



State of Delaware
Office of the Governor

Ruth Ann Minner
Governor

February 17, 2004

Mr. Donald S. Welsh (3RA00)
Regional Administrator
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA, 19103-2029

Dear Mr. Welsh:

This letter fulfills Delaware's obligations under Section 107 of the Clean Air Act for states to recommend attainment status designations for its counties under the daily (24-hour) and the annual national ambient air quality standards (NAAQS) for fine particulate matter (PM_{2.5}). For designation letter purposes the EPA has requested that States use 2000 through 2002 air monitoring data, with the understanding that 2001 through 2003 data will be used in the final designations when such data becomes available. This letter also recommends the placement, with rationale, of New Castle County (the only county in Delaware monitoring non-attainment relative to a PM_{2.5} NAAQS) in a non-attainment area.

Attainment Status – Daily Standard

The daily, or 24-hour based, PM_{2.5} NAAQS is 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), calculated as the 3-year average of the 98th percentiles (i.e., the daily values out of a year of monitoring data below which 98 percent of all daily values fall). The Delaware-monitored average 98th percentile daily values and site information for 2000 through 2002 are attached (see Table 1 in Attachment 1 to this letter).

All 3-year averages of the 98th percentile daily values are well below the PM_{2.5} NAAQS. Therefore, Delaware recommends that all three of its counties be designated attainment for the 24-hour PM_{2.5} NAAQS.

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Attainment Status – Annual Standard

The annual PM_{2.5} NAAQS is 15.0 µg/m³, annual arithmetic mean, based on the average of 3-years of data. The Delaware-monitored values and site information for 2000 through 2002 are attached (see Table 2 in Attachment 1 to this letter).

The annual NAAQS design values for New Castle, Kent and Sussex counties are 16.3 µg/m³, 13.1 µg/m³ and 14.0 µg/m³, respectively. Based on this, Delaware recommends that Kent County and Sussex County be designated attainment, and that New Castle County be designated non-attainment for the annual PM_{2.5} NAAQS.

Placement of New Castle County in a Non-attainment Area

There are four PM_{2.5} monitoring sites located in New Castle County Delaware (see Attachment 2 to this letter).

- The Martin Luther King (MLK) Boulevard monitor is situated downtown, in the southern part of the City of Wilmington in a low-lying 0.035 square mile “triangle” formed by MLK Boulevard, an elevated section of I-95, and the AMTRAK rails (see Attachment 3 to this letter). Also located within this “triangle” is the DART bus depot that services 250 busses. This monitor is sited to record the highest PM_{2.5} concentrations in the State, and it has a 2000-2002 design value of 16.3.
- The other three New Castle County monitors, Newark, Bellefonte, and Lums Pond, are located to the west, northeast, and southwest, of the MLK monitor, and have 2000-2002 design values of 15.2, 15.0, and 13.9 respectively.

The EPA is recommending that Metropolitan Statistical Areas or Consolidated Metropolitan Statistical Areas (C/MSA) serve as the presumptive boundaries for PM_{2.5} NAAQS non-attainment areas. Over the past two years the Delaware Department of Natural Resources and Environmental Control (DNREC) staff has conducted in-depth studies relative to PM_{2.5} in New Castle County, and the results clearly demonstrate that the PM_{2.5} non-attainment status for New Castle county is caused by a combination of interstate transport, intrastate transport and local urban emissions of PM_{2.5} and its precursors. Delaware does not agree that this presumptive C/MSA boundary should be applied to New Castle County.

First, DNREC has found that the three New Castle County monitors outside the downtown area of the City of Wilmington, and the nearby monitors in Pennsylvania, Maryland and New Jersey indicate that, moving away from the downtown Wilmington area, the relatively high downtown concentrations drop off quickly to below the NAAQS within the boundaries of New Castle County. This indicates that the area of non-attainment is limited to New Castle County, Delaware. Because

air quality monitoring sites are densely located around the City of Wilmington, and between Wilmington and Philadelphia (the center of the presumptive C/MSA), DNREC believes additional air quality dispersion modeling and additional data interpolation techniques are not necessary to help assess the geographic area violating the standard; the area of non-attainment is clearly limited to New Castle County.

