



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT No. 90062**

I. INTRODUCTION

This Class II new permit is for the construction and operation of a renewable natural gas facility for Align RNG Arizona - Snowflake, LLC.

A. Company Information

Facility Name: Align RNG Arizona - Snowflake

Mailing Address: 120 Tredegar Street,
Richmond, VA 23219

Facility Location: 11 miles north of Snowflake, AZ off Highway 77,
Snowflake, Navajo County, Arizona 85937

B. Attainment Classification

This facility is located in Navajo County which is classified as attainment or unclassified for all criteria pollutants.

II. BACKGROUND

Align RNG Arizona - Snowflake, LLC (Align) is proposing to construct and operate a renewable natural gas (RNG) facility consisting of anaerobic digesters, a gas upgrade system, and a truck loading station (proposed Align project). The proposed Align project will be located on an existing hog farm located in Snowflake, Arizona (PFFJ).

The existing hog farm (PFFJ), which includes an adjacent feed mill, is owned by Smithfield Foods, Inc. (Smithfield) and is currently operating under Permit No. 65643. Align, which is a joint venture between Smithfield and Dominion Energy, will own and operate the proposed Align project. A Memorandum on behalf of Align was submitted to ADEQ evaluating the three criteria listed under Arizona Administrative Code (A.A.C.) R18-101.14 to determine if the proposed Align project and PFFJ should be considered a single stationary source. The analysis concluded that the facility met each of the criteria listed under state rule to be considered a single stationary source. However, Align is proposing that the co-located project activities be covered by two separate air quality permits. Align stated in the memo that the primary function of the new proposed Align project and PFFJ are independent of the other and the permitting requirements for each operation are not connected to and will be unaffected by the proposed Align operation. As a result, the operators at each respective site would have little to no contact with the other. In addition, these sites are operated by two separate companies with different Responsible Officials, who cannot certify compliance for the other.

ADEQ reviewed the memo analyzing the source determination for the proposed Align project and PFFJ and affirmed that the operations should be considered a single stationary source under state rule for permit applicability determinations. Regarding Align's request to have the co-located

project activities covered by two separate air quality permits, the United States Environmental Protection Agency (EPA) has determined that permitting authorities may issue multiple permits to a stationary source if each facility's compliance obligations are clear, and all applicable requirements are included in the respective air quality permits. Given that the operations will be conducted by separate companies that have different Responsible Officials, ADEQ approved to permit the proposed Align project and PFFJ under two separate air quality permits, and also requested that the current and any future permitting, or air dispersion modeling, must consider emission sources from both operations.

III. PROCESS DESCRIPTION

A. Process Description

Align is proposing to produce salable, pipeline-quality renewable natural gas (RNG) from swine-generated raw biogas at the existing Smithfield hog farm (PFFJ) located in Snowflake, Arizona. The raw biogas will be produced from anaerobically digesting the swine manure (feedstock) in new anaerobic digesters (covered lagoons). The raw biogas will be collected and conveyed by low-pressure pipelines from the digesters to a biogas upgrade system (GUS) where it will be processed into a high quality RNG. After the GUS, the RNG will be conveyed to a truck loading station where it will be loaded onto trucks for transfer to an interconnection site (Injection Site), approximately 35 miles (via road) from PFFJ, where the RNG will be injected into an existing natural gas pipeline for distribution to end users. Align's proposed operations will generally consist of four new digesters, a GUS, and a truck loading station all located in designated areas on the property.

1. Anaerobic Digesters

The four new anaerobic digesters will process the manure from PFFJ to produce and collect raw biogas to supply the GUS. Under normal operations, the only emissions from the digesters will be fugitive emissions of hydrogen sulfide (H₂S) and volatile organic compounds (VOC) associated with potential leaks from the impermeable covers and digester systems. The digesters will also be equipped with a pressure relief vent for safety that will be manually actuated only during emergency situations such as in the vent of pressure buildup.

