Prevention of Significant Deterioration

Increment Consumption Baseline Areas & Dates

For Oklahoma

Prepared by the Engineering Section of the Permitting Unit
Air Quality Division
Oklahoma Department of Environmental Quality

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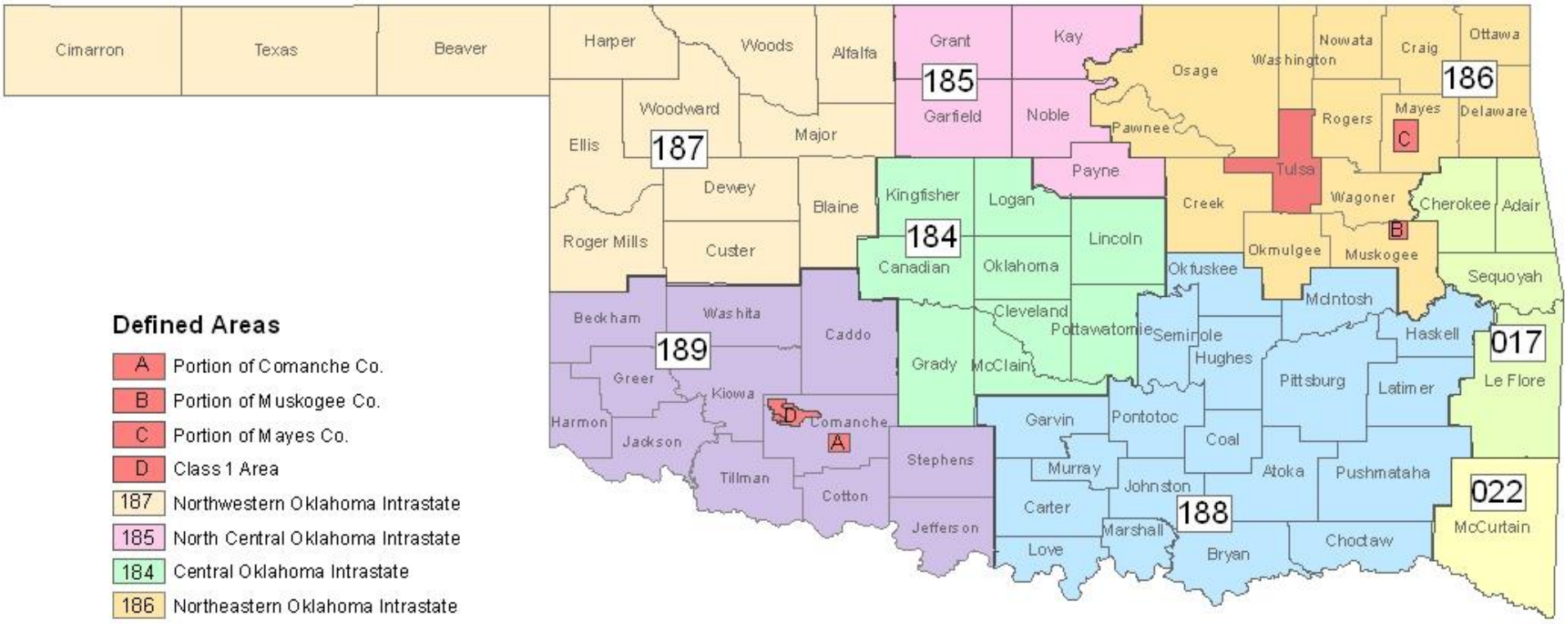
Air Quality Control Regions



Defined Areas

A	Portion of Comanche Co.
B	Portion of Muskogee Co.
C	Portion of Mayes Co.
D	Class 1 Area
187	Northwestern Oklahoma Intrastate
185	North Central Oklahoma Intrastate
184	Central Oklahoma Intrastate
186	Northeastern Oklahoma Intrastate
017	Metropolitan Fort Smith Interstate
022	Shreveport-Texarkana-Tyler Interstate
188	Southeastern Oklahoma Intrastate
189	Southwestern Oklahoma Intrastate

DEQ OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Executive Summary

The Prevention of Significant Deterioration (PSD) program is a construction permit program that establishes the maximum allowable increase in the ambient impacts of SO_2, PM_{10}, NO_2, and $PM_{2.5}$ above the baseline concentration. The maximum allowable increases in ambient impacts are referred to as increments and are established in Oklahoma Administrative Code (OAC), Title 252, Chapter 100-3-4. Baseline concentration in general means the ambient concentration of a specific pollutant that exists in a baseline area on the baseline date. Baseline areas are defined during the state attainment status designation process for each pollutant for which a National Ambient Air Quality Standard (NAAQS) is promulgated. For each NAAQS, the state defines each baseline area within the state and then designates those baseline areas as attainment, unclassifiable, or non-attainment. The baseline areas are defined and designated within 40 CFR Part 81. After the baseline areas have been designated, the baseline dates for each of the designated baseline areas can be established. There are two baseline dates: the major source baseline date and the minor source baseline date. The major source baseline date is the date after which all PSD major sources affect the amount of increment available. The minor source baseline date is the date after which all minor sources affect the amount of increment available. The major source baseline date is established by regulation for each pollutant. The minor source baseline date is established as the date of submittal of a complete PSD application for a facility located within the baseline area or impacting the baseline area after the trigger date. After the baseline date, emission increases, emission decreases, and modifications at facilities consume and expand the amount of increment available.

Increments or the allowable increase in pollutant concentrations are different depending on the pollutant and how the baseline area is classified. There are three different classifications for baseline areas: Class I, Class II, and Class III. Increments for Class I areas, such as National Parks and Wilderness Areas, are the lowest since these areas are afforded the most protection. Increments for Class II areas are the second lowest and increments for Class III areas are the highest. Oklahoma has one Class I area (Wichita Mountains Wildlife Refuge) and the remainder of Oklahoma is classified as Class II per 40 CFR § 52.21(g)(1) and § 162(b) of the Federal Clean Air Act. Even though the increments establish the maximum allowable increase in ambient impacts, the air quality cannot deteriorate beyond the concentration allowed by the applicable NAAQS, even if all of the allowable increment has not been consumed.

This guidance addresses the applicable rules and regulations related to increment such as baseline area, baseline date, and baseline concentration. The Air Quality Control Regions (AQCR) illustration identifies the AQCR, counties, and portions of counties that are the established baseline areas within the state of Oklahoma. Specific portions of counties and other areas which make up special baseline areas are further defined within the guidance. Finally, the major and minor baseline dates are defined and determined for each baseline area so that the baseline concentration and amount of increment available can be tracked and evaluated.

