

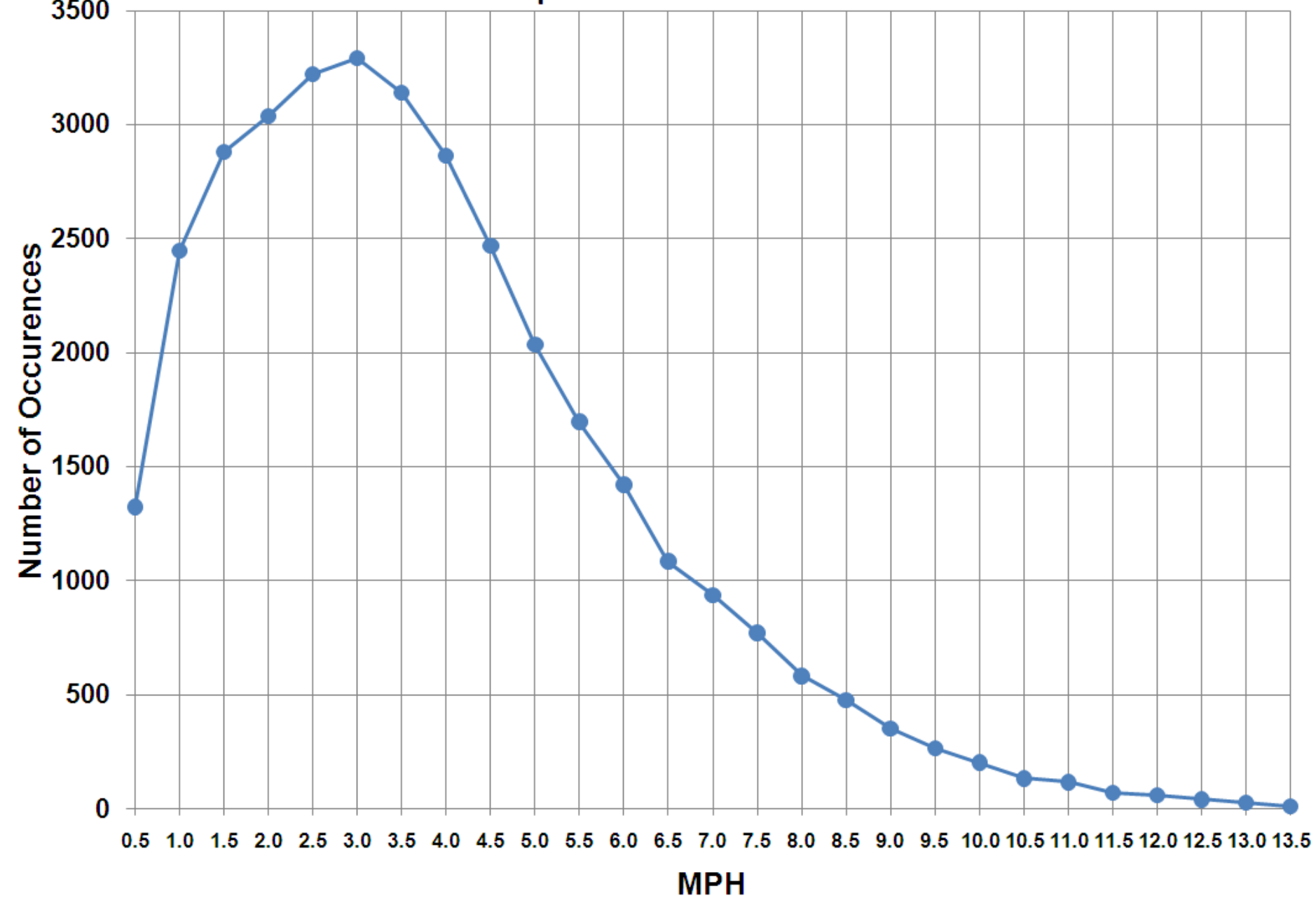
Data Comparisons

Y-12 West Tower Data

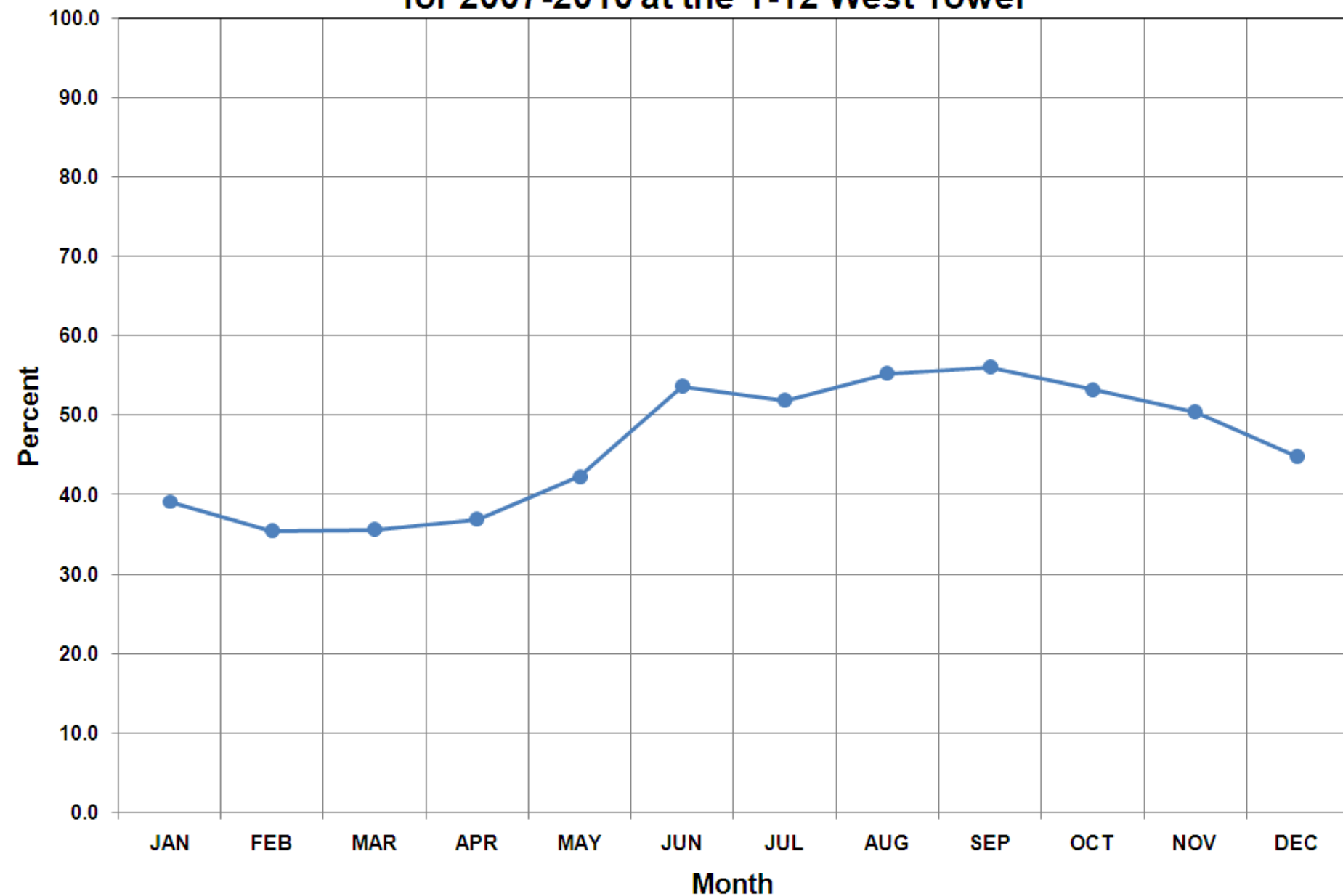
Used hourly data from 2007 – 2010.