Second, in addition to the violating area being limited to New Castle County, DNREC has found that intra- and interstate transport are significant contributors to ambient PM_{2.5} concentrations in Delaware. This has been confirmed by EPA emission modeling. Recently EPA issued a document on interstate transport entitled "Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Interstate Air Quality Rule)." In this document EPA, based on modeling, assessed the impacts of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) emissions from upwind States on downwind PM_{2.5} concentrations. This modeling indicates that:

- Delaware emissions contribute little to the PM_{2.5} concentrations in other States, or to the Philadelphia C/MSA. The EPA modeling shows that Delaware significantly impacts only one county nationwide (i.e., 0.17 µg/m³ contribution to Berks County, Pennsylvania). Delaware has enforceable measures in place that will reduce statewide SO₂ emissions from a 2002 base year by more than 40%. This, along with upcoming state and national PM_{2.5}, SO₂, and NO_x initiatives will mitigate all significant impact of Delaware emissions on downwind areas.
- Delaware air quality is significantly impacted by a geographically large area, not by the small C/MSA area. The EPA modeling shows that emissions from the states of Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois significantly impact Delaware.

The above clearly establishes that New Castle County's PM_{2.5} non-attainment problem is separate from the PM_{2.5} non-attainment portion of the Philadelphia C/MSA. 1) The boundaries of New Castle County encompass the full area that is violating the standard, based on monitoring data. 2) Delaware emissions do not significantly impact any part of the Philadelphia C/MSA, based on EPA modeling. 3) Emissions from a broad area encompassing the states of Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois impact Delaware (i.e., an area much broader than the Philadelphia C/MSA boundaries), based on EPA modeling.

April 1, 2003 EPA guidance, "Designations for the Fine Particle National Ambient Air Quality Standards," indicates that the EPA will consider requests for urban non-attainment area definitions that deviate from the Office of Management and Budget's (OMB) metropolitan area definitions on a

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case-by-case basis, considering nine specific factors. Delaware believes these nine factors are more applicable to devising and applying the proper control strategies for specific counties or zones within the non-attainment area **after** the non-attainment area is established, or are appropriate only for evaluating areas being removed from a C/MSA and designated **attainment**. Either way, these criteria should be considered as secondary to the above mentioned monitoring and modeling studies when designating non-attainment area boundaries. Regardless, these nine criteria are addressed at Attachment 4 to this letter.

Delaware hereby recommends that the boundaries of New Castle County, Delaware form the boundaries of the annual PM_{2.5} NAAQS non-attainment area, and that New Castle County not be included as part of the Philadelphia C/MSA non-attainment area. In addition, Delaware recommends that the EPA address the significant transport that is impacting Delaware, and looks forward to working cooperatively with the EPA to address the local contribution impacting the New Castle County non-attainment area. Thank you for your consideration of these recommendations. If you have any questions concerning this submittal or would like to discuss it further, please contact John Hughes, DNREC Secretary, or Ali Mirzakhali, Administrator of the Air Quality Management Section at (302) 739-4791.

Sincerely,



Ruth Ann Minner
Governor

pc: John A. Hughes, DNREC Secretary
John B. Blevins, DNREC AWM
Ali Mirzakhali, DNREC AQM
Judith Katz, EPA Region III
David Arnold, EPA Region III

