**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
REGION 1
NEW ENGLAND REGIONAL LABORATORY
OFFICE OF ENVIRONMENTAL MEASUREMENT & EVALUATION
11 TECHNOLOGY DRIVE
NORTH CHELMSFORD, MASSACHUSETTS 01863-2431

August 29, 2012

Anne Gobin, Chief
State of Connecticut Department of Environmental Protection
Bureau of Air Management
79 Elm Street
Hartford, CT 06106-5127

Dear Ms. Gobin:

Thank you for your submission of the Connecticut 2012 Annual Monitoring Network Plan and Near Road Nitrogen Dioxide Network Plan which were submitted to us in final form on July 12, 2012. We appreciate that you have addressed the comments we provided to you on June 27, 2012. EPA New England has evaluated your plan and finds that your plan meets the minimum requirements of 40 CFR, Part 58.

We acknowledge the intended changes to the Connecticut network for next year which are articulated in your plan:

- Discontinuing all CO sampling at the Hartford Morgan Street site, after a period of collocation with new near road site in Hartford.
- Discontinuing all sampling at the Norwalk site.
- Discontinuing all sampling at the Norwich site.
- Discontinuing all sampling at the Hartford Brainard Field site.
- Discontinuing CO monitoring at the Westport site.
- Establishing a Hartford near-road monitoring site to include the measurement of $NO_2$, CO, PM2.5, UVC/BC and dioxins (specific details for this proposed site can be found in the Connecticut 2012 Near-Road Network Plan).
- Establishing 1-in-3 day PM2.5 FRM and wind speed/direction sampling at Groton site.

We also note your acknowledgement that the New Haven Criscuolo Park should be considered among the 40 $NO_2$ monitors intended to help protect communities that are susceptible or vulnerable to $NO_2$ related health effects.

With this letter, I am approving your Annual Network Plan, with the exception of NCore, PAMS, STN, and the $NO_2$ monitoring plan required under 40 CFR 58.10(a)(5). Per 40 CFR 58.11(c), your NCore, PAMS, STN, and $NO_2$ network design and changes are subject to approval of the Administrator. We have forwarded your network plan to EPA headquarters for review and approval of these sections.

EPA-NE appreciates your partnership in conducting ambient air monitoring. We look forward to working with you to continuously improve the quality of ambient air in Connecticut. If you have any questions or comments regarding this network review, please contact Bob Judge at (617) 918-8387.

Sincerely,

Robert Maxfield, Director
Office of Environmental Measurement and Evaluation
EPA New England

cc: Paul Farrell, CT DEP
Randall Semagin, CT DEP

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

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*VIA ELECTRONIC MAIL*

July 12, 2012

Rob Maxfield, Acting Director
USEPA Region 1 - Office of Environmental Measurement and Evaluation
11 Technology Drive
North Chelmsford, MA 01863
maxfield.robert@epa.gov

RE: Connecticut 2012 Annual Air Monitoring Network Plan/Near Road Nitrogen Dioxide Network Plan

Dear Mr. Maxfield:

Attached please find for your approval the Connecticut 2012 Annual Air Monitoring Network Plan (Plan), with the 2012 Near Road Nitrogen Dioxide Plan included as Appendix C to the Plan. The Department of Energy and Environmental Protection (Department) drafted the Plan in fulfillment of the requirements set forth in 40 Code of Federal Regulations (CFR) Parts 53 and 58, as amended by the Revisions to Ambient Air Monitoring Regulations (71 Fed. Reg. 61236, October 17, 2006).

The Department worked closely with your staff in developing the Plan and sought out public comment on the Plan. In addition to posting the Plan for a 30-day public comment period on the Department's website, the Department reached out to its key stakeholders by presenting the Plan and directly soliciting comments from Connecticut's State Implementation Plan Revision Advisory Committee (SIPRAC). SIPRAC is comprised of approximately 400 members representing business and industry, the environmental community, the public, and academia-- all of whom have interests in working on Connecticut's air quality issues.

Special thanks to Robert Judge for his assistance with this Plan.

Sincerely,

Anne Gobin

Anne Gobin, Chief
Bureau of Air Management

AG/RS

cc: Robert Judge, EPA R1
Katrina Kipp, EPA R1

Enc: Connecticut 2012 Annual Air Monitoring Network Plan
Connecticut 2012 Near Road Nitrogen Dioxide Network Plan

# Connecticut 2012 Annual Air Monitoring Network Plan

Connecticut Department of Energy and Environmental Protection
Bureau of Air Management
July 12, 2012

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## Acronyms and Abbreviations

AMTIC – Ambient Monitoring Technical Information Center
AQS – Air Quality System
CAA – Clean Air Act
CFR – Code of Federal Regulations
CO – carbon monoxide
CSA – combined statistical area
DEEP – Connecticut Department of Energy and Environmental Protection
CV – coefficient of variance
DAS – data acquisition system
DQA – data quality assessment
DQO – data quality objective
DSL – digital subscriber line
EPA – Environmental Protection Agency
FEM – Federal Equivalent Method
FRM – Federal Reference Method
GC – gas chromatography
GC/MS – gas chromatography/mass spectrometry
GIS – geographical information systems
GPS – global positioning system
HAP – hazardous air pollutant
HPLC – high performance liquid chromatography
ICP/MS – inductively coupled plasma/mass spectrometry
IMPROVE – Interagency Monitoring of Protected Visual Environments
IT – information technology
LAN – local area network
LMP – limited maintenance plan
MQO – measurement quality objectives
MPA – monitoring planning area
MSA – metropolitan statistical area
NAAQS – National Ambient Air Quality Standards
NIST – National Institute of Standards and Technology
NOAA – National Oceanic and Atmospheric Administration
NOx – nitrogen oxides
NOy – reactive oxides of nitrogen
NPAP – National Performance Audit Program
NSPS – New Source Performance Standard
OAQPS – Office of Air Quality Planning and Standards
OARM – Office of Administration and Resources Management
OIRM – Office of Information Resources Management
OMB – Office of Management and Budget
ORD – Office of Research and Development
PAMS – Photochemical Assessment Monitoring Stations
P&A – precision and accuracy
PE – performance evaluation
$PM_{2.5}$ – fine particulate matter (<2.5 microns)
$PM_{10}$ – respirable particulate matter (<10 microns)
$PM_{10-2.5}$ – coarse particulate matter ($PM_{10}$ – $PM_{2.5}$)
QA – quality assurance
QA/QC – quality assurance/quality control
QAPP – quality assurance project plan
QMP – quality management plan
RH – relative humidity
RPD – relative percent difference
SIP – State Implementation Plan
SLAMS – state and local monitoring stations
$SO_2$ – sulfur dioxide
SOP – standard operating procedure
SPMS – special purpose monitoring stations
STN – Speciation Trends Network
TSA – technical system audit
TSP – total suspended particulate
VOC – volatile organic compound

## Introduction

This document meets the requirement to develop and submit to the Environmental Protection Agency (EPA) an annual air quality monitoring network plan (Plan). As required by 40 CFR 58.10, this Plan proposes air quality monitoring sites and parameters to be added, maintained or terminated.

## Background

The Clean Air Act of 1970 (CAA) established the Environmental Protection Agency as the principal administrative body to enact regulations to meet the requirements of the CAA and subsequent CAA amendments thereto. One such requirement directed EPA to set primary and secondary air quality standards, known as the National Ambient Air Quality Standards (NAAQS) for the six "criteria pollutants" that Congress determined presented serious negative impacts to human health and welfare. For areas within Connecticut that do not meet a NAAQS, the Department of Energy and Environmental Protection (DEEP) develops State Implementation Plans (SIPs) to detail the steps to be taken to bring air quality into attainment. Ambient air quality monitoring is essential to track progress towards meeting clean air goals and demonstrate attainment.

While DEEP monitors ambient air quality in Connecticut primarily for comparison with the NAAQS, there are other important objectives to ambient air quality monitoring. This monitoring provides local air quality data to the public, supports air quality forecasting and the Air Quality Index (AQI), supports long-term health assessments and other scientific research, assists with air permitting and identifying long-term air quality trends to gauge effectiveness of air pollution control strategies and serves as an accuracy check on computer based air quality models. DEEP's ability to manage the air quality monitoring network depends significantly on federal support from EPA.

EPA has committed additional federal funding to support new near-road monitoring requirements. Future federal funding levels, however, remain uncertain as Congress has recently proposed to reduce EPA's budget. In addition, as with state governmental operations everywhere, state resources allocated to ambient air quality monitoring are unable to keep pace with the costs. DEEP must continue to provide an acceptable level of service within these constraints by continually improving and focusing its efforts to ensure the completion of the most critical ambient air quality monitoring. As operating costs increase so do federal monitoring requirements. DEEP must do more with fewer resources by either improving operational efficiencies or reducing other aspects of the air monitoring network. Current efficiencies being employed include improvements to data acquisition (through software upgrades and the automating of data streams previously manual), to public data access (thorough Kiosks and improvements to the website), and to more informative multi-pollutant monitoring sites (through consolidation of resources).

## Network Overview

The DEEP air monitoring network currently consists of 21 monitoring stations. Given continuously changing programs, this Plan assumes the current level of staffing and federal funding will be maintained through FY13. Should EPA monitoring requirements significantly increase or should DEEP be impacted by staff attrition, the level of effort proposed in this Plan will have to be revisited.

In October 2006, EPA established a network of core multi-pollutant sites. These sites are known as the National Core (NCore) network, the primary purpose of which is to consolidate monitoring of multiple pollutants at fewer sites for efficiency and cost savings. Additional benefits provided by NCore are to provide a comprehensive suite of high-resolution pollutant data for NAAQS compliance assessment, research studies and long-term trends analysis. Two NCore sites are designated for Connecticut: Criscuolo Park in New Haven, and Mohawk Mountain in Cornwall. Although these sites predated NCore, they were both upgraded and brought into compliance with NCore requirements before EPA's NCore implementation date of January 1, 2011.

## Proposed Network Changes

Details of the proposed monitoring network configuration are described in the following site information pages. In addition to infrastructure maintenance and improvements, there are several proposed changes to the monitoring network through the end of 2013, which include:

- Discontinuing all sampling at the Hartford Morgan Street site.

- Discontinuing all sampling at the Norwalk site.
- Discontinuing all sampling at the Norwich site.
- Discontinuing all sampling at the Hartford Brainard Field site.
- Discontinuing CO monitoring at the Westport site.
- Establishing a Hartford near-road monitoring site to include the measurement of $NO_2$, CO, $PM_{2.5}$, UVC/BC and dioxins (specific details for this proposed site can be found in the Connecticut 2012 Near-Road Network Plan).
- Establishing 1-in-3 day $PM_{2.5}$ FRM and wind speed/direction sampling at Groton site.

DEEP maintains its air monitoring network so the critical data needs are fulfilled. New EPA requirements will require additional monitoring over the next several years and, consistent with the LEAN culture of the agency, this Plan calls for continued efforts to streamline data handling, while also looking for opportunities to identify and address low value added monitoring sites. If limited opportunities exist to disinvest from low value added monitoring sites, efficiencies nonetheless will occur by eliminating lower value data collection. Such efficiencies will be necessary to enable limited staff resources to focus on high value work efforts necessary to fulfilling the required new mandates. If efficiencies alone are insufficient, either additional resources will be required or the scope of the monitoring program will need to be revisited.

**Public Face**

The DEEP is developing a dashboard to educate and inform the public about air quality using easily understandable metrics to convey how Connecticut is moving forward to achieve its clean air goals. DEEP staff is in the process of developing a real-time air quality website that will be published later this year (2012). Kiosk systems will provide real-time access to the air quality information, provide a platform to discuss health related issues with respect to air quality, and an overview of Connecticut's ambient air monitoring network. DEEP plans to deploy these kiosk systems at the nature centers in Madison at Hammonasset State Park and Westport at Sherwood Island State Park. The kiosks will be portable and available for various applications as part of DEEP's public outreach and education campaign. Note that these kiosks are state funded and therefore not bound by EPA oversight and approval.

## Monitoring Site Information

Below is a table with a list of all monitoring sites currently operated by the DEEP. The following pages list detailed information for each monitoring site. The monitoring sites are listed in alphabetical order by site name.

### Site Information Table

| Town | Site | PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point / Rel. Humidity | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bridgeport | Edison School | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Bridgeport | Roosevelt School | 1/3 | | X | | | 1/6 | | | | | | | | | | X | | | | | | | | | | | X | | | | | |
| Cornwall | Mohawk Mountain | 1/3 | | X | | X | 1/3 | | X | | X | X | X | X | X | X | X | X | X | | | | | | | X | X | X | X | X | X | X |
| Danbury | Western Connecticut State University | 1/3 | | X | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | X | | |
| East Hartford | High Street | 1/3 | | X | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | |
| East Hartford | McAuliffe Park | 1/1 | | X | | | 1/6 | | | | | | | X | X | X | X | X | | | X | X | | | | X | X | X | X | | | X |
| Greenwich | Point Park | | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | X | | |
| Groton | Fort Griswold | P | | X | | | | | | | | | | | X | | | | | | | | | | | P | P | X | | | | |
| Hartford | Brainard Field | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | |
| Hartford | Morgan Street Courthouse | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Hartford | NEAR ROAD | | | P | | | | | | | | | | P | | | P | P | | | | | | | P | P | P | P | | | | |
| Madison | Hammonasset State Park | | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | | | |
| Mansfield | DOT | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | |
| Middletown | Connecticut Valley Hospital | | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | X | X | |
| New Haven | Criscuolo Park | 1/1 | 1/6 | X | | X | 1/3 | 1/6 | X | X | | X | X | X | X | X | X | X | X | X | X | | X | | | X | X | X | X | X | X | X |
| New Haven | State Street | 1/3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Norwalk | Health Department | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Norwich | Norwich Courthouse | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stafford | Shenipsit State Forest | | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | | | |
| Stratford | Stratford Lighthouse | | | | | | | | | | | | | | X | | | | | | | | | | | | | X | | | | |
| Waterbury | Meadow & Bank Street | 1/3 | 1/6 | X | | | | | | | | | | | | | | | | | | | | | | X | X | X | | X | | |
| Westport | Sherwood Island State Park | 1/3 | | | | | | | | | | | | | X | X | X | X | | | X | | | | | X | X | X | X | | | X |

X=Existing, P =Proposed, = Proposed to terminate

## National Ambient Air Quality Standards (NAAQS)

The EPA Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, known as the criteria pollutants. Table 1 summarizes the current NAAQS compliance requirements for the criteria pollutants.

**Table 1: National Ambient Air Quality Standards**

| Pollutant [final rule cite] | | Primary/ Secondary | Averaging Time | Level | Form |
|---|---|---|---|---|---|
| Carbon Monoxide [76 FR 54294, Aug 31, 2011] | | primary | 8-hour | 9 ppm | Not to be exceeded more than once per year |
| | | | 1-hour | 35 ppm | |
| Lead [73 FR 66964, Nov 12, 2008] | | primary and secondary | Rolling 3 month average | 0.15 µg/m$^3$ (1) | Not to be exceeded |
| Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996] | | primary | 1-hour | 100 ppb | 98th percentile, averaged over 3 years |
| | | primary and secondary | Annual | 53 ppb (2) | Annual Mean |
| Ozone [73 FR 16436, Mar 27, 2008] | | primary and secondary | 8-hour | 0.075 ppm (3) | Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years |
| Particle Pollution [71 FR 61144, Oct 17, 2006] | $PM_{2.5}$ | primary and secondary | Annual | 15 µg/m$^3$ | annual mean, averaged over 3 years |
| | | | 24-hour | 35 µg/m$^3$ | 98th percentile, averaged over 3 years |
| | $PM_{10}$ | primary and secondary | 24-hour | 150 µg/m$^3$ | Not to be exceeded more than once per year on average over 3 years |
| Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973] | | primary | 1-hour | 75 ppb (4) | 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years |
| | | secondary | 3-hour | 0.5 ppm | Not to be exceeded more than once per year |

(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual NO2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

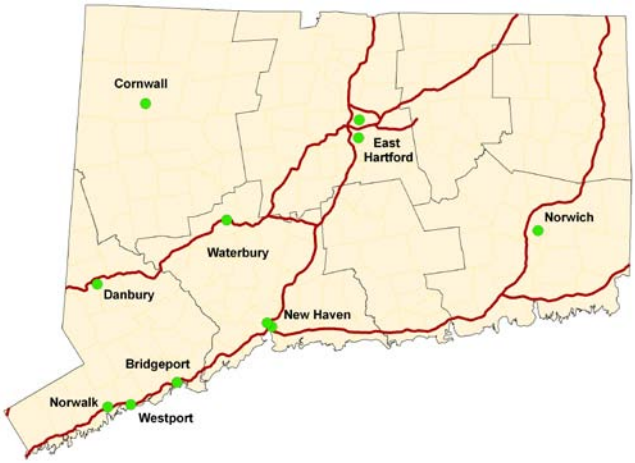
## Overview of Network Operation

DEEP operates a network of 21 sites throughout Connecticut used for monitoring air pollutants and meteorological parameters. The map below indicates the DEEP air monitoring sites as of July 2012. The map also shows the nearest air monitoring sites in neighboring states to indicate coverage.

The section below contains information about monitoring methods and sampling frequencies, as well as monitoring network maps for each pollutant parameter. Any network changes planned before the end of 2013 are discussed as are any anticipated network changes beyond that period.

### $PM_{2.5}$ FRM Network

DEEP operates eleven $PM_{2.5}$ FRM sites in the air monitoring network. Two of the sites, Criscuolo Park in New Haven and McAuliffe Park in East Hartford, operate on an everyday sample schedule while all the other sites operate on a 1-in-3 day sample schedule. Two sites, Waterbury and Criscuolo Park in New Haven, operate collocated $PM_{2.5}$ FRM samplers on a 1-in-6 day sample schedule. Proposed changes to the $PM_{2.5}$ network through 2013 include the elimination of the Norwalk and Norwich $PM_{2.5}$ sites. The Norwich PM $_{2.5}$ FRM monitor is proposed to be relocated to the Groton Fort Griswold location. DEEP will continue to deploy the new Thermo 2025i series samplers during



2012-2013. DEEP is currently evaluating the performance of the continuous MetOne 1020 BAM $PM_{2.5}$ analyzers to determine their acceptability for federal equivalency.

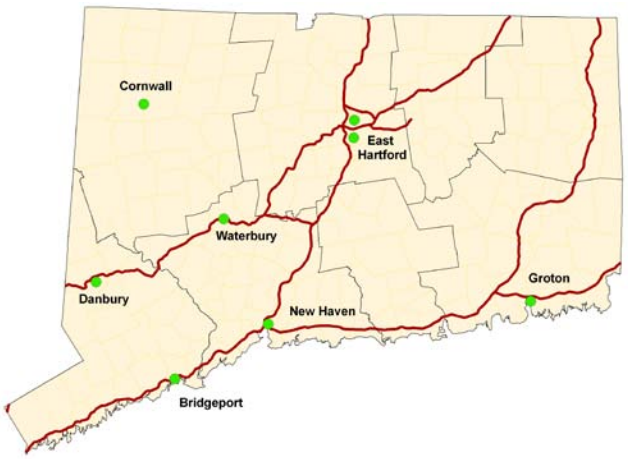
### $PM_{10}$ / $PM_{10-2.5}$ FRM Network

DEEP operates four $PM_{10}$ FRM sites in the air monitoring network. Two sites, Bridgeport and East Hartford, are operated on a 1-in-6 day sample schedule. The other two sites, Cornwall and New Haven, operate on a 1-in-3 day sample schedule. Criscuolo Park in New Haven has a collocated $PM_{10}$ FRM sampler operating on a 1-in-6 day sample schedule. All sites that have $PM_{10}$ FRM samplers also have $PM_{2.5}$ FRM samplers. As such, $PM_{10-2.5}$ data, which represent the coarse fraction of inhalable PM, is also provided at the four sites. Coarse PM is defined as thoracic PM having particle sizes between 2.5 and 10 microns. The coarse PM network is implemented both as an NCore requirement and in preparation for a coarse PM NAAQS potentially to be promulgated in the future (EPA is currently reviewing the PM NAAQS, we anticipate the final review and subsequent proposed NAAQS will be released sometime within the next year). No further changes to this network are proposed through the end of 2013.

