more than 50 *Culex tarsalis* mosquitoes are collected from the same trap multiple pools are tested. Thus a positive pool refers to the detection of WNV in between 1 – 50 *Culex tarsalis* mosquitoes collected from a given trap.