Air Quality Impacts Analysis (AQIA)
Nesson Gathering System, L.L.C.
Rough Rider and Flickertail Compressor Stations

Located in Williams County ND

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Division of Air Quality

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Contents

1 Executive Summary

Nesson Gathering System, L.L.C (Nesson) conducted air dispersion modeling for a proposed modification to two of its facilities, Flickertail Compressor Station (Flickertail) and Rough Rider Compressor Station (Rough Rider), both located in Williams County, North Dakota. The modeling efforts were conducted to demonstrate compliance with both state and federal Ambient Air Quality Standards (AAQS).

Based on the data provided in the Permit to Construct (PTC) application submitted on August 8, 2025, and the Department's independent review and modeling analysis, it is expected that the proposed facility (Project) will comply with the applicable AAQS. The Department's results regarding the modeled impacts for the AAQS are outlined in Table 1.

Table 1 - AAQS Results Summary[1]

POLLUTANT	AVERAGING TIME	MODELED IMPACT (µg/m³)	BACKGROUND (µg/m³)	TOTAL IMPACT (µg/m³)	NDAAQS (µg/m³)	NAAQS (µg/m³)	PASSED (Y/N)
NO_2	Annual	22.64	5	27.64	100	100	Y
	1-HR	139.53	35	174.53	-	188	Y

2 Introduction

On August 8, 2025, the North Dakota Department of Environmental Quality, Division of Air Quality (Department) received applications for a PTC from Nesson for the modification of the Flickertail Compressor Station and Rough Rider Compressor Station both located in Williams County. The application included a modeling analysis to confirm compliance with the North Dakota Ambient Air Quality Standards (NDAAQS) and the National Ambient Air Quality Standards (NAAQS). Modeling was conducted for NO_x emissions. This Air Quality Impacts Analysis (AQIA) summarizes the Department's findings based on a thorough review and independent modeling analysis of the Project.

3 Project Background

The original PTC and AQIA for Nesson Flickertail and Rough Rider Compressor stations were issued in June of 2022. The August 8, 2025, PTC modification submittal requested an increase in emission limits for engines at the facilities, so another modeling analysis was required to demonstrate compliance with the AAQS. Due to the compressor stations' proximity to each other, a single modeling analysis including both facilities was conducted.

[1] See Table 12 for AAQS averaging times.

4 Model Requirements

Both Flickertail and Rough Rider are non-PSD sources with respect to the PSD rules.[2,3] Any source subject to non-PSD review that is situated within 50 kilometers (km) of a Class I area is required to include a Class I increment analysis. Table 2 provides a list of the Class I areas in closest proximity to the Nesson facilities. The nearest Class I area to either facility is over 59 km away; therefore, a Class I increment analysis is not required.

Table 2 - Class I Areas Near Source

CLASS I AREA	DISTANCE FROM PROJECT (km)*	MODELING REQUIRED (Y/N)
Medicine Lake Wilderness Area (MT)	103	N
Fort Peck (MT)	182	N
Theodore Roosevelt National Park-North Unit (ND)	69	N
Theodore Roosevelt National Park-Elkhorn Ranch Unit (ND)	116	N
Theodore Roosevelt National Park-South Unit (ND)	142	N
Lostwood Wilderness Area (ND)	59	N

* Distances were measured from the facility closest to the respective Class I area

5 Model Input Values

5.1 Model Version

The U.S. Environmental Protection Agency (EPA) has developed the *Guideline on Air Quality Models*[4] (40 CFR 51 Appendix W) wherein they list preferred models for pre-construction permitting reviews. At the time of the application submittal, Appendix W (2024) was the most current revision in use. EPA's preferred model is AERMOD. Nesson and the Department used version 24142 for analysis and review.