2. Gas Upgrade System (GUS)

The GUS is an integrated processing system designed to process the raw biogas, by removing impurities, in order to upgrade it to pipeline quality gas. The maximum capacity of the system is nominally rated to process 1,473 standard cubic feet per minute (SCFM) of raw biogas, which would produce approximately 850 SCFM of RNG (approximately 58% of the raw biogas inlet feed rate). The GUS will include a biogas compression system, membrane upgrade technology, tail gas thermal oxidizer, and product gas H₂S polishing beds. The GUS uses membrane technology to process the raw biogas into high quality RNG. The membrane technology separates unwanted carbon dioxide (CO₂), H₂S, oxygen (O₂), water (H₂O), and other impurities in the raw biogas from the desired product (methane) based on each compound's permeability through three stages of membranes. This separation is carried out by pressurizing the biogas against the

membranes, which separates methane from the undesired compounds (tail gas – primarily CO₂ with lesser amounts of methane and trace quantities of H₂S and other impurities). Product gas exiting the last stage of membranes will flow through an H₂S polishing bed, adsorbing trace amounts of H₂S remaining in the product gas to meet pipeline quality specifications. From the H₂S polishing bed the product gas will be transported to the truck loading station. The tail gas from the various membrane stages of the GUS will be sent to a thermal oxidizer to oxidize any remaining methane and H₂S before being released to the atmosphere. The primary potential emissions from the GUS will consist of point source emissions from the thermal oxidizer. There is also the potential for fugitive H₂S and VOC emissions from equipment leaks.

3. Truck Loading Station

At the truck loading station, the RNG will be loaded onto tanker trucks for transport offsite to the pipeline injection point. The truck loading station will be equipped with an electric powered compressor with a variable frequency drive (VFD), a compressed natural gas (CNG) dryer, and a trailer connection hose post with operator push button interface. Potential emissions from the truck loading station will be fugitive VOC emissions consisting of escaped gas from the nozzle during loading events and other fugitive emissions from equipment leaks.

B. Control Devices

The tail gas from the various membrane stages of the GUS will be sent to a propane fired thermal oxidizer to oxidize any remaining methane and H₂S before being released to the atmosphere. The propane fired thermal oxidizer has a H₂S destruction efficiency of 98% guaranteed by the manufacturer.

C. Process Flow Diagram

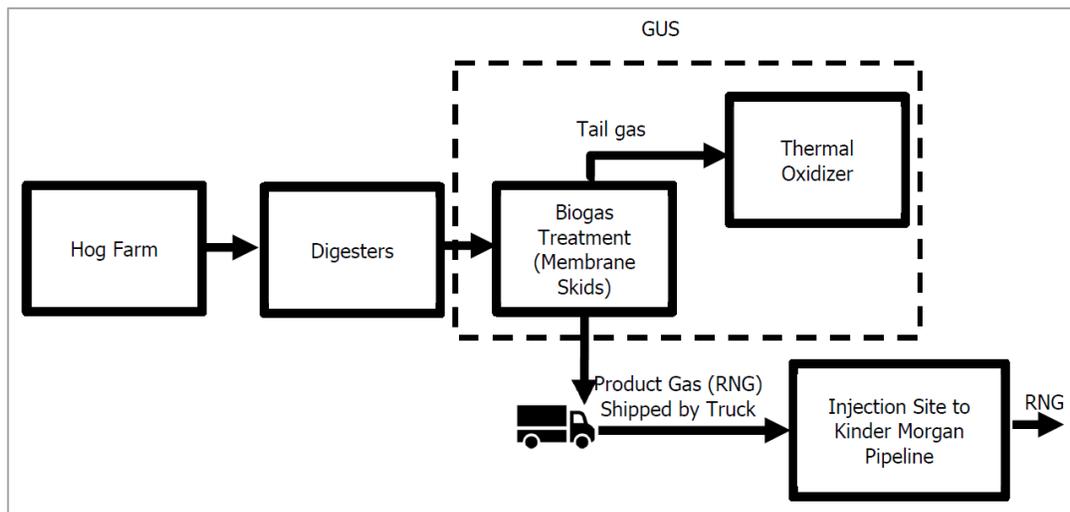


Figure 1. Align Process Flow Diagram

IV. LEARNING SITE EVALUATION

In accordance with ADEQ's Environmental Permits and Approvals near Learning Sites Policy, the Department is required to conduct an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

The Department did not identify any learning sites within two miles of the facility.

