

# AMBIENT AIR MONITORING WORK PLAN 2009

for

National Core (NCore) Monitoring Station - Rural

at

NATIONAL TRAIL HIGH SCHOOL (39-135-1001)  
Preble County, Ohio

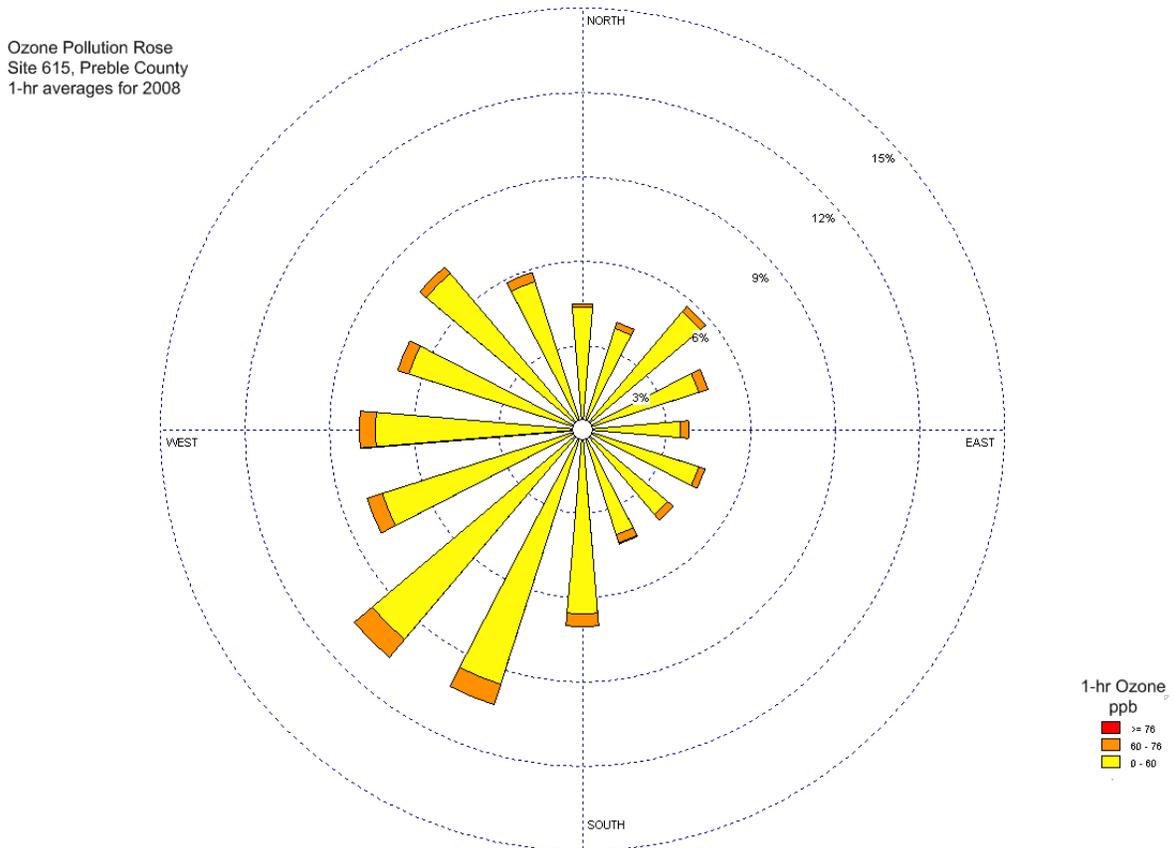
Regional Air Pollution Control Agency  
117 South Main Street  
Dayton, OH 45422



