



Verification of Continued Attainment in Limited Maintenance Areas (2021)

Air Quality Program

Washington State Department of Ecology
Olympia, Washington

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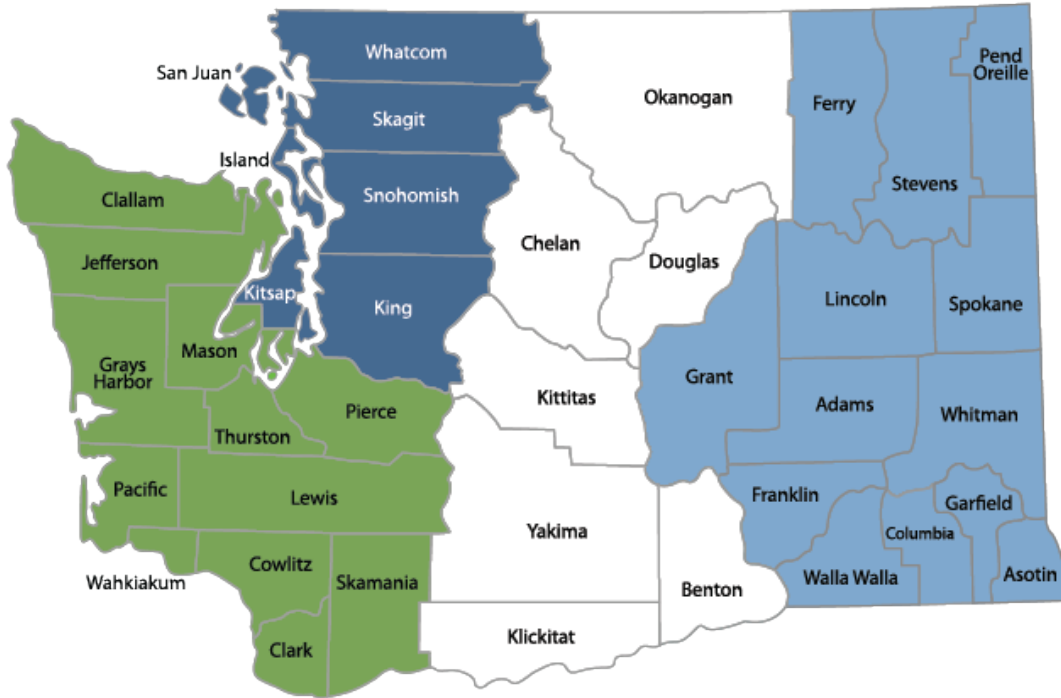
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Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 425-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400
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Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	3190 160th Ave SE Bellevue, WA 98008	425-649-7000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

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DEPARTMENT OF
ECOLOGY
State of Washington

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Executive Summary

This document summarizes the calculations for verification of continued attainment of National Ambient Air Quality Standards (NAAQS) in Washington’s Limited Maintenance Areas.

Maintenance Areas

Washington has ten maintenance areas for criteria pollutants. Only those areas that qualified for the Limited Maintenance Plan approach must submit verification documentation. These maintenance areas are marked with an (*). Maintenance areas demonstrate continued attainment of the NAAQS either through monitoring or through EPA-approved alternate methods. These methods are summarized in Table 1.

Table 1. Washington maintenance areas and methods of demonstrating NAAQS attainment

Maintenance Area (Pollutant)	End of Maintenance Period	NAAQS Attainment Method
Seattle (PM ₁₀)*	5/14/2021	Estimated PM ₁₀ from Seattle-Duwamish PM _{2.5} (530330057)
Kent (PM ₁₀)*	5/14/2021	Estimated PM ₁₀ from Kent-Central & James PM _{2.5} (530332004)
Tacoma (PM ₁₀)*	5/14/2021	Estimated PM ₁₀ from Tacoma-Alexander nephelometer PM _{2.5} (530530031)
Thurston County (PM ₁₀)*	12/4/2020	Estimated PM ₁₀ from Lacey-College St nephelometer PM _{2.5} (530670013)
Walla Walla (PM ₁₀)	9/26/2025	Kennewick-Metaline PM ₁₀ monitor (530050002) until 2017; Burbank-Maple St PM ₁₀ monitor (530710006) as of January 1, 2018
Spokane (PM ₁₀)*	8/30/2025	Spokane-Augusta PM ₁₀ monitor (530630021) until March 2021; Spokane-E Broadway Ave PM ₁₀ monitor (530630017) as of April 1, 2021
Yakima (PM ₁₀)	3/10/2025	Yakima-4 th Ave S PM ₁₀ monitor (530770009)
Tacoma (PM _{2.5})	3/12/2035	Tacoma-L St PM _{2.5} monitor (530530029)
Yakima (CO)	12/31/2022	Modeled CO vehicle emissions
Spokane (CO)*	8/30/2025	Modeled onroad, nonroad and residential wood combustion CO emissions