V. EMISSIONS

A. Emissions from the Proposed Align Project Only

The total generated biogas from all four anaerobic digesters will be 385,965,729 scf/yr and will all be routed to the GUS. The product gas from the GUS is approximately 58% in volume of the biogas sent to GUS, and the tail gas from the GUS is approximately 42% in volume of biogas sent to GUS. Methane content in the product gas is expected to be no lower than 98%. The tail gas from the GUS will be sent to a propane fired thermal oxidizer before being released to the atmosphere. The non-fugitive emissions of the proposed Align project are from the thermal oxidizer which includes the combustion of the tail gas and supplemental propane.

The potential-to-emit (PTE) only includes non-fugitive emissions due to that this facility is not a source listed in A.A.C. R18-2-101.23 (non-categorical source). The PTE is calculated based on U.S. EPA's Compilation of Air Pollution Emission Factors (AP-42) Section 1.4, Section 1.5, and Section 13.5, the vendor and manufacturer's specifications, and design parameters from the facility. The facility has a PTE more than the significant threshold of SO₂. The facility's PTE is provided in Table below:

Table 1: Potential to Emit (tpy) for Proposed Align Project Only

Pollutant	Emissions	Permitting Exemption Threshold	Significant Thresholds	Minor NSR Triggered?
NO _x	6.4	20	40	No
PM ₁₀	0.2	7.5	15	No
PM _{2.5}	0.2	5	10	Yes* (40 tpy of SO ₂ emissions)
CO	2.9	50	100	No
SO ₂	77.3	20	40	Yes
VOC	0.2	20	40	No

Pollutant	Emissions	Permitting Exemption Threshold	Significant Thresholds	Minor NSR Triggered?
HAPs	0.03	N/A	10 (single)/ 25 (combined)	N/A
H ₂ S	0.8	N/A	10	N/A

* SO₂ is a precursor to PM_{2.5}.

B. Emissions from the Proposed Align Project and PFFJ

Since neither the proposed Align project nor PFFJ is a categorical source listed in A.A.C. R18-2-101.23, only non-fugitive emissions are included in the PTE from both sources. The PTE for the proposed Align project and PFFJ is provided in Table 2.

Table 2: Potential to Emit (tpy) for the Proposed Align Project and PFFJ

Pollutant	Proposed Align Project	PFFJ	Proposed Align Project and PFFJ	Title V Thresholds	Major NSR Thresholds
NO _x	6.4	80.2	86.6	100	250
PM ₁₀	0.2	9.0	9.2	100	250
PM _{2.5}	0.2	9.0	9.2	100	250
CO	2.9	28.1	31.1	100	250
SO ₂	77.3	8.8	86.0	100	250
VOC	0.2	10.6	10.8	100	250
H ₂ S	0.8	0	0.8	100	250
HAPs	0.03	0.18	0.21	25	N/A

VI. TITLE V PROGRAM AND MAJOR NEW SOURCE REVIEW

A facility is subject to Title V program if this facility has a PTE equal to or greater than 100 tpy of any air pollutant subject to regulation. Major new source review is required if a facility has a PTE equal to or greater than 250 tpy of any regulated NSR pollutant if it is a non-categorical source. For both programs, fugitive emissions are not considered if the facility is a non-categorical source. As shown in Table 2, the PTE from the proposed Align project or the total PTE from the proposed Align project and PFFJ is both below the Title V thresholds and major new source review thresholds. Therefore, the proposed Align project is not subject to Title V or major new source review program; or if the proposed Align project and PFFJ together is considered to be a single source, this source does not trigger Title V or major new source review.

For future permitting actions or air dispersion modeling, the emissions from both sources shall be considered for major source, major new source review (NSR) and PSD applicability.

VII. MINOR NEW SOURCE REVIEW (NSR)

Minor new source review is required if the emissions of a new source have the potential to emit any NSR air pollutant at an amount equal to or greater than the permitting exemption threshold in Table above. For the proposed Align project, the potential to emit for SO₂ is greater than the permitting exemption threshold. Thus, this facility is subject to minor NSR requirements.

The facility has the option to either implement reasonably available control technology (RACT) or conduct screen modeling to satisfy the requirements of minor NSR. This facility elected to undergo screen modeling to demonstrate compliance with minor NSR Requirements. A detailed discussion of the screen modeling analysis can be found in Section XII below.