### PM Speciation Network

$PM_{2.5}$ chemical speciation measurements are being obtained at three sites in the DEEP air monitoring network. The IMPROVE (Interagency Monitoring of Protected Visual Environments) monitor is located at the Cornwall site and the STN (Speciation Trends Network) monitor is at the New Haven Criscuolo Park site. Both sites are operated on the standard EPA PM 1-in-3 day sample schedule and provide 24-hour integrated filter-base measurements. DEEP also operates continuous sulfate and continuous organic and elemental carbon monitors, which provide hourly average measurements, at the Cornwall and New Haven Criscuolo Park sites. In addition, black carbon and ultra-violet channel carbon (a wood smoke PM surrogate) are monitored at the Criscuolo Park, Cornwall and East Hartford McAuliffe Park sites using 2-channel Aethalometers. Changes to the speciation network will include the addition of an Aethalometer at the planned near-road site in the Hartford area (discussed separately in the Connecticut 2012 Near-Road Network Plan).

### Continuous PM Network




DEEP operates eight continuous PM sites in the air monitoring network. This network includes continuous MetOne 1020 BAM $PM_{2.5}$ samplers at each of the eight sites, and paired continuous MetOne 1020 BAM $PM_{10}$/ $PM_{10-2.5}$ samplers at the two NCore sites (New Haven and Cornwall). In addition, there is a Thermo 1405-DF dichotomous particulate sampler undergoing field testing at the New Haven NCore site. All monitors are operated year-round and the hourly data are sent to the

EPA AIRNow website for AQI purposes on an hourly basis.

The MetOne 1020 BAM samplers currently operating are configured as Federal Equivalent Methods (FEMs), but they are undergoing thorough field testing before they are considered to be utilized for compliance purposes. As such, the $PM_{2.5}$ data is reported to AQS as "acceptable $PM_{2.5}$" (parameter code 88501). DEEP projects this analysis period to run through 2012 to determine that the units are properly calibrated, and that any observed bias in comparison to FRM data is not due to spurious causes or conditions. No changes to the network are anticipated through the end of 2013, with the exception of an additional monitor at the planned near-road site in the Hartford area (discussed separately in the Connecticut 2012 Near-Road Network Plan).

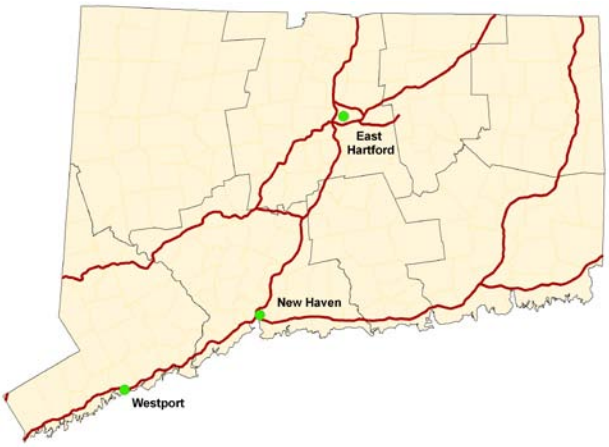
**Ozone Network**

DEEP operates eleven ozone sites in the air monitoring network. The ozone analyzers at the Cornwall and New Haven Criscuolo Park sites are operated year-round, while the remaining sites are operated from April 1 through September 30. DEEP will upgrade all network Ozone monitors to the Teledyne-API Model T400 photometric ozone analyzers (method EQOA-992-087) during 2012. Ozone measurements are sent to the EPA AIRNow website for AQI purposes on an hourly basis.

In 2009, EPA proposed ozone NAAQS revisions that would increase minimum monitoring requirements[1], including lengthening the required ozone monitoring season in many areas. For Connecticut, EPA proposed that the ozone season would be extended to the period March 1 through October 31. EPA has postponed the finalization of the rule until the latter part of 2012, therefore DEEP may implement the extended ozone monitoring season starting March 1, 2013.

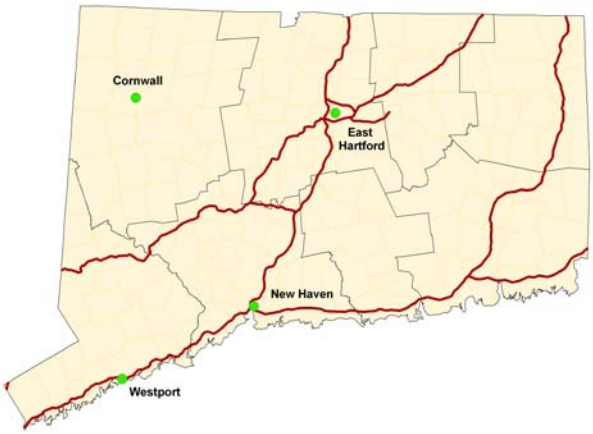
**PAMS Network**

DEEP operates three Photochemical Assessment Monitoring Stations (PAMS) sites in the air monitoring network. PAMS measurements are obtained from June 1 through August 31 each year. PAMS sampling generates hourly measurements of 56 volatile organic compounds (VOCs), such as benzene and toluene, which are precursors to ozone formation. Carbonyl sampling is also done in conjunction with PAMS at the East Hartford site on a 1-in-3 day sample schedule from June 1 through August 31. For each sample day, four three-hour samples are collected and analyzed for formaldehyde and acetaldehyde. For the 2012 PAMS season, two Synspec Gas Chromatographs (FID and PID detectors) will be deployed to replace aging Perkin Elmer Instruments. They will be located at the Westport Sherwood Island and New Haven Criscuolo Park sites. East Hartford will continue to run a Perkin Elmer Gas Chromatograph (FID detectors). In addition to the above said lower atmospheric measurements, the upper air measurements needed for modeling purposes are from regional National Oceanic and Atmospheric Administration (NOAA) radiosondes.




[1] 74 FR 34525

### $NO_2$ / NOy Network




DEEP operates four nitrogen dioxide ($NO_2$) sites in the air monitoring network. All $NO_2$ analyzers are operated year-round. DEEP is planning to replace the current TE Model 42 NO/NO2/NOx analyzers with Teledyne-API Model T200AU units during 2012.

Nitrogen oxide (NO) and nitrogen dioxide ($NO_2$) are currently required at NCore sites (for NAAQS compliance) and at PAMS sites (for their role in ozone formation). DEEP began operation of two NOy (total reactive oxides of nitrogen) samplers in 2011, at the New Haven Criscuolo Park and Cornwall NCore sites. NOy is defined as $NO+NO_2+NO_z$ (higher oxides of nitrogen).

On January 22, 2010, EPA finalized a revised $NO_2$ NAAQS[2], including new requirements for $NO_2$ monitoring required to be implemented by January 1, 2013. The revised rule establishes a network of $NO_2$ near-road monitoring and community based monitoring sites based on population estimates. All core-based statistical areas (CBSAs) with populations greater than 500,000 are required to have one near-road monitor. CBSAs with more than 1,000,000 people require to have a community-based monitor in addition to the near road monitor. For Connecticut, three CBSAs (Bridgeport-Stamford-Norwalk, Hartford-West Hartford-East Hartford and New Haven-Milford) will require near road monitors, and one CBSA (Hartford-West Hartford-East Hartford) will require a community based monitor. The near-road sites will be selected from the highest annual average daily traffic (AADT) road segments in each CBSA where the maximum hourly $NO_2$ concentrations are expected to occur, taking into consideration fleet mix, roadway design, traffic congestion patterns, terrain and meteorology. Proposed near-road sites must meet applicable siting criteria as indicated in the final $NO_2$ NAAQS rule.

The new rule also specifies siting requirements for the community based monitors. Requirement may be satisfied by a current PAMS site where the highest concentrations occur in the area and the site represents a neighborhood or urban scale. The East Hartford McAuliffe Park $NO_2$ monitor is proposed for the community-wide monitoring in the Hartford CBSA, as is it consistent with these specified requirements. In addition to the minimally-required four near-road and community-wide $NO_2$ monitors indicated above, the EPA Regional Administrators will site at least 40 $NO_2$ monitors nationwide to help protect communities that are susceptible or vulnerable to $NO_2$ related health effects. Working closely with DEEP, EPA has identified the New Haven Criscuolo Park site as one of these 40 nationwide monitors.

DEEP is in the process of implementing the near-road $NO_2$ network under guidance and funding of EPA. The specific near-road network planning is addressed in detail in a separate document, the Connecticut 2012 Near-Road Network Plan.

### CO Network

DEEP operates six carbon monoxide (CO) sites in the air monitoring network. All CO samplers are operated year-round and sample CO with TE 48i- TLE analyzers. Of the 6 sites, New Haven and Cornwall comply with the requirement for CO monitoring at NCore sites (sampling at NCore sites is at trace level), Hartford and Bridgeport monitor under CO limited maintenance plans, and East Hartford, Westport and New Haven include CO as a complement to the PAMS

[2] 75 FR 6474

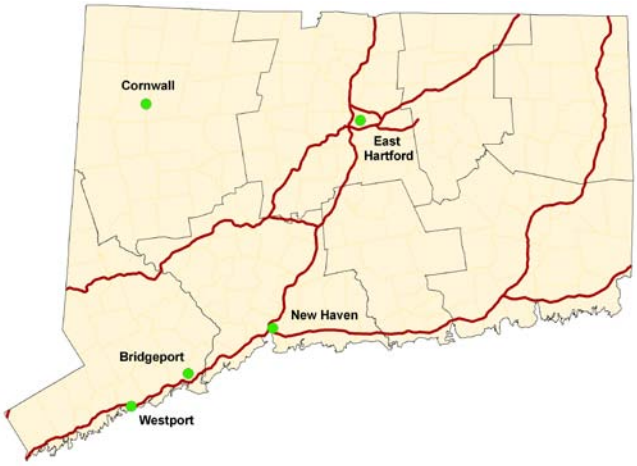
monitoring. As CO is not an essential PAMS parameter, and as it is monitored in nearby Bridgeport, we are proposing to discontinue CO monitoring at the Westport Sherwood Island State Park site on December 31, 2012. Westport CO values are among the lowest in the state and are well below the NAAQS, currently measuring at only 11% of the standard.

DEEP proposes to move the Hartford Morgan Street CO monitor to a new location at the Hartford near-road $NO_2$ site during 2012-2013. Implementation of the near-road site for $NO_2$ is funded by EPA and is expected to be operational by January 1, 2013. EPA's CO NAAQS rule, finalized August 12, 2011, specifies CO monitoring collocated with $NO_2$ near-road monitors in CBSAs with populations greater than 1,000,000, which would apply to the Hartford-West Hartford-East Hartford CBSA. DEEP proposes that the current Morgan Street, Hartford CO monitor be shifted to the Hartford area $NO_2$ near-road site by January 1, 2013, and that the Morgan Street site be closed. The proposed location of the near-road site is not included in this plan, but is addressed fully in the Connecticut 2012 Near-Road Network Plan.

CO monitoring at the Harford Morgan Street site fulfills the monitoring requirement for DEEP's Hartford area CO limited maintenance plan (LMP) (DEEP, 2004). Monitoring under the CO LMP is required to verify attainment with the CO NAAQS for the maintenance period. The relocation of the CO monitor to the near-road site will provide coverage similar to that at Morgan Street, in that the new location will be adjacent to and approximately the same horizontal distance from the interstate limited access highway, I-84. The new location will allow the monitoring probe to be at a similar level to the highway, whereas the Morgan Street probe is significantly below the traffic on the highway viaduct. DEEP will continue to operate the Morgan Street monitor for a period of several months to compare CO levels between the two sites.

**$SO_2$ Network**

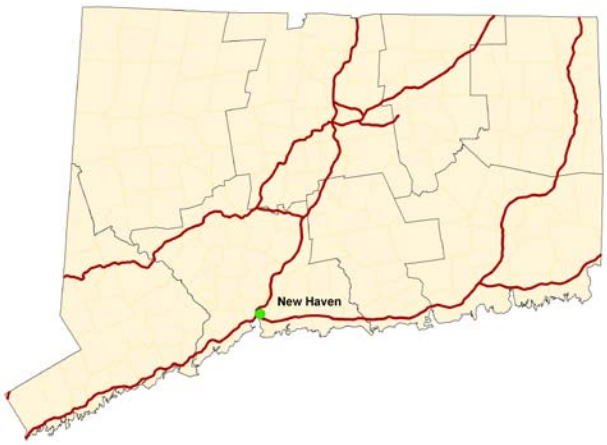
DEEP operates five sulfur dioxide ($SO_2$) sites in the air monitoring network. All samplers are TE 43i-TLE $SO_2$ analyzers and are operated year-round. NCore site analyzers are operating at trace level measurements. Both 1-hour and 5-minute block average $SO_2$ data are validated and reported to EPA.




As indicated in the Connecticut 2011 Annual Air Monitoring Network Plan, the Bridgeport Edison School and the East Hartford McAuliffe Park $SO_2$ monitors satisfy the requirements of the June 2, 2010 $SO_2$ final NAAQS rule for population-weighted emissions index (PWEI) monitoring in the Bridgeport-Stamford-Norwalk and Hartford-East Hartford-West Hartford CBSAs, respectively. In addition, $SO_2$ monitoring is required at both the Cornwall Mohawk Mountain and the New Haven Criscuolo Park NCore sites.

### Lead (Pb) Network

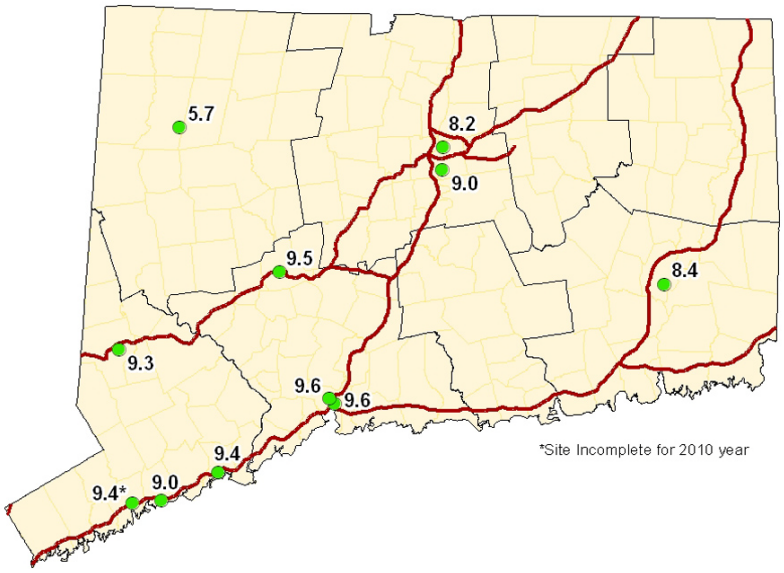
The DEEP lead monitoring network consists of primary and collocated 1-in-6 day sampling at the New Haven Criscuolo Park urban NCore site in fufillment of the revised Pb NAAQS and monitoring requirements promulgated in December 2010. Lead measurements are obtained from Energy Dispersive X-Ray Fluorescence (XRF) analysis of the 47 mm Teflon filter samples collected using a low-volume (lo-vol) FRM R&P Partisol Plus 2025 PM10 Sequential Air Samplers. No changes to the Pb monitoring network are anticipated through the end of 2013.




### $PM_{2.5}$ Annual Design Values (2009-2011)

Below are the current annual design values for $PM_{2.5}$ using 2009 through 2011 data. $PM_{2.5}$ annual design values are calculated using the 3-year average of the respective annual weighted averages. The current annual $PM_{2.5}$ standard is 15 $\mu g/m^3$. Although all Connecticut monitors are showing compliance with the design value for the annual $PM_{2.5}$ NAAQS, Fairfield and New Haven Counties remain designated nonattainment for the annual standard as part of the Greater New York City area and will remain so until a maintenance plan and redesignation request is completed and approved.

| Site | Design Value ($\mu g/m^3$) |
|---|---|
| Bridgeport | 9.4 |
| Cornwall | 5.7 |
| Danbury | 9.3 |
| East Hartford – High St. | 9.0 |
| East Hartford - McAuliffe | 8.2 |
| ☐ew Haven – Criscuolo | 9.6 |
| New Haven – State St. | 9.6 |
| Norwalk* | 9.4 |
| Norwich | 8.4 |
| Waterbury | 9.5 |
| Westport | 9.0 |

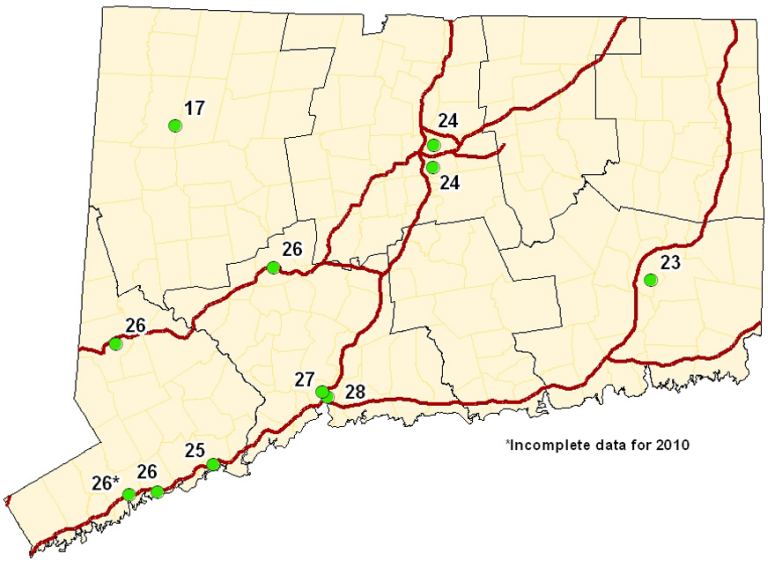



*Norwalk design values are computed from all three annual weighted means and 98th percentiles, respectively, although 2010 data did not achieve the required completeness of 75 percent due to roof construction.

## $PM_{2.5}$ Daily Design Values (2009-2011)

Below are the current daily design values for $PM_{2.5}$ using 2009 through 2011 data. $PM_{2.5}$ daily design values are calculated using the 3-year average of the annual 98th percentile values. As of 2006, the new, more stringent daily $PM_{2.5}$ NAAQS is 35 $\mu g/m^3$. The previous daily standard was 65 $\mu g/m^3$. Final designations relative to the 2006 24-hour $PM_{2.5}$ NAAQS were finalized by EPA in November 2009 (effective as of December 14, 2009), based upon measured data from 2006 through 2008. Although all Connecticut monitors are showing compliance with the 2006 24-hour $PM_{2.5}$ NAAQS, Fairfield and New Haven Counties are designated nonattainment for the daily standard as part of the Greater New York City area and will remain so until a maintenance plan and redesignation request is completed and approved. In the mean time Connecticut has also submitted a Clean Data Determination (CDD) which would suspend all Non-attainment area requirements until either a redesignation is approved or NAAQS are violated again.

| Site | Design Value ($\mu g/m^3$) |
|---|---|
| Bridgeport | 25 |
| Cornwall | 17 |
| Danbury | 26 |
| East Hartford – High St. | 24 |
| East Hartford - McAuliffe | 24 |
| New Haven – Criscuolo | 28 |
| New Haven – State St. | 27 |
| Norwalk* | 26 |
| Norwich | 23 |
| Waterbury | 26 |
| Westport | 26 |

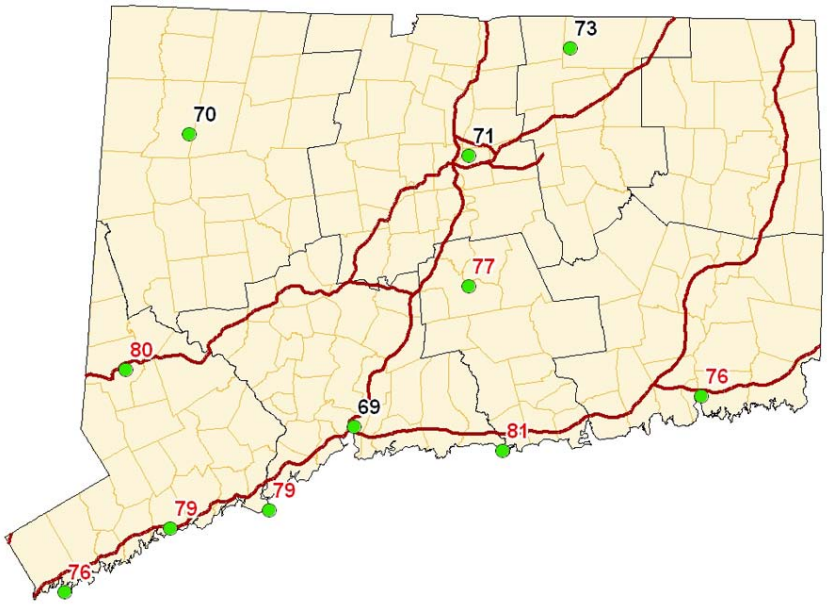



*Norwalk design value based on three years (2008-2010), although 2010 did not meet 75 percent data completeness due to construction at the site.