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Background

Prevention of Significant Deterioration (PSD)

PSD is a construction permit program applicable to construction of any new PSD major source or modification of any existing PSD major source. Major for the purposes of PSD is defined in Oklahoma Administrative Code Title 252, Chapter 100, Subchapter 8 (OAC 252:100-8), Part 9. Once a facility or project has been determined to be subject to the requirements of PSD (i.e. emissions are greater than the PSD major source thresholds or the significant emission rates (SER)), they must obtain a pre-construction permit prior to beginning construction or modification. The facility or project is only subject to PSD for those pollutants for which the emission increases are greater than either the PSD major source thresholds or the SER. The applicable PSD SER are listed below in Table 1.

Table 1. PSD Significance Emission Rates[1]

Pollutants	TPY
SO_2	40
PM_{10}	15
NO_2	40
$PM_{2.5}$ (Direct Emissions)	10
NO_2 (As Precursor)	40
SO_2 (As Precursor)	40

[1] - Only pollutants w/increments are included.

The applicant and the permit have to address all applicable requirements related to PSD for those pollutants which exceed the SER including review of the ambient impacts from the emission increases related to the construction or modification. The ambient impacts from the emission increases are addressed through air dispersion modeling.

Using air dispersion modeling, the emission increases, decreases or modifications for the facility or project are modeled to determine if the ambient impacts are greater than the significant impact levels (SIL). If the ambient impacts from the emission increases are greater than the SIL, the facility is required to conduct a NAAQS analysis and an increment analysis to ensure that the ambient impacts from the facility are below the NAAQS and increments. If the ambient impacts are below the SIL, the emission increases are determined to not cause or contribute to a violation of the NAAQS or Increment, as long as the current background plus the SIL do not exceed the NAAQS. The SIL are listed below in Table 2.

Table 2. SIL (µg/m^3)

	PM_{10}		SO_2			NO_2	$PM_{2.5}$[3]	
	24-hr	Annual	3-hr	24-hr	Annual	Annual	24-hr	Annual
Class I[1]	0.3	0.2	1.0	0.2	0.1	0.1	0.07	0.06
Class II / III[2]	5.0	1.0	25	5.0	1.0	1.0	1.2	0.3

[1] - Proposed July 23, 1996, Federal Register (Volume 61, No. 142, Page 38249).

[2] - 40 CFR Part 51, Subpart I, § 51.165(b)(2) [Exceeds].

[3] - [Equals or exceeds]

NAAQS analyses include modeling of the applicable facility and nearby sources and take into account background concentrations. Increment analyses only include modeling of the emission increases and or decreases that have occurred since the baseline dates and that consume or expand increment. This guidance will only address the issues related to increment analyses such as: where are the baseline areas, when were the baseline dates established, and what is the baseline concentration or how to evaluate the available increment for each baseline area.

PSD increments are the maximum allowable increases in ambient air concentrations that may occur above a baseline concentration for a specific pollutant, averaging period, and type of baseline area. Each designated baseline area is classified as Class I, Class II, or Class III. The classification of the baseline area determines the amount of allowable increment for each baseline area and pollutant. The applicable increments for each baseline area classification, pollutant, and averaging period are shown below in Table 3.

Table 3. Increments (OAC 252:100-3-4(b)) (µg/m^3)

	PM_{10}		SO_2			NO_2	$PM_{2.5}$	
	24-hr	**Annual**	**3-hr**	**24-hr**	**Annual**	**Annual**	**24-hr**	**Annual**
Class I	8	4	25	5	2	2.5	2	1
Class II	30	17	512	91	20	25	9	4
Class III	60	34	700	182	40	50	18	8

The applicable regulatory definitions for baseline area, baseline date, and baseline concentration are listed below. These definitions provide a basis for further discussion and for establishing and addressing the issues related to baseline area designation, establishment of baseline dates, and increment analyses.

"Baseline area" means any intrastate areas (and every part thereof) designated as attainment or unclassifiable under section 107(d)(1)(A)(ii) or (iii) of the Act [Federal Clean Air Act as amended] in which the major source or major modification establishing the minor source baseline date would construct or would have an air quality impact for the pollutant for which the baseline date is established, as follows: ≥ 1 µg/m^3 (annual average) for SO_2, NO_2, or PM_{10}; or ≥ 0.3 µg/m^3 (annual average) for $PM_{2.5}$.

(A) Area redesignations under section 107(d)(1)(A)(ii) or (iii) of the Act cannot intersect or be smaller than the area of impact of any major stationary source or major modification which:
  (i) establishes a minor source baseline date; or
  (ii) is subject to 40 CFR 52.21 or OAC 252:100-8, Part 7, and would be constructed in the same state as the state proposing the redesignation.

(B) Any baseline area established originally for the TSP increments shall remain in effect and shall apply for purposes of determining the amount of available PM_{10} increments, except that such baseline area shall not remain in effect if the Director rescinds the corresponding minor source baseline date in accordance with paragraph (D) of the definition of "baseline date."

"Baseline date" means:

(A) Major source baseline date means:
  (i) In the case of PM_{10} and SO_2, January 6, 1975;
  (ii) In the case of NO_2, February 8, 1988; and
  (iii) In the case of $PM_{2.5}$, October 20, 2010.

(B) Minor source baseline date means the earliest date after the trigger date on which a major stationary source or major modification (subject to 40 CFR 52.21 or OAC 252:100-8, Part 7) submits a complete application. The trigger date is:
  (i) In the case of PM_{10} and SO_2, August 7, 1977;
  (ii) In the case of NO_2, February 8, 1988; and
  (iii) In the case of $PM_{2.5}$, October 20, 2011.

(C) The baseline date is established for each pollutant for which increments or other equivalent measures have been established if:
  (i) the area in which the proposed source or modification would construct is designated as attainment or unclassifiable under section 107(d)(1)(A)(ii) or (iii) of the Act for the pollutant on the date of its complete application under 40 CFR 52.21 or under OAC 252:100-8, Part 7; and
  (ii) in the case of a major stationary source, the pollutant would be emitted in significant amounts, or, in the case of a major modification, there would be a significant net emissions increase of the pollutant.