* indicates Limited Maintenance Areas where submission of verification documentation is required.

Thurston County PM₁₀ Maintenance Area

Note: As the Thurston County PM₁₀ 20-year maintenance period ended on December 4, 2020, this is the final report of continued attainment in the Thurston County Limited Maintenance Area.

As detailed in the 2nd PM₁₀ Maintenance Plan for Thurston County Washington, ORCAA submitted the design value estimates for the Lacey-College Street nephelometer site (530670013). The PM₁₀ concentrations were calculated from Bscat (light scatter reported by the nephelometer) using the formula $28.15 * Bscat + 5.92 = PM_{10} \mu g/m^3$. The formula was generated through linear regression analysis performed on daily averaged Bscat and 24-hour FRM gravimetric PM₁₀ measurements with an R² of 0.94.

Wildfire smoke incursions in 2017 and 2018 caused higher design values than reported in previous years, though they remained below the Limited Maintenance Plan threshold of 98 $\mu g/m^3$. The 2020 wildfire season had a far more severe impact on air quality in Thurston County. Wildfire smoke from eastern Washington, Oregon and California converged in western Washington, causing the highest PM₁₀ readings in decades.

- In 2020, the 24-hour PM₁₀ exceeded 110 $\mu g/m^3$ on September 11, 12, 13, 14, 15, and 16. These values controlled the Limited Maintenance Plan design values.
- September is clearly outside the window of influence of effective measures described in the Maintenance Plan and the contingency measure.
- Ecology has flagged the data for those six days as influenced by wildfires.

The contingency measure was designed to reduce pollution from woodstoves. It does not address wildfire air quality impacts; therefore, the contingency was not implemented.

The Limited Maintenance Plan design values are shown with and without the six Ecology-flagged data points.

Table 2. Thurston County 3-year and 5-year PM₁₀ design values with and without days flagged for wildfire influence.

	2016-2020 Design Value $\mu g/m^3$	Number of Data Points	2018-2020 Design Value $\mu g/m^3$	Number of Data Points
Full data set	114	1792	149	1085
Excluding flagged data	69	1786	74	1079

Design values less than 98 $\mu g/m^3$ demonstrate that the Thurston County Limited Maintenance Plan was appropriate and effective for controlling woodstove pollution.

Design values were determined as follows: Ecology provided the daily 24-hour NPM₁₀ averages for the two specified timespans. Table 6-1 contained in the PM₁₀ SIP Development Guidance

document specifies which value represents the design value for a given number of days. For 1792/1786 and 1085/1079 days, the design value is given by the sixth highest and the fourth highest values, respectively.

The 21 highest PM₁₀ concentrations in the 2016-2020 data set all occurred during the summer months. Value number 22 (36 µg/m³ PM₁₀), observed on January 1, 2016, was the highest concentration observed during the heating season.

Kent, Seattle and Tacoma PM₁₀ Maintenance Areas

Three- and five-year design values were calculated using the table lookup method and the statistical fit method outlined in the PM₁₀ SIP Development Guideline and The Kent, Seattle, and Tacoma PM₁₀ Limited Maintenance Plan. A 3-year PM₁₀ design value of 150 µg/m³ or below demonstrates continued compliance with the PM₁₀ NAAQS. A 5-year design value below 98 µg/m³ is required to qualify for the LMP approach. Since only PM_{2.5} concentrations have been measured during 2013-2020, daily PM₁₀ concentrations are modeled using two site-dependent linear relationships, one for summer (Apr-Sep) and one for winter (Oct-Mar), established for 1999-2007 when PM₁₀ and PM_{2.5} were recorded simultaneously at each site.