To fully compare this data to the data from ASOS sites where wind sensor starting thresholds, rounding, and administrative limits greatly determine calms, wind speeds equal to or below 2.9 miles per hour from this site were defined as calm.

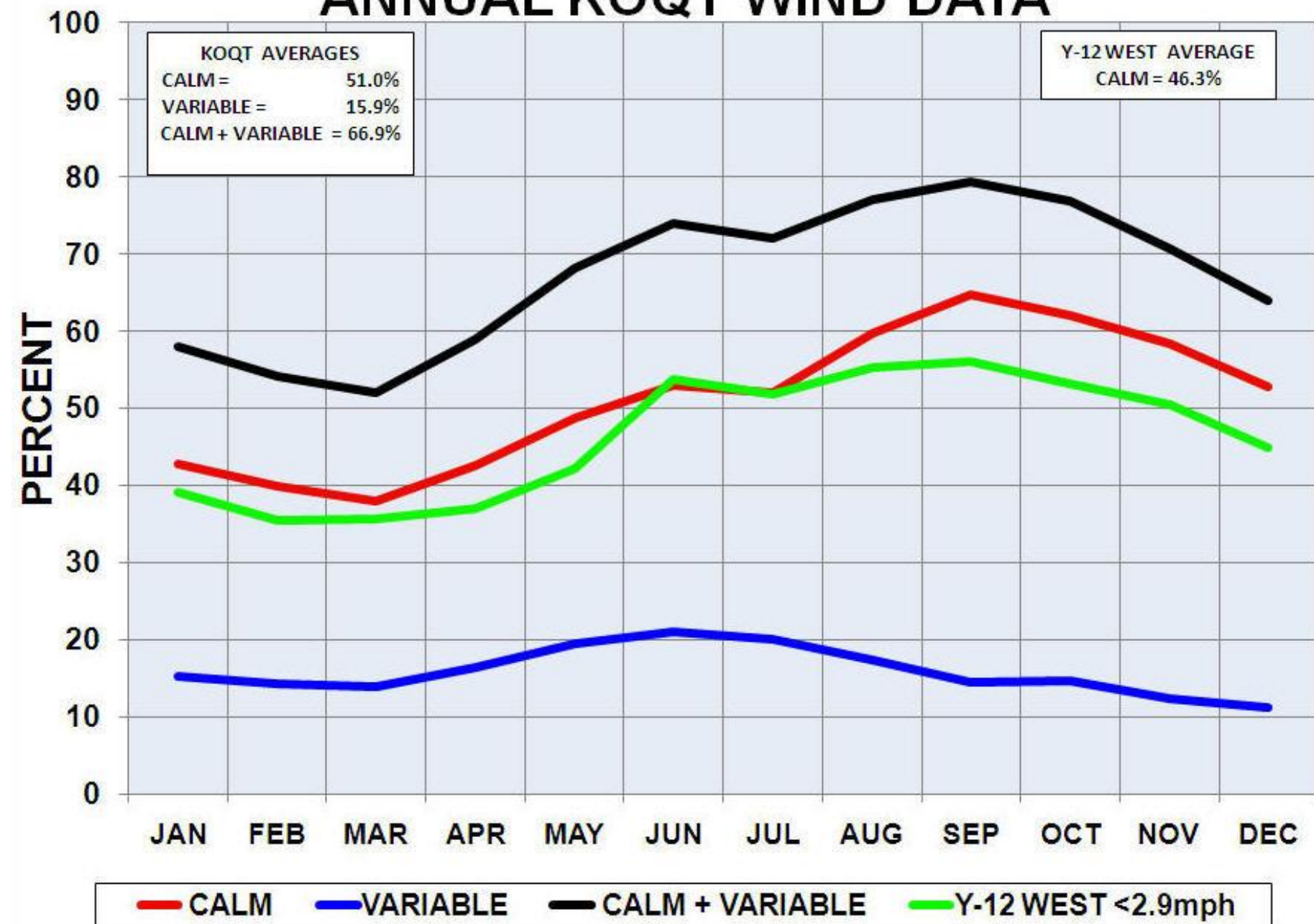
Occurrence of 10m Wind Speeds for 2007-2010 at the Y-12 West Tower



Percentage of Calms (= 2.9 mph) at 10m for 2007-2010 at the Y-12 West Tower

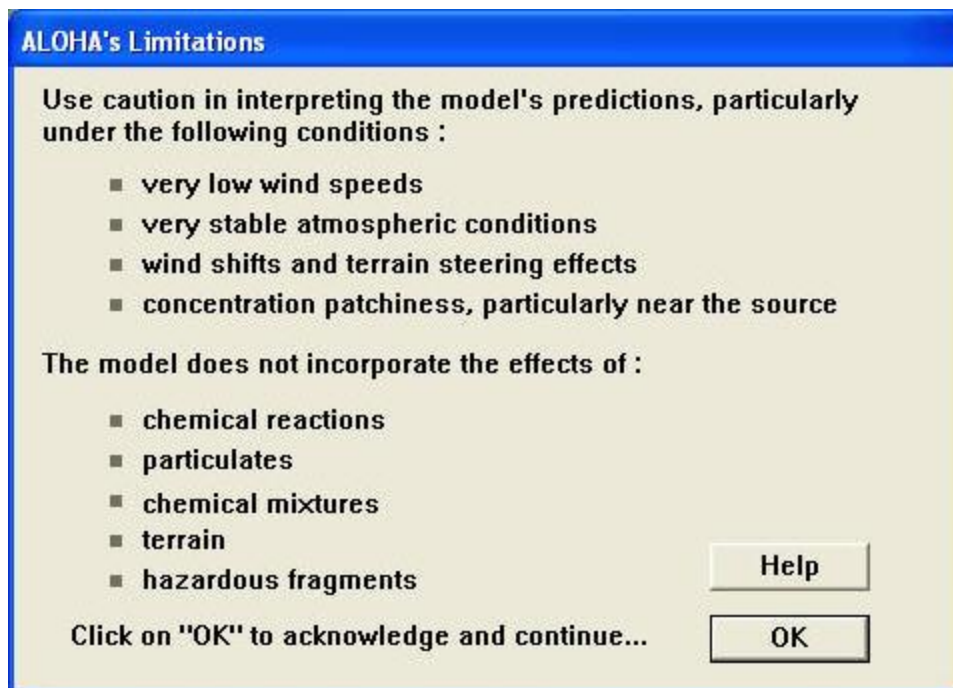


ANNUAL KOQT WIND DATA



Dispersion Modeling Implications

Since downwind concentrations are inversely proportional to wind speed, use caution when interpreting the model's prediction under very low wind speeds. Gaussian models tend to perform poorly with gross over predictions.