## Ozone Design Values (2009-2011)

The 2012 ozone 8-hour design values are given in the table below. Ozone design values are calculated by taking the average for three consecutive years of the annual fourth highest daily maximum 8-hour ozone average. Based on the March 2008 revised ozone standard of 0.075 ppm (75 ppb), seven out of eleven sites indicate nonattainment, shown in red font below. The EPA's ozone NAAQS implementation rule[3], which is not yet final, may require expanding the ozone monitoring season in Connecticut to March through October, adding a month to each end to the current season.

| Site | Design Value (ppb) |
|---|---|
| Cornwall | **70** |
| Danbury | **80** |
| East Hartford | **71** |
| Greenwich | **76** |
| Groton | **76** |
| Madison | **81** |
| Middletown | **77** |
| New Haven | **69** |
| Stafford | **73** |
| Stratford | **79** |
| Westport | **79** |




## Data Acquisition Network

The most significant changes within the data acquisition network during the past year include the implementation of an automated PM sampling data transfer system and the continuation of upgrades to the data acquisition system (DAS) software at the NCore sites.

Automated PM data transfer for the gravimetric FRM samplers has many benefits to the monitoring program. These improvements will eliminate multiple manual data transfers and will allow staff to remotely access the operational status of samplers in real time. Such remote access will allow early identification of operational issues in the field, more accurate and timely data transfer and better PM data completion and reporting timeliness. The data transfer improvements consist of the installation and configuration of digital wired and cellular DSL routers at the PM sites, configuration of the central data server to accept data transfer from the sites, and the development and testing of software (DR DAS FilterPAQC) that integrates the uploaded sampling data with the laboratory automated weighing data for the data validation process. DEEP expects to have this system fully operational by the end of 2012.

DEEP will extend the upgrade of DAS software (Envitech Envista Ultimate version) from the NCore sites to all sites in the network during 2012. This process will be integrated with the virtualization of the site DAS computers, which will allow for a uniform DAS configuration profile across the network.

[3] 74 FR 34525 (July 16, 2009)

| | | | |
|---|---|---|---|
| Town – Site: | **Bridgeport – Edison School** | | |
| County: | **Fairfield** | Latitude: | **41.19500°** |
| Address: | **115 Boston Terrace** | Longitude: | **-73.16350°** |
| AQS Site ID: | **09-001-0012** | Elevation: | **34 m (110 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1983** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |

X=Existing, P =Proposed, = Planned to terminate

**Site Description:** The Edison School site is a neighborhood-scale site located in southwestern Connecticut in the town of Bridgeport. This site is located 170 m to the north of Rte 1, 2.2 km to the north of I-95 and 2.7 km to the east of Rte 8. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Bridgeport Edison School monitoring site objective is to collect $SO_2$ measurements for compliance purposes and to potentially address the source-oriented monitoring requirement for the recently finalized 1-hour $SO_2$ NAAQS.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Bridgeport – Roosevelt School** | | |
| County: | **Fairfield** | Latitude: | **41.17086°** |
| Address: | **Park Avenue** | Longitude: | **-73.19476°** |
| AQS Site ID: | **09-001-0010** | Elevation: | **7 m (23 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1982** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | X | | | 1/6 | | | | | | | | | | X | | | | | | | | | | | X | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Roosevelt School site is a neighborhood-scale site located in southwestern Connecticut in the town of Bridgeport. This site is located 50 m to the north of I-95 and 200 m to the west of the I-95 and Rte 8 interchange. This coastal site is located in a schoolyard and residential neighborhoods are present in every direction of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Bridgeport Roosevelt School monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes. CO measurements will continue to be conducted at this site per requirements of the CO limited maintenance plan (LMP).

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Cornwall – Mohawk Mountain** | | |
| County: | **Litchfield** | Latitude: | **41.82140°** |
| Address: | **Mohawk Mountain** | Longitude: | **-73.29733°** |
| AQS Site ID: | **09-005-0005** | Elevation: | **505 m (1656 ft)** |
| Spatial Scale: | **Regional** | Year Established: | **1988** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | X | X | | 1/3 | | X | | X | X | X | X | X | X | X | X | X | | | | | | | X | X | X | X | X | X | X |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Mohawk Mountain site is a regional-scale site located in northwestern Connecticut in the town of Cornwall. The site is located at the top of Mohawk Mountain with an elevation of 505 m (1656 ft) and is approximately 17 km to the east of the New York border and 25 km to the south of the Massachusetts border. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Cornwall Mohawk Mountain site was approved to be an NCore site on October 30, 2009 by EPA OAQPS. The primary monitoring site objective is to meet NCore requirements. Trace-CO, NOy, NOx, $PM_{10}$ FRM and continuous $PM_{10-2.5}$ and $PM_{2.5}$ were deployed to the Cornwall Mohawk Mountain site in 2010 as part of NCore siting requirements. Other monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI reporting and forecasting purposes. $PM_{2.5}$ chemical speciation measurements are collected through the IMPROVE network. Ozone is measured at the Mohawk Mountain site for compliance assessment and AQI and forecasting purposes. Trace-$SO_2$ monitoring is being conducted to collect PM precursor gas measurements. Continuous organic carbon (OC) and elemental carbon (EC), sulfate, $PM_{2.5}$ measurements are collected as part of the Mid-Atlantic/Northeast Visibility Union (MANE-VU) Rural Aerosol Intensive Network (RAIN) to study the effects of regional haze and to provide data and information to develop the Regional Haze State Implementation Plan.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Danbury – Western Connecticut State University** | | |
| County: | **Fairfield** | Latitude: | **41.398692°** |
| Address: | **White Street** | Longitude: | **-73.443148°** |
| AQS Site ID: | **09-001-1123** | Elevation: | **116 m (380 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1974** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | X | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | X | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Western Connecticut State University (WCSU) site is a neighborhood site located in western Connecticut in the town of Danbury. This site is located on the top level of a parking garage on the WCSU campus. This site is located approximately 140 m to the southeast of I-84 on White Street. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Danbury WCSU monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes. Ozone is measured at the Danbury site for compliance assessment and AQI and forecasting purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **East Hartford – High Street** | | |
| County: | **Hartford** | Latitude: | **41.74259°** |
| Address: | **High Street** | Longitude: | **-72.63433°** |
| AQS Site ID: | **09-003-2006** | Elevation: | **12 m (40 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1989** |
| Statistical Area: | **CSA (Hartford-West Hartford-Willimantic)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | X | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The High Street site is neighborhood-scale site located in central Connecticut in the town of East Hartford. The site is located approximately 70 m to the northeast of Rte 2 and 20 m to the west of High Street. This site is located 4.2 km to the southeast of the city of Hartford. Residential neighborhoods are located in all directions of this site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The East Hartford High Street monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **East Hartford – McAuliffe Park** | | |
| County: | **Hartford** | Latitude: | **41.78471°** |
| Address: | **McAuliffe Park** | Longitude: | **-72.63158°** |
| AQS Site ID: | **09-003-1003** | Elevation: | **15 m (50 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1981** |
| Statistical Area: | **CSA (Hartford-West Hartford-Willimantic)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/1 | | X | | | 1/6 | | | | | | | X | X | X | X | X | | | X | X | | | | X | X | X | X | | | X |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The McAuliffe Park site is neighborhood-scale site located in central Connecticut in the town of East Hartford. The site is located approximately 120 m to the east of Rte 5, 2.0 km to the east of I-91 and 2.5 km to the south of I-291. This site is located 3.7 km to the northeast of the city of Hartford. Residential neighborhoods are located in all directions of this site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The East Hartford McAuliffe Park monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes. A $PM_{10}$ FRM is operated for compliance purposes, as well as to gather $PM_{10-2.5}$ measurements. Ozone is measured at the McAuliffe Park site for compliance assessment and AQI and forecasting purposes and PAMS and $NO_x$ monitoring is conducted to obtain measurements of ozone precursors. CO measurements are being collected to complement the PAMS measurements.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Greenwich – Point Park** | | |
| County: | **Fairfield** | Latitude: | **41.005047°** |
| Address: | **Point Park** | Longitude: | **-73.58382°** |
| AQS Site ID: | **09-001-0017** | Elevation: | **3 m (10 ft)** |
| Spatial Scale: | **Urban** | Year Established: | **1978** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | X | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Greenwich Point Park site is an urban-scale site located is southwestern Connecticut on the Long Island Sound in Greenwich. This is a coastal site located approximately 3.0 km to the southeast and 5.0 km to the northeast of the New York border. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Greenwich Point Park monitoring site objectives include collecting ozone measurements for compliance assessment and AQI and forecasting purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Groton – Fort Griswold** | | |
| County: | **New London** | Latitude: | **41.35362°** |
| Address: | **141 Smith Street** | Longitude: | **-72.07882°** |
| AQS Site ID: | **09-011-0124** | Elevation: | **37 m (120 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **2007** |
| Statistical Area: | **MSA (Norwich-New London)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | | X | | | | | | | | | | | X | | | | | | | | | | | P | P | X | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Fort Griswold site is a neighborhood-scale site located in southeastern Connecticut in the town of Groton. This site is located approximately 1.1 km to the south of I-95 and 0.5 km to the east of the New London Harbor. Residential neighborhoods are located in all directions of this site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Groton Fort Griswold monitoring site objectives include the proposed collecting of $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI and forecasting purposes. Ozone is measured at the Fort Griswold site for compliance assessment and AQI and forecasting purposes. Under consideration for the potential relocation of $SO_2$ monitor from Westport to provide information for New Source Review data in New London County (note this is not a planned change for 2012-2013, this is future change in early stages of review).

**Planned changes for 2012-2013:** Consolidation of Norwich $PM_{2.5}$ FRM site to the Groton Fort Griswold site. This will provide 1-in-3 $PM_{2.5}$ FRM monitor at the Groton Fort Griswold site along with the installation of a meteorological tower for wind speed and wind direction measurements.

| | | | |
|---|---|---|---|
| Town – Site: | **Hartford – Brainard Field** | | |
| County: | **Hartford** | Latitude: | **41.74551°** |
| Address: | **Maxim Road** | Longitude: | **-72.64917°** |
| AQS Site ID: | **Not assigned** | Elevation: | **12 m (39 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **2003** |
| Statistical Area: | **CSA (Hartford-West Hartford-Willimantic)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Brainard Field site is a neighborhood-scale site located in central Connecticut in the eastern part of the city of Hartford. This site is located on the Connecticut River approximately 1.0 km to the east and south of I-91 and the Wilbur Cross Highway. Residential neighborhoods are located in all directions of this site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Hartford Brainard Field monitoring site objective is to collect dioxin measurements for trends analysis.

**Planned changes for 2012-2013:** Elimination of site. Consolidation of dioxin monitoring at this site to the new Near Road location in the Hartford area to occur in 2012-2013

| | | | |
|---|---|---|---|
| Town – Site: | **Hartford – Morgan Street Courthouse** | | |
| County: | **Hartford** | Latitude: | **41.76923°** |
| Address: | **155 Morgan Street** | Longitude: | **-72.67033°** |
| AQS Site ID: | **09-003-0017** | Elevation: | **8 m (25 ft)** |
| Spatial Scale: | **Micro** | Year Established: | **1984** |
| Statistical Area: | **CSA (Hartford-West Hartford-Willimantic)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Morgan Street Courthouse is a micro-scale site located in central Connecticut in the city of Hartford. This site is located at 155 Morgan Street directly adjacent and below I-84 and is approximately 0.4 km from the I-84 and I-91 interchange. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Morgan Street Courthouse monitoring site objective is to collect CO measurements for compliance purposes. This site is a maximum impact site for CO, and is currently required by a CO maintenance plan. This site registers the highest CO measurements in the DEEP ambient air monitoring network; however, the levels are still well below the NAAQS.

**Planned changes for 2012-2013**: Elimination of site. Consolidation of CO monitoring at this site with new Near Road location in the Hartford area to occur during 2012-2013

| | | | |
|---|---|---|---|
| Town – Site: | **Madison – Hammonasset State Park** | | |
| County: | **New Haven** | Latitude: | **41.25984°** |
| Address: | **Hammonasset SP** | Longitude: | **-72.55018°** |
| AQS Site ID: | **09-009-3002** | Elevation: | **3 m (10 ft)** |
| Spatial Scale: | **Regional** | Year Established: | **1981** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Hammonasset State Park site is a regional-scale site located in central coastal Connecticut in the town of Madison. This site is located approximately 1.5 km to the south of Rte 1 and 3.0 km to the south of I-95 on the Long Island Sound. Residential neighborhoods are located primarily to the northeast, north and northwest of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Madison Hammonasset State Park monitoring site objective is to collect ozone measurements for compliance assessment and AQI and forecasting purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Mansfield – DOT** | | |
| County: | **Tolland** | Latitude: | **41.73140°** |
| Address: | **N. Frontage Road** | Longitude: | **-72.21163°** |
| AQS Site ID: | **09-013-0003** | Elevation: | **76 m (253 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **2006** |
| Statistical Area: | **CSA (Hartford-West Hartford-Willimantic)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Mansfield DOT site is a neighborhood-scale site located in eastern Connecticut to the north of downtown Mansfield. This site is located on North Frontage Road and is 60 m to the north of Rte 6. Residential neighborhoods are located in all directions of this site with the downtown located to the south. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Mansfield DOT site monitoring objective is to collect meteorological data for forecasting and modeling purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Middletown – Central Valley Hospital** | | |
| County: | **Middlesex** | Latitude: | **41.55224°** |
| Address: | **Shew Hall** | Longitude: | **-72.63004°** |
| AQS Site ID: | **09-007-0007** | Elevation: | **58 m (190 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1980** |
| Statistical Area: | **CSA (Hartford-West Hartford-Willimantic)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | X | X | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Middletown Central Valley Hospital site is a neighborhood-scale site located in central Connecticut. This site is located approximately 0.2 km to the east of Rte 9. Residential neighborhoods are located to the west, north and south of this site. This site meets all siting requirements and criteria with the exception of the height requirement. A height requirement waiver has been approved and granted by EPA Region I and EPA Headquarters. This site has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Middletown Central Valley Hospital monitoring site objective is to collect ozone measurements for compliance assessment and AQI and forecasting purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **New Haven – Criscuolo Park** | | |
| County: | **New Haven** | Latitude: | **41.30117°** |
| Address: | **1 James Street** | Longitude: | **-72.90288°** |
| AQS Site ID: | **09-009-0027** | Elevation: | **3 m (10 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **2004** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/1 | 1/6 | X | | | 1/3 | 1/6 | X | X | | X | X | X | X | X | X | X | X | X | X | | X | | | X | X | X | X | X | X | X |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Criscuolo Park site is a neighborhood-scale site located on the western side of the city of New Haven. The site is approximately 0.25 km to the north of the I-95 Quinnipiac River Bridge. The site is approximately 1.0 km to the east of the I-91 and I-95 interchange. Bulk gasoline transfer stations are located 0.3 to 2.0 km to the south of the site. Residential neighborhoods are located to the west, north and east of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The New Haven Criscuolo Park site was approved to be an NCore site on October 30, 2009 by EPA OAQPS. The primary monitoring site objective is to meet NCore requirements. Other monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI reporting and forecasting purposes. A $PM_{2.5}$ colocated FRM sampler is operated at this site to gather precision measurements. $PM_{2.5}$ chemical speciation measurements are collected through the EPA Speciation Trends Network (STN). A $PM_{10}$ FRM is operated for compliance purposes, as well as to gather $PM_{10-2.5}$ measurements and obtain lead measurements to determine compliance with the newly established lead NAAQS. $PM_{10}$ FRM sampling frequency was increased from 1-in-6 day sampling to 1-in-3 day sampling to meet NCore requirements. A $PM_{10}$ colocated FRM sampler is operated at this site to gather precision measurements. Ozone is measured at the Criscuolo Park site for compliance assessment and AQI and forecasting purposes and PAMS and $NO_x$ monitoring is conducted to obtain measurements of ozone precursors. Trace-CO measurements are being collected to complement the PAMS measurements. Trace-$SO_2$ monitoring is being conducted to collect PM precursor gas measurements.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **New Haven – State Street** | | |
| County: | **New Haven** | Latitude: | **41.31078°** |
| Address: | **715 State Street** | Longitude: | **-72.91688°** |
| AQS Site ID: | **09-009-1123** | Elevation: | **9 m (30 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1975** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The State Street site is a neighborhood-scale site located in the center of New Haven near the State Street and Trumbull Street intersection. The site is located 0.3 km to the west of I-91 and approximately 1.0 km to the northwest of the I-91 and I-95 interchange. Residential neighborhoods are located to the east, west, north and south of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The New Haven State Street monitoring site objective is to collect $PM_{2.5}$ FRM measurements for compliance purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Norwalk – Health Department** | | |
| County: | **Fairfield** | Latitude: | **41.11248°** |
| Address: | **137 East Avenue** | Longitude: | **-73.40737°** |
| AQS Site ID: | **09-001-3005** | Elevation: | **15 m (50 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1969** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| | PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Norwalk Health Department site is a neighborhood-scale site located in southwestern Connecticut in the town of Norwalk. This is a coastal site located approximately 1.0 km to the north and northwest of I-95. The site is approximately 23 km to the northeast of the New York border. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Norwalk Health Department monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes. $PM_{10}$ FRM sampling was discontinued as of January 1, 2011. $PM_{10}$ sampling was initially established at this site in the anticipation of a PM-coarse standard in 2006. To date, a PM-coarse standard has not been established nor will lead sampling be conducted at this site, therefore there is limited value added to the network to continue $PM_{10}$ FRM sampling at this site.

**Planned changes for 2012-2013:** Elimination of site. This monitor is not required to meet network requirements.

| | | | |
|---|---|---|---|
| Town – Site: | **Norwich – Courthouse** | | |
| County: | **New London** | Latitude: | **41.52407°** |
| Address: | **22 Courthouse Sq.** | Longitude: | **-72.07676°** |
| AQS Site ID: | **09-011-3002** | Elevation: | **12 m (39 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1984** |
| Statistical Area: | **MSA (Norwich-New London)** | | |

**Pollutant and Meteorological Parameters:**

| | PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Norwich Courthouse site is a neighborhood-scale site located in southeastern Connecticut in the center of the town of Norwich. The site is located in downtown Norwich between Water Street and Cliff Street and is approximately 3.5 km to the east of I-395. Residential neighborhoods are located to the east, west, north and south of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Norwich Courthouse monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes. Everyday $PM_{2.5}$ sampling was discontinued as of January 1, 2011 with 1-in-3 day sampling being established. The 2006 regulations required everyday sampling to be conducted at all sites that were within 5% of the daily $PM_{2.5}$ NAAQS of 35 $\mu g/m^3$ for a minimum of three years. The current daily design value for this site based on 2007-2009 data is 26 $\mu g/m^3$, well below the current NAAQS. Sampling through 2010 provided four continuous years of everyday $PM_{2.5}$ FRM sampling (2007-2010).