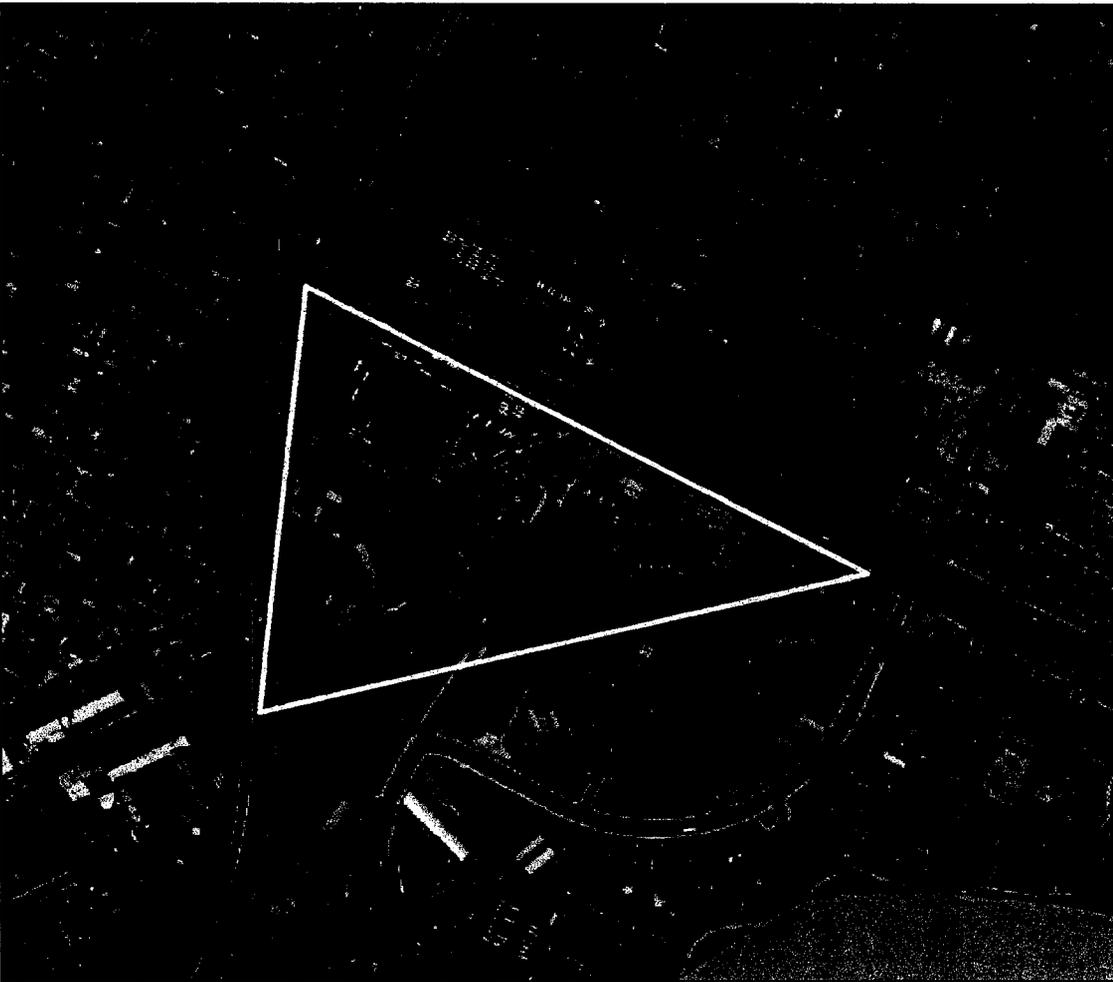
Attachment 1: Delaware Air Monitoring Data**Table 1: PM_{2.5} 24-hour 98th Percentile $\Phi\text{g}/\text{m}^3$; NAAQS = 3-year average 65 $\Phi\text{g}/\text{m}^3$**

Site Name and ID Number	2000	2001	2002	3-year Average
Bellefonte 10-003-1003	38.2	40.7	33.8	37.6
MLK 10-003-2004	39.3	43.2	36.8	39.8
Newark 10-003-1012	39.8	39.5	39.3	39.5
Lums Pond 10-003-1007	36.4	35.9	30.6	34.3
Dover 10-001-0003	27.8	31.5	35.5	33.9
Killens Pond 10-001-0002	34.4	41.5	37.1	35.3
Seaford 10-005-1002	36.0	42.5	42.2	39.9

Table 2: PM_{2.5} Annual Averages in $\Phi\text{g}/\text{m}^3$; NAAQS = 3-year average 15.0 $\Phi\text{g}/\text{m}^3$

Site Name and ID Number	2000	2001	2002	3-year Avg.
Bellefonte 10-003-1003	15.4	15.6	14.0	15.0
MLK (Wilmington)10-003-2004	16.4	17.6	14.8	16.3
Newark 10-003-1012	15.4	15.8	14.3	15.2
Lums Pond 10-003-1007	14.2	14.5	13.0	13.9
Dover 10-001-0003	12.9	14.0	12.4	13.1
Killens Pond 10-001-0002	13.2	13.0	12.4	12.9
Seaford 10-005-1002	14.3	14.4	13.2	14.0