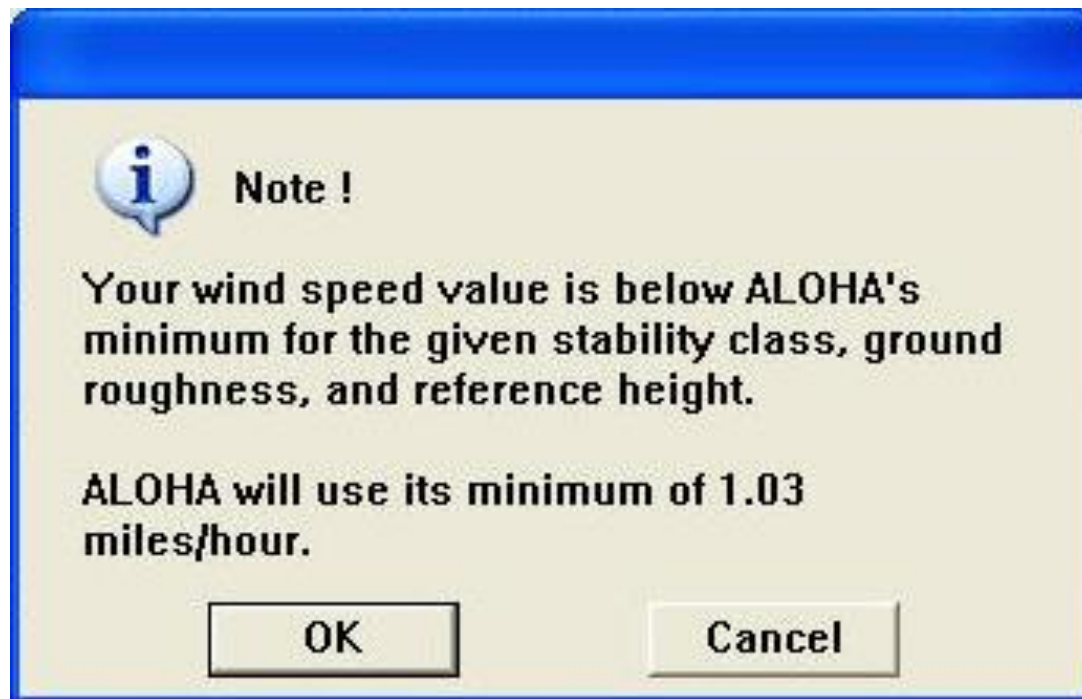
Dispersion Modeling Implications

Know what the lowest wind speed your dispersion model will allow. Some models will automatically assign calms to sensor thresholds or other values.

Know the starting threshold(s) of the anemometer(s) from the site(s) you wish to use and determine if there are rounding or other administrative limits imposed on the data.

Dispersion Modeling Implications

Heed low wind speed warning messages produced by your model.



Dispersion Modeling

Implications

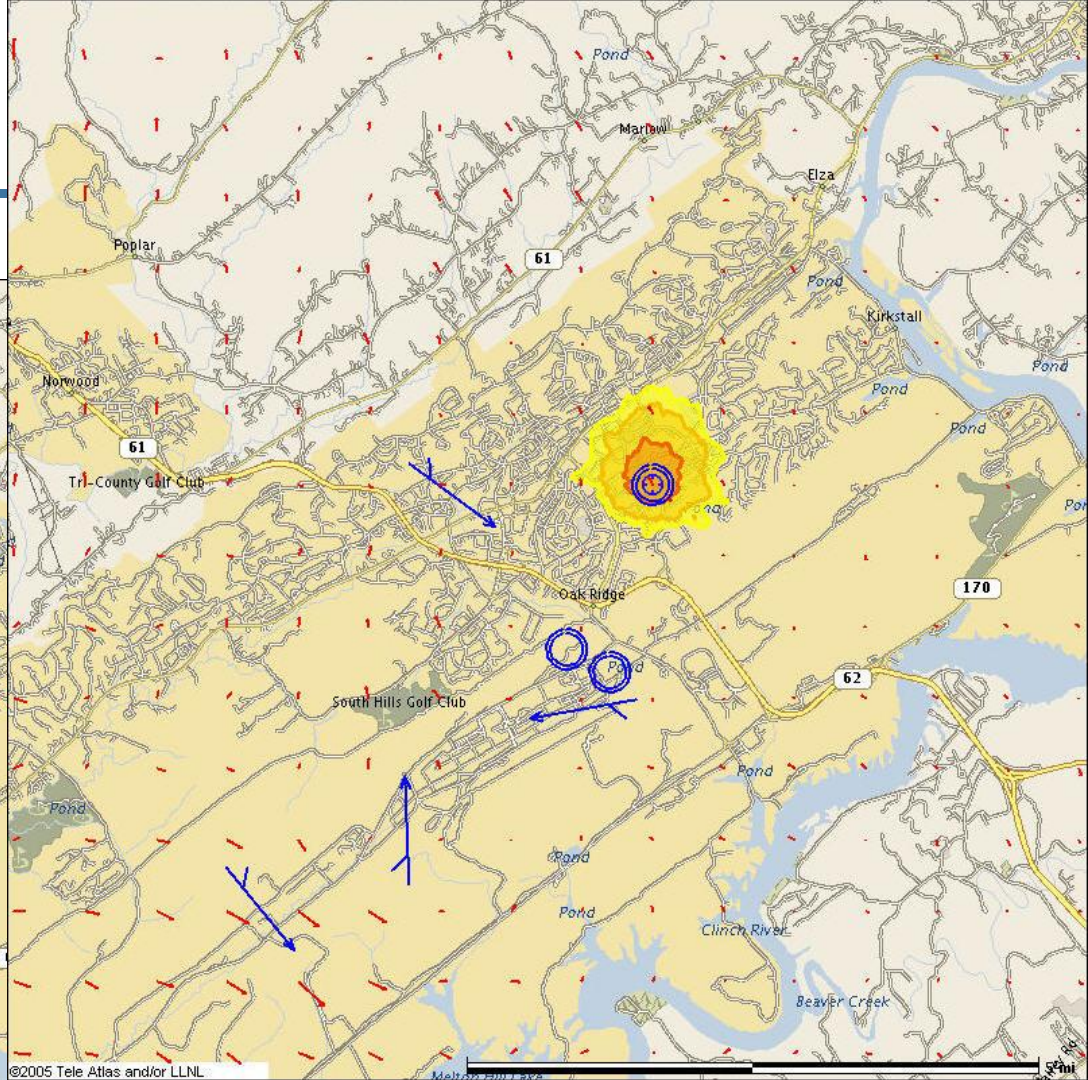
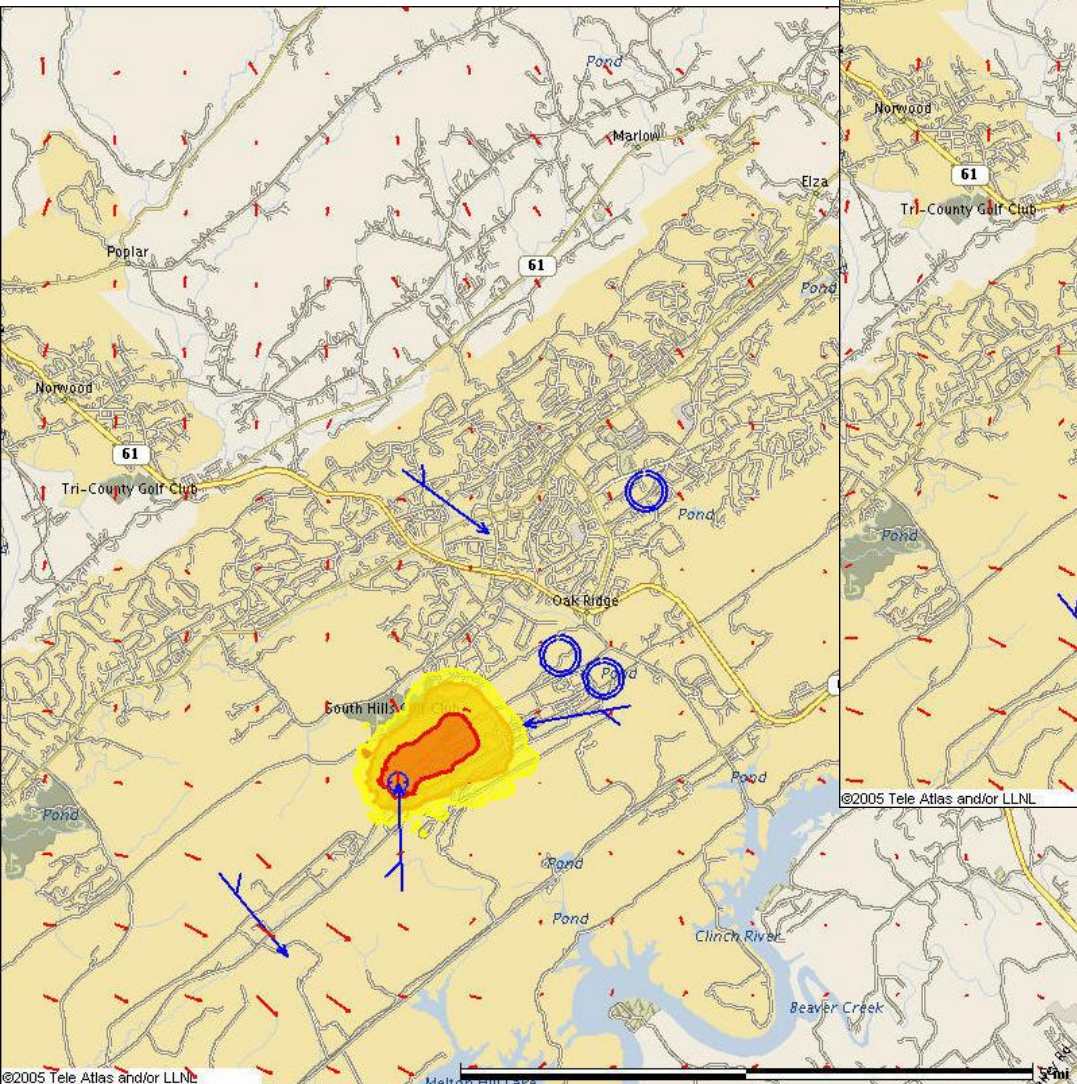
Depending of the model used, follow guidance on how to assign wind speeds during calm conditions.