VIII. VOLUNTARILY ACCEPTED EMISSION LIMITATIONS AND STANDARDS

The permit contains the following voluntary emission limitation and standard:

A. SO₂ Emission Limitation

The facility has accepted a voluntary SO₂ emission limitation of 80 tons per year from the thermal oxidizer to avoid the total emissions from the proposed Align project and PFFJ from triggering major source applicability. This operation limit was incorporated into this installation Permit No. 90062.

IX. APPLICABLE REGULATIONS

Table 1 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

Table 1: Applicable Regulations

Unit & year	Control Device	Rule	Discussion
GUS	Propane Fired Thermal Oxidizer	A.A.C. R18-2-730: Standards of Performance for Unclassified Sources	The GUS is subject to Unclassified Sources requirements A.A.C. R18-2-730.
		40 CFR Part 60 Subpart OOOOa: Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced after September 18, 2015	This is not applicable because the proposed Align project receives biogas produced from the anaerobic digestion of hog manures and process the biogas to form renewable natural gas, but does not obtain natural gas from a well per 40 CFR §60.5430a definition for natural gas production and processing.

Unit & year	Control Device	Rule	Discussion
		40 CFR 63 Subpart HH: National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities	This is not applicable because the proposed Align project is an area HAP source and does not have a triethylene glycol (TEG) dehydration unit per 40 CFR §63.760.(b)(2).
		40 CFR 63 Subpart HHH: National Emissions Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities	This is not applicable because the proposed Align project is not a major HAP source and not a natural gas transmission and storage facility and does not transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user per 40 CFR §63.1270.
Fugitive dust sources	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	These standards are applicable to any spray painting operation.
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

X. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit.

Table 4: Permit No. 90062

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
GUS (Thermal Oxidizer)	Opacity	20%	Conduct quarterly visible emissions survey	Maintain on-site records of the manufacturer supplied operations and maintenance instructions or Operation and Maintenance Plan for minimizing emissions for all equipment. Record thermal oxidizer operating temperature.	Report performance test results.
	SO ₂	600 ppm, 80 TPY (from thermal oxidizer)	Monitor the GUS and the thermal oxidizer to ensure that it is operated and maintained in conformance with its design. Operate and maintain the GUS and the thermal oxidizer in accordance with the manufacturers' specifications to ensure the 98% destruction efficiency of H ₂ S is met.		
	NO _x	500 ppm (as NO ₂)	Monitor the GUS and the thermal oxidizer to ensure that it is operated and maintained in conformance with its design.		
	H ₂ S	0.03 ppm			
	PM	40% Opacity	Operate and maintain the GUS and the thermal oxidizer in accordance		

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			<p>with the manufacturers' specifications to ensure the 98% destruction efficiency of H₂S is met. A Method 9 observer is required to conduct a monthly survey of visible emissions.</p> <p>Monitor thermal oxidizer operating temperature.</p> <p>Conduct initial and subsequent performance test on the SO₂ emission limit and H₂S destruction efficiency and operating temperature of the thermal oxidizer.</p>		
Fugitive Dust	PM	20% Opacity		Record of the dates and types of dust control measures employed, and if applicable, the results of any Method 9 observations, and any corrective action taken to lower the opacity of any excess emissions.	
Abrasive Blasting	VOC	20% Opacity Control 96% of the overspray		Record the date, duration and pollution control measures of any abrasive blasting project.	

Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Spray Painting	VOC			Maintain records of the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.	
Demolition/ Renovation	Asbestos			Maintain records of all asbestos related demolition or renovation projects including the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents	

XI. ENVIRONMENTAL JUSTICE ANALYSIS

EPA defines Environmental Justice (EJ) to include the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of completing an EJ assessment in permitting is to provide an opportunity for overburdened populations or communities to allow for meaningful participation in the permitting process. Overburdened is used to describe the minority, low-income, tribal and indigenous populations or communities that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards.

