

U.S. Virgin Islands
Area Designations for the
2012 Primary Annual PM_{2.5} National Ambient Air Quality Standard
Technical Support Document

1.0 Summary

In accordance with Section 107(d) of the Clean Air Act (CAA), the EPA must promulgate designations for all areas of the country. In particular, EPA must identify those areas that are violating a National Ambient Air Quality Standard (NAAQS) or contributing to a violation of the NAAQS in a nearby area. EPA must complete this process within 2 years of promulgating a new or revised NAAQS, or may do so within 3 years under circumstances not relevant to these designations.¹ This technical support document (TSD) describes the EPA's intent to designate areas in the U.S. Virgin Islands as unclassifiable for the 2012 primary annual fine particle NAAQS (2012 annual PM_{2.5} NAAQS).²

Under section 107(d), states are required to submit area designation recommendations to the EPA for the 2012 annual PM_{2.5} NAAQS no later than 1 year following promulgation of the standard, or by December 13, 2013. In February 2014, the U.S. Virgin Islands recommended that the entire Territory identified in Table 1 be designated as unclassifiable for the 2012 annual PM_{2.5} NAAQS based on insufficient air quality monitoring data.

After considering these recommendations and based on EPA's technical analysis as described in this TSD, the EPA intends to designate the areas listed in Table 1 as unclassifiable for the 2012 annual PM_{2.5} standard.

¹ Section 107(d) of the CAA requires the EPA to complete the initial designation process within 2 years of promulgation of a new or revised NAAQS, unless the Administrator has insufficient information to make initial designation decisions in the 2-year time frame. In such circumstances, the EPA may take up to 1 additional year to make initial area designation decisions (i.e., no later than 3 years after promulgation of the standard).

² On December 14, 2012, the EPA promulgated a revised primary annual PM_{2.5} NAAQS (78 FR 3086, January 15, 2013). In that action, the EPA revised the primary annual PM_{2.5} standard, strengthening it from 15.0 micrograms per cubic meter (µg/m³) to 12.0 µg/m³.

Table 1. The U.S. Virgin Islands’ Recommended Areas and EPA’s Intended Designated Areas for the 2012 annual PM_{2.5} NAAQS

Area	The U.S. Virgin Islands Recommended Unclassifiable Counties	EPA’s Intended Unclassifiable Counties
U.S Virgin Islands	St. Croix St. John St. Thomas	St. Croix St. John St. Thomas

Even though air quality data from prior years have indicated minimal potential for violation, EPA intends to designate the entire Territory of the U.S. Virgin Islands as “unclassifiable” for the 2012 annual PM_{2.5} NAAQS because current air quality data from monitoring sites are incomplete. Because the current data are incomplete, EPA cannot determine based on available information whether the ambient air concentration of PM_{2.5} in this area is at, above, or below the NAAQS.

2.0 Technical Analysis

In this technical analysis, EPA used the latest data and information available to EPA (and to the states and tribes through the PM_{2.5} Designations Mapping Tool³ and the EPA PM Designations Guidance and Data web page⁴) and/or data provided to EPA by states or tribes. This technical analysis is limited to an air quality analysis which involves examining available ambient PM_{2.5} air quality monitoring data. Because EPA determined that the air quality data for this area was not complete and thus could not determine whether the area was attaining or not attaining the standard, and due to the isolated location of the Virgin Islands, EPA did not in this case go on to analyze any of the other four designation factors to determine whether any nearby areas were contributing to any potential violations. This air quality analysis includes reviewing the design values (DV) calculated for each monitoring location in the area based on air quality data for the most recent complete 3 consecutive calendar years of quality-assured, certified air quality data in the EPA’s Air Quality System (AQS). In general, EPA identifies violations using data from suitable Federal Reference Method (FRM), Federal Equivalent Method (FEM), and/or Approved Regional Method (ARM) monitors sited and operated in accordance with 40 CFR Part 58.⁵ Procedures for using the air quality data to determine whether a violation has occurred are given in 40 CFR part 50 Appendix N, as revised by a final action published in the Federal Register on January 15, 2013 (78 FR 3086).⁶

³ EPA’s PM_{2.5} Designations Mapping Tool can be found at http://geoplatform2.epa.gov/PM_MAP/index.html.

⁴ EPA’s PM Designations Guidance and Data web page can be found at <http://www.epa.gov/pmdesignations/2012standards/techinfo.htm>.

⁵ Suitable monitors include all FEM and/or ARMs except those specific continuous FEMs/ARMs used in the monitoring agency’s network where the data are not of sufficient quality such that data are not to be compared to the NAAQS in accordance with 40 CFR part 58.10(b)(13) and approved by the EPA Regional Administrator per 40 CFR part 58.11(e).