5.2 Meteorological Data (MET)

In the modeling process, both surface and upper-air meteorological (met) data are pre-processed through

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[2] *NDAC 33.1-15-15*. Available at: https://www.ndlegis.gov/information/acdata/pdf/33.1-15-15.pdf (Last visited January 12, 2026)

[3] *40 CFR §52.21*. Available at: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21 (Last visited January 12, 2026)

[4] Available at: https://www.epa.gov/sites/default/files/2020-09/documents/appw_17.pdf (Last visited January 12, 2026)

AERMET. This pre-processing generates the boundary layer parameters required by AERMOD to estimate plume dispersion. AERMET processes hourly meteorological data to determine plume transport and dispersion downwind from a source.

Per Appendix W (2024) 8.4.2.e, the choice of meteorological data should be based on ensuring a sufficiently conservative and representative result, considering hourly and seasonal variations in meteorological conditions throughout the year, which directly influence plume movement due to atmospheric conditions. The options for selecting meteorological data include:

1. One year of site-specific data: This involves using data collected onsite from a monitoring station.
2. Five years of representative National Weather Service (NWS) data: This data source typically provides long-term, historical weather information.
3. At least 3 years of prognostic meteorological data: This type of data involves using predictive meteorological models to estimate future conditions.

The analysis used the second option, five years of representative NWS data. The specific MET stations used for input in AERMET for this analysis are listed in Table 3. AERMET processes hourly surface observations, including parameters such as wind speed and direction, ambient temperature, sky cover (opacity), and local air pressure (optionally). It combines these observations with the pre-processed AERSURFACE output values to compile the necessary surface met inputs (Table 4) for AERMOD.

Table 3 - Met Data Used

MET DATA	LOCATION	STATION NO.	YEARS	DISTANCE FROM SOURCE*	SOURCE OF DATA
Surface Air	Tioga Municipal Airport, ND	00289	2019 -2023	23 km N	NDDEQ
Upper Air	Bismarck, ND	24011	2019 - 2023	232 km SE	NDDEQ

* Approximate distances using Google Earth's measuring tool.

5.3 Surface Inputs

AERMET relies on certain key values, including surface roughness length, albedo, and Bowen ratio when pre-processing met data for use in AERMOD.

AERSURFACE allows users to generate these values based on inputs related to seasonal variation in the vegetative landscape (e.g., landcover). To facilitate this process, the Department has compiled a set of recommended inputs specifically designed for various regions within the state. These recommendations are outlined in the document titled *"Recommended AERSURFACE Inputs North Dakota* (March 2017)".[5]

[5] Available at: https://deq.nd.gov/publications/AQ/policy/Modeling/AERSURFACE_InputsND.pdf (Last visited January 12, 2026)

Table 4 - AERSURFACE Input Values

PARAMETER	VALUE USED
Radius of study area used for surface roughness:	1.0 km
Define the surface roughness length for multiple sectors?	Yes
Number of sectors:	12
Temporal resolution of surface characteristics	Monthly
Continuous snow cover for at least one month?	Yes
Reassign the months to different seasons?	Yes
Specify months for each season:	Yes
Late autumn after frost and harvest, or winter with no snow	Oct, Nov, Dec, Mar
Winter with continuous snow cover	Jan, Feb
Transitional spring	Apr, May
Midsummer with lush vegetation	Jun, Jul, Aug
Autumn with unharvested cropland	Sep
Is this site at an airport?	Yes
Is the site in an arid region?	No
Surface moisture condition at the site:	Average

5.4 Receptor Grid

Receptors serve as the designated locations where the air quality model calculates ground-level pollutant concentrations. These receptors are strategically placed within a receptor grid, and their distribution is determined by factors such as terrain characteristics and pollutant emission rates. While the exact configuration may vary, it typically forms a rectangular pattern radiating outward from the emission source. The goal is to ensure that the receptor grid effectively captures the dispersion and distribution of pollutants in the vicinity of the facility. Further specifics on the receptor grid are shown in Table 5.