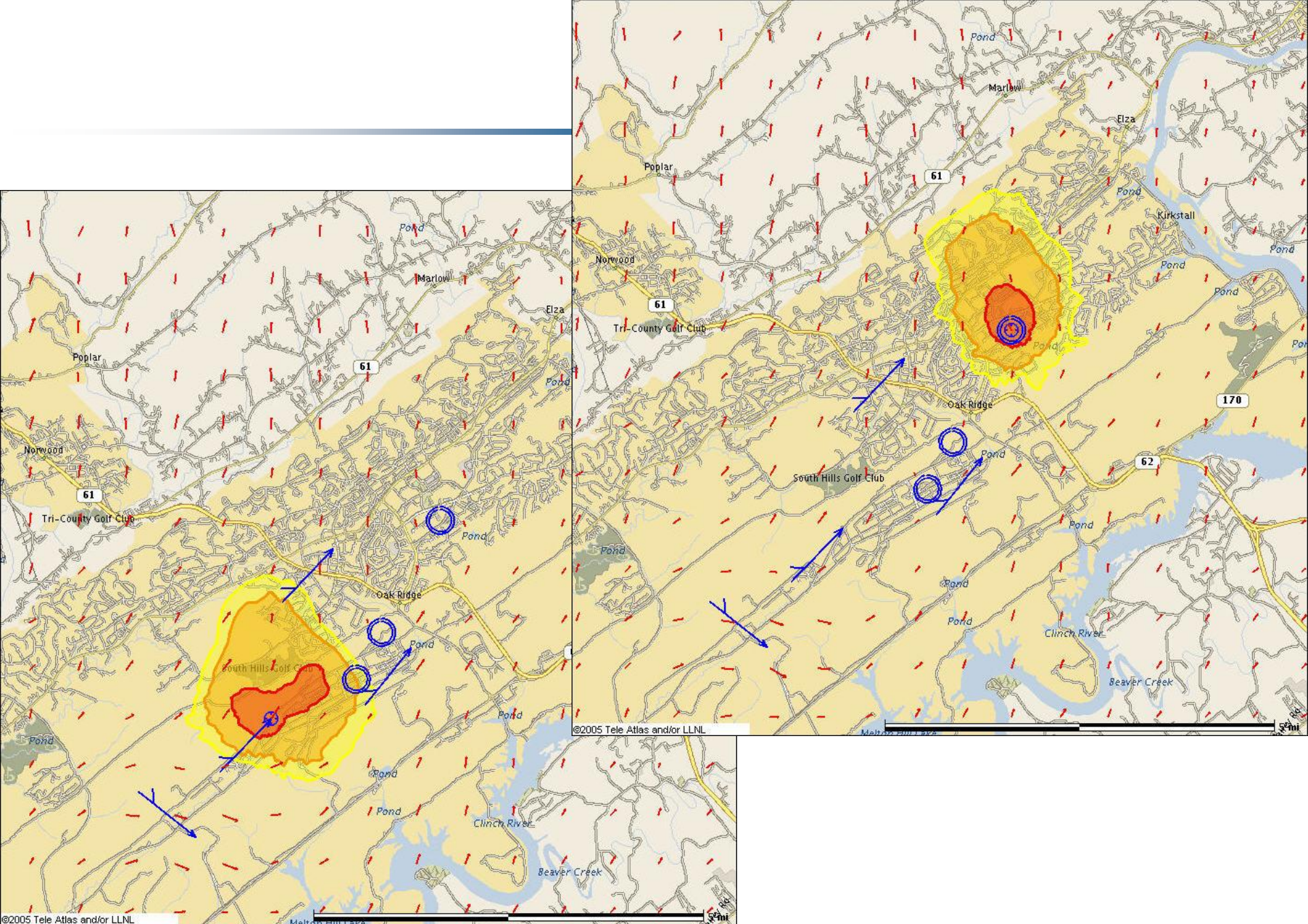
Calms should be defined as hourly average windspeeds below the vane or anemometer starting speed, whichever is higher (to reflect limitations in instrumentation). If the instrumentation program conforms to the regulatory position in Regulatory Guide 1.23, calms should be assigned a windspeed equal to the vane or anemometer starting speed, whichever is higher. Otherwise, consideration of a

