Alaska Department of Environmental Conservation
Air Permits Program

TECHNICAL ANALYSIS REPORT
For the terms and conditions of
Minor Permit No. AQ1854MSS02

Issued to Hilcorp Alaska LLC
For Omega Pad

Preliminary – January 30, 2026

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1. INTRODUCTION

This Technical Analysis Report (TAR) provides the Alaska Department of Environmental Conservation's (Department's) basis for issuing Minor Permit No. AQ1854MSS02 to Hilcorp Alaska LLC (Hilcorp) for the Omega Pad.

The stationary source's potential to emit (PTE) for particulate matter less than or equal to a nominal 2.5 microns in diameter ($PM_{2.5}$) exceeds the 10 TPY threshold in 18 AAC 50.502(c)(1). The Permittee has submitted an ambient demonstration for $PM_{2.5}$ to show that the stationary source will not cause or contribute to an exceedance of the 24-hour and annual average $PM_{2.5}$ Alaska Ambient Air Quality Standards (AAAQS).

2. APPLICATION DESCRIPTION

Hilcorp submitted its application for Minor Permit No. AQ1854MSS02 on September 5, 2025. This application proposes revising the terms and conditions of Minor Permit No. AQ1854MSS01. Additionally, this application proposes revisions to the emissions unit (EU) inventory for the stationary source. Proposed revisions to the EU inventory include removal of a hot oil heater (previously identified as EU ID 4 in Minor Permit No. AQ1854MSS01) and reductions to the maximum capacities of the remaining hot oil heaters (EU IDs 1 – 3) from 115 MMBtu/hr to 61.34 MMBtu/hr. Additionally, in Minor Permit No. AQ1854MSS01, EU ID 5 was identified as either being one engine with a rated maximum capacity of 1,490 bhp or two engines with rated maximum capacities of 779 bhp, each. However, this application proposes revising EU ID 5 as only being two smaller engines with rated maximum capacities of 779 bhp, each, now identified as EU IDs 5a and 5b. Thus, removing the possibility of a single larger engine being installed as EU ID 5.

The application for Minor Permit No. AQ1854MSS02 included an updated ambient demonstration to show that the stationary source, as revised, will not cause or contribute to an exceedance of the 24-hour and annual average particulate $PM_{2.5}$ AAAQS. As described above, the stationary source, as proposed in the application for Minor Permit No. AQ1854MSS02, has a $PM_{2.5}$ PTE exceeding the 10 TPY threshold in 18 AAC 50.502(c)(1). The stationary source's PTEs for other criteria pollutants do not exceed the thresholds under 18 AAC 50.502(c)(1). Therefore, an ambient demonstration was not required for Minor Permit No. AQ1524MSS02 to show that the stationary source would not cause or contribute to an exceedance of any of the AAAQS for those other criteria pollutants listed under 18 AAC 50.010 such as NO_X, SO_2, CO, and PM_{10}.

Omega Pad is a proposed project for the construction of a new stationary source. Hilcorp proposes constructing a new drilling and production pad within the Western Operating Area of Prudhoe Bay oil field, approximately 7.8 miles west-southwest of Hilcorp's Gathering Center #2 (GC-2). Omega Pad is expected to provide access to approximately 3,500 acres of undeveloped oil reserves.

The Omega Pad project will include the construction of a production pad, drilling of new wells, construction of a processing facility, and tie-ins to existing production transport pipelines and gas lift pipelines, electrical infrastructure, and other facilities. The proposed emissions unit (EU) inventory consists of three hot oil heaters, two standby generator engines, and five storage tanks.

3. CLASSIFICATION FINDINGS

Based on the review of the application, the Department finds that:

1. Minor Permit No. AQ1854MSS02 is classified under 18 AAC 50.508(6) for revising or rescinding the terms or conditions of a Title I permit.
2. Minor Permit No. AQ1854MSS02 is classified under 18 AAC 50.502(c)(1) because the Omega Pad is a new stationary source that has the potential to emit greater than 10 TPY of $PM_{2.5}$.