EPA developed EJSCREEN, a publicly available tool that uses nationally consistent data to produce maps and reports detailing environmental and demographic indicators that can be used to evaluate EJ concerns. EPA selected an 80th percentile threshold for this action to evaluate the potential for EJ concerns in a community, meaning that if the area of interest exceeds the 80th percentile for one or more of the EJ indexes, the EPA considers that area to have a high potential for EJ concerns. ADEQ mapped the location of the proposed Align project and reviewed a five-mile radius around the facility for potential environmental justice concerns (see Figure 2).

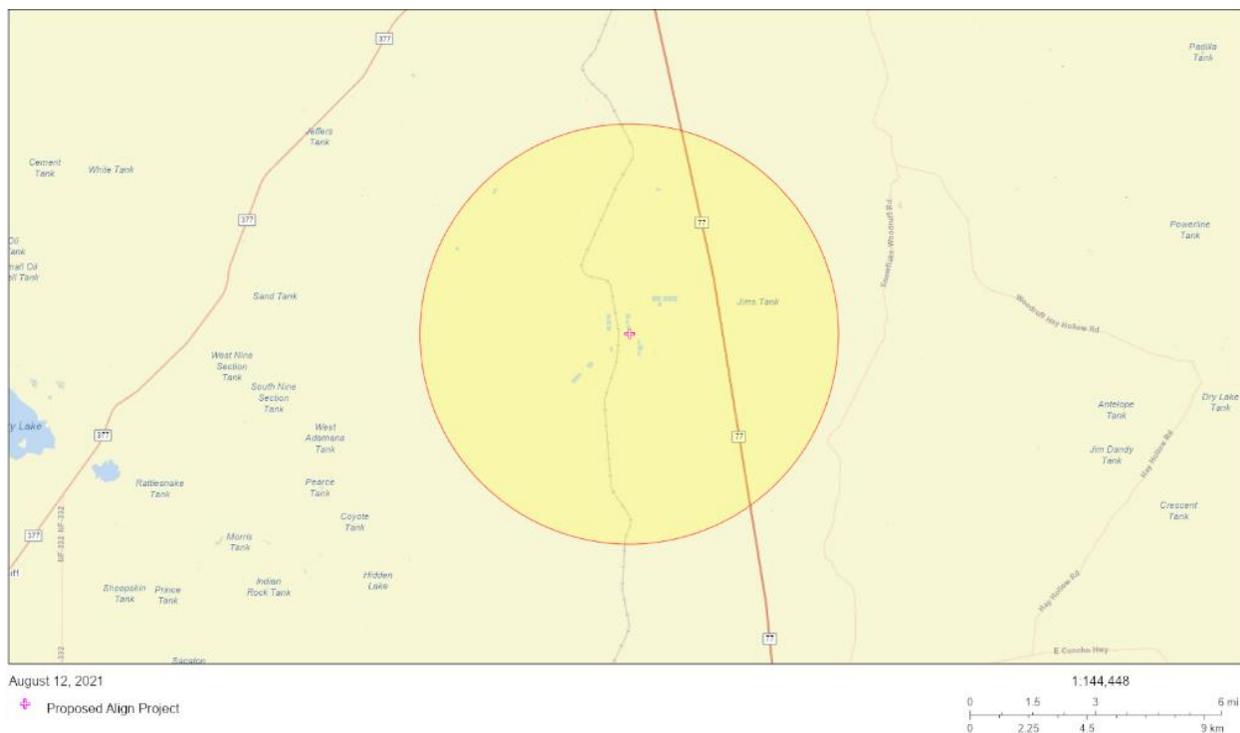


Figure 2. A Five-mile Radius around the Proposed Align Project for Potential Environmental Justice Concerns

A. Demographics

ADEQ relied on data from the EPA EJ Screen tool to assess the demographics of the communities near the initial location for this proposed facility. The EJSCREEN report shows that the Demographic Indicator for Demographic Index, People of Color Population, Low Income Population, Linguistically Isolated Population, Population with Less than High School Education, and Population over 64 Years of Age, are all below the 80th

percentile threshold. The Demographic Indicator for Population under 5 Years of Age is over the 80th percentile threshold. Air quality dispersion modeling was conducted to ensure that the total emissions from the proposed Align project and PFFJ do not contribute to any exceedances of the National Ambient Air Quality Standards (NAAQS). Additionally, ADEQ posts a notice in two newspapers of general circulation within the surrounding community, as well as publishes the notice electronically to ensure that the community has ample opportunity to provide comments on the draft documents prior to a final permitting decision.