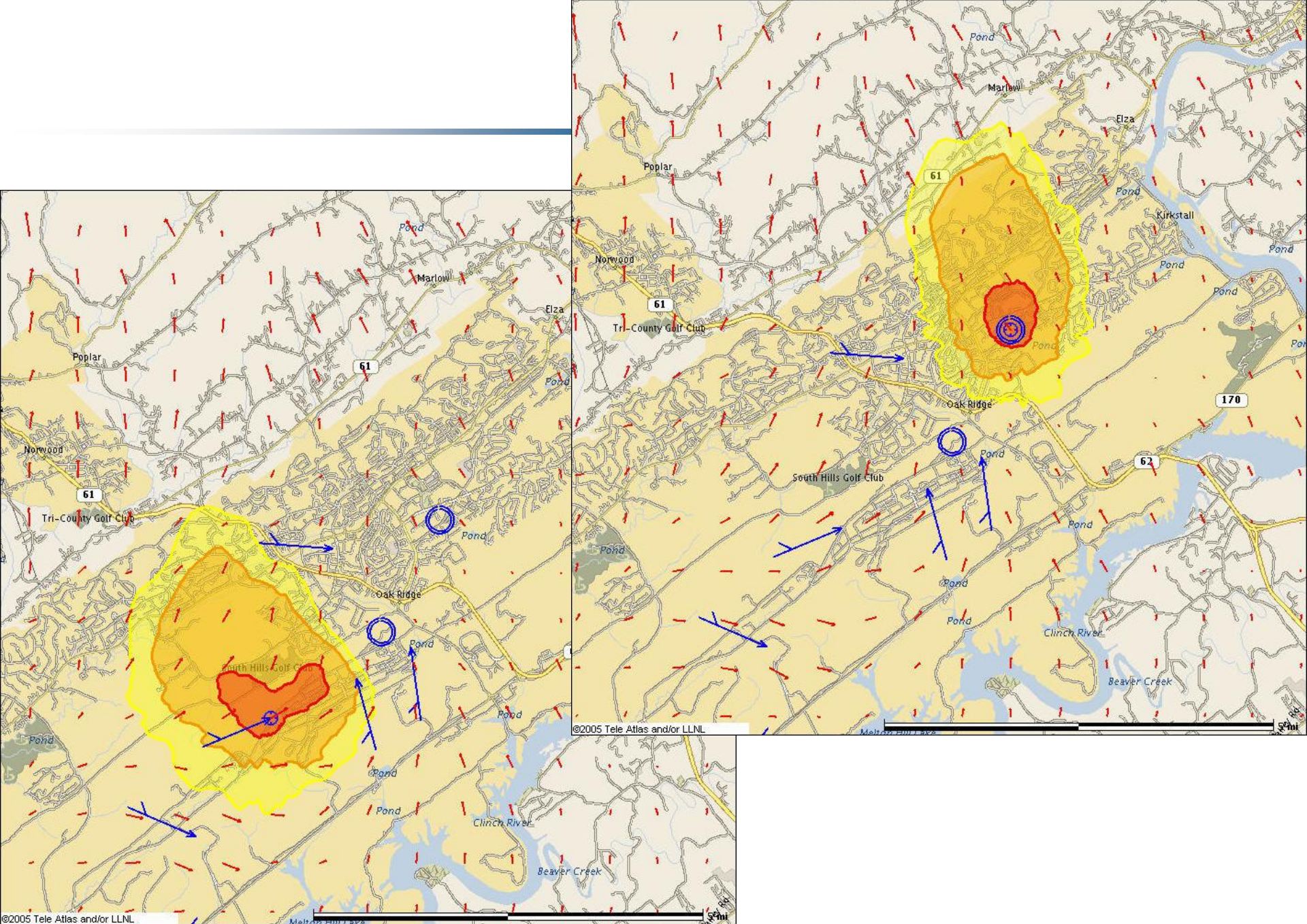
For input to variable trajectory atmospheric transport models, measured hourly values of windspeed should be used. Calms* should be assigned a windspeed of one-half of the appropriate starting speed, as described in the footnote, for instruments conforming to the recommendations or intent of Regulatory Guide 1.23 (Ref. 14). Otherwise, a windspeed of 0.1 meter/second should be assigned to calms. Hourly wind directions should be classed into at least the 16 compass point sectors (i.e., 22.5-degree sectors, centered on true north, north-northeast, etc.) according to measured values averaged over the time interval.