PM_{2.5} concentrations from Kent-Central & James (530332004), Seattle-Duwamish (530330057), and Tacoma-Alexander Ave (530530031) were used to assure continued compliance with the PM₁₀ NAAQS and to confirm continued eligibility for the LMP approach. The PM_{2.5} concentrations come from several instruments at each site. At all sites, Puget Sound Clean Air Agency (PSCAA) prioritizes instruments measuring PM_{2.5} concentrations with missing values in the following way: FEM BAM > FEM TEOM (method code 181) > FEM TEOM (method code 581) > nephelometer. While data at Kent and Seattle-Duwamish were primarily collected with FEM instruments, only a nephelometer has been in operation at Tacoma-Alexander Ave in 2013-2020.

In 2017, 2018 and 2020, the western United States and Canada experienced severe wildfire seasons, resulting in significant wildfire smoke impacts that caused numerous exceedances of the PM_{2.5} standard. Ecology placed informational flags (“i-flags”) in EPA’s Air Quality System (AQS) database data collected during these wildfire smoke events. Documentation supporting the exclusion of these values as exceptional events is provided in the “Consolidated 2018 Request for Exceptional Event Informational Flagging Memo” and “Informational Flagging Request for Wildfire Affected PM₁₀ and PM_{2.5} Exceedances in 2017” in the Appendix of Verification of Continued Attainment in Limited Maintenance Areas (2019), available from Ecology’s website at <https://fortress.wa.gov/ecy/publications/SummaryPages/1902015.html>, and in the Ecology memorandum “2020 Informational Flagging Request for Wildfire-Affected PM_{2.5}, Wildfire- and High Wind-Affected PM₁₀” included in the Appendix of this document.

The DVs presented in the tables below are calculated following two scenarios:

- **Scenario 1** (most conservative DV estimates): All modeled PM₁₀ concentrations were included without excluding wildfire smoke or other exceptions.

- **Scenario 2** (with wildfire smoke days omitted): Daily PM₁₀ concentrations from 2017, 2018, and 2020 i-flagged wildfire smoke days were excluded from the DV calculations.

Tables 2 and 3 below show 5-year DVs for Kent, Seattle and Tacoma and 95% confidence intervals from the lognormal fit calculation. The associated number in parentheses represents the DV obtained using the table-look-up method.

Table 3. 5-Year DVs - Scenario 1

	2017	2018	2019	2020
Kent	89±25 (82)	115±35 (118)	115±37 (118)	226±98 (214)
Seattle	72±11 (80)	119±45 (110)	117±46 (101)	216±104 (192)
Tacoma	93±39 (94)	163±69 (165)	163±70 (165)	234±92 (240)

Table 4. 5-Year DVs - Scenario 2

	2017	2018	2019	2020
Kent	54±6 (53)	62±12 (65)	60±13 (64)	54±13 (44)
Seattle	53±3 (56)	52±3 (53)	48±4 (48)	46±3 (46)
Tacoma	60±16 (55)	60±12 (58)	59±13 (58)	59±14 (57)

Five-year DVs less than 98 µg/m³ are required to qualify for the Limited Maintenance Plan. The most conservative scenario does not meet this qualification. Since the Tacoma site only has a nephelometer, this site is likely biased high as these instruments typically overestimate wildfire (and wood smoke) aerosols. However, scenario 2 is the more appropriate estimate and confirms continued eligibility for the LMP approach at the three Maintenance Areas excluding the unprecedented wildfire smoke events in 2017, 2018 and 2020.

Spokane County PM₁₀ Maintenance Area

The design values for the Spokane County Maintenance Area are based on FEM PM₁₀ monitoring data from the Spokane-Augusta monitoring site (530630021) in Spokane, Washington.