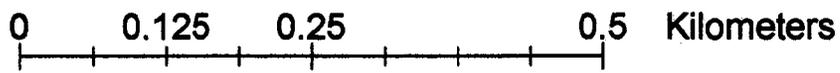
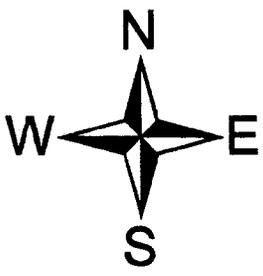
2002 Aerial Photo of Wilmington



Legend

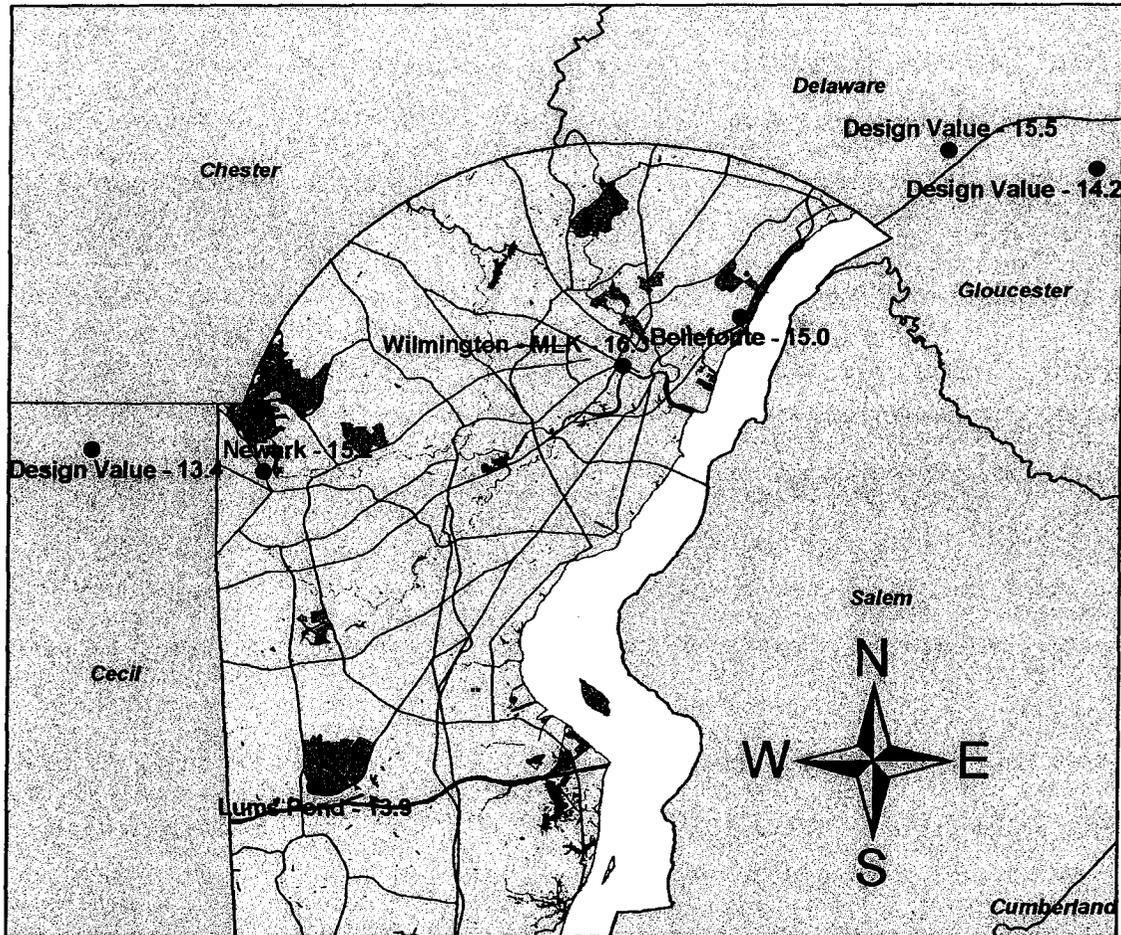
Receptors

- ✕ Dart Bus Depot
- ★ MLK Monitor
- Water
- Orange Polygon represents DART Bus Depot Lots
- Yellow Polygon represents "triangle" formed by I-95, MLK Blvd, and railroad tracks