**Planned changes for 2012-2013:** Elimination of site. Consolidation of this site with the Groton-Fort Griswold location meeting EPA compliance requirements for 1-in-3 day $PM_{2.5}$ monitoring.

| | | | |
|---|---|---|---|
| Town – Site: | **Stafford – Shenipsit State Forest** | | |
| County: | **Tolland** | Latitude: | **41.97568°** |
| Address: | **Route 190** | Longitude: | **-72.38674°** |
| AQS Site ID: | **09-013-1001** | Elevation: | **265 m (869 ft)** |
| Spatial Scale: | **Regional** | Year Established: | **1980** |
| Statistical Area: | **CSA (Hartford-West Hartford-Willimantic)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | X | | | | | | | | | | | X | X | X | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Shenipsit State Forest site is a regional-scale site that is located in northern Connecticut in the town of Stafford. The site is approximately 100 m to the south of Rte 190, 17 km to the east of I-91 and 12 km to the northwest of I-84. This site is located 34 km to the northeast of the city of Hartford. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Stafford Shenipsit State Forest monitoring site objective is to collect ozone measurements for compliance assessment and AQI and forecasting purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Stratford – Lighthouse** | | |
| County: | **Fairfield** | Latitude: | **41.15181°** |
| Address: | **Prospect Drive** | Longitude: | **-73.10334°** |
| AQS Site ID: | **09-001-3007** | Elevation: | **3 m (10 ft)** |
| Spatial Scale: | **Regional** | Year Established: | **1980** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | X | | | | | | | | | | | | | X | | | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Stratford Lighthouse site is a regional-scale site located in southwestern Connecticut in the town of Stratford. This is a coastal site that is located 4.5 km to the southeast of I-95 and is directly on the Long Island Sound. This site is approximately 45 km to the northeast of the New York border. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Stratford Lighthouse monitoring site objective is to collect ozone measurements for compliance assessment and AQI and forecasting purposes.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Waterbury – Meadow & Bank Street** | | |
| County: | **New Haven** | Latitude: | **41.55046°** |
| Address: | **Meadow & Bank** | Longitude: | **-73.04365°** |
| AQS Site ID: | **09-009-2123** | Elevation: | **80 m (269 ft)** |
| Spatial Scale: | **Neighborhood** | Year Established: | **1975** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | 1/6 | X | | | | | | | | | | | | | | | | | | | | | | X | X | X | | X | | |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Waterbury site is a neighborhood-scale site located in western Connecticut at Meadow Street and Bank Street in the Naugatuck River Valley. This site is approximately 170 m to the south of I-84, 300 m to the east of Rte 8 and 0.75 km to the east of the I-84 and Rte 8 interchange. Residential neighborhoods are located in all directions of the site. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Waterbury Meadow & Bank Street site monitoring objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes and continuous $PM_{2.5}$ for AQI reporting and forecasting purposes. Colocated samplers are operated at this site to gather precision measurements. $PM_{10}$ FRM sampling was discontinued as of January 1, 2011. $PM_{10}$ sampling was initially established at this site in the anticipation of a PM-coarse standard in 2006.

**Planned changes for 2012-2013:** None

| | | | |
|---|---|---|---|
| Town – Site: | **Westport – Sherwood Island State Park** | | |
| County: | **Fairfield** | Latitude: | **41.11822°** |
| Address: | **Sherwood Island SP** | Longitude: | **-73.33681°** |
| AQS Site ID: | **09-001-9003** | Elevation: | **4 m (13 ft)** |
| Spatial Scale: | **Regional** | Year Established: | **1996** |
| Statistical Area: | **CSA (New York-Newark-Bridgeport)** | | |

**Pollutant and Meteorological Parameters:**

| PM2.5 FRM | PM2.5 FRM colo | PM2.5 BAM | PM2.5 Nephelometer | PM2.5/PM10/PM-Coarse FDMS | PM10 FRM (lo-vol) | PM10 FRM colo | PM10 BAM | STN | IMPROVE | Continuous OC/EC | Continuous Sulfate | BC/UVC | Ozone | SO2 | CO | NOx | NOy | Lead (Pb) | VOCs (PAMS) | Carbonyls (PAMS) | Cont. PAH | Mercury | Dioxins | Wind Speed | Wind Direction | Temperature | Dew Point | Rain Fall | Barometric Pressure | Solar Radiation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 | | | | | | | | | | | | | X | X | X | X | | | X | | | | | X | X | X | X | | | X |

X=Existing, P =Proposed, = Proposed to terminate

**Site Description:** The Westport Sherwood Island State Park site is a regional-scale site located in southwestern Connecticut. This is a coastal site that is approximately 0.5 km to the south of I-95 on the Long Island Sound. This site meets all siting requirements and criteria and has been approved internally by DEEP and independently by EPA Region I.

**Monitoring Objectives:** The Westport Sherwood Island State Park monitoring site objectives include collecting $PM_{2.5}$ FRM measurements for compliance purposes. Everyday $PM_{2.5}$ sampling was discontinued as of January 1, 2011 with 1-in-3 day sampling being established. The 2006 regulations required everyday sampling to be conducted at all sites that were within 5% of the daily $PM_{2.5}$ NAAQS of 35 $\mu g/m^3$ for a minimum of three years. The current daily design value for this site based on 2007-2009 data is 29 $\mu g/m^3$, well below the current NAAQS. Sampling through 2010 provides four continuous years of everyday $PM_{2.5}$ FRM sampling (2007-2010). Ozone is measured at the Westport site for compliance assessment and AQI and forecasting purposes and PAMS and $NO_x$ monitoring is conducted to obtain measurements of ozone precursors. Trace-CO measurements are being collected to complement the PAMS measurements.

**Planned changes for 2012-2013:** Proposed discontinuation of CO monitoring at this site.

## References

Connecticut Department of Environmental Protection (2004). Limited Maintenance Plans for the Hartford, the New Haven, and the Connecticut Portion of the New York/New Jersey/Connecticut Carbon Monoxide Maintenance Areas. June 18, 2004

# Appendix A 2012 Network Plan Public Comments

DEEP sought public input on this Plan and posted this Plan on its web site ct.gov/deep from June 5, 2012 through July 5, 2012.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
OFFICE OF ENVIRONMENTAL MEASUREMENT AND EVALUATION
11 Technology Drive
North Chelmsford, MA 01863

June 27, 2012

Randall Semagin
Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106

Dear Mr. Semagin:

Thank you for providing EPA with a draft of the Connecticut 2012 Air Monitoring Network Plan and Near- Road Nitrogen Dioxide ($NO_2$) Network Plan which were released on June 4, 2012 for public comment. EPA-New England has reviewed your draft plans with respect to meeting the requirements of 40 CFR Part 58. Upon final submission of this document in July, we will move forward regarding approval of the Annual Network Plan. In addition, upon final submission of this document, we will work with our Headquarters offices to address the portions of the plan which require their attention, most notably monitoring associated with NCore, PAMS, STN, and the $NO_2$ monitoring plan required under 40 CFR 58.10(a)(5).

The following are our comments:

1. We acknowledge the following overall changes to your network, on page 5:

   Discontinuing all sampling at the Hartford Morgan Street site.

   Discontinuing all sampling at the Norwalk site.

   Discontinuing all sampling at the Norwich site.

   Discontinuing all sampling at the Hartford Brainard Field site.

   Discontinuing CO monitoring at the Westport site.

   Establishing a Hartford near-road monitoring site to include the measurement of $NO_2$, CO, $PM_{2.5}$, UVC/BC and dioxins (specific details for this proposed site can be found in the Connecticut 2012 Near-Road Network Plan).

   Establishing 1-in-3 day $PM_{2.5}$ FRM and wind speed/direction sampling at Groton site.

We would recommend that you consider measuring CO at Morgan Street for perhaps 1 year at the same time you begin running a near road CO monitor elsewhere in Hartford to demonstrate any variability between the locations. In any case, CO monitoring at Morgan Street is required until a near road site in Hartford measuring CO is operational.

2. On page 11, under $NO_2$/ NOy network, you note that EPA Regional Administrators will site at least 40 $NO_2$ monitors nationwide to help protect communities that are susceptible and vulnerable to $NO_2$ related health effects. Working closely with Connecticut, EPA has identified the New Haven- Criscuolo Park (09-0009-0027) that will serve to meet this obligation for monitors to protect susceptible and vulnerable populations. Connecticut is also obligated to operate a monitor in the Hartford CBSA meeting the urban community wide monitoring requirements and has identified the East Hartford McAuliffe Park (09-003-1003) as how it intends to meet this requirement.

3. Page 11, and your separate "Near- Road Nitrogen Dioxide Plan." EPA New England appreciates you discussing the need to evaluate and identify future $NO_2$ monitoring locations to reflect maximum near-roadway $NO_2$ concentrations. As you've noted in the past, Connecticut would be required to have 3 near road monitors under this rule. Those monitors are to be sited based in each of the CBSAs of Bridgeport, Hartford and New Haven. Any "near road" monitor would need to be sited consistent with the requirements of the final $NO_2$ NAAQS rule which are intended to focus on monitoring in the location of maximum concentrations. The final $NO_2$ rule requires that "...near-road $NO_2$ monitoring stations shall be selected by ranking all road segments within a CBSA by AADT and then identifying a location or locations adjacent to those highest ranked road segments, considering fleet mix, roadway design, congestion patterns, terrain, and meteorology, where maximum hourly $NO_2$ concentrations are expected to occur and siting criteria can be met in accordance with appendix E of this part."

As correctly noted, EPA has put forward a funding strategy that would ensure the largest areas begin monitoring for nitrogen dioxide near road first, and as such, EPA has been working with Connecticut on siting such a near road $NO_2$ monitor in the Hartford area. We commend the thoroughness of your evaluation of possible locations in the Hartford area, and the proposed selection of a site off I-84 in downtown Hartford at Walnut Street, near High Street.

4. Page 12, regarding your CO network. We support including CO monitoring at your near road site described above, and encourage considering measuring CO concentrations at both Morgan Street and the near road site to establish a relationship between these 2 sites.

5. Under "Sulfur Dioxide" on page 12 – The final rule for $SO_2$ was signed on June 2, 2010, and required that Connecticut site 2 $SO_2$ monitors under EPA's PWEI criteria in the Hartford- East Hartford- West Hartford CBSA; and in the Bridgeport-Stamford-Norwalk CBSAs. Those sites have been identified as East Hartford McAuliffe Park (09-003-1003), and Bridgeport- Edison School (09-001-0012).

6. Page 10. Under PAMS, near the bottom of the page, it should be noted that upper air measurements are no longer being conducted at Stowe, Massachusetts.

EPA-New England appreciates your partnership in conducting ambient air monitoring, and we look forward to working with you to continuously improve the quality of ambient air in Connecticut. We look forward to the submission of the Final Annual Network Plan this July. If you have any questions or comments regarding these comments, please contact me at (617) 918-8387.

Sincerely,

Robert C. Judge
Air Monitoring Coordinator
Office of Environmental Measurement and Evaluation
EPA-New England

Enclosure

| | | |
|---|---|---|
| cc: | Dennis Demchak | CT DEP |
| | Paul Farrel | CT DEP |

# Appendix B DEEP Response to Public Comments

# Appendix B

# Response to Public Comments

## Connecticut 2012 Annual Air Monitoring Network Plan and Connecticut 2012 Near Road Nitrogen Dioxide ($NO_2$) Network Plan

### Background

The Connecticut 2012 Annual Air Monitoring Network Plan (Plan) and the 2012 Near Road $NO_2$ Network Plan (Near Road Plan) were prepared pursuant to Code of Federal Regulations (CFR) Part 40, Section 58.10 by the Connecticut Department of Energy and Environmental Protection Air Management Bureau (DEEP). The purpose of the Plans is to provide a description of the state ambient air monitoring network and to propose any planned changes to that network. DEEP submitted the draft Plans to the EPA Region 1 Air Monitoring Coordinator on June 4, 2012, while simultaneously making the draft Plans available for public comment on its web site for a 30-day public comment period. This document responds to all public comments received by DEEP during the public comment period.

### Plan Comments and DEEP Responses

This section provides an overview of all public comments followed by DEEP's responses. EPA Region 1 was the only entity to submit comments on the draft Plans. DEEP has provided page and paragraph references in its responses to assist the reader in locating any modifications made to the draft Plans in response to public comments.

#### *EPA Comment 1:*

EPA acknowledged the changes DEEP proposed to make in the air monitoring network and recommended that DEEP co-measure carbon monoxide (CO) at Morgan Street and the new near road monitor in Hartford for approximately 1 year in order to demonstrate any variability between the measured CO values at the two locations. EPA stated their belief that CO monitoring at Morgan Street is required until the proposed near road site in Hartford measuring CO is operational.

#### *DEEP Response to Comment 1:*

While not stated explicitly in the Plan, DEEP intends to simultaneously monitor CO at both the near road and Morgan Street Hartford sites for period of time necessary to determine if there is significant variability between the two sites.

#### *EPA Comment 2:*

EPA commented that on page 11 of the Plan, under nitrogen dioxide ($NO_2$)/reactive nitrogen oxides ($NO_Y$) network, DEEP noted that EPA Regional Administrators will site at least 40 $NO_2$ monitors nationwide to help protect communities that are susceptible and vulnerable to $NO_2$ related health effects. Working closely with Connecticut, EPA has identified the New Haven-Criscuolo Park site (09-0009-0027) that will serve to meet this obligation for monitors to protect susceptible and vulnerable populations. EPA also noted Connecticut is obligated to operate a monitor in the Hartford core-based statistical area (CBSA) meeting the urban community wide monitoring requirements and has identified the East Hartford McAuliffe Park (09-003-1003) as how it intends to meet this requirement.

***DEEP Response to Comment 2:***

EPA is correct in stating that New Haven- Criscuolo Park (09-0009-0027) will serve to meet the obligation for monitors to protect susceptible and vulnerable populations. In the $NO_2/NO_Y$ network description on page 11, DEEP has added the following sentence to the fourth paragraph to address the 2010 $NO_2$ National Ambient Air Quality Standards (NAAQS) requirement for a nationwide network of 40 additional monitors in areas of susceptible or vulnerable populations: "Working closely with DEEP, EPA has identified the New Haven Criscuolo Park site as one of these 40 nationwide monitors." Also on page 11, the East Hartford McAuliffe Park site is proposed to meet the requirement for the Hartford CBSA community-wide $NO_2$ monitor.

***EPA Comment 3:***

EPA commented that on Page 11 of the Plan, as well as in the Near Road Plan, DEEP discussed the need to evaluate and identify future $NO_2$ monitoring locations to reflect maximum near-roadway $NO_2$ concentrations. EPA appreciated DEEP's discussion of future monitoring needs, including the need to have 3 near road monitors. EPA commented that additional near road monitors should be located in each of the CBSAs of Bridgeport, Hartford and New Haven in a manner consistent with the requirements of the final $NO_2$ NAAQS rule. EPA commended the thoroughness of your evaluation of possible locations in the Hartford area, and the proposed selection of a site off I-84 in downtown Hartford at Walnut Street, near High Street.

***DEEP Response to Comment 3:***

DEEP appreciates EPA's comment in support of its efforts to appropriately site a near road $NO_2$ monitor in the Hartford area. DEEP also appreciates EPA's approach to ensuring there is an adequate funding stream associated with this critical effort. As noted in the response to EPA comment 1 above, DEEP intends to operate CO monitors simultaneously at Morgan Street and the Hartford near road site for a period of time necessary to determine if there is significant variability in observed CO levels at the two sites

***EPA Comment 4:***

EPA commented, with respect to page 12 regarding the CO network, that they support including CO monitoring at the proposed near road site and encourage DEEP to consider co-measuring CO concentrations at both Morgan Street and the near road site to determine if there is a relationship between these two sites.

***DEEP Response to Comment 4:***

As noted in the response to EPA comment 1 above, DEEP intends to operate CO monitors simultaneously at Morgan Street and the Hartford near road site for a period of time necessary to determine if there is significant variability in observed CO levels at the two sites

***EPA Comment 5:***

EPA commented, with respect to "Sulfur Dioxide" on page 12, that the final rule for $SO_2$ was signed on June 2, 2010, and required that Connecticut site 2 $SO_2$ monitors under EPA's PWEI criteria in the Hartford- East Hartford- West Hartford CBSA; and in the Bridgeport-Stamford-Norwalk CBSAs. EPA indicated their belief that those sites are East Hartford McAuliffe Park (09-003-1003), and Bridgeport- Edison School (09-001-0012).

***DEEP Response to Comment 5:***

EPA commented that the reference to the population-weighted emissions index (PWEI)-required $SO_2$ sites should include the associated CBSAs. In the $SO_2$ network description on page 12, the text in the second paragraph is amended to state that the Bridgeport Edison School and the East Hartford McAuliffe Park sites satisfy the requirements for PWEI monitoring

in the Bridgeport-Stamford-Norwalk and Hartford-West Hartford-East Hartford CBSAs, respectively.

***EPA Comment 6:***

EPA commented, with respect to PAMS on Page 10, that DEEP should note in the Plan that upper air measurements are no longer being conducted at Stowe, Massachusetts.

***DEEP Response to Comment 6:***

DEEP acknowledges that upper air measurements are no longer conducted at Stowe, Massachusetts. Since DEEP does not monitor upper air meteorological for the PAMS program, ozone modeling conducted by the Ozone Transport Commission use data collected from meteorological soundings, or radiosondes. In the PAMS network description section on page 10, DEEP is amending the text to state that "…upper air measurements needed for modeling purposes are obtained from regional National Oceanic and Atmospheric Administration (NOAA) radiosondes."

# Appendix C Connecticut 2012 Nitrogen Dioxide Near Road Network Plan

# Connecticut 2012 Near-Road Nitrogen Dioxide Network Plan

**July 12, 2012**

Connecticut Department of ENERGY & ENVIRONMENTAL PROTECTION

The Department of Energy and Environmental Protection is an affirmative action/equal opportunity employer and service provider. In conformance with the Americans with Disabilities Act, DEEP makes every effort to provide equally effective services for persons with disabilities. Individuals with disabilities who need this information in an alternative format, to allow them to benefit and/or participate in the agency's programs and services, should call 860-424-3035 or e-mail the ADA Coordinator, at DEEP.aaoffice@CT.Gov. Persons who are hearing impaired should call the State of Connecticut relay number 711.