(D) Any minor source baseline date established originally for the TSP increments shall remain in effect and shall apply for purposes of determining the amount of available PM_{10} increments, except that the Director may rescind any such minor source baseline date where it can be shown, to the satisfaction of the Director, that the emissions increase from the major stationary source, or the net emissions increase from the major modification, responsible for triggering that date did not result in a significant amount of PM_{10} emissions.

"Baseline concentration" means that ambient concentration level that exists in the baseline area at the time of the applicable minor source baseline date.

(A) A baseline concentration is determined for each pollutant for which a minor source baseline date is established and shall include:
  (i) the actual emissions representative of sources in existence on the applicable minor source baseline date, except as provided in (B) of this definition.
  (ii) the allowable emissions of major stationary sources that commenced construction before the major source baseline date, but were not in operation by the applicable minor source baseline date.

(B) The following will not be included in the baseline concentration and will affect the applicable maximum allowable increase(s):
  (i) actual emissions from any major stationary source on which construction commenced after the major source baseline date; and,
  (ii) actual emissions increases and decreases at any stationary source occurring after the minor source baseline date.

Currently, increments have only been established for the following pollutants and averaging periods: PM_{10} (annual & 24-hour), SO_2 (annual, 24-hour, & 3-hour), NO_2 (annual), and $PM_{2.5}$ (annual & 24-hour). For each of these pollutants, the applicable baseline areas have to be defined so that the baseline dates for each area and pollutant can be determined as it is triggered by submittal of a PSD application which has a significant emission increase or significant net emission increase for the applicable pollutant.

The baseline areas are defined during the designation process for each NAAQS. For each pollutant, the baseline areas are determined by their designation within 40 CFR Part 81. For TSP/PM_{10}, the baseline areas were defined as the AQCR, applicable county (Tulsa County Only), or those portions of designated counties within a specific AQCR. For SO_2 and NO_2, the baseline areas were defined as the AQCR. For $PM_{2.5}$, the baseline areas were defined as each county within an AQCR.

To fully understand how and when increment is consumed or expanded, baseline date which is made up of three different dates related to baseline areas, must be explained. In chronological order, these dates are as follows:

- The major source baseline date;
- The trigger date; and
- The minor source baseline date.

The **major source baseline date** is the date after which actual emissions associated with construction of a PSD major source or modification of an existing PSD major source affect the amount of available increment. The **trigger date** is earliest date, after the major source baseline date, after which the minor source baseline date may be established. The major source baseline dates and trigger dates for the different pollutants are defined in Sections (A) and (B) in the definition of baseline date as indicated above. The **minor source baseline date** is the earliest date after the trigger date on which a complete application for a PSD major stationary source or modification of a PSD major source is received by the reviewing agency (EPA reviewed Oklahoma's PSD applications until 1984). A complete PSD application only triggers the minor source baseline date for a particular pollutant if the proposed emission increases for that pollutant are greater than the SER. When the minor source baseline date is established for a designated area, the baseline concentration is established and actual emission increases and decreases from minor sources and major sources affect the amount of available increment.

The first type of baseline area is AQCR. Each AQCR in the United States was originally defined by EPA and promulgated in 40 CFR Part 81. The AQCR within the state of Oklahoma are listed below. Each ACQR consists of the territorial area encompassed by the boundaries of the following jurisdictions or described area:

017 - Metropolitan Fort Smith Interstate Air Quality Control Region [40 CFR § 81.63]
In the State of Oklahoma: Adair County, Cherokee County, Le Flore County, Sequoyah County.

022 - Shreveport-Texarkana-Tyler Interstate Air Quality Control Region [40 CFR § 81.94]
In the State of Oklahoma: McCurtain County.

184 - Central Oklahoma Intrastate Air Quality Control Region [40 CFR § 81.47]
In the State of Oklahoma: Canadian County, Cleveland County, Grady County, Lincoln County, Logan County, Kingfisher County, McClain County, Oklahoma County, Pottawatomie County.

185 - North Central Oklahoma Intrastate Air Quality Control Region [40 CFR § 81.124]
In the State of Oklahoma: Garfield County, Grant County, Kay County, Noble County, Payne County.

186 - Northeastern Oklahoma Intrastate Air Quality Control Region [40 CFR § 81.79]
In the State of Oklahoma: Craig County, Creek County, Delaware County, Mayes County, Muskogee County, Nowata County, Okmulgee County, Osage County, Ottawa County, Pawnee County, Rogers County, Tulsa County, Wagoner County, Washington County.

187 - Northwestern Oklahoma Intrastate Air Quality Control Region [40 CFR § 81.126]
In the State of Oklahoma: Alfalfa County, Beaver County, Blaine County, Cimarron County, Custer County, Dewey County, Ellis County, Harper County, Major County, Roger Mills County, Texas County, Woods County, Woodward County.

188 - Southeastern Oklahoma Intrastate Air Quality Control Region [40 CFR § 81.123]
In the State of Oklahoma: Atoka County, Bryan County, Carter County, Choctaw County, Coal County, Garvin County, Haskell County, Hughes County, Johnston County, Latimer County, Love County, McIntosh County, Marshall County, Murray County, Okfuskee County, Pittsburg County, Pontotoc County, Pushmataha County, Seminole County.

189 - Southwestern Oklahoma Intrastate Air Quality Control Region [40 CFR § 81.125]
In the State of Oklahoma: Beckham County, Caddo County, Comanche County, Cotton County, Greer County, Harmon County, Jackson County, Jefferson County, Kiowa County, Stephens County, Tillman County, Washita County.

In compliance with section 107(d)(1)(A)(ii) or (iii) of the Act and 40 CFR § 81.300(b), the designated areas which are listed as attainment ("better than national standards") or unclassifiable ("cannot be classified") represent potential baseline areas or portions of baseline areas which are used in determining compliance with maximum allowable increases (increments) in concentrations of the respective pollutants for PSD. EPA has replaced the NAAQS for TSP with a NAAQS for PM_{10}. However, the TSP area designations remain in effect until the EPA determines that the designations are no longer necessary for implementing the increment. The Class I area in Oklahoma is itself defined separately for each pollutant from all of the other baseline areas but is triggered when the AQCR within which it is located is triggered.

Attainment or unclassifiable areas for Oklahoma are designated under 40 CFR § 81.337 and are listed below for those pollutants for which an increment has been established. The portions of specific counties identified within AQCR 186 and 189 for TSP are not described in 40 CFR Part 81. These areas were proposed in the original state designation letters that supported the designation of these areas as "cannot be classified" or "does not meet primary standards." When the designations were published in the original Federal Register these areas were not included in the publication because they were considered too lengthy. Since the description of these areas only had to do with the designation process, the description of some of the areas did not become part of the State Implementation Plan (SIP). Only those areas that had been originally designated as "does not meet primary standards" (e.g. portions of Mayes County) were described within the SIP.