In 2017, 2018, and 2020, the western United States and Canada experienced severe wildfire seasons, resulting in significant wildfire smoke impacts that caused:

- Eight PM₁₀ exceedances on August 19 and 20, 2018 and September 12, 13, 14, 15, 16, and 18, 2020. The exceedances affect the LMP design value and the NAAQS design value.
- Four elevated PM₁₀ concentrations August 14, 15, and 23, 2018, and September 17, 2020, that are eligible for exclusion from LMP design value calculations following the

guidance in the EPA memorandum “Additional Methods, Determinations, and Analyses to Modify Air Quality Data Beyond Exceptional Events.”²

- Two elevated PM₁₀ concentrations, August 13 and 16, 2018, were initially flagged but not eligible for exclusion.

Ecology placed informational flags (“i-flags”) in EPA’s Air Quality System (AQS) database on all hourly PM₁₀ concentrations on the days listed above. Documentation supporting the exclusion of these values as exceptional events is provided in the “Consolidated 2018 Request for Exceptional Event Informational Flagging Memo” and “Informational Flagging Request for Wildfire Affected PM₁₀ and PM_{2.5} Exceedances in 2017” in the Appendix of Verification of Continued Attainment in Limited Maintenance Areas (2019), available from Ecology’s website at <https://fortress.wa.gov/ecy/publications/SummaryPages/1902015.html>, and in the Ecology memorandum “2020 Informational Flagging Request for Wildfire-Affected PM_{2.5}, Wildfire- and High Wind-Affected PM₁₀” included in the Appendix of this document. The LMP 5-year design value and NAAQS 3-year design value are shown with and without the Ecology i-flagged elevated PM₁₀ days.

LMP Design Value

A 5-year PM₁₀ design value below 98 µg/m³ demonstrates that the Spokane County Maintenance Area continues to qualify for the LMP approach.

Table 5. Spokane County Maintenance Area LMP Design Values

	2016-2020 LMP Design Value (DV)
DV with i-flagged data	224 µg/m ³
DV without i-flagged data ³	87 µg/m ³

NAAQS Design Value

A 3-year PM₁₀ design value at or below 1.0 expected exceedances demonstrates compliance with the PM₁₀ NAAQS. The design value is the expected number of annual 24-hour exceedances of 150 µg/m³, averaged over 3 years. The NAAQS design value is shown with and without the eight Ecology i-flagged PM₁₀ exceedances.

Table 6. Spokane County Maintenance Area NAAQS Design Values

	2018-2020 NAAQS Design Value (DV)
DV with i-flagged data	2.7 expected exceedances
DV without i-flagged data	0.0 expected exceedances

² *Additional Methods, Determinations, and Analyses to Modify Air Quality Data Beyond Exceptional Events* [Memorandum]. Research Triangle Park, NC: Environmental Protection Agency. Retrieved from https://www.epa.gov/sites/production/files/2019-04/documents/clarification_memo_on_data_modification_methods.pdf.

³ Eight PM₁₀ exceedances and four PM₁₀ elevated concentrations

The 2017, 2018, and 2020 wildfire smoke impacts generated at total of eight PM₁₀ exceedances. The Spokane County PM₁₀ LMP contingency measures in the LMP are for road dust, windblown dust, and solid fuel burning devices. The contingency measures do not address wildfire air quality impacts; therefore they have not been implemented.

Spokane County CO Maintenance Area

EPA approved an alternate method of verification of attainment of the CO NAAQS and qualification for the limited maintenance plan option under 40 CFR 58.14(C) (Federal Register # 81 FR 45417; July 14, 2016). Under this alternative, EPA considers the limited maintenance plan criteria met and continued verification of attainment of the CO NAAQS if the total of the three predominant CO emission source categories calculated as part of the triennial emissions inventory (onroad mobile, nonroad, and residential wood combustion) remain below the corresponding total of the 2002 emission inventory source categories approved at the time the Spokane-area was redesignated to attainment. SRCAA and Ecology will compare future year 2017, 2020 and 2023 triennial emission analysis results to the baseline 2002.

Verification of Attainment

Total emissions for the 2017 evaluation year were compared to the 2002 attainment year emissions. The 2017 evaluation year was lower than the attainment year; therefore, the Spokane CO maintenance area continues to qualify for the limited maintenance plan option and continued verification of attainment of the CO NAAQS. SRCAA and Ecology’s next analysis will be with the 2020 triennial emissions inventory.