Table 5 - Receptor Grid Spacing

DISTANCE OUT FROM SOURCE	DISTANCE BETWEEN RECEPTORS
Fence line	25 meters
0 to 1500 meters (0 to 1.5 km)	100 meters
1,501 to 3,000 (1.5 to 3 km)	250 meters
3,001 to 6,000 meters (3 to 6 km)	500 meters
6,001 to 12,000 meters (6 to 12 km)	1000 meters
TOTAL NUMBER OF RECEPTORS	4,257

The receptor points are placed at ground level, and their elevation is determined using the United States Geological Survey (USGS) National Elevation Dataset (NED) terrain and land-use data. The Universal Transverse Mercator (UTM) map projection with the North American Datum of 1983 (NAD83) is used for both the source input locations and the receptor grid location. To ensure accurate placement at ground level, the USGS NED 2017 data at a 1/3 arcsecond (10-meter) resolution is processed through the AERMAP pre-processor. This pre-processor adjusts the receptor points' elevations based on terrain data, aligning them with the actual topography of the area.

Receptor points located within the plant boundary are not modeled, as they do not represent ambient air.[6] Ambient air is defined as air situated outside of a boundary (e.g., a fence), which restricts general public access to a facility or source. Nesson will utilize fencing or other approved techniques around the plant boundary to preclude access to the general public. This exclusion ensures that the modeling analysis focuses on assessing the impact of emissions on the air quality in areas accessible to the public.

5.5 Background

Nesson used a fixed background concentration to predict the cumulative impact of the project. The fixed background concentration was not included as an input in the modeling process, and as a result, is not included in the values output for concentrations (i.e., not included in MODELED IMPACT, but added in after under the TOTAL IMPACT in Table 1 and Table 12 - AAQS Results Summary). The fixed background concentration shown in Table 6 is considered conservatively representative of the entire state and plays a significant role in ensuring a comprehensive and conservative assessment of the total ambient effect on ambient air quality standards (AAQS) due to emissions from the facility. To demonstrate the conservative nature of the fixed values the Department evaluated ambient concentrations from the Theodore Roosevelt National Park (TRNP) and the Lostwood National Wildlife Refuge (NWR) ambient monitors. While these areas will include some anthropogenic contributions, they are low population areas that are closest to true representations of background concentrations in North Dakota and the project area. Ambient data

[6] *§40 CFR 50.1(e).* Available at: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-50/section-50.1 (Last visited January 12, 2026)

was acquired from the EPA Outdoor Air Quality data[7] and averaged over the 5-year period from 2018-2022. An average of the ambient data is most representative of background concentration. Table 7 shows that the Department's fixed ambient background concentrations are conservative in comparison to the ambient air concentrations.

Table 6 - Fixed Background Concentrations[9]

POLLUTANT	AVERAGING TIME	BACKGROUND ($\mu g/m^3$)
NO_2	Annual	5
	1-HR	35

Table 7 - Ambient Air Concentrations 2018-2022

Parameter	PM_{10}	$PM_{2.5}$		SO_2		CO	NO_2	
Averaging Period	24-hr	24-hr	Annual	1-hr	Annual	8-hr	1-hr	Annual
Monitoring Stations in North Dakota's Highest Population Areas – 5-Year Average (2018-2022)								
Fargo	12.44	7.54	5.58	3.11	0.84	-	33.61	4.17
Bismarck	19.45	6.99	6.46	11.11	0.41	221.28	34.56	4.71
Monitoring Stations in North Dakota's Lower Population Areas – 5-Year Average (2018-2022)								
TRNP	-	4.35	4.35	4.33	1.35	-	9.89	1.46
Lostwood NWR	11.36	-	-	-	-	-	-	-
Background	**30.00**	**13.70**	**4.75**	**13.00**	**3.00**	**1149.00**	**35.00**	**5.00**

Sources: https://www.epa.gov/outdoor-air-quality-data/download-daily-data
https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

5.5.1 Nearby Sources

The Department reviewed records pertaining to sources that could potentially share a significant concentration gradient with the Nesson facilities in North Dakota. Of the sources evaluated, ten were identified as potentially sharing a significant NO_2 concentration gradient. The facilities included in the NO_2 cumulative analysis are listed in