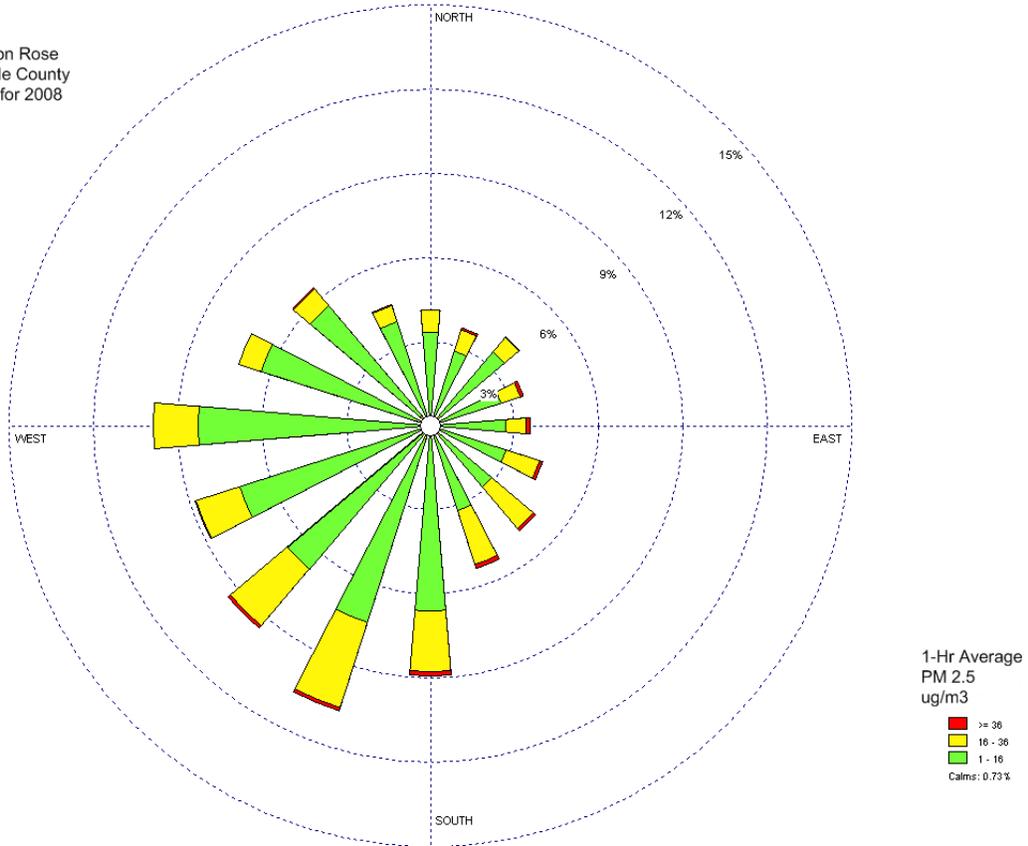
RAPCA'S AMBIENT AIR MONITORING WORK PLAN 2009  
for  
National Core (NCore) Monitoring Station – Rural  
at  
NATIONAL TRAIL HIGH SCHOOL (39-135-1001) – Preble County, Ohio

The Regional Air Pollution Control Agency – Dayton, Ohio plans to install and operate a rural NCore monitoring station at the existing National Trail High School monitoring site (AQS ID 39-135-1001). The street address for this site is 6940 Oxford Gettysburg Road, New Paris, Ohio 45347. Coordinates for this site are Latitude 39.835556, Longitude -84.720833. We have measured ambient air ozone concentrations at this site since 1976, PM<sub>2.5</sub> FRM concentrations since 2000, and PM<sub>2.5</sub> continuous concentrations since 2003.

Preble County, Ohio is an attainment county for all National Ambient Air Quality Standards (NAAQS). Pollution roses for 1-hr ozone and 1-hr PM<sub>2.5</sub> in 2008 at the site are shown.



PM 2.5 Pollution Rose  
 Site 615, Preble County  
 1-hr averages for 2008



Both roses show the prevailing wind direction in the Dayton area as southwest.

### **Monitoring Methods**

The table below outlines the existing, new or pending monitoring parameters and methods for the NCore site. Existing monitors are currently operating at the National Trail High School site. Monitors designated “New” will be purchased, installed and operating by January 2010. These monitors will be for trace sulfur dioxide (SO<sub>2</sub>), trace carbon monoxide (CO), and trace reactive nitrogen oxides (NO<sub>y</sub>). Monitors or parameters designated “Pending” are planned for installation in 2010 or later. Pending pollutants/parameters are PM<sub>2.5</sub> speciation, PM<sub>coarse</sub> mass and PM<sub>coarse</sub> speciation, and meteorological parameters.