⁶ As indicated in Appendix N to 40 CFR part 50, Interpretation of the National Ambient Air Quality Standards for PM_{2.5}, section 3(a) indicates “Except as otherwise provided in this appendix, all valid FRM/FEM/ARM PM_{2.5} mass concentration

Figure 1 is a map of EPA's intended unclassifiable boundary for the U.S. Virgin Islands.



Air Quality Data

All data collected during the year are important when determining contributions to an annual standard such as the 2012 annual $PM_{2.5}$ NAAQS. Compliance with an annual NAAQS depends on monitor readings throughout the year, including days with monitored ambient concentrations below the level of the NAAQS. For the 2012 annual $PM_{2.5}$ NAAQS, the annual mean is calculated as the mean of quarterly means. A high quarter can influence the mean for an entire year, which, in turn, can drive an elevated 3-year DV.

data produced by suitable monitors that are required to be submitted to AQS, or otherwise available to EPA, meeting the requirements of part 58 of this chapter including appendices A, C, and E shall be used in the DV (design value) calculations. Generally, EPA will only use such data if they have been certified by the reporting organization (as prescribed by § 58.15 of this chapter); however, data not certified by the reporting organization can nevertheless be used, if the deadline for certification has passed and EPA judges the data to be complete and accurate.”

PM_{2.5} Design Values and Total Mass Measurements - EPA calculated DVs based on air quality data for the most recent 3 consecutive calendar years of quality-assured, certified air quality data from suitable FEM/FRM/ARM monitoring sites in the EPA's Air Quality System (AQS). For this designations analysis, EPA used data for the 2011-2013 period (i.e., the 2013 design value), which are the most recent years with fully-certified air quality data. A monitor's DV is the metric or statistic that indicates whether that monitor attains a specified air quality standard. The 2012 annual PM_{2.5} NAAQS is met at a monitoring site when the 3-year average annual mean concentration is 12.0 micrograms per cubic meter (µg/m³) or less (e.g., 12.1 µg/m³ or greater is a violation). A DV is only valid if minimum data completeness criteria are met or when other regulatory data processing provisions are satisfied (See 40 CFR part 50 Appendix N). Table 2 identifies the current design value(s) (i.e., the 2013 DV) and the most recent three design values based on all monitoring sites in the area of analysis for the U.S. Virgin Islands intended unclassifiable area.⁷ In fact, the EPA concluded that there were no available design values for the St. Croix monitor, the only FRM monitor in the Virgin Islands, due to incomplete data. There are no other FEM/FRM/ARM monitoring sites in the Virgin Islands. St Thomas currently has a TEOM⁸ monitor⁹, which was most recently operational in 2008; however this monitor, by regulation¹⁰, cannot be used for designations purposes

Table 2. Virgin Islands Regulatory Monitor Design Values (all DV levels in µg/m³)

County, State	Monitor Site ID	State Recommends Nonattainment?	2009-2011 Design Value	2010-2012 Design Value	2011-2013 Design Value	2011 Complete Quarters	2012 Complete Quarters	2013 Complete Quarters
St. Croix, VI	780100012	No	Not Valid	Not Valid	Not Valid	0	4	0

Conclusion for the U.S. Virgin Islands Area

Based on the assessment described above and the fact that the air quality monitoring data from the St. Croix, VI regulatory monitor is incomplete, EPA intends to conclude that the entire Virgin Islands Territory should be designated unclassifiable. Because the current data are incomplete, EPA cannot determine based on available information whether the ambient air concentration of PM_{2.5} in this area is at, above, or below the NAAQS.

⁷ In certain circumstances, one or more monitoring locations within a monitoring network may not meet the network technical requirements set forth in 40 CFR 58.11(e), which states, "State and local governments must assess data from Class III PM_{2.5} FEM and ARM monitors operated within their network using the performance criteria described in table C-4 to subpart C of part 53 of this chapter, for cases where the data are identified as not of sufficient comparability to a collocated FRM, and the monitoring agency requests that the FEM or ARM data should not be used in comparison to the NAAQS. These assessments are required in the monitoring agency's annual monitoring network plan described in §58.10(b) for cases where the FEM or ARM is identified as not of sufficient comparability to a collocated FRM...."

⁸ Tapered element oscillating microbalance

⁹ TEOM monitors are not considered FEM, FRM, or ARM site, and could not be used for designations.

¹⁰ Appendix N to 40 CFR Part 50 – Interpretation of the National Ambient Air Quality Standards for PM_{2.5}