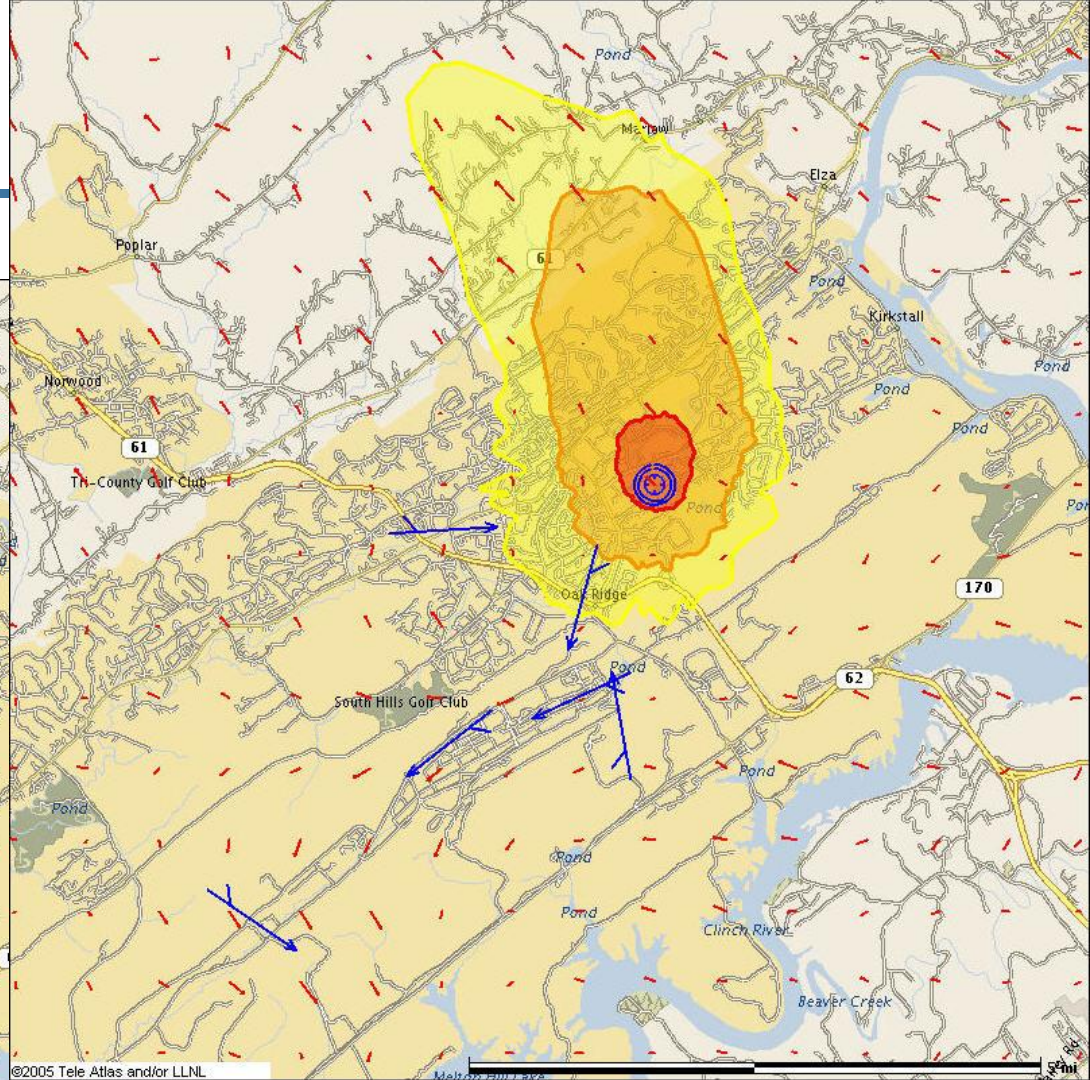
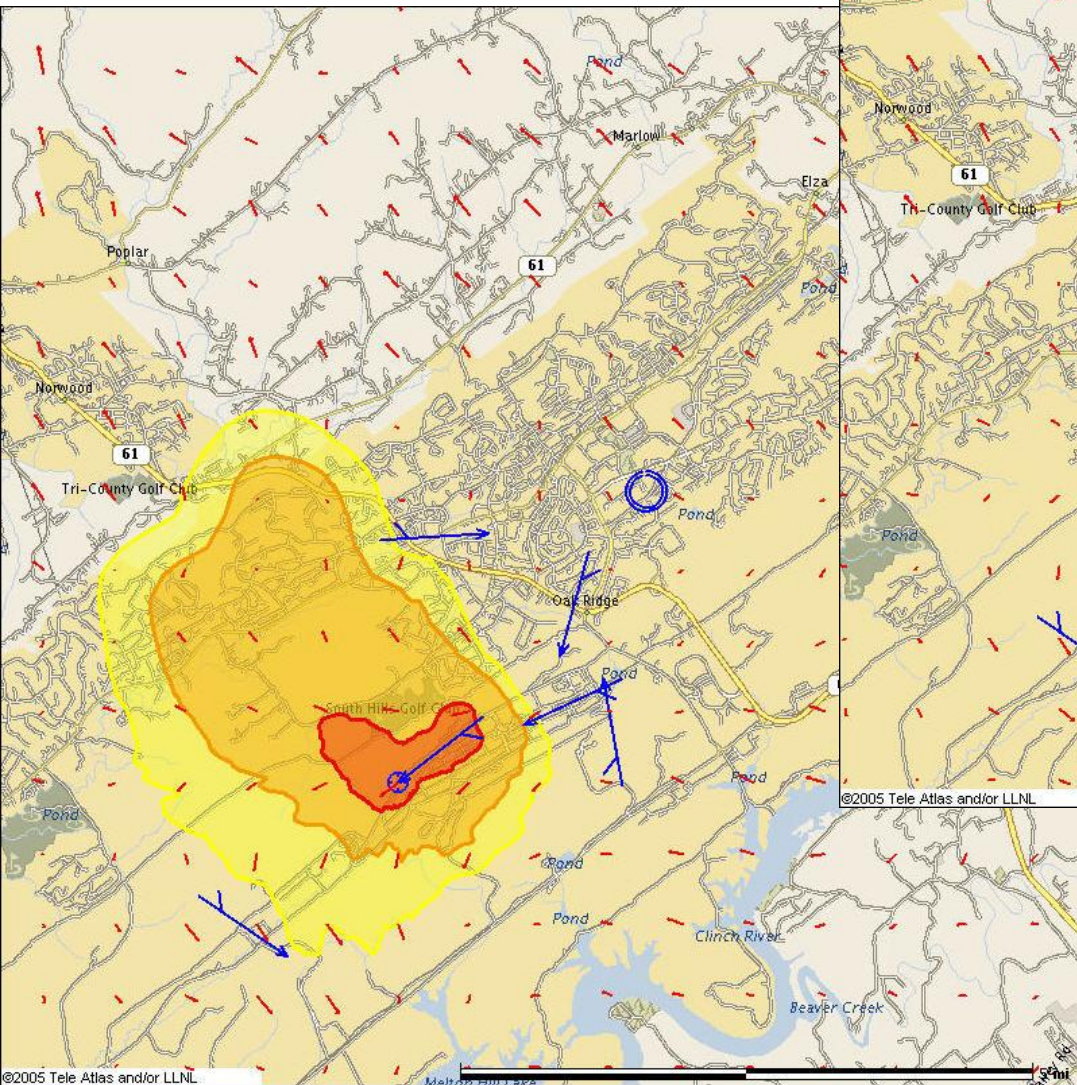
Dispersion Modeling Implications

In more complex models, understand how calms (zero speed) are handled in the local wind field. Some models may ignore this data altogether or substitute other data.









Dispersion Modeling Implications

Have some knowledge of the maintenance and calibration performed on the wind sensor that is used for your model input. Lack of wind sensor maintenance can lead to erroneous data or tend to indicate more calms due to worn sensor bearings.

Have some knowledge of the topography and nearby structures where the site is located. Some sites may be located without attention to siting standards.

Perform a study to determine the number of calms on a monthly basis that occur at the site of interest.

Here are a few local weather sites that have been popping up in MADIS.

You might want to consider if the wind data from these sites is worth using.