Table 4. Oklahoma TSP/PM_{10} Designations

Designated Area	Does Not Meet Primary Standards	Does Not Meet Secondary Standards	Cannot Be Classified	Better Than National Standards
AQCR 017				X
AQCR 022				X
AQCR 184				X
AQCR 185				X
AQCR 186				
Tulsa County			X	
Portions of Muskogee County[1]			X	
Portions of Mayes County[2]			X	
Remainder of AQCR				X
AQCR 187				X
AQCR 188				X
AQCR 189				
Portion of Comanche County[3]			X	
Remainder of AQCR				X

[1] That portion of Muskogee County enclosed by a line from the SW corner of Section 3, Township 14N, Range 18E; proceeding eastward to the SE corner of Section 4, Township 14N, Range 19E; northward to the NE corner of Section 4, Township 15N, Range 19E; westward to NW corner of Section 3, Township 15N, Range 18E; southward to point of origin. [43 FR 8962 (3/3/1978)]

[2] That portion of Mayes County enclosed by a line from the SW corner of Section 23, Township 20N, Range 18E; eastward to the SE corner of Section 19, Township 20N, Range 20E; northward to NE corner of Section 30, Township 22N, Range 20E; westward to NW corner of Section 26, Township 22N, Range 18E; southward to point of origin. [43 FR 8962 (3/3/1978) & 40412 (9/11/1978)]
[Originally Designated "Does not Meet Primary Standards" & also described in April 2, 1979, SIP Submittal: Chapter 4, Part 2, Total Suspended Particulates, Section I (3) and approved in 44 FR 09741 (2/13/1980)]

[3] That portion of Comanche County enclosed by a line from the SW corner of Section 21, Township 1N, Range 12W; eastward to the SE corner of Section 21, Township 1N, Range 11W; northward to the NE corner of Section 21, Township 2N, Range 11W; westward to the NW corner of Section 21, Township 2N, Range 12W; southward to point of origin. [43 FR 8962 (3/3/1978)]

Table 5. Oklahoma SO_2 (1971 Primary & Secondary Standards) Designations

Designated Area	Does Not Meet Primary Standards	Does Not Meet Secondary Standards	Cannot Be Classified	Better Than National Standards
AQCR 017				X
AQCR 184				X
AQCR 185				X
AQCR 186				X
AQCR 187				X
AQCR 188				X
AQCR 189				X

Table 6. Oklahoma NO_2 (1971 Annual Standard) Designations

Designated Area	Does Not Meet Primary Standards	Cannot Be Classified or Better Than National Standards
AQCR 017		X
AQCR 184		X
AQCR 185		X
AQCR 186		X
AQCR 187		X
AQCR 188		X
AQCR 189		X

Table 7. Oklahoma $PM_{2.5}$ (Annual & 24-hour NAAQS) Designations

Designated area	Designation	
	Date[1]	Type
AQCR 017:		
Adair County		Unclassifiable/Attainment
Cherokee County		Unclassifiable/Attainment
Le Flore County		Unclassifiable/Attainment
Sequoyah County		Unclassifiable/Attainment
AQCR 022:		
McCurtain County		Unclassifiable/Attainment
AQCR 184:		
Cleveland County		Unclassifiable/Attainment
Oklahoma County		Unclassifiable/Attainment
Canadian County		Unclassifiable/Attainment
Grady County		Unclassifiable/Attainment
Kingfisher County		Unclassifiable/Attainment
Lincoln County		Unclassifiable/Attainment

Table 7. Oklahoma $PM_{2.5}$ (Annual & 24-hour NAAQS) Designations

Designated area	Designation	
	Date[1]	Type
Logan County		Unclassifiable/Attainment
McClain County		Unclassifiable/Attainment
Pottawatomie County		Unclassifiable/Attainment
AQCR 185:		
Garfield County		Unclassifiable/Attainment
Grant County		Unclassifiable/Attainment
Kay County		Unclassifiable/Attainment
Noble County		Unclassifiable/Attainment
Payne County		Unclassifiable/Attainment
AQCR 186:		
Craig County		Unclassifiable/Attainment
Creek County		Unclassifiable/Attainment
Delaware County		Unclassifiable/Attainment
Mayes County		Unclassifiable/Attainment
Muskogee County		Unclassifiable/Attainment
Nowata County		Unclassifiable/Attainment
Okmulgee County		Unclassifiable/Attainment
Osage County		Unclassifiable/Attainment
Ottawa County		Unclassifiable/Attainment
Pawnee County		Unclassifiable/Attainment
Rogers County		Unclassifiable/Attainment
Tulsa County		Unclassifiable/Attainment
Wagoner County		Unclassifiable/Attainment
Washington County		Unclassifiable/Attainment
AQCR 187:		
Alfalfa County		Unclassifiable/Attainment
Beaver County		Unclassifiable/Attainment
Blaine County		Unclassifiable/Attainment
Cimarron County		Unclassifiable/Attainment
Custer County		Unclassifiable/Attainment
Dewey County		Unclassifiable/Attainment
Ellis County		Unclassifiable/Attainment
Harper County		Unclassifiable/Attainment
Major County		Unclassifiable/Attainment
Roger Mills County		Unclassifiable/Attainment
Texas County		Unclassifiable/Attainment
Woods County		Unclassifiable/Attainment
Woodward County		Unclassifiable/Attainment