Table 7. Spokane CO maintenance area total emissions (tons per year)

	Onroad	Nonroad	Residential Wood Combustion	Total
2002	48,878	23,795	7,199	80,872
2017	18,678	12,586	8,260	39,524

Wallula PM₁₀ Maintenance Area

The Wallula Maintenance Plan is not a Limited Maintenance Plan. Ecology submitted the Second Ten-Year Maintenance Plan for Particulate Matter (PM₁₀) for Wallula to EPA November 22, 2019, which was approved on June 1, 2020. Continued attainment of the PM₁₀ standard is demonstrated by the Burbank-Maple Street monitor as of January 2018. Please see the 2021 Ambient Air Monitoring Network Plan for the Wallula Maintenance Area compliance status.

Appendix. Maintenance Plan and Flagging Correspondence

To: Jill Schulte, Ecology

From: Robert Moody, ORCAA

Re: PM₁₀ Design Values for Thurston County, Washington 2016-2020

Date: February 19, 2021

This is the final report for the 2nd PM₁₀ Thurston County Maintenance Plan. As detailed in the 2nd PM₁₀ Maintenance Plan for Thurston County Washington, ORCAA is submitting the design value estimates for the Lacey-College Street nephelometer site (530670013). The PM₁₀ concentrations were calculated from the Bscat (light scatter reported by the nephelometer) using the formula $28.15 * Bscat + 5.92 = PM_{10} \mu g/m^3$. The formula was generated through linear regression analysis performed on daily averaged Bscat and 24-hour FRM gravimetric PM₁₀ measurements with an R² of 0.94.

Wildfire smoke incursions in 2017 and 2018 caused higher design values than reported in previous years though they remained below the Limited Maintenance Plan threshold of 98 $\mu g/m^3$. The 2020 wildfire season had a far more severe impact on air quality in Thurston County. Wildfire smoke from eastern Washington, Oregon and California converged in western Washington causing the highest PM₁₀ readings in decades.

- In 2020, the 24-hour PM₁₀ exceeded 110 $\mu g/m^3$ on September 11, 12, 13, 14, 15, and 16. These values controlled the Limited Maintenance Plan design values.
- September is clearly outside the window of influence of effective measures described in the Maintenance Plan and the contingency measure.
- Ecology has flagged the data for those six days as influenced by wildfires.

The contingency measure was designed to reduce pollution from woodstoves. It does not address wildfire air quality impacts; therefore, the contingency was not implemented.

The Limited Maintenance Plan design values are shown with and without the six Ecology-flagged data points.

	2016-2020 Design Value $\mu g/m^3$	Number of Data Points	2018-2020 Design Value $\mu g/m^3$	Number of Data Points
Full data set	114	1792	149	1085
Excluding flagged data	69	1786	74	1079

Design values less than 98 $\mu g/m^3$ demonstrates that the Thurston County Limited Maintenance Plan was appropriate and effective for controlling woodstove pollution.

Design values were determined as follows: Ecology provided the daily 24-hour NPM₁₀ averages for the two specified timespans. Table 6-1 contained in the PM₁₀ SIP Development Guidance document specifies which value represents the design value for a given number of days. For 1792/1786 and 1085/1079 days, the design value is given by the sixth highest and the fourth highest values, respectively.

The 21 highest PM₁₀ concentrations in the 2016-2020 data set all occurred during the summer months. Value number 22 (36 µg/m³ PM₁₀), observed on January 1, 2016, was the highest concentration observed during the heating season.