Attachment 2: Delaware PM_{2.5} Air Monitoring Locations

PM_{2.5} Monitors (and Concentrations) In and Around New Castle County



Attachment 4: Nine Criteria in April 1, 2003 “Designations for the Fine Particle National Ambient Air Quality Standards” Guidance

April 1, 2003 designation guidance signed by Jeffrey R. Holmstead indicates that the EPA will consider the following factors in assessing whether to exclude portions of a metropolitan area as part of the designated non-attainment areas. Delaware believes these nine factors are more applicable to devising and applying the proper control strategies for specific counties or zones within the non-attainment area **after** the non-attainment area is established, or are appropriate only for evaluating areas being removed from a C/MSA and designated **attainment**. Regardless:

- ***Emissions in areas potentially included versus excluded from the non-attainment area*** – No areas will be excluded from the non-attainment “umbrella.” New Castle County, the “excluded area” will be subject to the PM_{2.5} non-attainment provisions of the Clean Air Act in the same manner and to the same extent as any other non-attainment portion of the Philadelphia C/MSA.

This indicates that there will be no difference in the treatment of emissions between New Castle County being part of the Philadelphia C/MSA or being separate from the Philadelphia C/MSA. Also, Delaware emissions do not significantly impact the Philadelphia C/MSA, and the Philadelphia C/MSA is only part of a large geographic area whose emissions significantly impact Delaware (see discussion on meteorology - transport patterns below).

- ***Air quality in potentially included versus excluded areas***

PM_{2.5} concentrations near the MLK monitoring site are significantly higher than the other three (3) monitors in New Castle County. The monitor at Bellefonte, approximately 6 miles to the northeast of MLK is showing attainment at 15.0 µg/m³. The monitor at Newark is approximately 11 miles to the west from MLK, and is barely above the standard at 15.2 µg/m³ (preliminary 2003 data indicates the 2001-2003 design value will be attainment). Furthermore, the monitor in Cecil County, MD to the west of Newark is showing attainment. The Lums Pond monitor to the south is showing attainment.

These air quality monitors indicate that the geographic area violating the PM_{2.5} NAAQS, relative to Delaware, is limited to New Castle County, and that the New Castle County non-attainment area is separate from the Philadelphia C/MSA non-attainment area.

- ***Population density and degree of urbanization including commercial development in included versus excluded areas***

Again, no area is being proposed for exclusion from a non-attainment designation. Delaware believes that areas exceeding the PM_{2.5} NAAQS are primarily associated with the urban areas in New Castle County.

The population density in urban areas of Philadelphia County is almost 4 times greater than in New Castle County (4323 people/ sq. km versus 1000 people/sq. km, respectively), and including all areas, Philadelphia County's population density is higher by over 10 times (4337 people/sq. km versus 453 people/sq. km, respectively). While Philadelphia County is very urbanized, (95% of the county is urban), only 37% of New Castle County, the "excluded area," is urban.

- ***Traffic and commuting patterns***

The monitor defining New Castle County's non-attainment status is adjacent to one of Wilmington's busiest roads (Martin Luther King Boulevard), which is only 38 meters from the monitor, and handles an average of 14,609 vehicles per day. Annual average daily traffic of Philadelphia's two highest roads are more than 70,000 vehicles per day.

Delaware studies indicate there is a significant link between traffic and PM_{2.5} concentrations in urban areas. Delaware believes this is one of the main reasons for the air quality differences (see above), and further demonstrates that the New Castle County non-attainment area is separate from the Philadelphia C/MSA.

- ***Expected growth (including extent, pattern and rate of growth)***

As indicated throughout this document, separating New Castle County from the Philadelphia C/MSA will not exempt any area from being under the "non-attainment umbrella." Therefore, all aspects of growth in the excluded area, New Castle County, will be subject to the PM_{2.5} non-attainment provisions of the Clean Air Act in the same manner and to the same extent as any other non-attainment portion of the Philadelphia C/MSA.