B. Air Quality

Air quality dispersion modeling was conducted to determine if the total emissions from the proposed Align project and PFFJ will contribute to a NAAQS or Arizona Ambient Air Quality Guidelines (AAAQG) exceedance. A complete review of the air quality analysis can be found in Section XII below. Based on the modeling analysis results, ADEQ has determined that the issuance of the Air Quality Permit for the proposed Align project will not interfere with attainment and maintenance of the NAAQS, and will not have an adverse impact on the community.

C. Conclusion

ADEQ concludes that the protections afforded by Arizona Revised Statutes (A.R.S.) § 49-426, which is imposed through the permit, ensure that the public health and environment in Arizona are protected and that the public notice and comment opportunities afforded to the community on this new permit application satisfy the public participation component of the EPA EJ Guidance. The dispersion modeling conducted further concludes that the proposed Align project demonstrates compliance with the NAAQS and that the emissions from the facility will not result in any significant environmental or public health impacts.

XII. AMBIENT AIR IMPACT ANALYSIS

This section summarizes the ADEQ's findings regarding the ambient assessment submitted by Align in support of its air quality Class II permit application for the construction and operation of a renewable upgrading natural gas facility near Snowflake, Arizona. As previously discussed, the proposed Align project will trigger the minor NSR review for SO₂. Under the minor NSR program, the Permittee must address minor NSR requirements by conducting a National Ambient Air Quality Standards (NAAQS) modeling exercise or a Reasonable Available Control Technology (RACT) analysis. Align elected to perform regulatory dispersion modeling to demonstrate that the proposed project's emissions will not interfere with attainment and maintenance of NAAQS for SO₂. Since SO₂ emissions may also contribute to the secondary formation of PM_{2.5}, Align performed an additional analysis to address the impacts on secondary PM_{2.5} from the proposed project's precursor (SO₂ and NO_x) emissions.

ADEQ reviewed the ambient air impact analysis following the EPA's Guideline on Air Quality Models (40 CFR Part 51 Appendix W)¹ and ADEQ's Modeling Guidelines for Arizona Air Permits

¹ https://www.epa.gov/sites/production/files/2020-09/documents/appw_17.pdf

(hereafter “ADEQ Guidelines”).² It was concluded that the issuance of the Air Quality Permit for the proposed Align project will not interfere with attainment and maintenance of the NAAQS, and will not have an adverse impact on the community.

A. Model Selection

Align used the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) model for the ambient impact analysis. AERMOD is the EPA-preferred regulatory model for estimating impacts at receptors located in simple terrain and complex terrain (within 50 km of a source) due to emissions from industrial sources. AERMOD consists of three major components: AERMAP, used to process terrain data and develop elevations for receptors; AERMET, used to process the meteorological data; and AERMOD, used to estimate the ambient pollutant concentrations. Align used the latest version of AERMOD (Version 21112) for the modeling analysis.

B. Emission Sources

The dispersion modeling considers all SO₂ emissions sources from both the proposed Align project and the existing hog farm PFFJ. The SO₂ emission source from the proposed Align project is a thermal oxidizer (owned and operated by Align) where the tail gas containing H₂S will be combusted. PFFJ has propane-fired heaters and diesel-fired engines (owned and operated by Smithfield). The thermal oxidizer is the primary emission source, accounting for approximately 90% of the total emissions over the two facilities.

The thermal oxidizer and the diesel-fired engines were modeled as point sources. The maximum hourly emission rates for point sources were modeled. The propane building heaters used at PFFJ are vented inside the buildings. Therefore, these heaters were modeled as area sources. Because the heaters operate seven (7) months out of the year, the short-term emission rates based on annual emissions were adjusted accordingly.

C. Meteorological Data

1. Meteorological Data Selection

For regulatory dispersion modeling analyses, 5 years of National Weather Service (NWS) station meteorological data, or at least 1 year of site-specific meteorological data, or at least 3 years of prognostic meteorological data should be used.