4. APPLICATION REVIEW FINDINGS

Based on the review of the application, the Department finds that:

1. Per 18 AAC 50.502(c)(1), "the owner or operator must obtain a minor permit under this section before beginning actual construction of a new stationary source with a potential to emit greater than 10 TPY of direct $PM_{2.5}$…" 18 AAC 50.502(c)(1) is not often triggered when applicants propose to revise or rescind the terms or conditions of a Title I permit under 18 AAC 50.508(6). However, 18 AAC 50.990(14) and 40 C.F.R. 52.21(b)(11) describes the term *begin actual construction* as meaning "in general, initiation of physical on-site construction activities on an emissions unit which are of a permanent nature. Such activities include, but are not limit to, installation of building supports and foundations, laying underground pipework and construction of permanent storage structures…" Per the application materials for this permit, "construction of the Omega Pad is anticipated to commence in the first quarter of 2027…" Because actual construction has not begun for this stationary source, the Department concludes that this permitting action is classified under 18 AAC 50.202(c)(1).
2. Hilcorp's minor permit application for Omega Pad contains the elements listed in 18 AAC 50.540.
3. Hilcorp calculated the SO_2 PTE of the stationary source assuming the H_2S concentration of fuel gas combusted in the hot oil heaters (EU IDs 1 – 3) is 250 ppmv. This assumption was based off Hilcorp's plan to supply the Omega Pad with fuel gas from the GC-1 annex, which is permitted under Minor Permit No. AQ0182MSS02 Rev. 2. Minor Permit No. AQ0182MSS02 Rev. 2 limits the H_2S concentration of fuel gas combusted at the GC-1 annex to no more than 200 ppmv. The Department revised the SO_2 PTE calculated by Hilcorp in the application for Minor Permit No. AQ1854MSS02 to reflect that the H_2S concentration of fuel gas should not exceed 200 ppmv.
4. The potential emissions from the Omega Pad will not exceed the Title V major source thresholds found in the definition of "major source" as defined in 40 C.F.R. 71.2 (adopted under 18 AAC 50.040(j)). Nor is this stationary source subject to any federal standards requiring that the stationary source obtains a Title V permit. Thus, this stationary source is not required to obtain a Title V permit.
5. Hilcorp's modeling analysis complies with the ambient demonstration requirements of 18 AAC 50.540(c)(2).
6. To protect the 24-hour and annually averaged $PM_{2.5}$ Alaska ambient air quality standards AAAQS, the Permittee is required to comply with the following requirements:

- Construct and maintain the exhaust stacks of EU IDs 1 – 3 according to the stack height requirements in Condition 10.1. For further discussion, see Section 3.7.2.1 of the modeling review in Appendix B.
- Install and operate EPA Tier 4 compliant engines as EU IDs 5a and 5b as described in Condition 10.2. For further discussion, see Section 3.7.1.3 of the modeling review in Appendix B.

5. EMISSIONS SUMMARY AND PERMIT APPLICABILITY

Table 1 shows the emissions summary and permit applicability with assessable emissions from the stationary source. Emission factors and detailed calculations are provided in Appendix A.

A summary of the potential to emit (PTE) and assessable PTE, as determined by the Department, is shown in Table A below.

Table A – Emissions Summary and Permit Applicability, tons per year (TPY)

Parameter	NO_x	CO	VOC	$PM_{2.5}$	PM_{10}	PM	SO_2
New Stationary Source PTE	36.79	32.89	15.92	10.43	10.43	10.43	30.97
18 AAC 50.502(c)(1) Permit Thresholds	40	N/A	N/A	10	15	N/A	40
502(c)(1) Applicable?	N	N/A	N/A	Y	N	N/A	N
PSD Major Threshold	250	250	250	250	250	N/A	250
PSD Major Required	N	N	N	N	N	N/A	N
Title V Permit Thresholds	100	100	100	100			100
Title V Permit Required?	N	N	N	N			N
Assessable Emissions	36.79	32.89	15.92	10.43[a]			30.97
Total Assessable [a], [b]	127.00						

Notes:

[a] PM emissions include PM_{10} and $PM_{2.5}$ emissions. Therefore, PM_{10} and $PM_{2.5}$ are not counted in total assessable emissions.

[b] HAP emissions are a subset of either VOC or PM_{10} emissions and are excluded from the assessable emissions total to avoid double counting. The total cumulative HAP PTE is 1.86 TPY, including the highest single HAP (n-Hexane) PTE at 1.65 TPY.