Further, growth in New Castle County is likely to be regulated beyond most other areas because of Delaware's existing environmentally protective programs. These include Delaware's New Source Review (NSR) program that incorporates the dual source definition of a stationary source (sources cannot "net out" of non-attainment NSR, Delaware's Coastal Zone Program, where offsets are required for any increase in emission (no de minimis), and the Livable Delaware initiative which is designed to promote smart growth principles.

- ***Meteorology (weather/transport patterns)***

Over the past two years the Delaware Department of Natural Resources and Environmental Control (DNREC) staff has conducted in-depth studies relative to PM_{2.5} in New Castle County, and the results clearly demonstrate that the PM_{2.5} non-attainment status for New Castle County is caused by a combination of interstate transport, intrastate transport and local urban emissions of PM_{2.5} and its precursors.

Regarding transport, recent EPA modeling associated with the "Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Interstate Air Quality Rule)" indicates that:

- Delaware emissions contribute little to the PM_{2.5} concentrations in other States. The EPA modeling shows that Delaware significantly impacts only one county nationwide (i.e., 0.17 µg/m³ contribution to Berks County, Pennsylvania). Delaware has enforceable measures in place that will reduce statewide SO₂ emissions from a 2002 base year by more than 40%. This, along with upcoming state and national PM_{2.5}, SO₂, and NO_x initiatives will mitigate all significant impact of Delaware emissions on downwind areas.
- Delaware air quality is significantly impacted by emissions from Ohio, Indiana, Pennsylvania, Michigan, West Virginia, New York, Maryland, District of Columbia, New Jersey, North Carolina, and Illinois. The upwind areas that significantly impact Delaware is broad, and must be addressed by the EPA.

The above clearly establishes that New Castle County's PM_{2.5} non-attainment problem is separate from the PM_{2.5} non-attainment portion of the Philadelphia C/MSA; Delaware emissions do not impact the Philadelphia C/MSA, and the area impacting Delaware is much larger than the Philadelphia C/MSA.

- ***Geography/topography (mountain ranges or other air basin boundaries)***

Delaware ranks 49th in the nation with a total area of 1,982 square miles. New Castle County is 438 square miles. Kent County is 594 square miles. Sussex County is 950 square miles. Delaware is 96 miles long and varies from 9 to 35 miles in width. The highest elevation in the state is 447.85 ft. above sea level near Ebright Road in New Castle County. The lowest is sea level along the coast.

Note that the highest reading monitor (MLK) is positioned in such as way to be at the bottom of a "bowl", e.g. elevation of 300 ft. sloping 3 miles to the northwest, and 300 ft. sloping 3 miles to the NE. This would tend to concentrate emissions at the monitor during summer inversions and most of the winter, times when emissions are recorded at their highest.

The high PM_{2.5} concentrations in the "bowl" indicate the New Castle County non-attainment area is separate from the Philadelphia C/MSA.

- ***Jurisdictional boundaries (e.g., counties, air districts, Reservations, etc.)***

All of New Castle County is under the jurisdictional authority of the State of Delaware. All air quality issues are handled by a single agency, the Delaware Department of Natural Resources and Environmental Control. Separating New Castle County from the Philadelphia C/MSA will simplify administrative and legal authorities relative to non-attainment requirements. Delaware will continue to actively interact with the neighboring jurisdictions, and participate in regional organizations.

- ***Level of control of emission sources***

Again, no areas will be excluded from the non-attainment “umbrella.” New Castle County, the “excluded area” will be subject to the PM_{2.5} non-attainment provisions of the Clean Air Act in the same manner and to the same extent as any other non-attainment portion of the Philadelphia C/MSA. All Delaware emission sources are regulated to the extent required of a severe 1-hour ozone non-attainment area (RACT, general and transportation conformity, NO_x SIP Call, etc.), and will also be subject to the 8-hour ozone non-attainment provisions of the clean air act.

Analyses of these factors suggest that non-attainment boundaries relative to the annual PM_{2.5} NAAQS are the boundaries of New Castle County, Delaware.