DATE: February 26, 2021

TO: Jill Schulte

CC: Erik Saganić

FROM: Clém Miège

SUBJECT: PM₁₀ Design Values (2017–2020) for Kent, Seattle, and Tacoma PM₁₀ Maintenance Areas

Dear Jill Schulte,

Please find in this memo a compilation of five-year PM₁₀ design values (DVs) calculated for Kent (AQS Site ID: 53 033 2004), Seattle–Duwamish (53 033 0057), and Tacoma–Tideflats (53 053 0031) PM₁₀ Maintenance Areas for the last four years (2017–2020). These DVs have been calculated using a table-look-up method and a statistical-fit method, both described in the SIP Development Guideline¹. Since only PM_{2.5} concentrations have been measured during 2013–2020, daily PM₁₀ concentrations are modeled using two site-dependent linear relationships (one for summer (Apr–Sep) and one for winter (Oct–Mar)) established for 1999–2007 when PM₁₀ and PM_{2.5} were recorded simultaneously at each site.

The PM_{2.5} concentrations come from several instruments at each site. At all sites, we prioritize instruments measuring PM_{2.5} concentrations with missing values in the following way: FEM BAM > 1400ab/8500 FEM TEOM > 1405 FEM TEOM > nephelometer. While Kent and Seattle–Duwamish have most of their data coming from TEOM (2013–2018) and BAM (2018–2020), only a nephelometer has been in operation at Tacoma–Tideflats for 2013–2020.

The DVs presented in the table below are calculated following two scenarios:

- **Scenario 1** (most conservative DV estimates): All modeled PM₁₀ concentrations are included without excluding wildfire smoke or other exceptions.
- **Scenario 2** (with wildfire smoke days omitted): Daily PM₁₀ concentrations are excluded in the DV calculation during 2017, 2018 & 2020 wildfire–smoke impacted days (I–Flags^{2–3} for 2017 & 2019 and best judgement for 2020 since the I–Flag memo is not yet available).

- 1 -

Table 1: 5-year PM₁₀ DVs for Kent, Seattle and Tacoma. DV associated with an uncertainty interval come from a lognormal fit to the data and its 95% prediction interval. The associated number in between parentheses represents the DV obtained using the table-look-up method.

Sites:	5-yr PM ₁₀ DVs - Scenario 1				5-yr PM ₁₀ DVs - Scenario 2			
	2017	2018	2019	2020	2017	2018	2019	2020
Kent	89±25 (82)	115±35 (118)	115±37 (118)	226±98 (214)	54±6 (53)	62±12 (65)	60±13 (64)	54±13 (44)
Seattle	72±11 (80)	119±45 (110)	117±46 (101)	216±104 (192)	53±3 (56)	52±3 (53)	48±4 (48)	46±3 (46)
Tacoma	93±39 (94)	163±69 (165)	163±70 (165)	234±92 (240)	60±16 (55)	60±12 (58)	59±13 (58)	59±14 (57)

Five-year PM₁₀ DVs less than 98 µg/m³ are required to qualify for the Limited Maintenance Plan⁴ (LMP). The most conservative scenario doesn't meet this qualification. Since the Tacoma site only has a nephelometer, this site is likely biased high as these instruments typically overestimate wildfire (and wood smoke) aerosols. However, scenario 2 that removes the unprecedented wildfire smoke impact in 2017, 2018 and 2020 confirms continued eligibility for the LMP approach at our three Maintenance Areas.

Please let us know if you have any questions, thank you and all the best,

Clém Miège

References:

- ¹PM₁₀ SIP Development Guideline – United States Environmental Protection Agency. June 1987. EPA-450/2-86-001
- ²Informational Flag request for 2017 Wildfire Affected Exceedances – WA Dept. of Ecology. Flagging Memo. Feb 2018.
- ³Informational Flag request for 2018 Wildfire Affected Exceedances – WA Dept. of Ecology. Flagging Memo. Feb 2019

Dates excluded at each site:

Date	Site		
	Duwamish	Kent	Tacoma
8/2/2017	x	x	x
8/3/2017	x	x	x
8/4/2017	x	x	x
8/7/2017	x	x	x
8/8/2017	x	x	x
8/9/2017	x	x	x
8/10/2017	x	x	x
9/5/2017	x	x	x
9/6/2017	x	x	x
9/7/2017	x	x	x
8/14/2018	x	x	x
8/15/2018	x	x	x
8/19/2018		x	x
8/20/2018	x	x	x
8/21/2018	x	x	x
8/22/2018	x	x	x
8/23/2018	x		
8/24/2018	x		x
8/25/2018	x		
9/7/2020	x	x	x
9/8/2020	x	x	x
9/9/2020	x	x	x
9/10/2020	x	x	x
9/11/2020	x	x	x
9/12/2020	x	x	x
9/13/2020	x	x	x
9/14/2020	x	x	x
9/15/2020	x	x	x
9/16/2020	x	x	x
9/17/2020	x	x	x
9/18/2020	x	x	x
9/19/2020	x	x	x