Table 7. Oklahoma $PM_{2.5}$ (Annual & 24-hour NAAQS) Designations

Designated area	Designation	
	Date[1]	Type
AQCR 188:		
Atoka County		Unclassifiable/Attainment
Bryan County		Unclassifiable/Attainment
Carter County		Unclassifiable/Attainment
Choctaw County		Unclassifiable/Attainment
Coal County		Unclassifiable/Attainment
Garvin County		Unclassifiable/Attainment
Haskell County		Unclassifiable/Attainment
Hughes County		Unclassifiable/Attainment
Johnston County		Unclassifiable/Attainment
Latimer County		Unclassifiable/Attainment
Love County		Unclassifiable/Attainment
McIntosh County		Unclassifiable/Attainment
Marshall County		Unclassifiable/Attainment
Murray County		Unclassifiable/Attainment
Okfuskee County		Unclassifiable/Attainment
Pittsburg County		Unclassifiable/Attainment
Pontotoc County		Unclassifiable/Attainment
Pushmataha County		Unclassifiable/Attainment
Seminole County		Unclassifiable/Attainment
AQCR 189:		
Beckham County		Unclassifiable/Attainment
Caddo County		Unclassifiable/Attainment
Comanche County		Unclassifiable/Attainment
Cotton County		Unclassifiable/Attainment
Greer County		Unclassifiable/Attainment
Harmon County		Unclassifiable/Attainment
Jackson County		Unclassifiable/Attainment
Jefferson County		Unclassifiable/Attainment
Kiowa County		Unclassifiable/Attainment
Stephens County		Unclassifiable/Attainment
Tillman County		Unclassifiable/Attainment
Washita County		Unclassifiable/Attainment

[1] - This date is 90 days after January 5, 2005, unless otherwise noted for the 1997 NAAQS (24-hr). This date is 30 days after November 13, 2009, unless otherwise noted for the 2006 NAAQS (Annual).

Baseline Areas

For each NAAQS, the areas designated in 40 CFR Part 81 are the areas for which a minor source baseline date can be established by submittal of a complete PSD application. The minor source baseline date for the baseline area or areas, within which the source submitting the PSD application is located, are automatically triggered by submittal of a complete PSD application.

However, additional baseline areas can also be triggered by the submittal if the ambient impacts, from the emission increases related to the facility or modification, extend into those baseline areas. The ambient impacts from the emission increases have to exceed the ambient impact levels described within the definition of baseline area, for the applicable pollutant and averaging period, to cause the minor source baseline date to be triggered in that baseline area. The modeling for each PSD permit application was utilized to determine the impacts, from each facility or modification, for each pollutant that exceeded the SER. The impacts were then compared to the applicable ambient impacts for each pollutant.

The designated baseline areas are classified as Class I, Class II, and Class III areas. The increments for Class I areas such as the Wichita Mountains Wildlife Refuge (WMWR) are the lowest. The WMWR is a mandatory federal Class I Area per 40 CFR § 52.21(e)(1)(ii) because it was a national wilderness area which exceeds 5,000 acres in size and was in existence on August 7, 1977. The WMWR Class I area cannot be re-designated per 40 CFR § 52.21(e)(2)(ii). The remainder of Oklahoma was classified as Class II per 40 CFR § 52.21(g)(1) as of December 5, 1974.

The WMWR Class I area is promulgated under 40 CFR Part 81, Subpart D, Identification of Mandatory Class I Federal Areas Where Visibility Is an Important Value. The specific boundaries defining the WMWR Class I area are not defined in 40 CFR Part 81, Subpart D, but are listed within maps supported by the Department of the Interior. Analyses for the WMWR Class I area are dependent on a listing of defined receptors developed by the Federal Land Manager and are provided in Appendix B.

40 CFR § 81.454 Oklahoma

Area Name	Acreage	Public Law Establishing	Federal Land Manager
Wichita Mountains Wildlife Refuge	8,900	91-504	USDI-FWS

Baseline Dates

In order to determine the minor source baseline dates, all PSD permit applications received in Oklahoma from 1975 through 2015 were reviewed. A complete list of all PSD applications can be requested from the AQD. A list of all applications that establish minor source baseline dates is included in Appendix A.

Table 8. Major Source Baseline Dates and Trigger Dates

Pollutant	Major Source Baseline Date	Trigger Date
PM_{10}	January 6, 1975	August 7, 1977
SO_2	January 6, 1975	August 7, 1977
NO_2	February 8, 1988	February 8, 1988
$PM_{2.5}$	October 20, 2010	October 20, 2011

As stated in the definition of baseline date, the minor source baseline date is the earliest date after the trigger date on which a PSD major source or PSD major modification establishing the minor source baseline date submits a complete application. The baseline date is established for each pollutant for which increments have been established if the area in which the proposed source or modification would construct has been designated attainment or unclassifiable and the pollutant would be emitted in significant amounts or results in a significant emission increase. Baseline areas and dates are not applicable to areas designated as non-attainment since the impacts plus background cannot exceed the NAAQS, even if not all of the increment has been consumed.

The definition of baseline area means the area "in which the major source or major modification establishing the baseline date would construct or would have an air quality impact for the pollutant for which the baseline date is established as follows: ≥ 1 µg/m^3 (annual average) for SO_2, NO_2, or PM_{10}; or ≥ 0.3 µg/m^3 (annual average) for $PM_{2.5}$." This indicates that the baseline area cannot be less than the area impacted by the source at these levels. If the ambient impacts from a facility located in one AQCR extend into another AQCR at the ambient levels indicated, the PSD application not only triggers the AQCR in which the source is located it also triggers the AQCR for which the ambient impacts are greater than the ambient levels which are indicated in the definition of baseline area. For the most part, specific areas were triggered because the facility was located in the baseline area. There is only one baseline area which was triggered because the ambient impacts of the facility extended into that area.

The baseline date is set by a complete PSD application regardless of whether the source is constructed or not. However, if a facility submits a PSD permit application but later determines that the permit application was not required, that permit application would not establish the minor source baseline date. The PSD program underwent a modification in 1980, which resulted in rescission of several permits. These permits did not set the baseline dates for increment consumption and were excluded from the review.

The following tables identify the minor source baseline dates as well as the permits that triggered them. This list is periodically revised to include new PSD applications that are received by the AQD.

Table 9. TSP/PM_{10} Minor Source Baseline Dates and Associated Permit Application

Designated Area	Minor Source Baseline Date	Permit
AQCR 017	October 8, 1986	86-045-C PSD
AQCR 022	November 29, 1982	PSD-OK-558
AQCR 184[1]	June 23, 1999	99-072-C PSD
AQCR 185[2]	April 6, 1979	PSD-OK-218
AQCR 186:	----	----
Tulsa County[4]	September 9, 1982	PSD-OK-556
Portions of Muskogee County	November 30, 1977	PSD-OK-057
Portions of Mayes County[4]	November 7, 1977	PSD-OK-051
Remainder of AQCR[4]	November 7, 1977	PSD-OK-051
AQCR 187[5]	August 22, 2012	2009-302-C (M-1) PSD
AQCR 188	November 15, 1977	PSD-OK-053
AQCR 189:	----	----
Portion of Comanche County	**Not Established**	
Remainder of AQCR	June 13, 2000	2000-150-C PSD

[1] - The minor source baseline date for AQCR 184 was changed from August 25, 1982, to June 23, 1999, based on the fact that the actual impacts from PSD-OK-218 did not significantly impact the AQCR.