Table 8 - Nearby Sources Sharing Significant NO_2 Concentration Gradient

FACILITY	LOCATION	SOURCE TYPE
Nesson Gathering System, LLC - Nesson Gas Plant	Tioga, Williams County, ND	Natural Gas Processing
Whiting Oil and Gas Corporation, LLC - Ray Gas Plant	Ray, Williams County, ND	Natural Gas Processing
Hiland Partners Holdings LLC - Silurian Compressor Station	Tioga, Williams County, ND	Compressor Station

[7] Available at: https://www.epa.gov/outdoor-air-quality-data/download-daily-data (Last visited January 12, 2026)

FACILITY	LOCATION	SOURCE TYPE
Hess North Dakota Pipelines LLC - East Nesson Compressor Station 1	White Earth, Mountrail County, ND	Compressor Station
ONEOK Rockies Midstream, L.L.C. - Riverside Compressor Station	New Town, McKenzie County, ND	Compressor Station
ONEOK Rockies Midstream, L.L.C. - Demicks Lake Compressor Station	Keene, McKenzie County, ND	Compressor Station
Rough Rider Bakken G&P LLC - Brause Compressor Station	Watford City, McKenzie County, ND	Compressor Station
Grayson Mill Operating, LLC - Central Banks CDP Compressor Station	McKenzie County, ND	Compressor Station
Rough Rider Bakken G&P LLC - North Compressor Station	Watford City, McKenzie County, ND	Compressor Station
Hiland Partners Holdings LLC - 4Runner Compressor Station	Williston, Williams County, ND	Compressor Station

5.6 Emission Source Modeling Parameters

AERMOD requires specific source data to model air pollutant dispersion accurately. This data includes:

1. Type and location of each emission point
2. Base elevation of each stack
3. Emission height and rate
4. Gas exit velocity and temperature
5. Other stack/emission parameters depending upon source type

To ensure the accuracy of model input values, a comparison was made between the emission rates and stack parameters provided in the application and the corresponding information for each emission unit. The modeling parameters for point sources are shown in Table 9 for the Flickertail facility and Table 10 for the Rough Rider facility .

Table 9 - Flickertail Point Source Parameters and Emission Rates lists the model input parameters at the Nesson Flickertail facility for location (UTM X-Y coordinates), elevation, stack height, exit temperature, exit velocity, stack exit diameter, stack exit orientation, and emission rates.

Table 10 - Rough Rider Point Source Parameters and Emission Rates lists the model input parameters at the Nesson Rough Rider facility for location (UTM X-Y coordinates), elevation, stack height, exit temperature, exit velocity, stack exit diameter, stack exit orientation, and emission rates.

Table 11 - Nearby Source Parameters and Emission Rates lists the model input parameters at nearby sources for location (UTM X-Y coordinates), elevation, stack height, exit temperature, exit velocity, stack exit diameter, stack exit orientation, and emission rates.