The assessable PTE listed under Condition 4.1 is the sum of the PTE of each individual air pollutant. The emissions listed in Table A are estimates that are for informational use only. The listing of the emissions does not create an enforceable limit for the stationary source.

The emissions listed in Table A are as provided in the Permittee's application for this permit, except that the Department revised the calculated SO_2 PTE. In its application for this permit, the Permittee assumed that the H_2S concentration of the fuel gas combusted in EU IDs 1 – 3 would be 250 ppmv. This assumed concentration is a conservative assumption based off the Permittee's plan to supply the Omega Pad with fuel gas from the GC-1 annex. Currently, as of issuance of this permit, the GC-1 annex is permitted under Minor Permit No. AQ0182MSS02 Rev. 2. Minor Permit No. AQ0182MSS02 Rev. 2 limits the H_2S concentration of the fuel gas combusted in units at the GC-1 annex, some of which will be sent to the Omega Pad, to no more than 200 ppmv. The Department revised the SO_2 PTE calculations to reflect that the maximum H_2S concentration of fuel gas being supplied from the GC-1 annex should be 200 ppmv.

6. PERMIT ADMINISTRATION

Hilcorp may proceed with construction of the stationary source upon the issuance of this minor permit. The stationary source's potential to emit of the different criteria pollutants do not exceed 100 TPY. Additionally, the stationary source is not subject to any federal standard that requires the stationary source to obtain a Title V permit. Therefore, the stationary source is not required to obtain a Title V operating permit.

7. PERMIT CONDITIONS

The bases for the standard and general conditions imposed in Minor Permit No. AQ1854MSS02 are described below.

Cover Page

18 AAC 50.544(a)(1) requires the Department to identify the stationary source, Permittee, and contact information. The Department provided this information on the cover page of the permit.

Section 1: Emissions Unit Inventory

The EUs authorized and/or restricted by this permit are listed in Table 1 of the permit. Unless otherwise noted in the permit, the information in Table 1 is for identification purposes only. Condition 1 is a general requirement to comply with AS 46.14 and 18 AAC 50 when installing a replacement EU.

Condition 2 is a general requirement for good air pollution control practices and maintenance of EUs operated at the stationary source. Maintaining and operating equipment in good working order is fundamental to preventing unnecessary or excess emissions. Standard conditions for monitoring compliance with emission standards are based on the assumption that good maintenance is performed. Without appropriate maintenance, equipment can deteriorate more quickly than with appropriate maintenance. The Permittee is required to keep maintenance records to show that proper maintenance procedures were followed, and to make the records available to the Department.

Section 2: Fee Requirements

18 AAC 50.544(a)(2) requires the Department to include a requirement to pay fees in accordance with 18 AAC 50.400 – 18 AAC 50.499 in each minor permit issued under 18 AAC 50.542. The Department used the Standard Permit Condition (SPC) I language for Minor Permit No. AQ1854MSS02. However, the Department modified the condition by removing the requirement to only pay for emissions of each air pollutant in quantities of 10 tons per year or greater, to be consistent with the updates to the emission fees in 18 AAC 50.410(a) that went into effect September 7, 2022. The Department is in the process of incorporating these updates into SPC I.

Condition 5.3 applies only to permitted new stationary sources that have not yet commenced construction or operations or existing stationary sources that are inactive but are keeping their operating permits current. As indicated by this condition, if the stationary source has not commenced construction or operation on or before March 31, the Permittee is required to submit a transmittal letter certified by the responsible official under 18 AAC 50.205 indicating that the assessable emissions for the source are zero for the previous fiscal year and provide estimates for when construction or operation will commence.

Section 3: State Emission Standards

Condition 7, Visible Emissions

Visible emissions, excluding condensed water vapor, from an industrial process or fuel-burning equipment may not reduce visibility through the effluent by more than 20 percent averaged over six consecutive minutes, under 18 AAC 50.055(a)(1).

Permits classified under 18 AAC 50.502(c) must include terms and conditions requiring performance tests for emission limits under 18 AAC 50.050 –18 AAC 50.090. Therefore, the Department is requiring an initial compliance demonstration (Method 9 observation) for the diesel-fired engines, EU IDs 5a and 5b, within 60 days of their startup. The Department has also included recordkeeping and reporting requirements for EU ID 5a and 5b to ensure compliance with the visible emissions standard. Per Condition 10.2, EU IDs 5a and 5b must meet EPA's Tier 4 emissions standards (found in Table 1 of 40 C.F.R. 1039.101). Consequently, the Department does not expect visible emissions from EU IDs 5a and 5b to exceed the visible emissions limit in Condition 7. Therefore, the Department has not included ongoing visible emissions monitoring for EU IDs 5a and 5b.