[2] - The minor source baseline date for AQCR 185 was changed from August 25, 1982, to April 6, 1979, based on the fact that the submittal date for PSD-OK-218 was incorrect.

[3] - The minor source baseline date for AQCR 186 was changed from August 25, 1982, to November 11, 1977, based on the fact that the actual impacts from PSD-OK-218 did not significantly impact the AQCR.

[4] - The facility for this application was located on the border adjoining both of these baseline areas.

[5] - The minor source baseline date for AQCR 187 was established by submittal of Permit No. 2009-302-C (M-1) PSD.

Table 10. SO_2 Minor Source Baseline Dates and Associated Permit Application

Designated Area	Minor Source Baseline Date	Permit
AQCR 017[1]	October 8, 1986	86-045-C PSD
AQCR 022	November 29, 1982	PSD-OK-558
AQCR 184	May 22, 1980	PSD-OK-344
AQCR 185[2]	April 6, 1979	PSD-OK-218
AQCR 186	November 7, 1977	PSD-OK-051
AQCR 187[3]	December 16, 1982	PSD-OK-560
AQCR 188	November 15, 1977	PSD-OK-053
AQCR 189[3]	December 16, 1982	PSD-OK-560

[1] - The minor source baseline date for AQCR 017 was changed from November 7, 1977, to October 8, 1986, based on the fact that the actual impacts from PSD-OK-051 did not significantly impact the AQCR.

[2] - The minor source baseline date for AQCR 185 was changed from August 25, 1982, to April 6, 1979, based on the fact that the submittal date for PSD-OK-218 was incorrect.

[3] - The ambient impacts from the facility in Permit PSD-OK-560 extended from AQCR 189 into AQCR 187.

Table 11. NO_2 Minor Source Baseline Dates and Associated Permit Application

Designated Area	Minor Source Baseline Date	Permit
AQCR 017	May 10, 2000	2000-115-C PSD
AQCR 022	June 6, 1994	94-157-C PSD
AQCR 184	August 19, 1988	OCC-88-012-C PSD
AQCR 185	February 20, 1992	92-016-C PSD
AQCR 186	June 23, 1989	89-045-C PSD
AQCR 187	November 17, 1994	94-388-C PSD
AQCR 188	July 30, 1990	85-037-C (M-1) PSD
AQCR 189	June 13, 2000	2000-150-C PSD

Table 12. $PM_{2.5}$ Minor Source Baseline Dates and Associated Permit Application

Designated Area	Minor Source Baseline Date	Permit
AQCR 017		
Adair	Not Established	
Cherokee	Not Established	
Le Flore	Not Established	
Sequoyah	August 28, 2013	2008-284-C (M-1) PSD[1]
AQCR 022		
McCurtain	Not Established	
AQCR 184		
Canadian	Not Established	
Cleveland	Not Established	
Grady	Not Established	
Kingfisher	Not Established	
Lincoln	Not Established	
Logan	Not Established	
McClain	Not Established	
Oklahoma	Not Established	
Pottawatomie	Not Established	
AQCR 185		
Garfield	January 31, 2012	2013-0109-C PSD
Grant	Not Established	
Kay	Not Established	
Noble	Not Established	
Payne	Not Established	
AQCR 186		
Craig	Not Established	
Creek	Not Established	
Delaware	Not Established	
Mayes	July 9, 2014	98-171-C (M-2) PSD[1]
Muskogee	Not Established	
Nowata	Not Established	
Okmulgee	Not Established	

Table 12. $PM_{2.5}$ Minor Source Baseline Dates and Associated Permit Application

Designated Area	Minor Source Baseline Date	Permit
Osage	Not Established	
Ottawa	Not Established	
Pawnee	Not Established	
Rogers	Not Established	
Tulsa	October 14, 2014	2012-1062-C (M-1) PSD 2010-599-C (M-3) PSD 2012-924-C (M-3) PSD
Wagoner	Not Established	
Washington	Not Established	
AQCR 187		
Alfalfa	Not Established	
Beaver	Not Established	
Blaine	Not Established	
Cimarron	Not Established	
Custer	Not Established	
Dewey	Not Established	
Ellis	Not Established	
Harper	Not Established	
Major	Not Established	
Roger Mills	Not Established	
Texas	Not Established	
Woods	May 15, 2012	2012-1393-C PSD
Woodward	August 22, 2012	2008-302-C (M-1) PSD
AQCR 188		
Atoka	Not Established	
Bryan	September 9, 2015	2015-0643-C PSD
Carter	Not Established	
Choctaw	Not Established	
Coal	Not Established	
Garvin	Not Established	
Haskell	Not Established	
Hughes	Not Established	
Johnston	Not Established	
Latimer	Not Established	
Love	Not Established	
Marshall	Not Established	
McIntosh	Not Established	
Murray	Not Established	
Okfuskee	Not Established	
Pittsburg	Not Established	
Pontotoc	Not Established	
Pushmataha	Not Established	
Seminole	Not Established	

Table 12. $PM_{2.5}$ Minor Source Baseline Dates and Associated Permit Application

Designated Area	Minor Source Baseline Date	Permit
AQCR 189		
Beckham	February 21, 2012	2012-1026-C PSD
Caddo	Not Established	
Comanche	Not Established	
Cotton	Not Established	
Greer	Not Established	
Harmon	Not Established	
Jackson	Not Established	
Jefferson	Not Established	
Kiowa	Not Established	
Stephens	Not Established	
Tillman	Not Established	
Washita	Not Established	

[1] - The date was based on the date that the application went into Technical Review prior to going into Pending Internal Review.

Baseline Concentration

The baseline concentration is established by the baseline date. However, the baseline concentration can only be determined using modeling. Since monitors are not located in every baseline area, the actual concentration of a specific pollutant in a specific area cannot be determined. Therefore, to be able to evaluate the existing concentration of a pollutant in a specific area modeling must be used. Likewise, the only way to determine the amount of increment consumed in a specific area can only be determined using modeling. Since the actual baseline concentration does not need to be determined and only compliance with the increment needs to be determined, the modeling only has to include the differences between the baseline and the potential future impacts. Therefore, modeling for increment usually only includes the emission increases since the baseline date.