Table 9 - Flickertail Point Source Parameters and Emission Rates

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Elevation (m)	Height (m)	Exit Temp (°F)	Exit Velocity (m/s)	Diameter (m)	Orientation (vert/horiz)	NO_2 (g/s)
FTENG1	Caterpillar G3608 TALE Compressor Engine	647536.61	5339999.23	575.46	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTENG2	Caterpillar G3608 TALE Compressor Engine	647549.24	5339997.13	575.92	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTENG3	Caterpillar G3608 TALE Compressor Engine	647562.85	5339995.07	576.32	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTENG4	Caterpillar G3608 TALE Compressor Engine	647576.67	5339994.07	576.74	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTENG5	Caterpillar G3608 TALE Compressor Engine	647590.39	5339991.97	577.13	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTENG6	Caterpillar G3608 TALE Compressor Engine	647604.22	5339990.08	577.54	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTENG7	Caterpillar G3608 TALE Compressor Engine	647617.60	5339988.29	577.91	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTENG8	Caterpillar G3608 TALE Compressor Engine	647631.53	5339986.76	578.27	9.27	658.15	24.64	0.61	VERTICAL	0.28
FTCOMB	TEG DEHY COMBUSTOR - COMBINED STILL COLUMN EMISSIONS	647535.59	5339922.44	573.92	4.57	533.15	0.00	0.76	VERTICAL	0.001
FTLPCOMB	LOW PRESSURE COMBUSTOR - NORMAL OPERATIONS	647464.05	5339977.55	573.18	12.19	322.04	0.04	2.13	VERTICAL	0.07
FTHTR1	DEHY REBOILER: 0.75 MMBTU/HR BURNER	647586.13	5339911.35	575.35	3.66	477.59	0.22	0.41	VERTICAL	0.01
FTHTR2	DEHY REBOILER: 0.75 MMBTU/HR BURNER	647586.37	5339917.65	575.54	3.66	477.59	0.22	0.41	VERTICAL	0.01
FTHTR3	FUEL MEMBRANE HEATER: 2.5 MMBTU/HR BURNER	647588.25	5339925.11	575.89	4.57	699.82	0.06	0.61	VERTICAL	0.04
FTHPFLR	EMERGENCY FLARE	647673.62	5339888.14	576.70	27.09	1000.00	40.00	0.39	VERTICAL	0.16

Table 10 - Rough Rider Point Source Parameters and Emission Rates

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Elevation (m)	Height (m)	Exit Temp (°F)	Exit Velocity (m/s)	Diameter (m)	Orientation (vert/horiz)	NO_2 (g/s)
RRENG1	Caterpillar G3608 TALE Compressor Engine	657514.00	5340459.76	602.40	9.27	658.15	25	0.61	VERTICAL	0.28
RRENG2	Caterpillar G3608 TALE Compressor Engine	657528.07	5340459.80	602.28	9.27	658.15	25	0.61	VERTICAL	0.28
RRENG3	Caterpillar G3608 TALE Compressor Engine	657541.22	5340459.76	602.11	9.27	658.15	25	0.61	VERTICAL	0.28
RRENG4	Caterpillar G3608 TALE Compressor Engine	657554.31	5340460.69	601.96	9.27	658.15	25	0.61	VERTICAL	0.28
RRENG5	Caterpillar G3608 TALE Compressor Engine	657566.96	5340460.69	601.79	9.27	658.15	25	0.61	VERTICAL	0.28
RRENG6	Caterpillar G3608 TALE Compressor Engine	657581.62	5340461.27	601.68	9.27	658.15	25	0.61	VERTICAL	0.28
RRENG7	Caterpillar G3608 TALE Compressor Engine	657595.32	5340461.29	601.42	9.27	658.15	25	0.61	VERTICAL	0.28
RRENG8	Caterpillar G3608 TALE Compressor Engine	657609.37	5340461.29	601.33	9.27	658.15	25	0.61	VERTICAL	0.28
RRCOMB	TEG DEHY COMBUSTOR - COMBINED STILL COLUMN EMISSIONS	657599.64	5340534.35	599.13	4.57	533.15	0	0.76	VERTICAL	0.001
RRLPCOMB	LOW PRESSURE COMBUSTOR - NORMAL OPERATIONS	657678.84	5340491.42	598.69	12.19	322.04	0	2.13	VERTICAL	0.07
RRHTR1	DEHY REBOILER: 0.75 MMBTU/HR BURNER	657545.00	5340539.00	599.37	3.66	477.59	0	0.41	VERTICAL	0.01
RRHTR2	DEHY REBOILER: 0.75 MMBTU/HR BURNER	657545.00	5340536.00	599.46	3.66	477.59	0	0.41	VERTICAL	0.01
RRHTR3	FUEL MEMBRANE HEATER: 2.5 MMBTU/HR BURNER	657547.00	5340533.00	599.54	4.57	699.82	0	0.61	VERTICAL	0.04
RRHPFLR	EMERGENCY FLARE	657452.99	5340557.27	599.87	27.09	1000.00	40	0.39	VERTICAL	0.16