KW1ND / AS528

Station type/software: Weather Display / Davis Vantage Pro







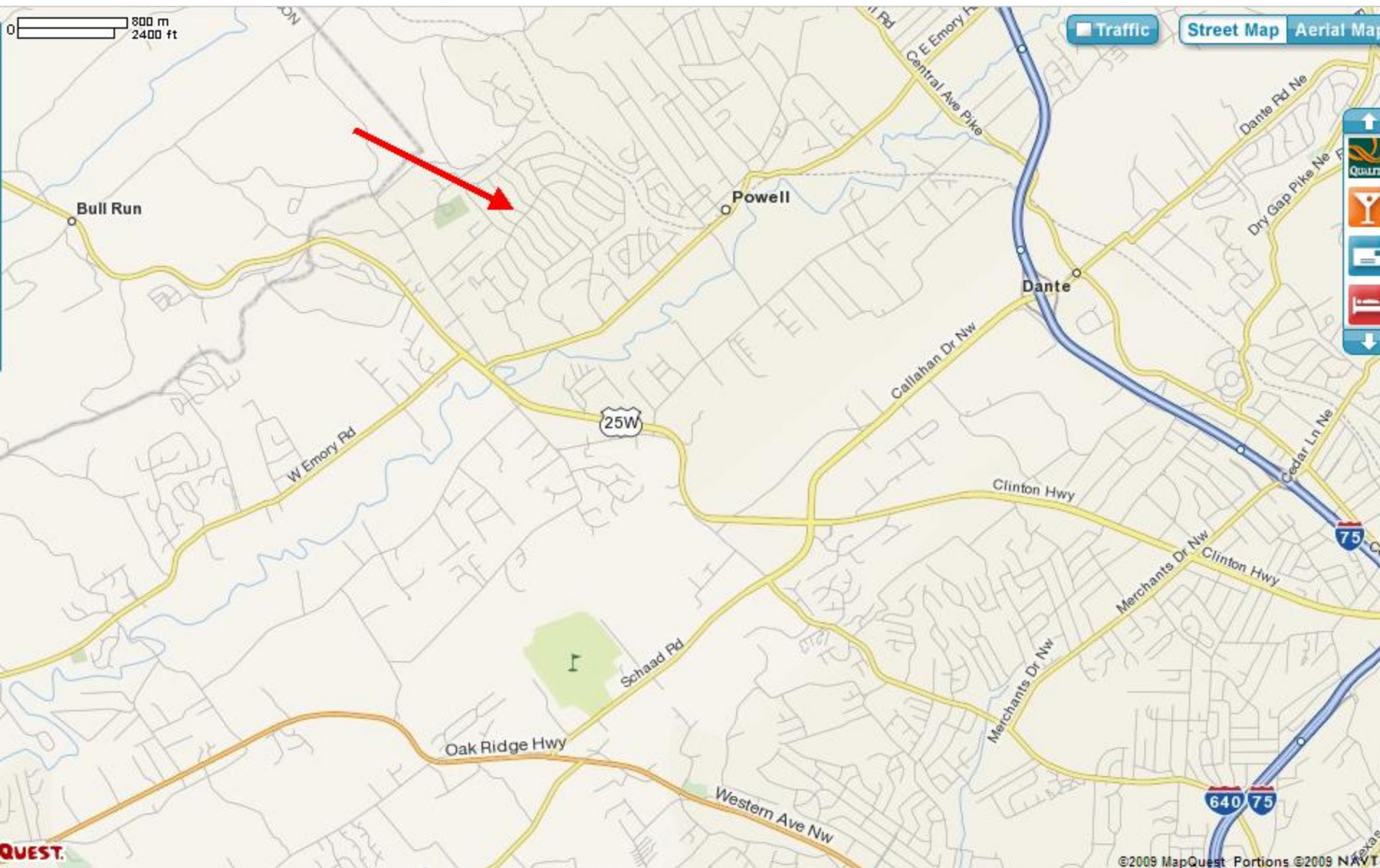


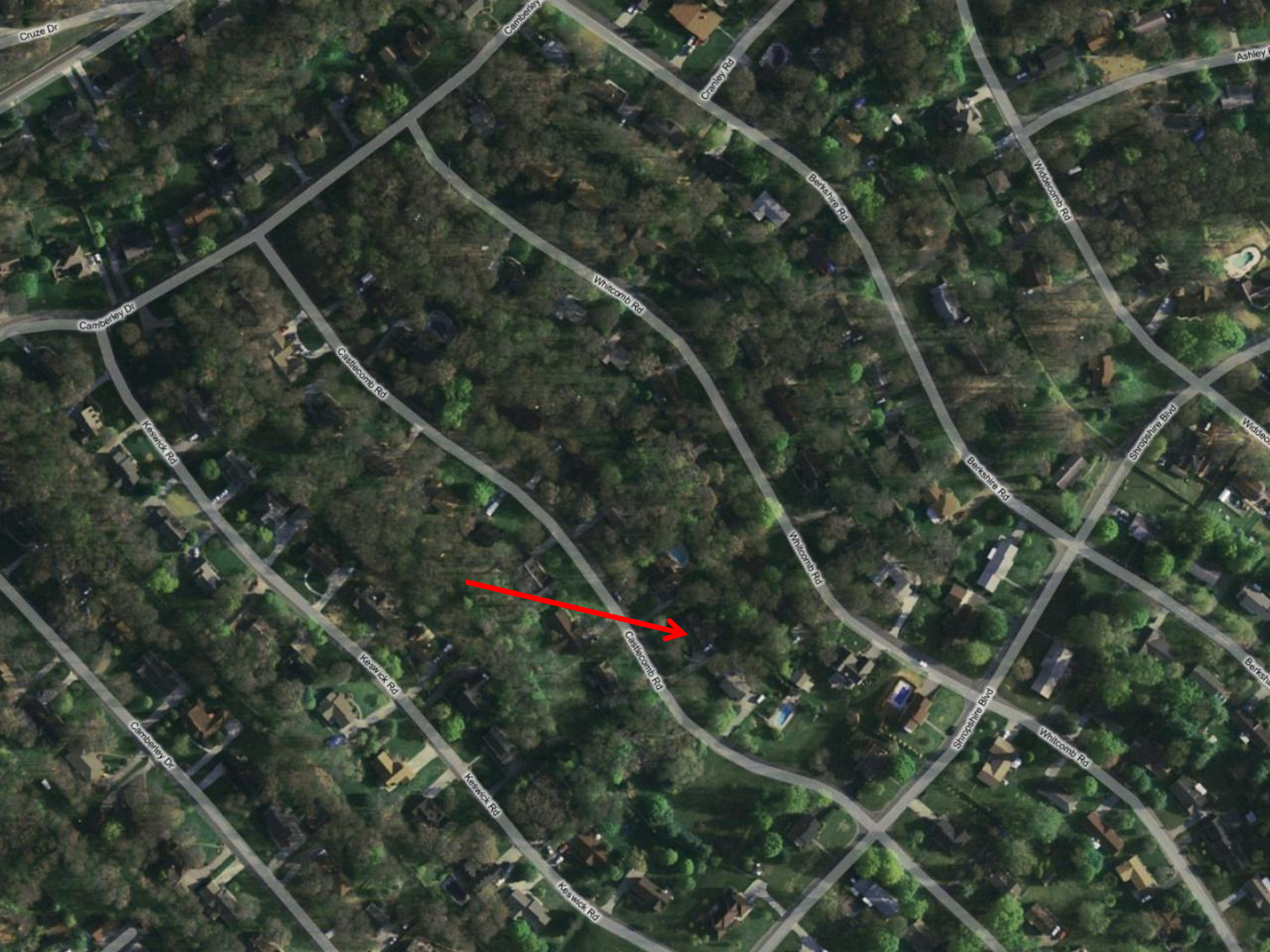


K4TSB

Station type/software: Weather Display / Davis Vantage Pro









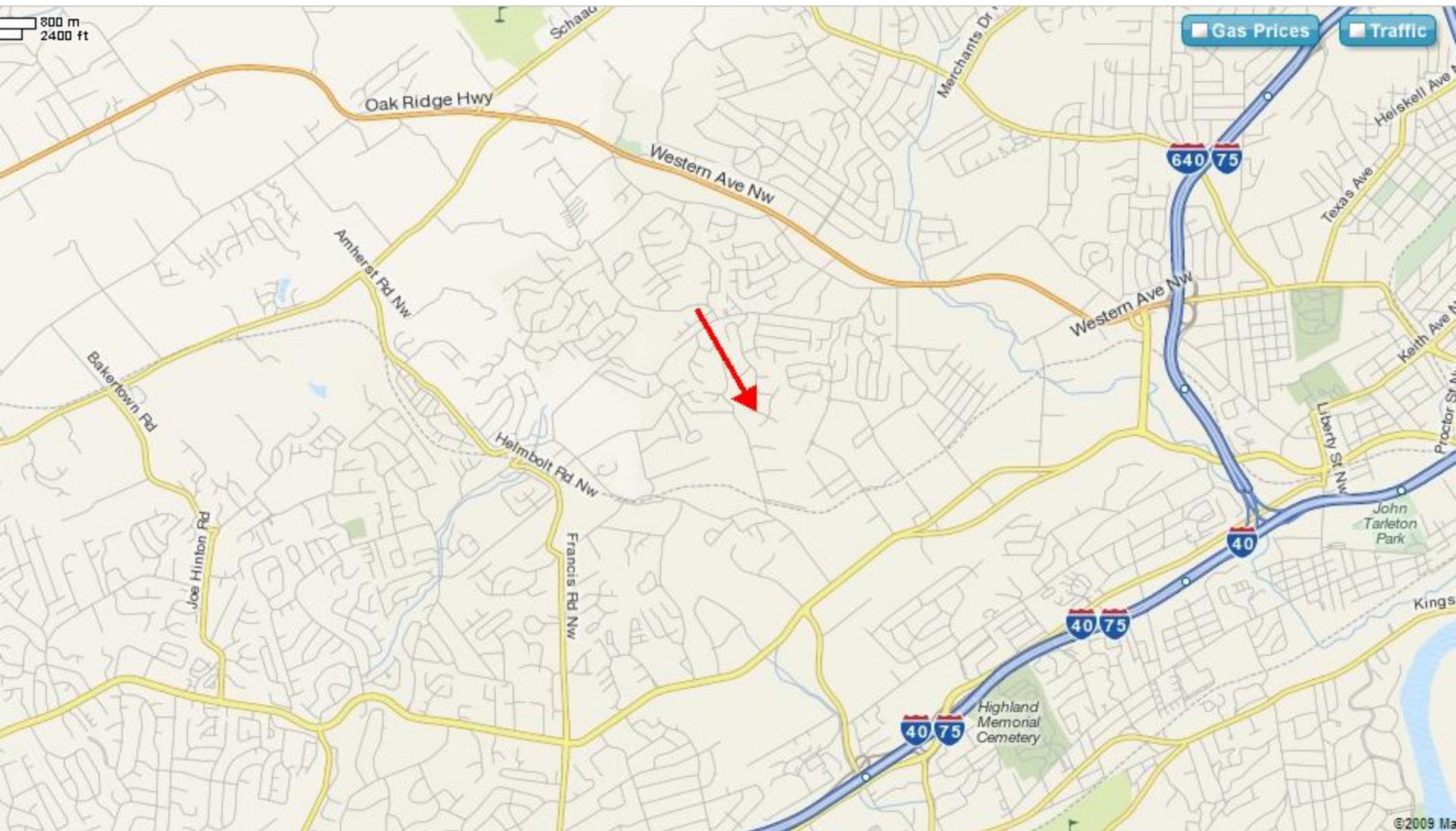
It's in there somewhere

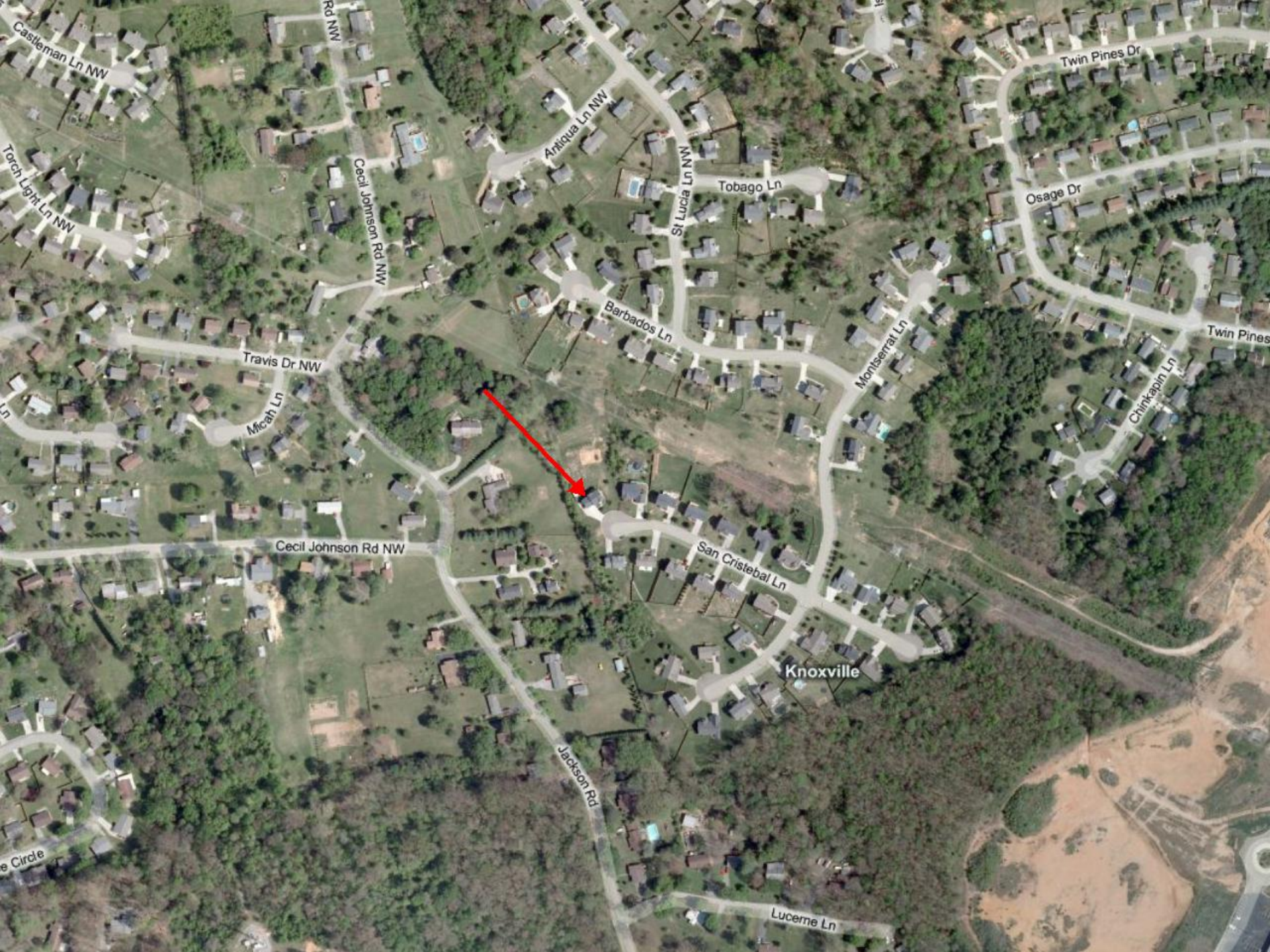


C6625 / CW6625

Station type/software: Davis Vantage Pro 2 with Weatherlink







Castleman Ln NW
Torch Light Ln NW
Cecil Johnson Rd NW
Travis Dr NW
McCaughy Ln
Cecil Johnson Rd NW
Jackson Rd
e Circle
Antiqua Ln NW
St Lucia Ln NW
Tobago Ln
Barbados Ln
San Cristobal Ln
Knoxville
Lucerne Ln
Twin Pines Dr
Osage Dr
Chickapin Ln
Twin Pines



San Cristobal Ln

Knoxville



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References

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FCM-H1-2005 Washington, D.C. September 2005

Automated Surface Observing System (ASOS) User's Guide, National Oceanic and
Atmospheric Administration, Department of Defense, Federal Aviation Administration,
United States Navy, March 1998

Atmospheric Turbulence and Diffusion Division
Air Resources Laboratory - NOAA
Weather Research & Forecasting model

KOQT historical quote: <http://weather.gladstonefamily.net/site/KOQT>

Wind resource estimates developed by AWS Truepower, LLC for windNavigator.
http://www.windpoweringamerica.gov/pdfs/wind_maps/us_windmap_80meters.pdf and
http://www.windpoweringamerica.gov/pdfs/wind_maps/tn_80m.pdf

Oak Ridge and Knoxville McGhee Tyson Version 3 METAR data, National Climatic Data
Center, Federal Building, 151 Patton Avenue, Asheville NC 28801-5001
<http://cdo.ncdc.noaa.gov/qclcd/QCLCD>

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