Note that August 3rd and August 9th of 2017 were added to the list from the I-Flag memo as these days were not included as they were based solely on Darrington, which missed a sample and was not listed in the I-Flag memo. These days were also clearly wildfire smoke impacted days based on satellite observations. For 2020, since the I-flag memo has not been made available yet, we used our best judgement based on PM_{2.5} data and satellite observations to identify the wildfire smoke impacted days.

⁴Memorandum: Limited Maintenance Plan Option for Moderate PM₁₀ Nonattainment Areas. U.S. EPA. Aug 2001.



Date: March 31, 2021
 To: Jill Schulte, Beth Friedman, Sean Lundblad
 CC: Laurie Hulse-Moyer, Jacob Berkley, Scott Windsor, Mark Rowe
 From: Margee Chambers *Margee Chambers*
 Subject: Spokane County PM₁₀ and CO Design Values for Air Monitoring Network Report

PM₁₀ Design Values

Included in this memo are the 5-year and 3-year design values for the Spokane County Maintenance Area, in Spokane, Washington. The design values are based on FRM and FEM 24-hour PM₁₀ monitoring data from the Augusta Avenue site (530630021), in Spokane, Washington.

In 2018 and 2020, the western United States and Canada experienced severe wildfire seasons, resulting in significant wildfire smoke impacts that caused:

- Eight PM₁₀ exceedances on August 19 and 20, 2018 and September 12, 13, 14, 15, 16, and 18, 2020. The exceedances affect the LMP design value and the NAAQS design value.
- Four PM₁₀ elevated concentrations August 14, 15, and 23, 2018, and September 17, 2020, that are eligible for exclusion. The elevated concentrations have regulatory significance for the area to meet the LMP design value.
- Two PM₁₀ elevated concentrations, August 13 and 16, 2018, were initially flagged but not eligible for exclusion.

LMP Critical Design Value:

A 5-year PM₁₀ critical design value below 98 µg/m³ demonstrates that the Spokane County Maintenance Area continues to qualify for the limited maintenance plan (LMP) approach. The LMP critical design value is shown with and without the eight Ecology i-flagged PM₁₀ exceedance data and four PM₁₀ high concentration data.

	2016-2020 LMP Design Value (DV)
DV with i-flagged data	224 µg/m ³
DV without i-flagged data ¹	87 µg/m ³

¹ 8 PM₁₀ exceedances and 4 PM₁₀ elevated concentrations

NAAQS Design Value:

A 3-year PM₁₀ design value at or below 1.0 demonstrates compliance with the PM₁₀ National Ambient Air Quality Standard (NAAQS). The design value is the number of 24-hour exceedances of 150 µg/m³, averaged over three years. The NAAQS design value is shown with and without the eight Ecology i-flagged PM₁₀ exceedance data.

	2018-2020 NAAQS Design Value (DV)
DV with i-flagged data	2.7
DV without i-flagged data ²	0.0

The 2018 and 2020 wildfire smoke impacts generated a total of 8 PM₁₀ exceedances. The Spokane County PM₁₀ LMP contingency measures in the LMP are for road dust, windblown dust, and solid fuel burning devices. The contingency measures do not address wildfire air quality impacts; therefore, they have not been implemented.

CO Design Value

EPA approved an alternate method of verification of attainment of the CO NAAQS and qualification for the limited maintenance plan option under 40 CFR 58.14(C) (Federal Register # 81 FR 45417; July 14, 2016). Under this alternative, EPA considers the limited maintenance plan criteria met and continued verification of attainment of the CO NAAQS if the total of the three predominate CO emission source categories calculated as part of the triennial emissions inventory (onroad mobile, nonroad, and residential wood combustion) remain below the corresponding total of the 2002 emission inventory source categories approved at the time the Spokane-area was redesignated to attainment. SRCAA and Ecology will compare future year 2017, 2020 and 2023 triennial emission analysis results to the baseline 2002.