Table 11 - Nearby Source Parameters and Emission Rates

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Elevation (m)	Height (m)	Exit Temp (°F)	Exit Velocity (m/s)	Exit Diameter (m)	Orientation (vert/horiz)	NOx (g/s)
NGP1	Nesson Gas Plant - Engine#2	645082.3	5358751.9	724.23	32.0	730.83	15.90	0.38	Vertical	0.13
NGP2	Nesson Gas Plant - Engine#3	645096.3	5358752.0	724.43	32.0	759.42	24.83	0.40	Vertical	0.20
NGP3	Nesson Gas Plant - Engine#4	645110.4	5358753.0	724.74	32.0	767.17	27.79	0.39	Vertical	0.11
NGP4	Nesson Gas Plant - Engine#5	645123.8	5358753.9	724.99	32.0	615	22.03	0.42	Vertical	0.09
NGP5	Nesson Gas Plant - Engine#6	645137.6	5358753.7	725.16	32.0	617.67	22.97	0.42	Vertical	0.10
NGP6	Nesson Gas Plant - Heater#1	645024.0	5358688.8	724.04	15.0	600	2.56	0.18	Vertical	0.04
NGP7	Nesson Gas Plant - Heater#2	645024.0	5358671.2	724.03	15.0	600	2.56	0.18	Vertical	0.18
NGP8	Nesson Gas Plant - Oil Heater#1	645108.0	5358665.0	725.59	15.0	1000	31.00	0.30	Vertical	0.22
NGP9	Nesson Gas Plant - Oil Heater#2	645108.0	5358665.0	725.59	15.0	1000	55.26	0.30	Vertical	0.43
RG1	Whiting - Ray Gas Dehy Unit Flare	639766.7	5357319.9	692.19	12.0	1273	8.26	0.10	Vertical	0.07
RG2	Whiting - Ray Gas Hot Oil Heater	639766.7	5357319.9	692.19	35.0	250	0.36	0.91	Vertical	0.08
SC1	Hess - Silurian Compressor Engine#1	651864.1	5350731.5	713.07	26.5	870	40.84	0.41	Vertical	0.14
SC2	Hess - Silurian Compressor Engine#2	651808.4	5351082.4	713.08	29.5	847	34.44	0.46	Vertical	0.24
SC3	Hess - Silurian Compressor Heater	651894.2	5350734.5	714.12	20.0	700	2.44	0.23	Vertical	0.01
SC4	Hess - Silurian Compressor Reboiler	651902.3	5350733.0	713.79	30.0	1000	2.44	0.20	Vertical	0.01
EN1	Hess - East Nesson 1 Heater#1	661709.1	5339518.4	634.55	10.0	1021	34.93	0.25	Vertical	0.01
EN2	Hess - East Nesson 1 Heater#2	661709.1	5339518.4	634.55	10.0	1021	34.93	0.25	Vertical	0.02
ORC1	ONEOK - Riverside Compressor Engine#1	662112.8	5324644.9	684.92	30.0	1078.33	39.72	0.41	Vertical	0.08
ORC2	ONEOK - Riverside Compressor Engine#2	662128.4	5324645.6	684.49	30.0	950.04	36.83	0.41	Vertical	0.22