Align utilized 5 years of the meteorological data collected at the Winslow-Lindbergh Regional Airport (Winslow Airport) for the dispersion modeling analysis. Align provided justification on the representativeness of the meteorological data following the four criteria as listed in 40 CFR Part 51 Appendix W Section 8.4.1.b: (i) spatial proximity of the meteorological monitoring site to the facility; (ii) complexity of the topography of the area; (iii) exposure of the meteorological sensors; and (iv) period of time during which the

² https://static.azdeq.gov/aqd/modeling_guidance_2019.pdf

data are collected. Upon review, ADEQ concurred with Align that the meteorological data collected from the Winslow Airport generally characterize the transport and dispersion conditions in the project area.

2. Meteorological Data Processing

ADEQ provided Align the pre-processed meteorological files for the period of 2015 to 2019. ADEQ used the AERMET meteorological preprocessor (Version 19191) to process the five-years of surface data collected from Winslow Airport along with concurrent upper air radiosonde data obtained from the Albuquerque NWS radiosonde station. ADEQ also used the EPA's AERSURFACE tool (Version 20060) to calculate surface characteristic parameters (albedo, Bowen ration and surface roughness) required by AERMET.

During the permit review period, ADEQ processed the most recent five-years of meteorological data (2016-2020) using the most recent version of AERMET (Version 21112). ADEQ reran the model with the updated meteorological dataset and found that the effects of the updated meteorological dataset on the modeled results were marginal.

D. Ambient Air Boundary and Receptor Network

Align used the facility fence line as the ambient air boundary for modeling purposes. Following ADEQ Guidelines, Align set up a receptor network to determine areas of maximum predicted concentrations. Align used the AERMAP terrain processor (Version AERMAP - Version 18081) to process the National Elevation Data (NED) NED 1/3 arc second data files to generate the receptor elevations and hill heights.

E. Land Use Classification

The rural/urban classification of an area is determined by either the dominance of a specific land use or by population data in the study area. The land-use procedure specifies that the land-use within a three-kilometer radius of the source should be determined using the typing scheme developed by Auer.³ Align determined the proposed project site area as "Rural" based on the land use method. Therefore, Align utilized the default, rural dispersion coefficient for the modeling analysis.

F. Building Downwash Effects

Align evaluated building downwash effects based on building and stack location and dimensions, and the EPA's Building Profile Input Program Plume Rise Model Enhancements (BPIP-PRME).

G. Background Concentration

³ Auer, A.H. 1978. Correlation of Land Use and Cover with Meteorological Anomalies, *Journal of Applied Meteorology*, 17:636-643.

The background concentrations account for sources of air pollution other than those explicitly modeled. Typically, background concentrations should be determined based on the air quality data collected in the vicinity of the proposed project site. There are no monitors located in the vicinity of the project site.

Because this air dispersion modeling analysis has already modeled the proposed Align project emission sources as well as nearby sources (such as engines and heaters with PFFJ), the background concentrations only need to consider the impacts from some relatively distant sources. ADEQ identified that the Cholla power plant may contribute to the background of the project site. Upon reviewing the 1-hour SO₂ Data Requirements Rule (DRR) modeling for Cholla, ADEQ recommended a background of 20 µg/m³ (7.6 ppb) for the project site.

H. SO₂ Modeling Results

Table 5 summarizes the modeled results for SO₂. Representative background concentrations were added to modeled impacts and the total concentrations were then compared to the NAAQS. As shown in Table 5, emissions from the proposed Align project will not cause or contribute to a violation of the NAAQS for SO₂ under the operational limits/conditions as proposed in the draft permit.

Table 5: Modeled Results for SO₂

Averaging Period	Modeled Concentration (µg/m ³)	Background Concentration (µg/m ³)	Maximum Ambient Concentration (µg/m ³)	NAAQS (µg/m ³)
1-hour	119.50	20	139.50	196*
3-hours	115.75	20	135.75	1,300**

* Primary standard - provide public health protection.

** Secondary standard - provide public welfare protection.

I. Impacts on Secondary PM_{2.5}

Per Appendix W Section 5.3.2 and Section 5.4.2 of 40 CFR Part 51, the EPA recommends a two-tiered demonstration approach for addressing single-source impacts on Secondary PM_{2.5}. The first tier involves use of technically credible relationships between precursor emissions and a source's impacts. The second tier involves application of more sophisticated case-specific chemical transport models (e.g., photochemical grid models). In general, the case for using a full quantitative chemical transport model is rare.