# *Acronyms and Abbreviations*

| | |
|---|---|
| AADT | annual average daily traffic |
| BAM | beta attenuation monitoring ($PM_{2.5}$ method) |
| BC | black carbon |
| BC/UVC | black carbon and ultraviolet channel carbon (aethalometer) |
| CBSA | core-based statistical area |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| CT | Connecticut |
| DAS | data acquisition system |
| DEEP | Department of Energy and Environmental Protection, State of CT |
| EPA | Environmental Protection Agency |
| EPA R1 | Environmental Protection Agency, Region 1 |
| FE_AADT | fleet-equivalent annual average daily traffic |
| FEM | federal equivalent method |
| FRM | federal reference method |
| GIS | geographical information systems |
| I- | Interstate (highway) |
| MSA | metropolitan statistical area |
| NAAQS | National Ambient Air Quality Standards |
| NACAA | National Association of Clean Air Agencies |
| NCore | National Core Monitoring Sites |
| NERL | [EPA] New England Regional Lab |
| NO | nitric oxide |
| $NO_2$ | nitrogen dioxide |
| $NO_x$ | oxides of nitrogen (NO + NO2) |
| $PM_{2.5}$ | fine particulate matter (PM less than 2 µm diameter) |
| P&S | Planning and Standards Division (DEEP) |
| SLAMS | state and local monitoring stations |
| SR | state route |
| TAD | technical assistance document |
| µm | micrometer ($10^{-6}$ meter) |

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## Overview

In January 2011, the United States Environmental Protection Agency (EPA) finalized a revised the Nitrogen Dioxide ($NO_2$) National Ambient Air Quality Standard (NAAQS) that includes new monitoring requirements. Specifically, the rule requires near-road $NO_2$ monitoring adjacent to the highest traffic road segments in major urban areas. Implementation of the first tier of near-road monitoring is set forth in the Connecticut 2012 Near-Road Nitrogen Dioxide Network Plan (the Plan), which details the site selection process in accordance with EPA regulations and guidance. In this phase, EPA requires the near-road $NO_2$ sites be installed within Core-Based Statistical Areas (CBSAs) with populations greater than 1 million. As explained in greater detail in this Plan, Connecticut will be locating $NO_2$ near-road monitoring instrumentation in the Hartford-West Hartford-East Hartford CBSA.

In accordance with EPA guidance, the Department on Energy and Environmental Protection (DEEP) considered numerous factors in selecting the Hartford-West Hartford-East Hartford CBSA site. These factors include: distance from roadway, total daily traffic, heavy truck traffic, congestion patterns, roadway design and structures, terrain, meteorology, accessibility, safety, and potential future construction. DEEP conducted a comparative analysis of these factors for the 10 highest traffic candidate sites. Of these, three sites met the minimum near-road siting objectives, two of which were approved by DOT. Subsequent to the determination of the two acceptable candidate sites, DEEP considered the potential for population exposure in the criteria utilized to select the final site location, in accordance with EPA requirements. In addition to determining the location with the highest population exposure, factors considered in the determination of the final site location included the use of publicly available demographic and socioeconomic data (See Appendix C), in order to determine the potential exposure to susceptible or vulnerable populations. The near-road site proposed by DEEP is adjacent to I-84 in downtown Hartford at Walnut Street near High Street, and will include $NO_2$, NO, $NO_x$, CO, $PM_{2.5}$, and Black Carbon (BC/UVC). In addition to monitoring the pollutants mandated by EPA's new requirements, DEEP's proposed near-road site will go beyond EPA's authority under the requirements and will independently track dioxins and wind and temperature meteorology. The near-road plan will be posted on the DEEP website for a 30 day public comment period before submission to EPA.

**Figure 1: Downtown Hartford Satellite Image Showing Proposed Near-Road Site**[1]

## Introduction

DEEP's Bureau of Air Management operates an ambient air monitoring network in the state to determine compliance with all NAAQS and to identify and forecast air quality action/alert days to both inform the public and protect public health. The air monitoring network design is based on requirements of NAAQS regulations, and may include monitoring for other parameters for various other reasons. DEEP submits a network plan each year by July 1 to propose any changes to the ambient monitoring network. Each network plan is reviewed by EPA and the public, and is approved by EPA. DEEP is submitting this Plan separately from the 2012 Connecticut Air Monitoring Network Plan as requested by EPA to allow for approval for the general network plan irrespective of potential regulatory considerations in approving the near-road $NO_2$ network Plan.

On January 22, 2010, EPA strengthened the $NO_2$ NAAQS[2] to increase protection of public health by adding a 1-hour standard at 100 parts per billion (ppb), while retaining the annual average standard at 53 ppb. To assist states in their effort to determine compliance with the 1-hour standard, EPA made changes in the $NO_2$ air quality monitoring network requirements. These monitoring changes focused on:

[1] Base map source: Google Earth
[2] 75 FR 6474

- Peak, short-term concentrations, primarily near major roads in urban areas;
- The highest $NO_2$ concentrations that occur over wider community areas; and
- Identifying $NO_2$ concentrations capable of impacting susceptible and vulnerable groups.

EPA's near road requirement is based on evidence that highway in-vehicle concentrations can be 2-3 times higher than those measured at nearby community-wide monitors, and that populations located close to busy highways can be exposed to $NO_2$ levels 30 to 100% higher than away from major roads[3]. The rule's near-road monitoring requirements necessitate at least one monitor in urban areas with populations over 500,000 and two in areas over 2,500,000. However, EPA is phasing the implementation such that only areas with populations over 1,000,000 would initially install the near-road $NO_2$ monitors to allow for an evaluation of the data before proceeding with the remaining monitors. Connecticut has three urban areas with populations greater than 500,000, and one area greater than 1,000,000 but less than 2,500,000. DEEP is proposing in this plan to install and operate a near-road $NO_2$ site in the Hartford urban area[4].

The near-road siting requirements are:

- The monitors are located near the highest-ranked traffic volume road segments in the required urban area. In addition to AADT, consideration must be given to fleet mix, congestion patterns, physical characteristics, terrain, geographic location and meteorology in selecting the location.
- The monitors are placed as close to the travel lanes as practicable, but no more than 50 meters from the nearest edge of all traffic lanes included in the traffic count.
- The monitors should capture data representative of nearby population exposure, if possible.

## Objectives of the Near-Road Plan

The purpose of this Plan is to propose the DEEP near-road $NO_2$ network planned for installation and operation before December 2013. This Plan also documents the near-road site selection process in accordance with the requirements of Title 40 of the Code of Federal Regulations (40 CFR) Part 58, EPA's draft Near-Road $NO_2$ Monitoring Technical Assistance Document (TAD)[5] as well as other EPA sources such as fact sheets, presentations and webinars.

The site selection process is based on consideration of population and traffic data, road segment physical characteristics, accessibility, safety and exposure of sensitive populations. Analyses of these factors are addressed in the following sections.

[3] http://www.epa.gov/airquality/nitrogenoxides/health.html
[4] http://www.epa.gov/airquality/nitrogenoxides/pdfs/20100122fs.pdf
[5] http://www.epa.gov/ttnamti1/files/nearroad/20111221tad.pdf

## Determination of Near-Road Monitoring Areas

The January 2010 $NO_2$ NAAQS revision included near-road monitoring requirements within urban areas with populations greater than 500,000 (EPA, 2010). Subsequent EPA guidance, as proposed in the "Build and Hold" concept presented at several National Association of Clean Air Agencies (NACAA) teleconferences in 2011 indicated that EPA would wholly fund the near-road sites with urban areas greater than 1,000,000 people. Connecticut will construct and maintain these sites with the continued understanding that costs for the program will be covered by EPA. For the urban areas with populations between 500,000 and 1,000,000, near-road sites may be required at a later date. Currently, EPA is proposing rule changes that would require these first-tier sites to be operating by January 1, 2014. Once EPA finalizes the requirements to monitor at these first-tier sites, Connecticut will construct and maintain these sites with additional EPA funding that will be necessary to support the program.

The US Census Bureau population data for Connecticut (Table 1) show three Core-Based Statistical Areas (CBSAs) with estimated July 2009 populations greater than 500,000, with only the Hartford-West Hartford-East Hartford CBSA population of 1,195,998 exceeding the 1,000,000 threshold for the first tier of the Build and Hold plan. As such, Connecticut is proposing in this Plan to construct a site in the Hartford-West Hartford-East Hartford urban area in compliance with EPA directives for the first tier near-road sites. Since the population is less than 2,500,000, a second population-based near-road monitor is not required. Plans for future near-road sites, if required for CBSAs with populations between 500,000 and 1,000,000, will be addressed in future DEEP monitoring plans.

### Table 1: Populations of Connecticut Core-Based Statistical Areas[6]

| CBSA Code | Geographic Area | 7/2009 Population Estimate |
|---|---|---|
| 14860 | Bridgeport-Stamford-Norwalk, CT | 901,208 |
| 25540 | Hartford-West Hartford-East Hartford, CT | 1,195,998 |
| 35300 | New Haven-Milford, CT | 848,006 |
| 35980 | Norwich-New London, CT | 266,830 |
| 45860 | Torrington, CT | 188,728 |
| 48740 | Willimantic, CT | 117,518 |

The Hartford-West Hartford-East Hartford (Hartford) CBSA includes all of the areas of Hartford and Middlesex counties. The major highways in the area are I-84 (east-west) and I-91 (north-south), which intersect each other in downtown Hartford. Other limited access highways in the area include I-291, I-384 and state routes (SR) 2, 3, and 9.

## Traffic Data Analysis

In this section, the analysis of data derived from traffic counts of the interstate highways and state routes within the Hartford CBSA is described. The results of the analysis are rankings of road segments

[6] http://quickfacts.census.gov/qfd/states/09000lk.html

based on total vehicle counts and passenger car equivalent counts, which take into account the fleet mix of passenger cars and heavy duty trucks. Traffic congestion data is also reviewed.

**Traffic Counts**

DEEP performed an analysis of Connecticut Department of Transportation (DOT) traffic count data using the published 2008 annual average daily traffic (AADT) report for Connecticut state and interstate routes[7]. The 25 highest AADT segments in the Hartford CBSA are given in Table 2, ranked in descending AADT order. All top-ranked road segments are located on I-84 or I-91. All traffic segments are below the threshold of 250,000 AADT that would require a second monitor in the CBSA.

The highest traffic count segments are along I-84 in Hartford from Sigourney Street to Trumbull Street (three segments), on I-91 at the Rocky Hill-Wethersfield town line, and in East Hartford on I-84 between Route 15 and I-384.

**Fleet Mix**

In addition to AADT data, fleet mix and congestion patterns were also considered in the traffic analysis. Fleet mix (FM) is the ratio of heavy duty vehicles, or trucks, to total vehicles. Knowledge of fleet mix is used to modify the AADT to take into account the much higher emission factors for heavy duty vehicles compared to passenger cars.

For Connecticut interstate highways, DOT personnel provided a fleet mix ratio of 0.05 for peak periods and 0.14 overall for all segments. The fleet mix value becomes important when it varies between comparable segments because the higher ratio of trucks results in higher $NO_2$ emissions.

Road segments are ranked based on an estimate of emissions contributions from both cars and trucks. The metric to assess this is called the fleet-equivalent AADT (FE_AADT), and is computed using the fleet mix ratio and an estimate of relative heavy-duty vehicle emissions in comparison to light duty vehicles.

$FE_AADT = (AADT - HD_c) + (HD_m * HD_c)$, where

$HD_c$ = AADT*FM, the estimated annual average daily truck count, and

$HD_m$ = emissions multiplier for heavy duty vehicles.

The value of $HD_m$ used in this analysis is EPA's national default value of 10, as suggested by EPA in the TAD. The impact of this assumption is inconsequential on the road segment ranking, as the constant FM value results in identical rankings for both AADT and FE-AADT, as seen in Table 2. The top 25 AADT/FE_AADT road segments are displayed graphically in the highway maps shown in Appendix 2, where the segments are labeled by rank value, 1 being the highest traffic count.

**Congestion Patterns**

Traffic congestions indicators, if available, should be used to differentiate between comparably ranked road segments, based on AADT and FE_AADT. Congestion metrics include: level of service, peak hour

[7] http://www.ct.gov/dot/cwp/view.asp?a=3532&q=330402

traffic volume, and volume to capacity ratio. Level of service (LOS) is a qualitative measure of congestion using a scale of A (free flow traffic) to F (traffic flow approaches zero). For the Connecticut highways, LOS data was not available from the state transportation agency.

For the highway segments in question, peak hour volume and volume to capacity ratio data were available from Connecticut DOT and are given in Appendix B. Peak hour volume is the directional design hour volume, derived as the product of the annual average daily traffic, K-factor, and the directional split. The peak hour volume to capacity ratio is the ratio of peak hour volume to peak capacity. Peak capacity is an empirically derived value for each road segment based on empirical factors related to the particular highway physical design and environment, such as number and width of lanes, interchange density, urban versus rural setting and heavy vehicles mix.

**Table 2: Traffic Data Matrix**

| Town | State Route | Beginning of Segment | Beg Exit | Beg Mile | End of Segment | End Exit | End Mile | Seg Len | 2008 AADT | Fleet Equiv AADT | AADT Rank | FE AADT Rank | Vol to Cap Rank | Peak Hour Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hartford | 84 | EB ACC FR SIGOURNEY ST(114) | | 61.13 | EB EXIT TO CAPITOL AVE(190) | 48 | 61.38 | 0.25 | 167200 | 242440 | 1 | 1 | 34 | 5 |
| Hartford | 84 | EB ACC FR BROAD ST(186) | | 61.63 | EB EXIT TO HIGH ST(188) | 49 | 61.88 | 0.25 | 159900 | 231855 | 2 | 2 | 36 | 8 |
| Hartford | 84 | EB EXIT TO HIGH ST(188) | 49 | 61.88 | EB EXIT TO TRUMBULL ST(192) | 50 | 62.07 | 0.19 | 159400 | 231130 | 3 | 3 | 63 | 23 |
| Rocky Hill | 91 | NB ACC FR RTE 99(051) | | 31.91 | ROCKY HILL - WETHERSFIELD TL | | 31.98 | 0.07 | 157600 | 228520 | 4 | 4 | 20 | 2 |
| Wethersfield | 91 | ROCKY HILL - WETHERSFIELD TL | | 31.98 | SB EXIT FR SB RTE 3(802) | | 33.08 | 1.1 | 157600 | 228520 | 5 | 5 | 21 | 3 |
| East Hartford | 84 | EB ACC FR SR 518(ROBERTS ST)(312) | | 65.15 | EB JCT EB I-384 | 59 | 66.43 | 1.28 | 156100 | 226345 | 6 | 6 | 64 | 1 |
| Rocky Hill | 91 | CROMWELL - ROCKY HILL TL NB | | 27.87 | NB EXIT TO SSR 411(WEST ST)(044) | 23 | 29.05 | 1.18 | 153900 | 223155 | 7 | 7 | 35 | 7 |
| Hartford | 84 | EB EXIT TO TRUMBULL ST(192) | 50 | 62.07 | EB EXIT TO NB I-91(TR 839) | 51 | 62.13 | 0.06 | 153000 | 221850 | 8 | 8 | 47 | 14 |
| Hartford | 91 | NB ACCESS FROM I-84 EB AND I-84 WB | | 38.77 | NB EXIT TO JENNINGS RD/BGN NB HOV | 33 | 39.6 | 0.83 | 149500 | 216775 | 9 | 9 | 4 | 12 |
| Rocky Hill | 91 | NB ACC FR SSR 411(046) | | 29.35 | NB EXIT TO RTE 99(050) | 24 | 31.72 | 2.37 | 149300 | 216485 | 10 | 10 | 42 | 11 |
| East Hartford | 84 | EB JCT NB RTE 15 | 57 | 64.84 | EB ACC FR SR 518(ROBERTS ST)(312) | | 65.15 | 0.31 | 148700 | 215615 | 12 | 11 | 39 | 9 |
| Hartford | 84 | EB JCT EB SR 503 | | 60.82 | EB ACC FR SIGOURNEY ST(114) | | 61.13 | 0.31 | 148700 | 215615 | 11 | 12 | 66 | 4 |

| Town | State Route | Beginning of Segment | Beg Exit | Beg Mile | End of Segment | End Exit | End Mile | Seg Len | 2008 AADT | Fleet Equiv AADT | AADT Rank | FE AADT Rank | Vol to Cap Rank | Peak Hour Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rocky Hill | 91 | NB EXIT TO RTE 99(050) | 24 | 31.72 | NB ACC FR RTE 99(051) | | 31.91 | 0.19 | 148000 | 214600 | 13 | 13 | 43 | 13 |
| Hartford | 84 | EB EXIT TO CAPITOL AVE(190) | 48 | 61.38 | EB ACC FR BROAD ST(186) | | 61.63 | 0.25 | 145900 | 211555 | 14 | 14 | 73 | 57 |
| Windsor | 91 | NB ACC FR I-291 | | 42.73 | NB EXIT TO RTE 178(210) | 36 | 43.32 | 0.59 | 145800 | 211410 | 15 | 15 | 7 | 16 |
| Wethersfield | 91 | SB EXIT FR SB RTE 3(802) | | 33.08 | NB EXIT TO NB RTE 3(TR 822) | 25 | 33.47 | 0.39 | 143700 | 208365 | 16 | 16 | 49 | 17 |
| Windsor | 91 | NB ACC FR RTE 178(211) | | 43.79 | NB EXIT TO RTE 305(159) | 37 | 44.29 | 0.5 | 142000 | 205900 | 17 | 17 | 8 | 21 |
| Hartford | 91 | WETHERSFIELD - HARTFORD TL | | 35.37 | SB ACC FR NB US 5 & RTE 15(TR 826) | | 35.5 | 0.13 | 140500 | 203725 | 19 | 18 | 59 | 27 |
| Wethersfield | 91 | NB ACC FR GT MEADOW RD(057) | | 34.32 | WETHERSFIELD - HARTFORD TL | | 35.37 | 1.05 | 140500 | 203725 | 18 | 19 | 10 | 26 |
| Hartford | 91 | NB ACC FR JENNINGS RD(163)(PVT) | | 40.14 | SB END OP AMTRAK | 34 | 40.98 | 0.84 | 139300 | 201985 | 20 | 20 | 14 | 29 |
| Hartford | 91 | SB ACC FR NB US 5 & RTE 15(TR 826) | | 35.5 | NB EXIT TO BRAINARD RD(147) | 27 | 35.54 | 0.04 | 138800 | 201260 | 21 | 21 | 26 | 49 |
| Wethersfield | 91 | NB EXIT FR NB RTE 3(TR 803) | | 34.09 | NB ACC FR GT MEADOW RD(057) | | 34.32 | 0.23 | 138300 | 200535 | 22 | 22 | 11 | 25 |
| Hartford | 91 | NB ACC FR MEADOW RD(200) | | 41.24 | HARTFORD - WINDSOR TL | | 41.32 | 0.08 | 137600 | 199520 | 23 | 23 | 17 | 35 |
| Windsor | 91 | HARTFORD - WINDSOR TL | | 41.32 | NB EXIT TO EB I-291(TR 860) | 35 | 41.63 | 0.31 | 137600 | 199520 | 24 | 24 | 18 | 36 |
| Rocky Hill | 91 | NB EXIT TO SSR 411(WEST ST)(044) | 23 | 29.05 | NB ACC FR SSR 411(046) | | 29.35 | 0.3 | 137000 | 198650 | 25 | 25 | 55 | 22 |

## Physical Characteristics of Candidate Sites

Evaluation of the physical characteristics of candidate near-road sites includes assessments of roadway design and configuration, roadside structures, surrounding terrain and local meteorology. Feasible candidate sites possessed physical attributes that comply with the required siting criteria and allowed for a safely accessible air monitoring station. In this evaluation, DEEP considered the top 25 ranked sites by AADT and FE_AADT, with the primary evaluation performed on the top 10 ranked segments. DEEP investigated the physical characteristics of these areas using drive-by reconnaissance, site visits, DOT highway maps and geo-referenced orthoimagery.

The 25 highest ranked AADT/FE_AADT road segment locations are shown on town road maps included in Appendix A. Interstate highway 84, which runs east-west, has segments of interest in Hartford and East Hartford. The highest I-84 segments are from the interchange with SR 503 to the I-91 interchange in Hartford, and from the SR 15 interchange to the I-384 interchange in East Hartford. Highway segments of interest on I-91 extend from Rocky Hill through Wethersfield and Hartford into Windsor.

**Roadway Design**

Most of the top ranked road segments are concentrated within downtown Hartford, where there is a high density of buildings and people. In this area, many parts of the highways are significantly above or below grade and adjacent properties are not available for near road monitoring site location due to space considerations.