Increment can be consumed and expanded. While it is obvious that new sources and emission increases will consume increment, there are specific changes at existing sources that will expand increment. Reductions in emissions at existing sources and removal of existing sources in being on the baseline date will expand the allowable increment by decreasing the impacts of the existing sources. Other changes such as increasing stack height at existing sources which reduces the impacts of the existing sources will also expand increment. These reductions in impacts can also be included in increment modeling using negative emissions within the model or by modeling both the old and the new stack parameters and then looking at the difference in impacts.

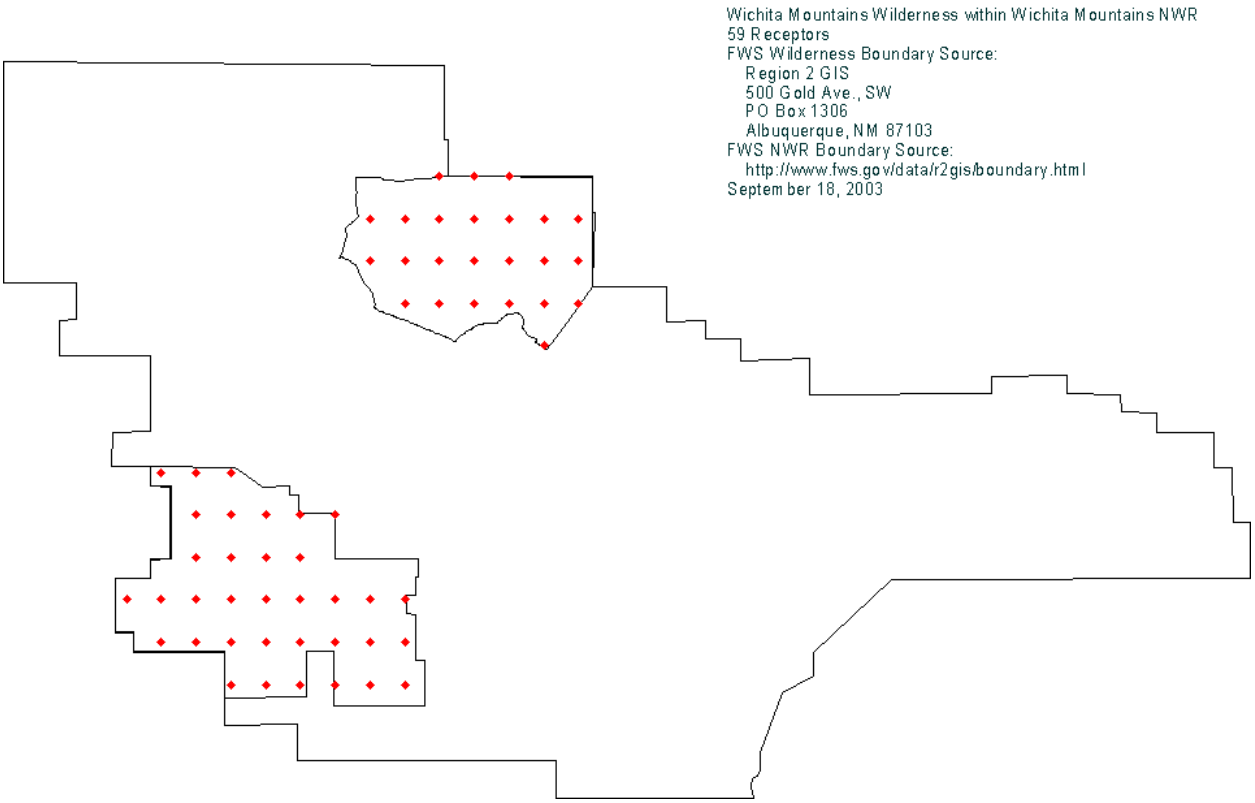
The maximum amount of PSD increment consumed must be determined by modeling the net changes in emissions (between the baseline and future cases) for each averaging period with at least a full year of meteorological data. PSD increments are computed on a spatially and temporally consistent basis which means the impacts are determined at a specific location and time. Each source will impact each area within a baseline area differently and when reviewing these impacts we have to look at the impacts of each source at a specific time and location.

The purpose of the increment modeling is to identify whether an increment violation is likely to occur in the future under realistic emissions and meteorology conditions. The recommended procedure for modeling impacts from increment consuming sources is model new and modified sources at their potential emissions and to base impacts from existing increment consuming sources on actual emissions. Use of potential emissions for the new or modified sources would be evaluated on the basis of actual emissions in the next increment evaluation. Therefore, the use of potential emissions does not artificially limit growth in an area over time. Actual emissions are usually based on an average of the most recent two consecutive years in order to characterize the full range of typical emissions patterns. Meteorological data for increment modeling utilizes 5 years of meteorology data, in order to account for variability in weather patterns from year-to-year. Use of CEM data paired with corresponding, or same hour, meteorological data would only serve to document whether an increment violation occurred during the period reflecting the CEM and meteorological data set being modeled, not to realistically assess whether violations are likely under expected emissions and weather conditions. Other techniques may be approved where they can be demonstrated to be equally protective of the PSD increments.