<b>Parameter</b>	<b>Frequency</b>	<b>Analysis Method Designation</b>	<b>Designation</b>	<b>Existing, New or Pending</b>
PM <sub>2.5</sub> mass	continuous	Thermo SHARP 5030	AQI/NCore	Existing
PM <sub>2.5</sub> mass	1/3 day	Thermo 2025 Partisol FRM	NAAQS/NCore	Existing (replaces Thermo RAAS on July 1)
PM <sub>2.5</sub> speciation	1/6 day	To be determined	NCore	Pending
PM <sub>10-2.5</sub> mass		TBD	NCore	Pending
PM <sub>10-2.5</sub> speciation		TBD	NCore	Pending
Ozone	continuous	Thermo 49C FEM	NAAQS/NCore	Existing
Sulfur Dioxide	continuous	Ecotech 9850T	NCore	New
Carbon Monoxide	continuous	Ecotech 9830T	NCore	New
Total Reactive Nitrogen	continuous	Ecotech 9841T – NO <sub>y</sub>	NCore	New
Wind speed	continuous	To be determined		Pending
Wind direction	continuous	TBD		Pending
Relative humidity	continuous	TBD		Pending
Ambient temperature	continuous	TBD		Pending
Solar radiation	continuous	TBD		Pending

## Site Description



Aerial photo above shows distances from existing monitoring shelter to roadways and major structures. Note that the high school building is 145 m from the site, and a bus parking lot is located on the east side of Eaton Gettysburg Road approximately 130 m east of the site. The area is predominantly rural/agricultural, with no local sources of importance. This site is representative of regional background concentrations of NCore pollutants. Oxford Gettysburg Road and Eaton Gettysburg Road are country roads, with no definitive traffic count data available. However, they do not interchange with I-70, and are expected to have little traffic other than some school-related traffic. Table lists distances, average daily traffic counts (2006 data) and siting criteria for the pollutants of interest.

Roadway	average daily count	distance from site	Minimum Distance Required, meters			
			ozone	NO/NO <sub>y</sub>	CO	Particulate*
US 40	3560	560 m	10	20	10	80
I-70	35380	185 m	45	55	~100	110
CR-10 (Oxford Gettysburg Rd)	<500 (est.)	235 m	10	20	10	70
Eaton Gettysburg Rd	<500 (est.)	98 m	10	20	10	70

\* worst-case urban scale criteria

### **Siting Criteria**

40 CFR Part 58 Appendix E lists siting criteria to ensure monitors are sited correctly.

#### **Horizontal and Vertical Placement of Probe/Inlet**

The gaseous monitors will be inside the monitoring site shelter. The CO, SO<sub>2</sub>, and the NO<sub>y</sub> monitors will draw their samples from a heated manifold that extends up through the roof of the structure. A 10m tower will be installed at the station for the NO<sub>y</sub> converter.

The particulate samplers are on the roof of the station.

Inlets for all monitors will be between 2 and 15 meters above the ground, and more than 1 meter from any vertical or horizontal supporting structures or walls.

#### **Spacing from Sources**

Several minor sources share the same zip code as the station; however all are hundreds of meters away. It is believed that the plume from these local minor sources will not inappropriately impact the data from the site. Particulate matter data will be collected at NCore sites; this site is surrounded by ground with vegetative cover and paved parking areas. Some agricultural fields are in the neighborhood of the station, but CFR offers no guidance for spacing away from these areas. The largest town in Preble County is Eaton (population 8019), approximately 11 km to the SE from the monitoring site. SALUTE!

Based on research of sources in the county, the sole Title 5 facility in Preble County is Neaton Auto Products Manufacturing Inc. The facility performs plastic injection molding and plastic parts coating of automobile parts. The facility is located at the SE edge of Eaton, approximately 13 km to the SE from the monitoring site. Facility actual emissions in 2008 were reported to be 26.5 tons, 25.9 tons of which were organic compounds.

There are no minor sources near the monitoring site that will impact the measured pollutants and the major source identified is 13 km away and will similarly influence the region represented by this site.

### **Spacing from Obstructions**

The sole building in the vicinity of the NCore site is the National Trail High School, at a distance of 145 m.

The distances from all of the obstacles to the monitor probe inlets is well over twice the height the obstacle protrudes above the inlets.

### **Spacing from Trees**

Several minor trees are in the vicinity of the NCore site, but none are believed to exceed 10 m in height.

The probes for the all of the monitors will be more than 10 meters from the drip line of all trees.

The following page presents a panorama of photographs taken from the roof of the NCore monitoring site shelter. Clearly this site is representative of regional background concentrations of NCore pollutants.

As we progress in establishing the NCore site, updates to QMPs, QAPPs and Monitoring Plans will be made as necessary.