Interstate 84 becomes a raised viaduct for one or both directional lanes passing through Hartford from where it crosses Park Street going east to just after it crosses Asylum Street. After Asylum Street, the eastbound and westbound lanes are approximately at ground level until they descend into a cut at Trumbull Street, and then enters a tunnel to Market Street. Further east in East Hartford, the lanes merge at grade after Roberts Street until the I-384 interchange, but the highway width is approximately 85 meters due to the large number of lanes, including high occupancy vehicle (HOV) lanes.

Although there are high-ranked road segments on I-91 in Rocky Hill, the northbound and southbound lanes are separated by a vegetated median strip with a width between 15 and 30 meters, so the horizontal distance from the monitor to the farthest lanes would not meet siting criteria. Similarly, in Wethersfield, Segment 4 has a median strip of about 10 meters or greater, and so would also not meet the horizontal spacing criteria.

**Roadside Structures**

The primary roadside structures occurring in the areas of interest are highway sound walls, approximately 20 feet high of timber or concrete construction. These occur along I-91 in Windsor for segments 16 and 18, in Hartford between SR 2 and SR 508, in Wethersfield on the west side of segments 4 and 19, and in Rocky Hill along much of both sides of segments 7 and 11. Additionally, there are active railroad tracks on both side of I-91 in Harford from about SR 2 to SR 15, which would prevent access to a site in those areas. In East Hartford along I-84 in the area of segment 6, there are sound walls adjacent

to parts of both the north and south sides of the highway. In addition, there are electric transmission wires running along the north side of I-84 where there is no sound wall.

**Terrain Features**

Terrain features that impact the feasibility of some of the higher ranked traffic segments include steep embankments adjacent to highways and floodplains. In the case of steep embankments, site construction would be very difficult, as would be safe site access in many cases. Much of I-91 in Hartford and Wethersfield has steep embankments along the road sides, as noted in Table 3 below. The eastern side of I-91 in Wethersfield between SR 99 and SR 3 is a flood plain for the Connecticut River, which would limit regular access to the site. In addition, the east side of segment 9 on I-91 just north of the I-84 interchange is located in a park that that is subject to regular flooding from the nearby Connecticut River, which also presents site access issues.

**Meteorology**

Characterization of the meteorology of the site is important to ensure that typical wind patterns allow for proper monitoring of the vehicle emissions components of monitored pollutants. If possible, the monitoring site should be located such that the closest part of the target road segment is upwind of the monitor for the prevailing wind directions. Potential local effects of wind diversion or channeling, such as from tall buildings, billboards, sound barriers or road cuts and tunnels should be considered.

To characterize the background meteorology, local wind data was analyzed using a wind rose plot. The wind rose, shown in Figure 2, is based on data from the East Hartford High Street monitoring site, located approximately 2.7 miles southeast of downtown Hartford. The wind rose shows that the northwest direction is the most prevalent at over 12 percent of hourly values, closely followed by the south-southwest, south and north directions. A higher fraction of the wind directions from the south are in the moderately low wind speed range (0.5-2.4 kph) while the more northerly directions have a larger percentage of hours in the higher wind speed ranges of 2.4-4.8 kph. The data indicates that the east-southeast road segment upwind direction would be unfavorable for monitoring, and the north-northwest and south upwind directions would be the most favorable.

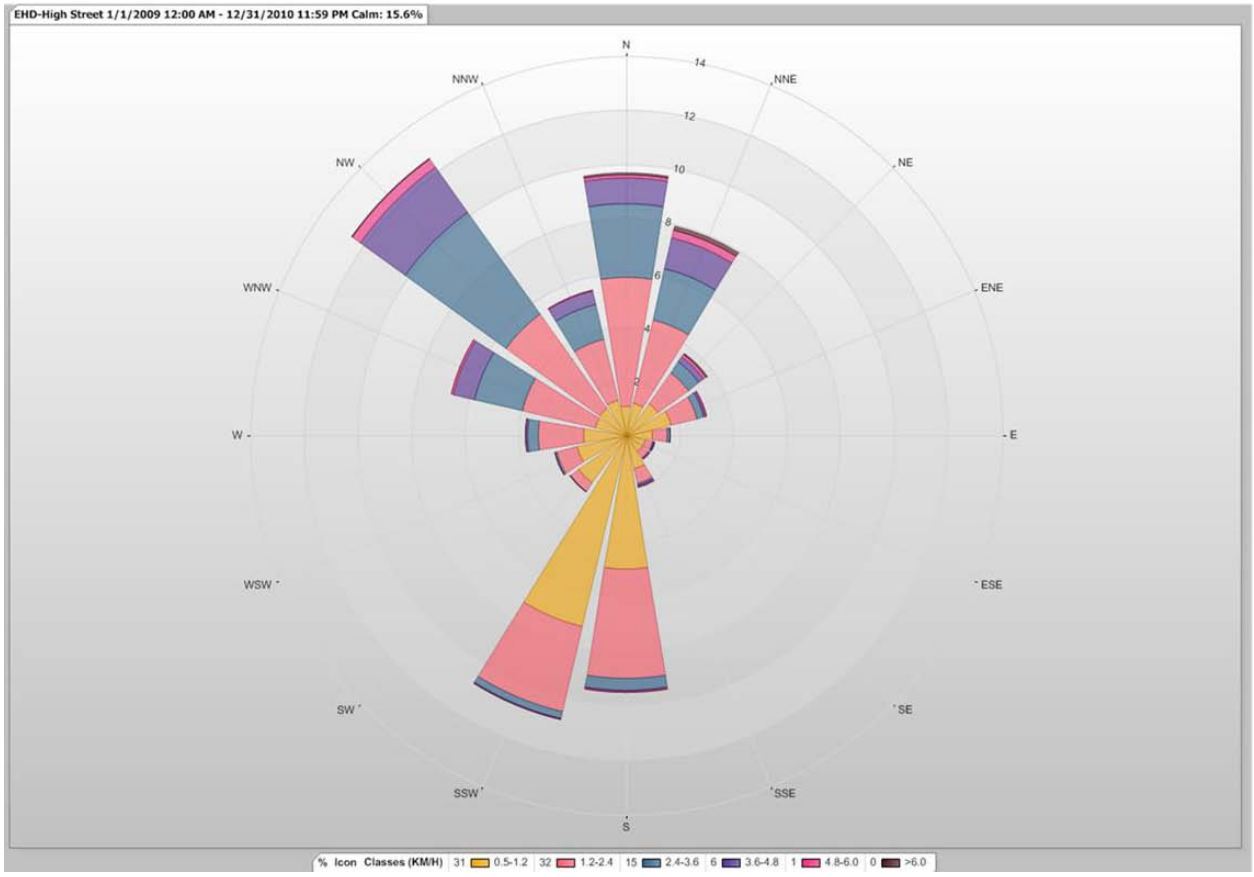



**Figure 2: East Hartford High Street Wind Rose Plot, 2009-2010**

## Comparison of Candidate Near-Road Sites

DEEP performed a detailed review of the physical characteristics for near-road monitoring suitability for the ten highest ranked AADT and FE_AADT road segments in the Hartford CBSA. The results of the review are summarized in Table 3, Candidate Site Comparison Matrix. Of the top ten segments, only four satisfy minimum requirements for physical characteristics, such as the nearest edge of all travel lanes within 50 meters of a feasible monitoring point, or highway at or near grade. In the matrix feasibility grading, segments graded as S/U (satisfactory/unsatisfactory) have partial sections that meet physical criteria, but significant lengths that do not meet such criteria. Although segment 5 is feasible with regard to physical characteristics, roadside structures such as sound barriers and terrain features, including steep roadside embankments and flood zones render the segment as infeasible. Therefore, the candidate road segments are limited to segments 2 and 3 along I-84 in Hartford and segment 10 along I-91 in Rocky Hill.

DEEP conducted field reconnaissance of the feasible segments to determine where any plausible monitoring site locations may exist adjacent to candidate road segments. Three potential sites were identified in Hartford along I-84 within segments 2 and 3. Once these sites were identified, DEEP did not pursue segment 10 because of its lower AADT rank, population exposure and issues with vegetation. The three prioritized candidate sites were: (1) Walnut Street at Hoadley Pl #1 and High St westbound I-84 access, (2) Spring St at westbound I-84 exit, (3) Hoadley Pl #2 at Foot Guard Pl. All three sites are located on Connecticut DOT property.

DEEP submitted a request to DOT to operate a monitoring site at one of the candidate sites. DOT granted conditional approval for both #1 Walnut Street and #2 Spring Street. Both sites are north of I-84 on adjacent road segments, and both are separated from the main travel lanes of the highway by access or exit ramps. Walnut Street is the preferred candidate because both eastbound and westbound lanes are at the same elevation as the monitoring site, whereas at Spring Street, the eastbound lane is elevated about ten feet and the westbound lane is in a cut of about 7 feet. Also, because I-84 bends sharply between the two sites, it is located approximately due south of Walnut Street but due southeast of Spring Street, which is less favorable in terms of meteorology. Based on these considerations, DEEP selected the Walnut Street site as the near-road $NO_2$ monitoring site for the Hartford CBSA. Aerial and street view photographs of the Walnut Street site are shown in Appendix D. Figure 3 shows the proposed $NO_2$ near-road monitoring network map.

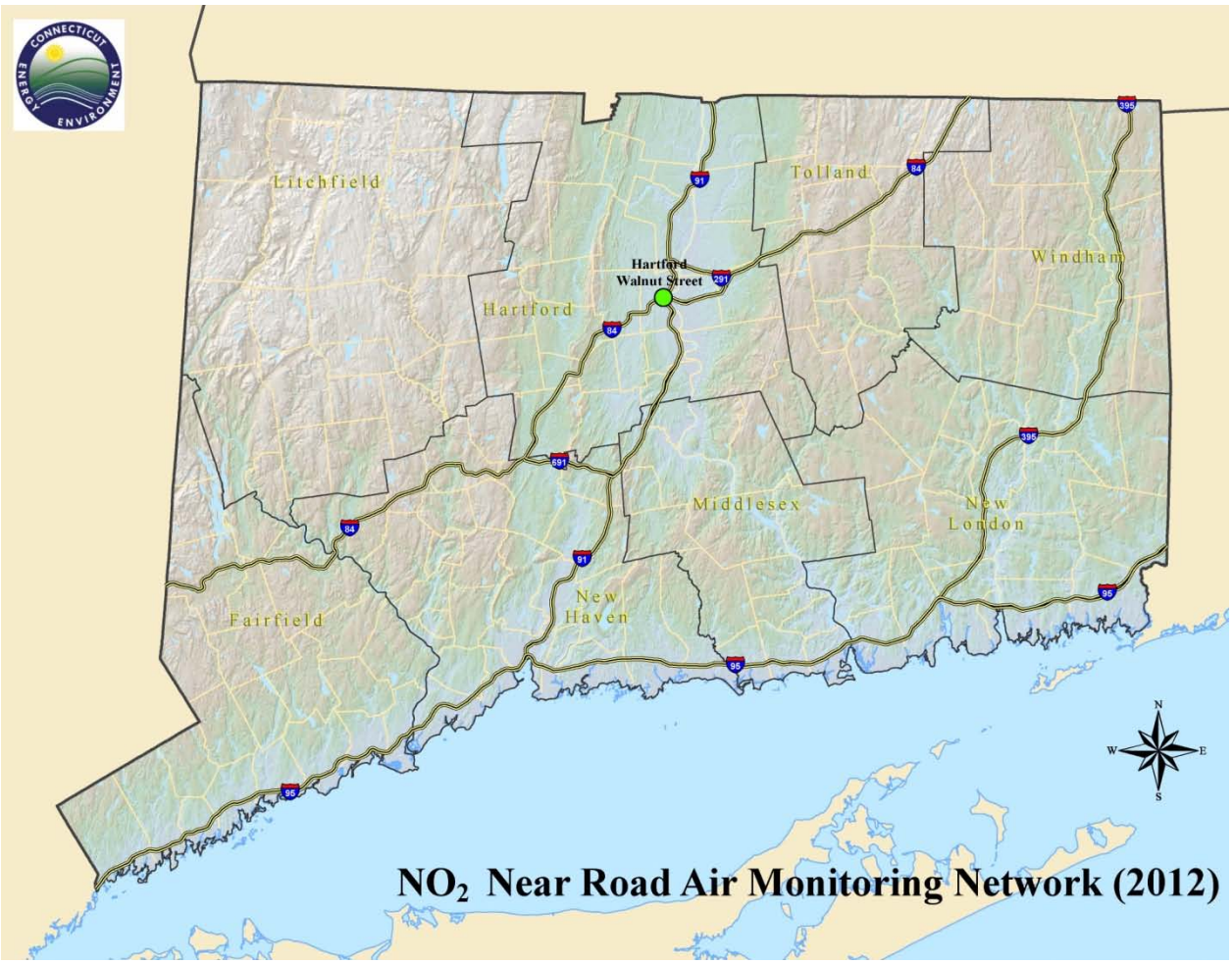



**Figure 3: Proposed NO2 Near-Road Monitoring Network**

## Multi-Pollutant Monitoring

DEEP proposes to monitor several pollutants at the Walnut Street near-road site in addition to the required $NO_2$. To comply with the CO monitoring rule, the CO monitor will be moved from the Hartford Morgan Street site to the near-road site as discussed in the Connecticut DEEP 2012 Monitoring Network Plan. In addition, DEEP plans to move the dioxin monitor, which is a state-only monitoring parameter, from Maxim Road to the near-road site. The following parameters are planned for the Walnut Street site:

- $NO_2$, NO, $NO_x$
- CO
- $PM_{2.5}$
- BC/UVC (aethalometer)
- Wind speed, wind direction (10 meter), temperature (2 meter)

**Table 3: Candidate Road Segment Comparison Matrix**

| Town | Rank | State Route | Begin Segment | End Segment | Seg Mi | Phys Char | Road-side Struct | Ter-rain | Meteo rology | Env. justice | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hartford | 1 | 84 | EB ACC FR SIGOURNEY ST | EB EXIT TO CAPITOL AVE | 0.25 | U | U | S | N/A | Y | Raised viaduct, buildings on north side |
| Hartford | 2 | 84 | EB ACC FR BROAD ST(186) | EB EXIT TO HIGH ST(188) | 0.25 | S/U | S | S | S | Y | Only east half closer to grade, good horizontal spacing |
| Hartford | 3 | 84 | EB EXIT TO HIGH ST(188) | EB EXIT TO TRUMBULL ST | 0.19 | S | S | S | S | Y | North side at grade with lanes, all w/in 50 m |
| Rocky Hill | 4 | 91 | NB ACC FR RTE 99 | ROCKY HILL - WETHERSFIELD TL | 0.07 | U | S | U | N/A | N | Steep embankments and vegetation, highway wider than 50 m |
| Wethers field | 5 | 91 | Rocky Hill - Wethersfield TL | SB EXIT FR SB RTE 3 | 1.1 | S | U | U | N/A | N | Sound wall on west side, steep embankment and flood zone on east side |
| East Hartford | 6 | 84 | EB ACC FR SR 518(ROBERTS ST) | EB JCT EB I-384 | 1.28 | U | S/U | S | N/A | Y | Highway wider than 50 m, sound walls, north side has high tension wires. |
| Rocky Hill | 7 | 91 | CROMWELL - ROCKY HILL TL NB | NB EXIT TO SSR 411(WEST ST) | 1.18 | U | U | S/U | N/A | N | Highway wider than 50 m, sound walls on north side |
| Hartford | 8 | 84 | EB EXIT TO TRUMBULL ST | EB EXIT TO NB I-91(TR 839) | 0.06 | U | N/A | N/A | N/A | Y | 10-20 foot deep cut, tunnel on east part |
| Hartford | 9 | 91 | NB ACCESS FROM I-84 EB AND I-84 WB | NB EXIT TO JENNINGS RD/BGN NB HOV | 0.83 | U | S | U | N/A | N | Highway wider than 50 m, sloped embankments and/or flood zone area |
| Rocky Hill | 10 | 91 | NB ACC FR SSR 411(046) | NB EXIT TO RTE 99(050) | 2.37 | S/U | S/U | S/U | S | N | Short section at north end of segment has no sound wall, but possibly heavy vegetation |

Key: S=satisfactory; U=unsatisfactory; Y=yes; N=no; N/A=not applicable

## Public Notice Comments

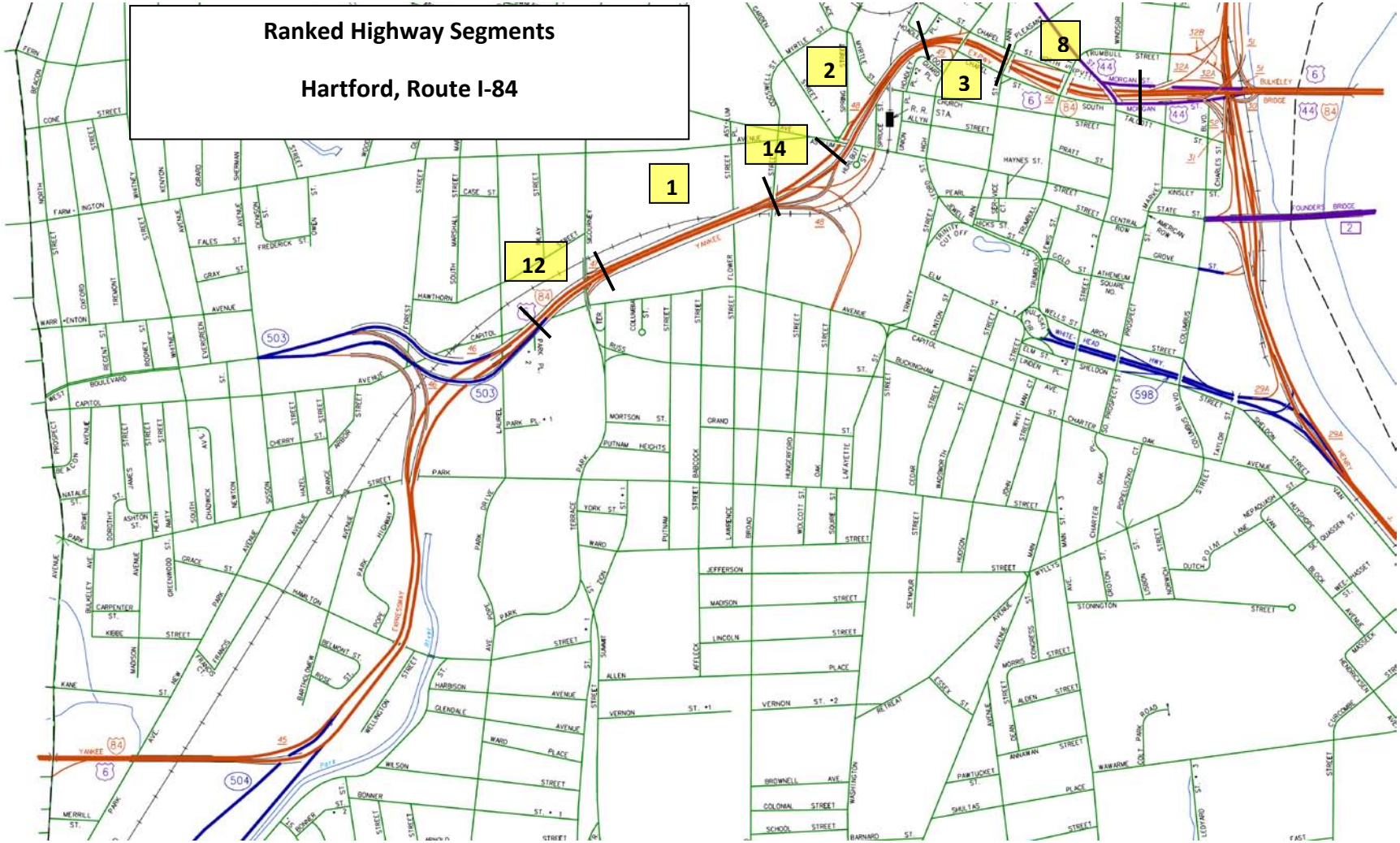
Comments received from the public and/or EPA are presented in Attachment A of the Connecticut 2012 Annual Air Monitoring Network Plan.