One of the first-tier demonstration tools is Model Emissions Rates for Precursors (MERPs). The MERPs can be described as an emission rate of a precursor that is expected to result in a change in ambient air that would be less than a specific air quality concentration threshold such as a significant impact level (SIL). If the emission rates of precursors for a

proposed source are less than MERPs, it is concluded that the precursor emissions will not cause or contribute to a violation of PM_{2.5} NAAQS.

Based on the SILs for PM_{2.5} NAAQS, the EPA investigated single source impacts on secondary PM_{2.5} from some hypothetical sources and provided most conservative illustrative MERP values for SO₂ and NO_x. The Coconino MERPs location is the closest representative location for this site. Table 6 lists the most conservative illustrative MERPs in Coconino County.⁴

Table 6: Most Conservative Illustrative MERP Values

County	Emissions (tpy)	Stack Height(m)	Most Conservative Illustrative MERP Values (tpy)			
			Annual PM _{2.5} SO ₂	Daily PM _{2.5} SO ₂	Annual PM _{2.5} NO _x	Daily PM _{2.5} NO _x
Coconino	500, 1000	10, 90	32,077	21,050	299,905	32,498

The potential to emit (PTE) for SO₂ and NO_x due to the proposed Align project are 77.3 tpy and 6.4 tpy, respectively, which are significantly lower than the most conservative illustrative MERPs as presented in Table 6. Additionally, the proposed Align project only emits 0.2 tpy of primary PM_{2.5}. Therefore, it is concluded that the proposed Align project will not interfere with the attainment and maintenance of the NAAQS for PM_{2.5}.

XIII. LIST OF ABBREVIATIONS

- AAB..... Ambient Air Boundary
- A.A.C..... Arizona Administrative Code
- AAAQG..... Arizona Ambient Air Quality Guidelines
- ADEQ..... Arizona Department of Environmental Quality
- AERMAP..... Terrain data preprocessor for AERMOD
- AERMET..... AERMOD Meteorological Preprocessor
- AERMOD..... AMS/EPA Regulatory Model
- AERSURFACE..... Surface characteristics preprocessor for AERMOD
- AMS..... American Meteorological Society
- A.R.S..... Arizona Revised Statutes
- CFR..... Code of Federal Regulations
- CNG..... Compressed Natural Gas
- CO..... Carbon Monoxide
- CO₂..... Carbon Dioxide
- DRR..... Data Requirements Rule
- EPA..... Environmental Protection Agency
- EJ..... Environmental Justice
- GUS..... Gas Upgrade System
- HAP..... Hazardous Air Pollutant
- H₂O..... Water
- H₂S..... Hydrogen Sulfide

4 <https://www.epa.gov/scram/merps-view-qlik>

MERP.....	Model Emissions Rates for Precursors
NAAQS.....	National Ambient Air Quality Standard
NED.....	National Elevation Dataset
NESHAP.....	National Emission Standards for Hazardous Air Pollutants
NO _x	Nitrogen Oxides
NO ₂	Nitrogen Dioxide
NSPS.....	New Source Performance Standards
NSR.....	New Source Review
O ₂	Oxygen
PM.....	Particulate Matter
PM ₁₀	Particulate Matter no larger than 10 µm nominal aerodynamic diameter
PM _{2.5}	Particulate Matter no larger than 2.5 µm nominal aerodynamic diameter
PRIME.....	Plume Rise Model Enhancements
PSD.....	Prevention of Significant Deterioration
PTE.....	Potential to Emit
RACT.....	Reasonable Available Control Technology
RNG.....	Renewable Natural Gas
SCFM.....	Standard Cubic Feet per Minute
scf/yr.....	Standard Cubic Feet per year
SIA.....	Significant Impact Area
SIL.....	Significant Impact Level
SO ₂	Sulfur Dioxide Significant Impact Levels
TPY (tpy).....	Tons per Year
VFD.....	Variable Frequency Drive
VOC.....	Volatile Organic Compound
yr.....	Year