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Elevation (m)	Height (m)	Exit Temp (°F)	Exit Velocity (m/s)	Exit Diameter (m)	Orientation (vert/horiz)	NOx (g/s)
ORC3	ONEOK - Riverside Compressor Engine#3	662142.7	5324644.6	684.3	30.0	1066.02	40.84	0.41	Vertical	0.24
ORC4	ONEOK - Riverside Compressor Engine#4	662155.9	5324645.0	684.06	30.0	1088.94	42.21	0.46	Vertical	0.19
ORC5	ONEOK - Riverside Compressor Engine#5	662169.0	5324649.3	683.8	30.0	1099.63	45.47	0.46	Vertical	0.37
ODL1	ONEOK - Demicks Lake Compressor Engine	649066.3	5307509.1	710.51	20.0	984	32.79	0.21	Vertical	1.65
ODL2	ONEOK - Demicks Lake Compressor Heater	649059.6	5307515.4	710.8	10.0	400	1.62	0.30	Vertical	0.01
ETB1	Energy Transfer - Brause Compressor Engine#1	634549.8	5319173.3	606.05	25.8	834	21.26	0.41	Vertical	0.15
ETB2	Energy Transfer - Brause Compressor Engine#2	634549.8	5319173.3	606.05	25.8	834	21.26	0.41	Horizontal	0.15
ETB3	Energy Transfer - Brause Compressor Engine#3	634549.8	5319173.3	606.05	22.5	813	34.44	0.46	Vertical	0.14
ETB4	Energy Transfer - Brause Compressor Engine#4	634549.8	5319173.3	606.05	25.8	834	29.69	0.41	Vertical	0.10
ETB5	Energy Transfer - Brause Compressor Engine#5	634549.8	5319173.3	606.05	25.8	834	29.69	0.41	Vertical	0.10
ETB6	Energy Transfer - Brause Compressor Engine#8	634549.8	5319173.3	606.05	25.8	834	29.69	0.41	Vertical	0.15
ETB7	Energy Transfer - Brause Compressor Engine#10	634549.8	5319173.3	606.05	25.8	834	29.69	0.41	Vertical	0.17
GCB1	Grayson - Central Banks CDP Compressor Engine#1	631877.0	5317243.0	662.4	12.0	957.63	27.08	0.41	Vertical	0.04

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Elevation (m)	Height (m)	Exit Temp (°F)	Exit Velocity (m/s)	Exit Diameter (m)	Orientation (vert/horiz)	NOx (g/s)
GCB2	Grayson - Central Banks CDP Compressor Engine#2	631886.0	5317244.0	662.17	12.0	946.83	25.97	0.41	Vertical	0.11
GCB3	Grayson - Central Banks CDP Compressor Engine#3	631898.0	5317244.0	662.38	12.0	865.69	21.39	0.41	Vertical	0.07
GCB4	Grayson - Central Banks CDP Compressor Engine#4	631908.0	5317245.0	662.36	12.0	955.19	33.19	0.36	Vertical	0.07
GCB5	Grayson - Central Banks CDP Compressor Engine#5	631922.0	5317245.0	662.05	12.0	908.15	29.61	0.36	Vertical	0.16
GCB6	Grayson - Central Banks CDP Compressor Engine#24	631905.0	5317165.0	656.36	12.0	866.13	44.21	0.30	Vertical	0.14
GCB7	Grayson - Central Banks CDP Compressor Engine#25	631899.0	5317165.0	656.44	12.0	849.85	44.51	0.30	Vertical	0.13
GCB8	Grayson - Central Banks CDP Compressor Engine#26	631892.0	5317165.0	656.49	12.0	749.06	25.42	0.51	Vertical	0.20
ETN1	Energy Transfer - North Compressor Engine#1	634248.7	5314754.6	603.98	27.5	1090.67	8.21	0.46	Vertical	0.18
ETN2	Energy Transfer - North Compressor Engine#3	634248.7	5314754.6	603.98	27.5	1259.33	13.68	0.46	Vertical	0.18
ETN3	Energy Transfer - North Compressor Engine#4	634248.7	5314754.6	603.98	27.5	1276	16.80	0.41	Vertical	0.13
ETN4	Energy Transfer - North Compressor Engine#5	634248.7	5314754.6	603.98	27.5	1083	10.12	0.41	Vertical	0.18
ETN5	Energy Transfer - North Compressor Engine#6	634248.7	5314754.6	603.98	27.5	1122.67	10.63	0.41	Vertical	0.16
ETN6	Energy Transfer - North Compressor Engine#7	634248.7	5314754.6	603.98	27.5	1158.33	11.00	0.41	Vertical	0.15
ETN7	Energy Transfer - North Compressor Engine#8	634248.7	5314754.6	603.98	27.5	1168.33	10.85	0.41	Vertical	0.12
ETN8	Energy Transfer - North Compressor Engine#10	634248.7	5314754.6	603.98	27.5	1089.33	10.41	0.41	Vertical	0.15