The Department will not be requiring performance testing for the fuel gas-fired heaters (EU IDs 1 – 3) because fuel gas-fired equipment generally complies with the visible emissions standard while they only combust fuel gas. Therefore, in place of requiring performance testing, the Department is requiring the Permittee to certify in each operating report required under Condition 16 that only fuel gas is combusted in each of EU IDs 1 – 3. Combusting any fuel other than fuel gas in any of EU IDs 1 – 3 shall be reported under excess emissions and permit deviation reporting requirements. This is consistent with the language in the Department's Standard Permit Condition (SPC) VIII (Visible Emissions and Particulate Matter Monitoring Plan for Gas Fuel-Burning Equipment).

Ongoing visible emissions monitoring for EU IDs 1 – 3 has been included through continued verification that the units only combust fuel gas.

Condition 8, Particulate Matter (PM)

PM emitted from an industrial process or fuel-burning equipment may not exceed 0.05 grains per cubic foot of exhaust gas (gr/dscf), averaged over three hours, under 18 AAC 50.055(b).

Experience has shown there is a correlation between opacity and PM. Twenty percent visible emissions would normally comply with the 0.05 gr/dscf. As such, compliance with the opacity limits is included as a surrogate method of assuring compliance with the PM standards.

Ongoing PM emissions monitoring for EU IDs 1 – 3 has been included through continued verification that the units only combust fuel gas.

Per Condition 10.2, EU IDs 5a and 5b must meet EPA's Tier 4 emissions standards (found in Table 1 of 40 C.F.R. 1039.101). Consequently, the Department does not expect PM emissions from EU IDs 5a and 5b to exceed the PM emissions limit in Condition 8. Therefore, the Department has not included ongoing PM emissions monitoring for EU IDs 5a and 5b.

Condition 9, Sulfur Compound Emissions

Sulfur compound emissions from an industrial process or fuel burning equipment may not exceed 500 ppm averaged over a period of three hours, under 18 AAC 50.055(c).

Permits classified under 18 AAC 50.502(c) must include terms and conditions requiring performance tests for emission limits under 18 AAC 50.050 – 090.

Calculations show that fuel oil with sulfur content less than 0.74 percent by weight will comply with the state emissions standard. Calculations show that fuel gas with a H_2S concentration less than 4,000 ppmv will comply with the state standards.

Ongoing sulfur compound emissions monitoring for EU IDs 1 – 3 has been included.

Per Condition 10.2, EU IDs 5a and 5b must meet EPA's Tier 4 emissions standards (found in Table 1 of 40 C.F.R. 1039.101). As Tier 4 engines, EU IDs 5a and 5b are subject to 40 C.F.R. 60.4207(b) and, consequently, must only combust fuel meeting the requirements of 40 C.F.R. 1090.305(b) (i.e., a maximum sulfur content of 15 ppm). Fuel with a maximum sulfur content of 15 ppm is also known as ultra-low sulfur diesel (ULSD). Because EU IDs 5a and 5b are required to combust ULSD by federal requirements, the emissions from EU IDs 5a and 5b cannot exceed the sulfur compound emissions limit in Condition 9. Therefore, the Department has not included ongoing sulfur compound emissions monitoring for EU IDs 5a and 5b.

Section 4: Ambient Air Quality Protection Requirements

Condition 10, Ambient Air Quality Protection Requirements

18 AAC 50.544(a)(3) and 18 AAC 50.544(a)(6) require the Department to include conditions to protect air quality, when warranted. The Department determined that conditions are warranted to protect the 24-hour and annually averaged $PM_{2.5}$ AAAQS for the reasons described in the modeling review found in Appendix B of this TAR.

Section 5: General Recordkeeping, Reporting, and Certification Requirements

Condition 11, Recordkeeping Requirements

The condition restates the regulatory requirements for recordkeeping, and supplements the recordkeeping defined for specific conditions in the permit. The records being kept provide evidence of compliance with this requirement.