## Response to Public Notice Comments

DEEP responses to public and/or EPA comments are presented in Attachment B of the Connecticut 2012 Annual Air Monitoring Network Plan.

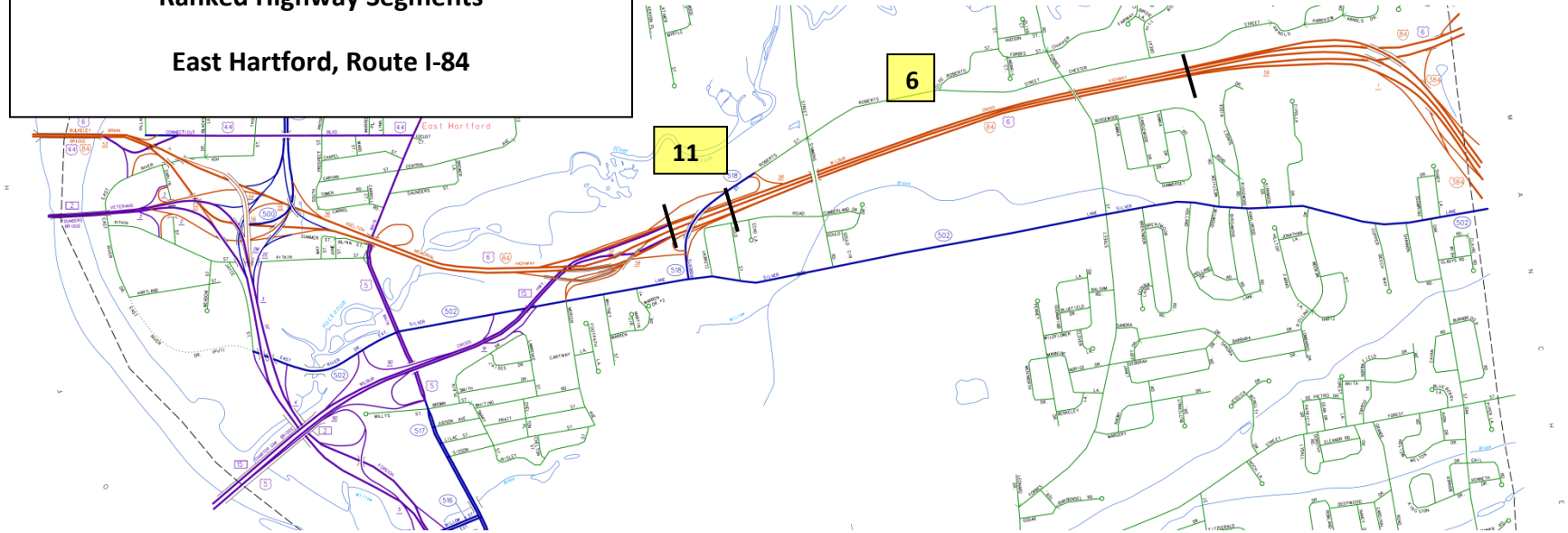
## Appendix A Maps of AADT Ranked Near-Road Segments[8]

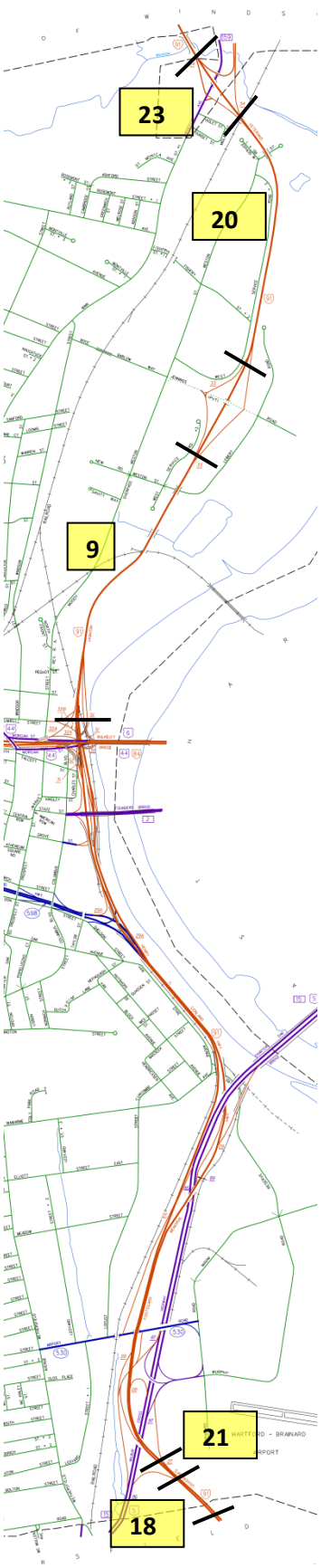
[8] Base maps from Connecticut DOT, http://www.ct.gov/dot/LIB/dot/Documents/dpolicy/policymaps/tru/pdf/trupdf.pdf#40752


Ranked Highway Segments
Hartford, Route I-84
1
2
3
8
12
14

**Ranked Highway Segments**

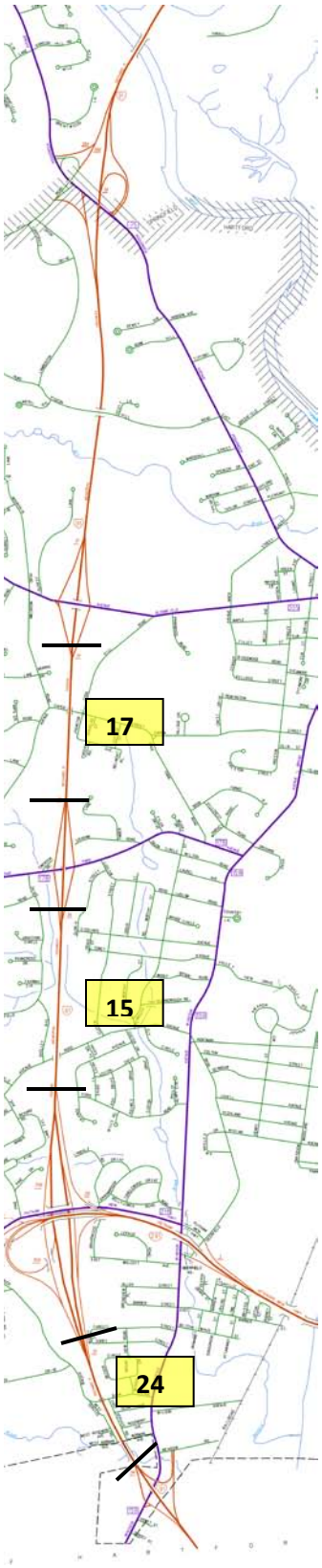
**East Hartford, Route I-84**





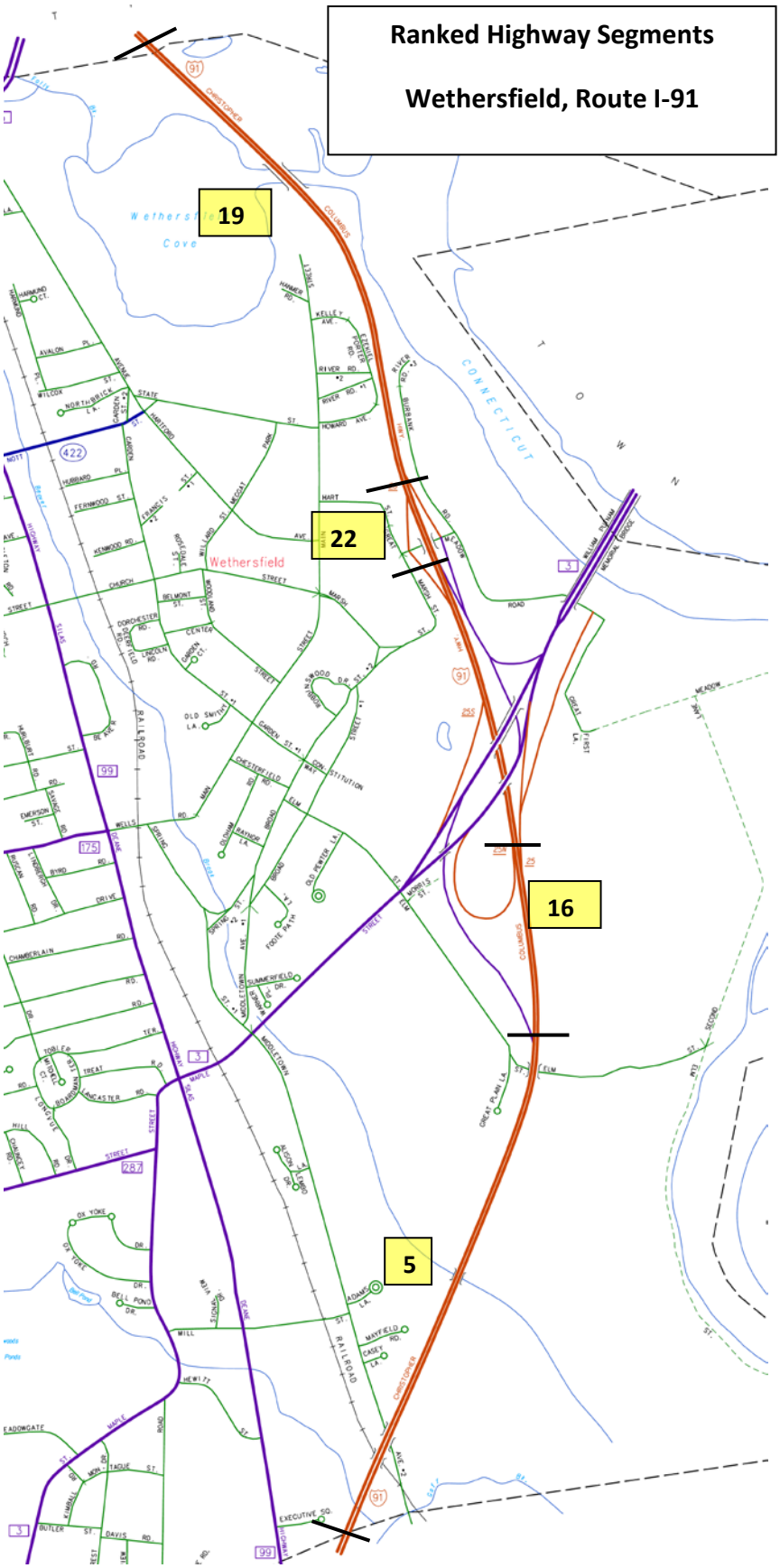

**Ranked Highway Segments**

**Hartford, Route I-91**



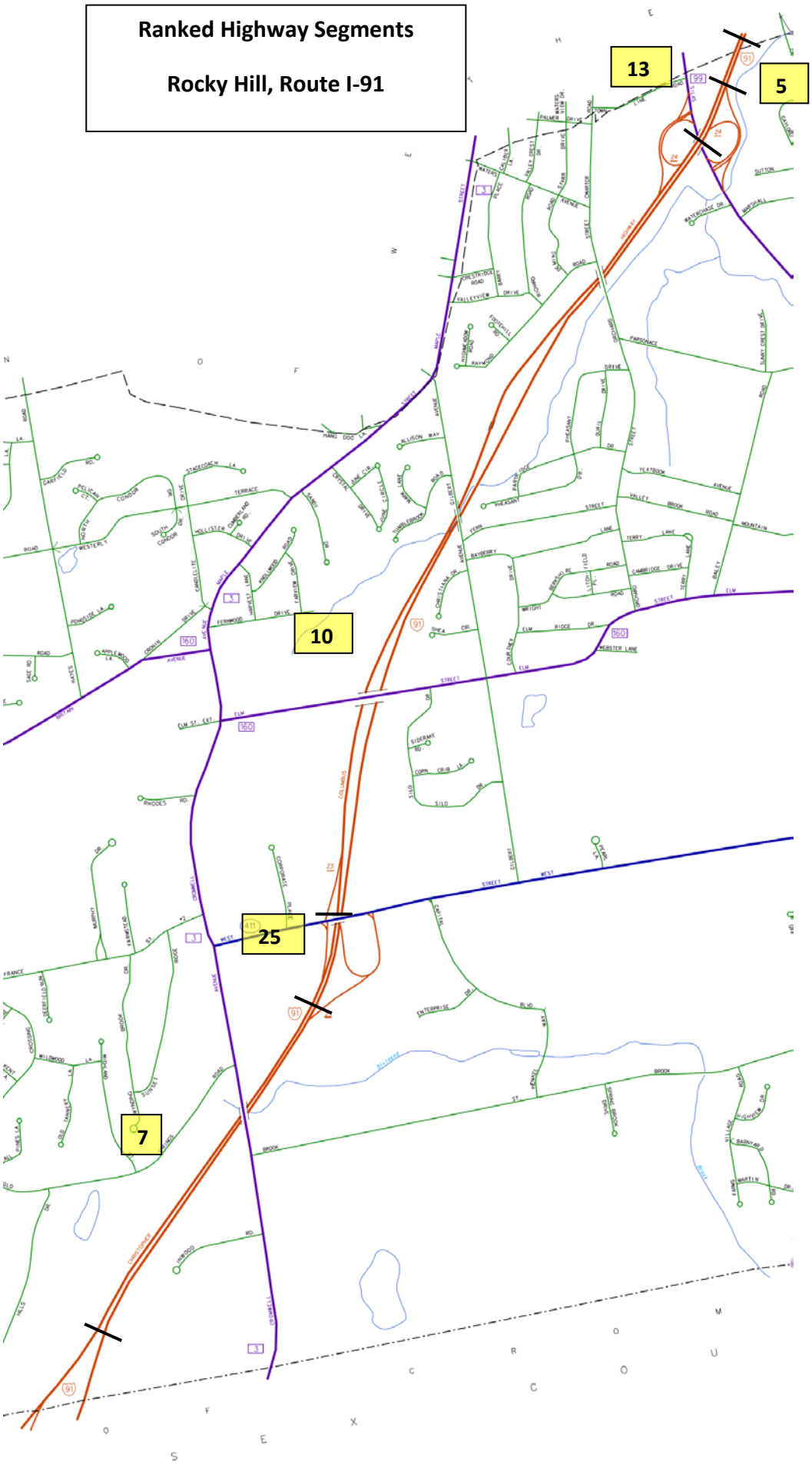

**Ranked Highway Segments**

**Windsor, Route I-91**


Ranked Highway Segments
Wethersfield, Route I-91
19
22
16
5
Wethersfield
Cove
CONNECTICUT
RIVER
Wethersfield

**Ranked Highway Segments**

**Rocky Hill, Route I-91**



## Appendix B Hartford Area 2010 Traffic Congestion Data[9]

[9] Source: Connecticut DOT, personnel communication, April 2012

## Table 4: Hartford Area 2010 Traffic Congestion Data

| town | route | begin | end | 2010adt | 2010peak | capacity | 2010vc |
|---|---|---|---|---|---|---|---|
| Cromwell | 91 | 25.66 | 25.78 | 113500 | 5618 | 6461 | 0.87 |
| Cromwell | 91 | 25.78 | 26.07 | 106000 | 5247 | 6314 | 0.83 |
| Cromwell | 91 | 26.07 | 26.75 | 122800 | 6079 | 6506 | 0.93 |
| Cromwell | 91 | 26.75 | 27.25 | 102800 | 5551 | 6425 | 0.86 |
| Cromwell | 91 | 27.25 | 27.28 | 112200 | 5610 | 6461 | 0.87 |
| Cromwell | 91 | 27.28 | 27.41 | 112200 | 6171 | 6475 | 0.95 |
| Cromwell | 91 | 27.41 | 27.58 | 112200 | 5610 | 6357 | 0.88 |
| Cromwell | 91 | 27.58 | 27.76 | 112200 | 6171 | 6475 | 0.95 |
| Cromwell | 91 | 27.76 | 27.86 | 133600 | 8083 | 6475 | 1.25 |
| Cromwell | 91 | 27.86 | 27.87 | 148800 | 8184 | 6475 | 1.26 |
| Rocky Hill | 91 | 27.87 | 28.06 | 148800 | 8184 | 8633 | 0.95 |
| Rocky Hill | 91 | 28.06 | 28.43 | 148800 | 8184 | 8633 | 0.95 |
| Rocky Hill | 91 | 28.43 | 29.05 | 148800 | 8184 | 8633 | 0.95 |
| Rocky Hill | 91 | 29.05 | 29.35 | 133300 | 7332 | 8427 | 0.87 |
| Rocky Hill | 91 | 29.35 | 29.39 | 144600 | 7953 | 8621 | 0.92 |
| Rocky Hill | 91 | 29.39 | 29.53 | 144600 | 7953 | 8633 | 0.92 |
| Rocky Hill | 91 | 29.53 | 29.77 | 144600 | 7953 | 8633 | 0.92 |
| Rocky Hill | 91 | 29.77 | 30.04 | 144600 | 7953 | 8621 | 0.92 |
| Rocky Hill | 91 | 30.04 | 30.40 | 144600 | 7953 | 8633 | 0.92 |
| Rocky Hill | 91 | 30.40 | 31.72 | 144600 | 7953 | 8621 | 0.92 |
| Rocky Hill | 91 | 31.72 | 31.91 | 141400 | 7777 | 8573 | 0.91 |
| Rocky Hill | 91 | 31.91 | 31.98 | 149000 | 8940 | 8633 | 1.04 |
| Wethersfield | 91 | 31.98 | 33.08 | 149000 | 8940 | 8633 | 1.04 |
| Wethersfield | 91 | 33.08 | 33.25 | 135900 | 7475 | 8525 | 0.88 |
| Wethersfield | 91 | 33.25 | 33.44 | 135900 | 7475 | 8525 | 0.88 |
| Wethersfield | 91 | 33.44 | 33.47 | 135900 | 7475 | 6475 | 1.15 |
| Wethersfield | 91 | 33.47 | 34.09 | 123600 | 6798 | 6475 | 1.05 |
| Wethersfield | 91 | 34.09 | 34.15 | 130000 | 7150 | 6475 | 1.10 |
| Wethersfield | 91 | 34.15 | 34.32 | 130000 | 7150 | 8427 | 0.85 |
| Wethersfield | 91 | 34.32 | 35.05 | 132000 | 7128 | 8378 | 0.85 |
| Wethersfield | 91 | 35.05 | 35.37 | 132000 | 7920 | 8633 | 0.92 |
| Hartford | 91 | 35.37 | 35.50 | 132000 | 7128 | 6475 | 1.10 |
| Hartford | 91 | 35.50 | 35.54 | 130200 | 6445 | 6475 | 1.00 |
| Hartford | 91 | 35.54 | 35.87 | 120300 | 6496 | 6475 | 1.00 |
| Hartford | 91 | 35.87 | 36.18 | 115400 | 6232 | 6475 | 0.96 |
| Hartford | 91 | 36.18 | 36.28 | 115400 | 6232 | 6475 | 0.96 |
| Hartford | 91 | 36.28 | 36.59 | 115400 | 6232 | 6475 | 0.96 |
| Hartford | 91 | 36.59 | 36.82 | 115400 | 6232 | 7997 | 0.78 |
| Hartford | 91 | 36.82 | 36.99 | 88500 | 5310 | 7997 | 0.66 |
| Hartford | 91 | 36.99 | 37.50 | 108300 | 6498 | 8077 | 0.80 |
| Hartford | 91 | 37.50 | 37.57 | 108300 | 6498 | 6475 | 1.00 |
| Hartford | 91 | 37.57 | 37.68 | 94500 | 5670 | 6466 | 0.88 |
| Hartford | 91 | 37.68 | 37.78 | 94500 | 5670 | 6466 | 0.88 |
| Hartford | 91 | 37.78 | 38.23 | 89500 | 4833 | 6058 | 0.80 |
| Hartford | 91 | 38.23 | 38.26 | 89500 | 4833 | 4317 | 1.12 |
| Hartford | 91 | 38.26 | 38.57 | 78700 | 4604 | 4317 | 1.07 |
| Hartford | 91 | 38.57 | 38.67 | 88600 | 4784 | 4317 | 1.11 |
| Hartford | 91 | 38.67 | 38.77 | 88600 | 4784 | 6019 | 0.79 |
| Hartford | 91 | 38.77 | 38.96 | 158600 | 7851 | 6475 | 1.21 |
| Hartford | 91 | 38.96 | 39.21 | 158600 | 7137 | 8566 | 0.83 |
| Hartford | 91 | 39.21 | 39.25 | 158600 | 7851 | 8675 | 0.91 |
| Hartford | 91 | 39.25 | 39.52 | 158600 | 7851 | 8675 | 0.91 |
| Hartford | 91 | 39.52 | 39.60 | 158600 | 7851 | 8675 | 0.91 |
| Hartford | 91 | 39.60 | 39.72 | 120900 | 5985 | 6542 | 0.91 |