APPENDIX A PSD Permits Which Triggered Minor Source Baseline Dates

Permit No. Issued	Team No. (if diff.)	Company	Source	County	Application Date	Status
PSD-OK-051	77-083-O	Grand River Dam Authority	Chouteau Coal-Fired Complex	Mayes	11/07/1977	Issued
PSD-OK-053		WFEC	Hugo	Choctaw	11/15/1977	Issued
PSD-OK-057	77-084-C	OG&E	Muskogee Unit #6	Muskogee	11/30/1977	Issued
PSD-OK-344		Allied Materials/Allied Refinery	Waste Incinerator	Lincoln	05/22/1980	Issued
PSD-OK-218		OG&E	Sooner Units #3 , #4	Noble	08/25/1982	Withdrawn
PSD-OK-556	82-058-C	Steam Supply Corporation	Steam Supply Corporation	Tulsa	09/09/1982	Issued
PSD-OK-558	82-079-C	Weyerhaeuser Company	Valliant	McCurtain	11/29/1982	Withdrawn
PSD-OK-560	82-090-C	Mesa Petroleum Company	NE Mayfield Gas Plant	Beckham	12/16/1982	Issued
OCC-88-012-C PSD		CMI	CMI Energy Conversion Systems	Oklahoma	08/19/1988	Withdrawn
94-388-C		Natural Gas Pipeline Co of America	Station 102	Beaver	11/17/1994	Issued
86-045-C		Cogeneration Plant	AES Shady Point	LeFlore	10/08/1986	Issued
89-045-C PSD		Cogen Corp of America	Mid-America Industrial Park	Mayes	06/23/1989	Issued
85-037-C (M-1) PSD		Texaco Exploration and Production	Maysville Gas Plant	Garvin	07/30/1990	Issued
92-016-C PSD		Ponca City Municipal Steam Plant	Ponca City Municipal Steam Plant	Kay	02/20/1992	Issued
94-157-C PSD		Weyerhaeuser Company	Wright City	McCurtain	06/06/1994	Issued
99-072-C PSD		General Motors Corp.	GM	Oklahoma	06/23/1999	Issued
2000-115-C PSD		Smith Cogeneration OK, Inc.	Smith Pocola Energy Project	LeFlore	05/10/2000	Issued
2000-150-C		Smith Cogeneration OK, Inc.	Smith Lawton Energy Project	Comanche	06/13/2000	Withdrawn
2013-0109-C PSD		Northstar Agri Industries	Northstar Agri Ind. Enid	Garfield	01/31/2012	Issued
2012-1026-C PSD		Markwest Buffalo Creek Gas Co, LLC	Buffalo Creek Processing Plant	Beckham	02/21/2012	Issued
2012-1393-C PSD		Semgas, L.P.	Rose Valley Plant	Woods	05/15/2012	Issued
2008-302-C (M-1) PSD		Western Farmers Electric, COOP	Mooreland Generating Station	Woodward	08/22/2012	Issued
2008-284-C (M-1) PSD		Us Lime Co - St Clair	Marble City	Sequoyah	08/28/2013	Issued
98-171-C (M-2) PSD		NORIT Americas, Inc.	Pryor Activated Carbon Plant	Mayes	07/09/2014	Issued
2012-1062-C (M-1) PSD		Holly Frontier Tulsa Refining LLC	Tulsa Refinery East	Tulsa	10/14/2014	Issued
2010-599-C (M-3) PSD		Holly Frontier Tulsa Refining LLC	Tulsa Refinery West	Tulsa	10/14/2014	Issued
2012-924-C (M-3) PSD		Holly Energy Partners Tulsa LLC	Holly Energy Partners Tulsa	Tulsa	10/14/2014	Issued
2015-0643-C PSD		Commercial Metals Co	CMC Steel Oklahoma	Bryan	09/09/2015	Issued

APPENDIX B Wichita Mountains Wildlife Refuge (WMWR) Class I Area Data



WMWR Receptors

Latitude	Longitude	Elevation (m)	Northing (m)	Easting (m)
34.704167	-98.754167	454	3840264.66	522513.16
34.704167	-98.745833	486	3840266.47	523276.32
34.704167	-98.737500	487	3840268.43	524039.48
34.704167	-98.729167	478	3840270.45	524802.64
34.704167	-98.720833	518	3840272.53	525565.80
34.704167	-98.712500	518	3840274.68	526328.96
34.712500	-98.770833	510	3841185.06	520984.74
34.712500	-98.762500	493	3841186.83	521747.82
34.712500	-98.754167	488	3841188.66	522510.90
34.712500	-98.745833	615	3841190.56	523273.99
34.712500	-98.737500	522	3841192.52	524037.07
34.712500	-98.729167	494	3841194.54	524800.15
34.712500	-98.720833	609	3841196.63	525563.24
34.712500	-98.712500	518	3841198.78	526326.32
34.720833	-98.779167	487	3842107.45	520219.63
34.720833	-98.770833	518	3842109.16	520982.63
34.720833	-98.762500	609	3842110.93	521745.64
34.720833	-98.754167	554	3842112.76	522508.64
34.720833	-98.745833	578	3842114.66	523271.65
34.720833	-98.737500	557	3842116.61	524034.66
34.720833	-98.729167	571	3842118.64	524797.67
34.720833	-98.720833	670	3842120.72	525560.67
34.720833	-98.712500	518	3842122.87	526323.68
34.729167	-98.762500	518	3843035.02	521743.46

APPENDIX B Wichita Mountains Wildlife Refuge (WMWR) Class I Area Data

Latitude	Longitude	Elevation (m)	Northing (m)	Easting (m)
34.729167	-98.754167	548	3843036.86	522506.39
34.729167	-98.745833	548	3843038.75	523269.32
34.729167	-98.737500	518	3843040.71	524032.25
34.737500	-98.762500	517	3843959.12	521741.27
34.737500	-98.754167	579	3843960.95	522504.13
34.737500	-98.745833	613	3843962.85	523266.98
34.737500	-98.737500	548	3843964.81	524029.83
34.737500	-98.729167	523	3843966.83	524792.69
34.745833	-98.770833	542	3844881.45	520976.31
34.745833	-98.762500	545	3844883.22	521739.09
34.745833	-98.754167	552	3844885.05	522501.87
34.770833	-98.679167	579	3847676.71	529358.02
34.779167	-98.712500	609	3848591.58	526305.18
34.779167	-98.704167	654	3848593.79	527067.65
34.779167	-98.695833	621	3848596.07	527830.12
34.779167	-98.687500	629	3848598.41	528592.59
34.779167	-98.679167	579	3848600.82	529355.06
34.779167	-98.670833	560	3848603.28	530117.54
34.787500	-98.720833	615	3849513.53	525540.14
34.787500	-98.712500	641	3849515.69	526302.53
34.787500	-98.704167	640	3849517.90	527064.93
34.787500	-98.695833	662	3849520.18	527827.32
34.787500	-98.687500	618	3849522.52	528589.72
34.787500	-98.679167	630	3849524.92	529352.11
34.787500	-98.670833	534	3849527.39	530114.51
34.795833	-98.720833	606	3850437.64	525537.57
34.795833	-98.712500	566	3850439.79	526299.89
34.795833	-98.704167	633	3850442.01	527062.20
34.795833	-98.695833	670	3850444.29	527824.52
34.795833	-98.687500	609	3850446.63	528586.84
34.795833	-98.679167	579	3850449.03	529349.16
34.795833	-98.670833	535	3850451.50	530111.48
34.804167	-98.704167	548	3851366.12	527059.48
34.804167	-98.695833	518	3851368.39	527821.72
34.804167	-98.687500	506	3851370.74	528583.96