Condition 12, Certification

18 AAC 50.205 requires the Permittee to certify any permit application, report, affirmation, or compliance certification submitted to the Department. The Department used the language in SPC XVII. This requirement is reiterated as a standard permit condition in 18 AAC 50.345(j).

Condition 13, Submittals

Condition 13 clarifies where the Permittee should send their reports, certifications, and other submittals required by the permit. The Department used the language in SPC XVII. The Department included this condition from a practical perspective rather than a regulatory obligation.

Condition 14, Information Requests

AS 46.14.020(b) allows the Department to obtain a wide variety of emissions, design and operational information from the owner and operator of a stationary source. This statutory provision is reiterated as a standard permit condition in 18 AAC 50.345(i). The Department used the standard language in Minor Permit No. AQ1854MSS02.

Condition 15 and Section 9, Excess Emission and Permit Deviation Reports and Notification Form

This condition reiterates the notification requirements in 18 AAC 50.235(a)(2) and 18 AAC 50.240 regarding unavoidable emergencies, malfunctions, and excess emissions. Also, the Permittee is required to notify the Department when emissions or operations deviate from the requirements of the permit. The Department used the language in SPCs III and IV, except as follows:

The Department has modified Condition 15.3 and the Notification Form in Section 9 to reflect the electronic submittal requirements in 18 AAC 50.270 using the Department's online form to submit notification of excess emissions and permit deviations beginning September 7, 2023. The electronic notification form is found at the Division of Air Quality's Air Online Services (AOS) system webpage http://dec.alaska.gov/applications/air/airtoolsweb using the Permittee Portal option. Submittal through other methods may be allowed only upon written Department approval. Beyond, as noted, the Department has determined that the standard conditions adequately meet the requirements of 40 C.F.R. 71.6(a)(3).

Condition 16, Operating Reports

The Department mostly used the SPC VII language for the operating report condition. However, the Department modified or eliminated the Title V-specific aspects in order to make the language applicable for a minor permit.

Condition 17, Annual Affirmation

The Permittee shall submit to the Department by March 31 of each year an affirmation certified according to Condition 12 of whether the stationary source is still accurately described by the application and this permit, and whether any changes have been made to the stationary source that would trigger the requirement for a new permit under 18 AAC 50.

Condition 18, Air Pollution Prohibited

18 AAC 50.110 prohibits any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property. Condition 18 reiterates this prohibition as a permit condition. The Department used the SPC II language for Minor Permit No. AQ1854MSS02.

Condition 19, Emission Inventory Reporting

This condition requires the Permittee to submit emissions data to the state, so the state is able to satisfy the federal requirement to submit emission inventory data from point sources to the EPA as required under 40 C.F.R. 51.15 and 51.321. The federal emission inventory requirement applies to sources defined as point sources in 40 C.F.R. 51.50. Under 18 AAC 50.275, the state also requires reporting of emissions triennially for stationary sources with

an air quality permit, regardless of permit classification. This includes sources that do not meet the federal emission thresholds in Table 1 to Appendix A of 40 C.F.R. 51 Subpart A. The state must report emissions data as described in 40 C.F.R. 51.15 and the data elements in Tables 2a and 2b to Appendix A of 40 C.F.R. 51 Subpart A to the EPA.

The Department modified the language in SPC XV for the permit condition by lowering the thresholds that require reporting to include all stationary sources regardless of permit classification (excluding ORLs and PAELs) to capture the new requirements found in 18 AAC 50.275, effective September 7, 2022.

As of the issue date of this permit, Omega Pad is required to report triennially, as described in Condition 19.

Condition 20, Consistency of Reporting Methodologies

Condition 20, is from 18 AAC 50.275(a) and requires all stationary sources, regardless of permit classification (with the exception of owner requested limits (ORLs) issued under 18 AAC 50.225 and preapproved emission limits (PAELs) issued under 18 AAC 50.230), to report actual emissions to the state so that the state can meet its obligation under 40 C.F.R. 51. Condition 20.1 is from 18 AAC 50.275(b) and requires consistency on the stationary sources' actual emissions reports submitted for NEI and the state's assessable emissions.