Verification of Attainment:

Total emissions for the 2017 evaluation year were compared to the 2002 attainment year emissions. The 2017 evaluation year was lower than the attainment year; therefore, the Spokane CO maintenance area continues to qualify for the limited maintenance plan option and continued verification of attainment of the CO NAAQS. SRCAA and Ecology's next analysis will be with the 2020 triennial emissions inventory.

Spokane County CO Emissions in Tons per Year

Year	Onroad	Nonroad	Residential Wood Combustion	Total
2002	49,878 tons/yr	23,795 tons/yr	7,199 tons/yr	80,872 tons/yr
2017	18,678 tons/yr	12,586 tons/yr	8,260 tons/yr	39,524 tons/yr

² 8 Ecology i-flagged PM₁₀ exceedance data

DEPARTMENT OF ECOLOGY
Air Quality Program

May 7, 2021

TO: Beth Friedman

FROM: Jacob Berkey

CC: Ecology: Martha Hankins, Jason Alberich, Laurie Hulse-Moyer, Farren Herron-Thorpe, Jill Schulte and Melanie Forster
Benton Clean Air Agency: Robin Priddy
Northwest Clean Air Agency: Agata McIntyre, Lyn Tober
Olympic Regional Clean Air Agency: Allie Feldt
Puget Sound Clean Air Agency: Kathy Strange, Betsy Wheelock
Southwest Clean Air Agency: Crystal Moore
Spokane Clean Air Agency: Margee Chambers
Yakima Clean Air Agency: Keith Hurley and Hasan Tahat

SUBJECT: 2020 Informational flagging request for Wildfire affected PM2.5, Wildfire and high wind affected PM 10.

The Exceptional Event Rule (EER) provides two data qualifier codes:

- Request Exclusion flags (R).
- Informational Only Flags (I).

Agencies use I flags for informational data and R flags for data points intended for an Air Quality System (AQS) exclusion request. I flags are initially used to identify values believed to have been affected by an event, yet may not be ready for exceptional events demonstration or exclusion request.

During September 7 through 19 2020, the State of Washington experienced significant wildfire smoke events, which blanketed the state and resulted in exceedances of PM2.5 and PM10. The contributing wildfires were in California, and Oregon, with additional wildfires burning here in Washington. Yakima County experienced additional wildfire smoke impact from September 2 through September 4.

For more information about these events, see the Washington State Smoke Blog:
<https://wasmoke.blogspot.com/2020/09/smoky-siege-look-back-at-smoke-storm-of.html>

Kennewick experienced three days in October related to high-wind dust. These occurred on October 16, 18, and 30, 2020. Our monitoring data at Kennewick shows these events. Here are the recorded maximum wind speeds for those dates:

10/16/2020: 32.1 mph

10/18/2020: 36.9 mph

10/30/2020: 31.1 mph

- This link from Department of Ecology shows our outreach efforts in regards to the wind event: <https://twitter.com/ecyspokane/status/1322295179928170496>
- This link is outreach from the National Weather Service regarding the event: <https://twitter.com/NWSPendleton/status/1322124202246361090>
- To track daily conditions during the time of the wind event check here: <http://mesonet.agron.iastate.edu/wx/afos/list.phtml?source=OTX&year=2020&month=10&day=7&drange=yes&year2=2020&month2=10&day2=23&view=prod&order=asc>
 - October 16: <http://mesonet.agron.iastate.edu/wx/afos/p.php?pil=AFDOTX&e=202010162318>
 - October 18: <http://mesonet.agron.iastate.edu/wx/afos/p.php?pil=AFDOTX&e=202010180505>
 - October 30: <http://mesonet.agron.iastate.edu/wx/afos/p.php?pil=AFDOTX&e=202010301805>

To meet the EER requirements, Ecology's Air Quality Program Policy and Planning Section requests you to place an I flag on all data in AQS associated with the wildfire and high wind affected PM2.5 and PM10 data during 2020.