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Elevation (m)	Height (m)	Exit Temp (°F)	Exit Velocity (m/s)	Exit Diameter (m)	Orientation (vert/horiz)	NOx (g/s)
HPR1	Hiland Partners - 4Runner Compressor Engine#1	619729.8	5323844.0	582.9	40.0	794.70	32.96	0.34	Vertical	0.05
HPR2	Hiland Partners - 4Runner Compressor Engine#2	619729.8	5323844.0	582.9	40.0	821.30	28.46	0.34	Vertical	0.14
HPR3	Hiland Partners - 4Runner Compressor Engine#3	619729.8	5323844.0	582.9	40.0	853.17	29.06	0.34	Vertical	0.18
HPR4	Hiland Partners - 4Runner Compressor Engine#4	619729.8	5323844.0	582.9	40.0	667.10	23.91	0.51	Vertical	0.26
HPR5	Hiland Partners - 4Runner Compressor Engine#5	619729.8	5323844.0	582.9	40.0	662.83	26.56	0.51	Vertical	0.27
HPR6	Hiland Partners - 4Runner Compressor Engine#6	619729.8	5323844.0	582.9	40.0	943.33	35.34	0.34	Vertical	0.25
HPR7	Hiland Partners - 4Runner Compressor Reboiler	619729.8	5323844.0	582.9	32.0	400.00	2.85	0.30	Vertical	0.01

6 Model Execution and Results

State[8] and federal[9] AAQS were modeled per the parameters listed in Section 5.6. The model analysis results are shown in Table 12. Modeling utilized Tier II of the Ambient Ratio Method (ARM2). Default minimum and maximum ratios of 0.5 and 0.9 were applied to determine the predicted ground-level concentration of NO_2.

Table 12 - AAQS Results Summary

POLLUTANT	AVERAGING TIME	MODELED IMPACT ($\mu g/m^3$)	BACKGROUND ($\mu g/m^3$)	TOTAL IMPACT ($\mu g/m^3$)	NDAAQS ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	PASSED (Y/N)
NO_2	Annual[A]	22.64	5	27.64	100	100	Y
	1-HR[B]	139.53	35	174.53	-	188	Y

[A] Modeled concentration is the annual average concentration (first-high) of five modeled years of meteorological data.

[B] Modeled concentration is the 98th percentile (eighth-high) of the annual distribution of daily maximum 1-hr concentrations averaged across five years of meteorological data.

7 Summary & Conclusions

Upon the Department's review and independent analysis of the modeling submitted by Nesson, the following is concluded:

Nesson followed all applicable State and Federal guidance in their modeling protocol.

Nesson's dispersion modeling was conducted to demonstrate that emissions from the Project are expected to comply with state and federal Ambient Air Quality Standards. Emissions associated with operating the facility with the proposed emission units and limits are not expected to cause or contribute to a violation of the NAAQS and NDAAQS as listed in NDAC 33.1-15-02-04. Results of the modeled impacts for the AAQS are displayed in Table 1 and Table 12.

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[8] *NDAC 33.1-15-02*. Available at: https://www.ndlegis.gov/information/acdata/pdf/33.1-15-02.pdf?20150602082326 (Last visited January 12, 2026)

[9] *§40 CFR 50.* Available at: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-50?toc=1 (Last visited January 12, 2026)

8 Plots

Model Set-Up

Flickertail Compressor Station Site	Plot	1
Rough Rider Compressor Station Site	Plot	2
Terrain Contours	Plot	3
Windrose	Plot	4
Receptor Grid	Plot	5

AAQS Analysis

NO_2 1-HR	Plot	6
NO_2 Annual	Plot	7