The regulation was added to 18 AAC 50 on September 7, 2022, to include all stationary sources required to report actual emissions for the purpose of federal emissions inventory and to avoid inconsistencies in actual emissions reports submitted. When reporting actual emissions under Condition 19 or assessable emissions under Condition 4.2, consistent emission factors and calculation methods shall be used for all reporting requirements for the stationary source.

Section 6: Standard Permit Conditions

Conditions 21 – 26, Standard Permit Conditions

18 AAC 50.544(a)(5) requires each minor permit issued under 18 AAC 50.542 to contain the standard permit conditions in 18 AAC 50.345, as applicable. 18 AAC 50.345(a) clarifies that subparts (c)(1) and (2), and (d) through (o), may be applicable for a minor permit.

The Department included all of the minor permit-related standard conditions of 18 AAC 50.345 in Minor Permit No. AQ1854MSS02. The Department incorporated these standard conditions as follows:

- 18 AAC 50.345(c)(1) and (2) is incorporated as Condition 21 of Section 6 (Standard Permit Conditions);
- 18 AAC 50.345(d) through (h) is incorporated as Conditions 22 through 26, respectively, of Section 6 (Standard Permit Conditions); and
- As previously discussed, 18 AAC 50.345(i) is incorporated as Condition 14 and 18 AAC 50.345(j) is incorporated as Condition 12 of Section 5 (Recordkeeping, Reporting, and Certification Requirements).

Appendix A: Emissions Calculations

Table A-1 presents details of the EUs, their characteristics, and emissions. Potential emissions are estimated using maximum annual operation for all fuel burning equipment as defined in 18 AAC 50.990(39) subject to any operating limits.

Table A-1 – Emissions Summary, in Tons Per Year (TPY)

EU ID	Unit Description	Maximum Rating or Capacity	Operating Limits	NO_X		CO		VOC		$PM_{2.5}$ / PM_{10}/PM		SO_2
				EF	PTE (TPY)	EF	PTE (TPY)	EF	PTE (TPY)	EF	PTE (TPY)	PTE (TPY)
1[1]	Hot Oil Heater	61.34 MMBtu/hr	8,760 hr/yr	0.0401 lb/MMBtu	10.77	0.0407 lb/MMBtu	10.93	0.0192 lb/MMBtu	5.16	0.0125 lb/MMBtu	3.36	10.30
2[1]	Hot Oil Heater	61.34 MMBtu/hr	8,760 hr/yr	0.0401 lb/MMBtu	10.77	0.0407 lb/MMBtu	10.93	0.0192 lb/MMBtu	5.16	0.0125 lb/MMBtu	3.36	10.30
3[1]	Hot Oil Heater	61.34 MMBtu/hr	8,760 hr/yr	0.0401 lb/MMBtu	10.77	0.0407 lb/MMBtu	10.93	0.0192 lb/MMBtu	5.16	0.0125 lb/MMBtu	3.36	10.30
5a[2]	Standby Engine	779 bhp	8,760 hr/yr	0.51 lb/hr[1]	2.23	0.01 lb/hr	0.04	0.04 lb/hr	0.18	0.04 lb/hr	0.18	0.034
5b[2]	Standby Engine	779 bhp	8,760 hr/yr	0.51 lb/hr[1]	2.23	0.01 lb/hr	0.04	0.04 lb/hr	0.18	0.04 lb/hr	0.18	0.034
6	Emulsion Breaker Tank	2,300 gallons	8,760 hr/yr	N/A	0.00	N/A	0.00	AP-42, Sec. 7.1	1.9E-02	N/A	0.00	0.00
7	Anti Foam Tank	2,300 gallons	8,760 hr/yr	N/A	0.00	N/A	0.00	AP-42, Sec. 7.1	1.9E-02	N/A	0.00	0.00
8	Pad Buster Tank	2,300 gallons	8,760 hr/yr	N/A	0.00	N/A	0.00	AP-42, Sec. 7.1	1.9E-02	N/A	0.00	0.00
9	Corrosion Inhibitor Tank	14,000 gallons	8,760 hr/yr	N/A	0.00	N/A	0.00	AP-42, Sec. 7.1	3.5E-02	N/A	0.00	0.00
10	ULSD Tank	5,000 gallons	8,760 hr/yr	N/A	0.00	N/A	0.00	AP-42, Sec 7.1	1.6E-04	N/A	0.00	0.00
Total Potential to Emit					**36.79**		**32.89**		**15.92**		**10.43**	**30.97**