| town | route | begin | end | 2010adt | 2010peak | capacity | 2010vc |
|---|---|---|---|---|---|---|---|
| Hartford | 91 | 39.72 | 39.82 | 120900 | 5985 | 8779 | 0.68 |
| Hartford | 91 | 39.82 | 40.03 | 120900 | 5985 | 6542 | 0.91 |
| Hartford | 91 | 40.03 | 40.14 | 120900 | 5985 | 6542 | 0.91 |
| Hartford | 91 | 40.14 | 40.98 | 129400 | 6988 | 6542 | 1.07 |
| Hartford | 91 | 40.98 | 41.07 | 121300 | 6550 | 6542 | 1.00 |
| Windsor | 91 | 41.07 | 41.22 | 121300 | 6550 | 6542 | 1.00 |
| Hartford | 91 | 41.22 | 41.24 | 121300 | 6550 | 6542 | 1.00 |
| Hartford | 91 | 41.24 | 41.25 | 127200 | 6869 | 6542 | 1.05 |
| Hartford | 91 | 41.25 | 41.32 | 127200 | 6869 | 6542 | 1.05 |
| Windsor | 91 | 41.32 | 41.63 | 127200 | 6869 | 6542 | 1.05 |
| Windsor | 91 | 41.63 | 42.43 | 106600 | 5330 | 6236 | 0.85 |
| Windsor | 91 | 42.43 | 42.73 | 123200 | 6160 | 6542 | 0.94 |
| Windsor | 91 | 42.73 | 43.32 | 137700 | 7574 | 6542 | 1.16 |
| Windsor | 91 | 43.32 | 43.79 | 128000 | 7040 | 6542 | 1.08 |
| Windsor | 91 | 43.79 | 44.29 | 134700 | 7409 | 6542 | 1.13 |
| Windsor | 91 | 44.29 | 44.77 | 116800 | 6424 | 6542 | 0.98 |
| Windsor | 91 | 44.77 | 46.03 | 121500 | 6683 | 6542 | 1.02 |
| Windsor | 91 | 46.03 | 46.35 | 109300 | 6558 | 6542 | 1.00 |
| Windsor | 91 | 46.35 | 46.69 | 121600 | 7661 | 6542 | 1.17 |
| Windsor | 91 | 46.69 | 47.16 | 123900 | 7434 | 6312 | 1.18 |
| Windsor | 91 | 47.16 | 47.22 | 139200 | 9048 | 8675 | 1.04 |
| Windsor | 91 | 47.22 | 47.27 | 126100 | 8197 | 8675 | 0.94 |
| Windsor | 91 | 47.27 | 47.44 | 126100 | 8197 | 8675 | 0.94 |
| Windsor | 91 | 47.44 | 47.81 | 126100 | 8197 | 8675 | 0.94 |
| Windsor | 91 | 47.81 | 47.95 | 96800 | 6292 | 8036 | 0.78 |
| Windsor | 91 | 47.95 | 48.04 | 96800 | 6292 | 8036 | 0.78 |
| Windsor | 91 | 48.04 | 48.08 | 96800 | 6292 | 8675 | 0.73 |
| Windsor | 91 | 48.08 | 48.20 | 96800 | 6292 | 6506 | 0.97 |
| Windsor | 91 | 48.20 | 48.53 | 96800 | 6292 | 8036 | 0.78 |
| Windsor | 91 | 48.53 | 48.58 | 114400 | 7436 | 8566 | 0.87 |
| West Hartford | 84 | 55.99 | 56.00 | 98800 | 5335 | 6277 | 0.85 |
| West Hartford | 84 | 56.00 | 56.03 | 113000 | 6611 | 6506 | 1.02 |
| West Hartford | 84 | 56.03 | 56.29 | 125900 | 6799 | 6506 | 1.04 |
| West Hartford | 84 | 56.29 | 56.59 | 119100 | 6431 | 6506 | 0.99 |
| West Hartford | 84 | 56.59 | 57.03 | 128500 | 6939 | 6506 | 1.07 |
| West Hartford | 84 | 57.03 | 57.40 | 116800 | 5606 | 6351 | 0.88 |
| West Hartford | 84 | 57.40 | 57.95 | 120900 | 5803 | 6461 | 0.90 |
| West Hartford | 84 | 57.95 | 58.09 | 107700 | 5170 | 6087 | 0.85 |
| West Hartford | 84 | 58.09 | 58.37 | 109500 | 5256 | 6126 | 0.86 |
| West Hartford | 84 | 58.37 | 58.40 | 122600 | 5885 | 6497 | 0.91 |
| West Hartford | 84 | 58.40 | 59.07 | 122600 | 5885 | 6497 | 0.91 |
| West Hartford | 84 | 59.07 | 59.27 | 111900 | 5371 | 6240 | 0.86 |
| West Hartford | 84 | 59.27 | 59.30 | 116000 | 5568 | 6351 | 0.88 |
| Hartford | 84 | 59.30 | 59.42 | 116000 | 5568 | 6351 | 0.88 |
| Hartford | 84 | 59.42 | 59.88 | 119800 | 5750 | 6461 | 0.89 |
| Hartford | 84 | 59.88 | 60.45 | 137200 | 6586 | 6506 | 1.01 |
| Hartford | 84 | 60.45 | 60.46 | 130000 | 6240 | 6506 | 0.96 |
| Hartford | 84 | 60.46 | 60.51 | 130000 | 6240 | 10844 | 0.58 |
| Hartford | 84 | 60.51 | 60.93 | 130000 | 7020 | 6277 | 1.12 |
| Hartford | 84 | 60.93 | 61.13 | 149200 | 8057 | 8675 | 0.93 |
| Hartford | 84 | 61.13 | 61.20 | 166400 | 8237 | 8675 | 0.95 |
| Hartford | 84 | 61.20 | 61.22 | 166400 | 8237 | 8675 | 0.95 |
| Hartford | 84 | 61.22 | 61.33 | 166400 | 8237 | 10844 | 0.76 |
| Hartford | 84 | 61.33 | 61.36 | 166400 | 8237 | 10844 | 0.76 |
| Hartford | 84 | 61.36 | 61.38 | 166400 | 8237 | 8675 | 0.95 |
| Hartford | 84 | 61.38 | 61.63 | 147300 | 5892 | 8036 | 0.73 |

| town | route | begin | end | 2010adt | 2010peak | capacity | 2010vc |
|---|---|---|---|---|---|---|---|
| Hartford | 84 | 61.63 | 61.88 | 164100 | 8123 | 8675 | 0.94 |
| Hartford | 84 | 61.88 | 62.04 | 165200 | 7269 | 8615 | 0.84 |
| Hartford | 84 | 62.04 | 62.13 | 160100 | 7685 | 8663 | 0.89 |
| Hartford | 84 | 62.13 | 62.17 | 126800 | 5579 | 7982 | 0.70 |
| Hartford | 84 | 62.17 | 62.47 | 126800 | 5579 | 4338 | 1.29 |
| Hartford | 84 | 62.47 | 62.61 | 91300 | 3652 | 4210 | 0.87 |
| Hartford | 84 | 62.61 | 62.63 | 110700 | 5480 | 4338 | 1.26 |
| Hartford | 84 | 62.63 | 62.70 | 141100 | 6984 | 4338 | 1.61 |
| East Hartford | 84 | 62.70 | 62.73 | 141100 | 6984 | 4338 | 1.61 |
| East Hartford | 84 | 62.73 | 62.82 | 141100 | 6984 | 6506 | 1.07 |
| East Hartford | 84 | 62.82 | 62.84 | 141100 | 6984 | 8319 | 0.84 |
| East Hartford | 84 | 62.84 | 63.00 | 128700 | 6371 | 8036 | 0.79 |
| East Hartford | 84 | 63.00 | 63.03 | 128700 | 6371 | 6506 | 0.98 |
| East Hartford | 84 | 63.03 | 63.11 | 113200 | 5603 | 6388 | 0.88 |
| East Hartford | 84 | 63.11 | 63.18 | 113200 | 5603 | 6388 | 0.88 |
| East Hartford | 84 | 63.18 | 63.37 | 81300 | 3902 | 6027 | 0.65 |
| East Hartford | 84 | 63.37 | 63.67 | 87200 | 5886 | 10045 | 0.59 |
| East Hartford | 84 | 63.67 | 63.78 | 107000 | 6955 | 10045 | 0.69 |
| East Hartford | 84 | 63.78 | 64.11 | 107400 | 6981 | 10045 | 0.69 |
| East Hartford | 84 | 64.11 | 64.19 | 99600 | 7470 | 10045 | 0.74 |
| East Hartford | 84 | 64.19 | 64.20 | 99600 | 7470 | 8036 | 0.93 |
| East Hartford | 84 | 64.20 | 64.43 | 99600 | 7470 | 8036 | 0.93 |
| East Hartford | 84 | 64.43 | 64.64 | 99600 | 7470 | 8663 | 0.86 |
| East Hartford | 84 | 64.64 | 64.84 | 89400 | 6705 | 8219 | 0.82 |
| East Hartford | 84 | 64.84 | 65.15 | 145900 | 8535 | 10517 | 0.81 |
| East Hartford | 84 | 65.15 | 65.30 | 153500 | 8980 | 10645 | 0.84 |
| East Hartford | 84 | 65.30 | 66.27 | 153500 | 9671 | 11043 | 0.88 |
| East Hartford | 84 | 66.27 | 66.38 | 153500 | 9671 | 6542 | 1.48 |
| East Hartford | 84 | 66.38 | 66.46 | 115200 | 5069 | 6236 | 0.81 |
| East Hartford | 84 | 66.46 | 66.81 | 115200 | 6221 | 6498 | 0.96 |
| East Hartford | 84 | 66.81 | 66.90 | 112800 | 6091 | 6542 | 0.93 |
| East Hartford | 84 | 66.90 | 67.42 | 113500 | 7151 | 6542 | 1.09 |

# Appendix C Potential for Population Exposure

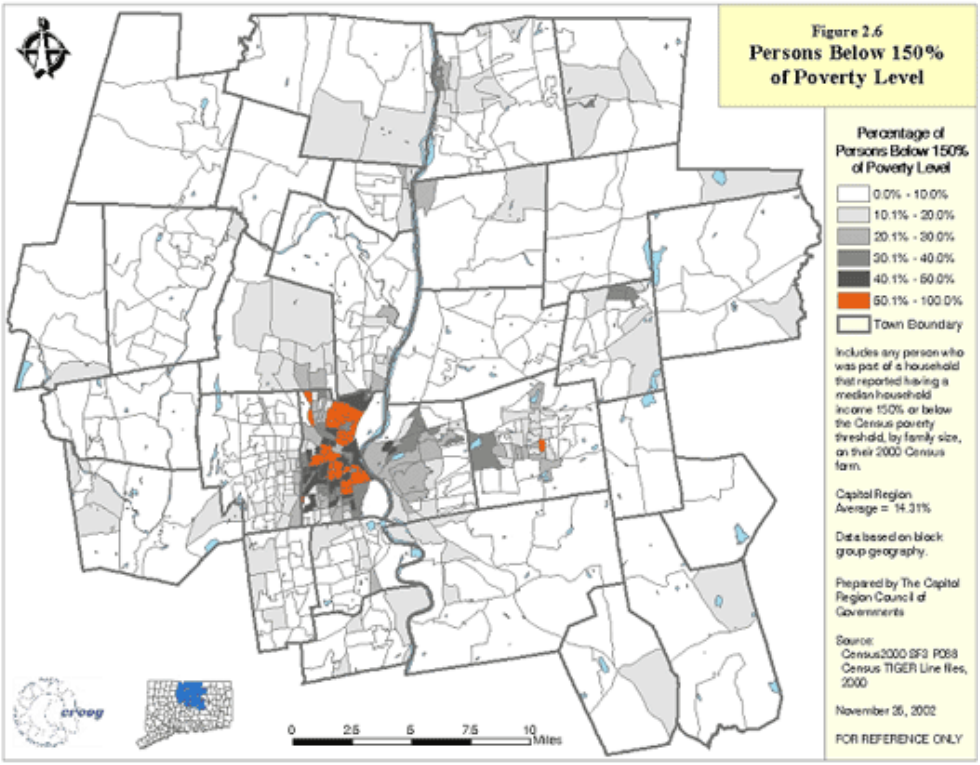



**Figure 4: Percentage of Persons Below 150% of the Poverty Level**

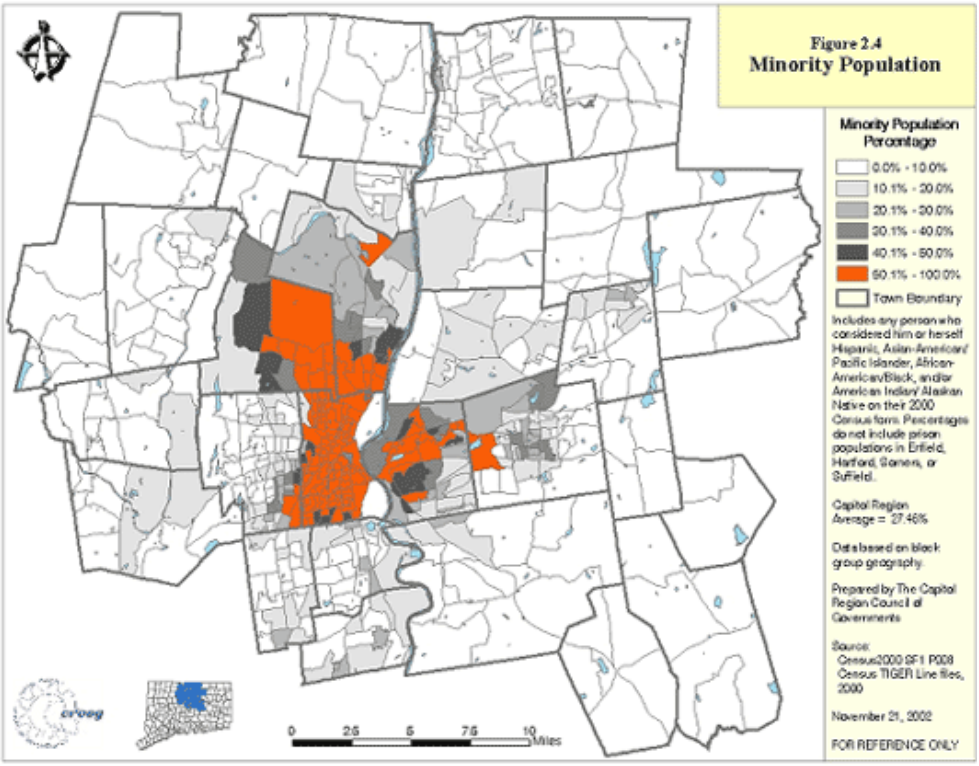



**Figure 5: Percentage of Minority Population**

## Appendix D Selected Near-Road Candidate Site Photographs

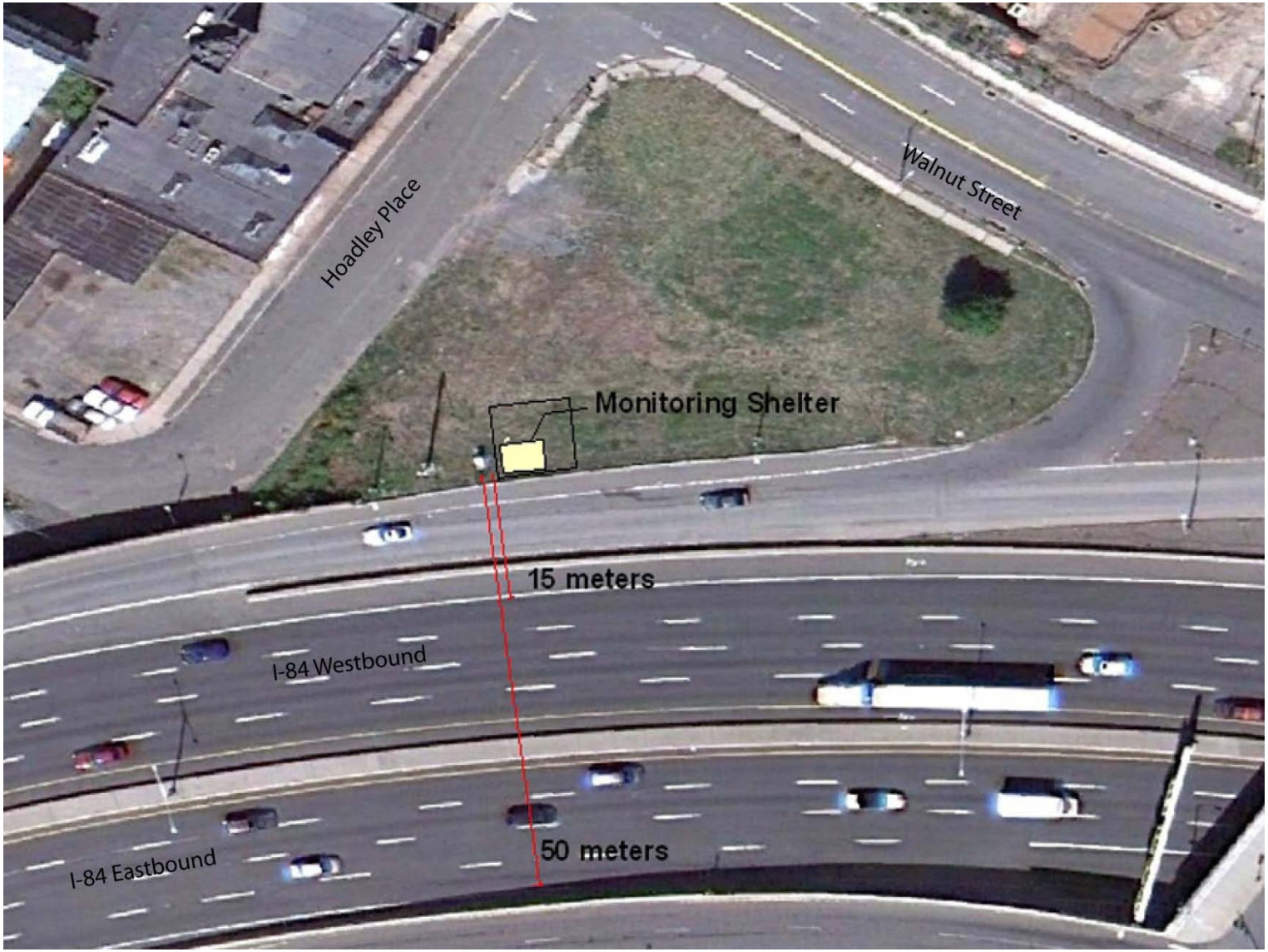



**Figure 6: Hartford Walnut Street Candidate Site Aerial View**

**Figure 7: Hartford Walnut Street Candidate Site Looking West**

**Figure 8: Hartford Walnut Street Candidate Site Looking South**