Notes:

1. For EU IDs 1 -3, EFs for NO_X, CO, PM, and VOC are from vendor data for Tulsa Heater SHO (Therminol). SO_2 emissions were calculated through mass balance, based on a fuel gas H_2S concentration of 200 ppmv, which is assumed to be the worst-case scenario.
2. For EU IDs 5a and 5b, EFs for NO_X, CO, PM, and VOC are from vendor data for Caterpillar C18 engines. SO_2 emissions were calculated through mass balance, based on ULSD (i.e., maximum sulfur content of 0.0015 percent sulfur by weight), which is assumed to be the worst-case scenario.

Appendix B: Ambient Demonstration Report

Alaska Department of Environmental Conservation
Air Permit Program

Review of
Hilcorp North Slope, LLC's (Hilcorp's)
Ambient Demonstration
for the
Omega Pad

Minor Permit No. AQ1854MSS02

Prepared by: Joshua Klina
[January 30, 2026]

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1. INTRODUCTION

This report summarizes the Alaska Department of Environmental Conservation's (Department's) findings regarding the ambient demonstration submitted by Hilcorp North Slope, LLC (Hilcorp) for the proposed stationary source, the Omega Pad. Hilcorp submitted this analysis in support of their application for Minor Permit No. AQ1854MSS02 dated September 5, 2025. Hilcorp demonstrated that operating the Omega Pad emissions units (EUs) within the restrictions listed in this report will not cause or contribute to a violation of the 24-hour and annual average particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$) Alaska Ambient Air Quality Standards (AAAQS) established in 18 AAC 50.010.

2. PROJECT BACKGROUND

The following sub-sections provide additional background on the proposed project and application materials.

2.1. Project Location

Hilcorp is proposing to establish a stationary source on the Alaskan North Slope. Hilcorp's application materials indicate the new stationary source, the Omega Pad, will be located at 70.349346 °N, 149.362233 °W. This location is situated within the Western Operating Area of Prudhoe Bay Unit (PBU). The Omega Pad's location will be approximately 7.8 miles west-southwest of Hilcorp's Gathering Center #2 (GC-2).

2.2. Project Description

Hilcorp's application for Minor Permit No. AQ1854MSS02 proposes to expand oil resource development within PBU by constructing a new drilling and production pad, the Omega Pad, which is expected to provide access to approximately 3,500 acres of undeveloped oil reserves. The Omega Pad project will involve the construction of a production pad, drilling of new wells, construction of a processing facility, and tie-ins to existing production transport pipelines and gas lift pipelines, electrical infrastructure, and other facilities.

As part of the Omega Pad project, Hilcorp's application proposes the installation of emissions units (EUs) with regulatorily significant ratings and potential emissions. These proposed EUs include three hot oil heaters, two standby generator engines, and five storage tanks. Further details on these proposed EUs are provided in Section 3.6 (EU Inventory). Hilcorp's application materials have identified the proposed project under the standard industrial classification (SIC), 1311, for crude petroleum and natural gas operations. The proposed EU inventory at the source is generally consistent with that of its industrial classification.

2.3. Project Classification

Hilcorp's minor permit application is classified under 18 AAC 50.508(6) for revising or rescinding the terms and conditions of a Title I permit.

Hilcorp's minor permit application is also classified under 18 AAC 50.502(c)(1) for $PM_{2.5}$. In accordance with the application information requirements of 18 AAC 50.540(c)(2)(A),

applicants must provide an ambient AAAQS analysis for each triggered pollutant. Hilcorp fulfilled this requirement by submitting an AAAQS analysis for 24-hour and annually averaged $PM_{2.5}$ AAAQS with their minor permit application.

2.4. Modeling Protocol Submittal

The Department does not typically require a modeling protocol to be submitted with minor permit applications.[1] However, a protocol is helpful to ensure that the modeling tools, procedures, input data, and assumptions that are used by an applicant are consistent with both State and Federal guidance. Hilcorp did not submit a modeling protocol for the Omega Pad project.

2.5. Application Submittal

The Department received Hilcorp's permit application and ambient demonstration on September 5, 2025. Hilcorp provided supplemental information via email dated November 3, 2025, in response to an information request sent by the Department. Boreal Environmental Services prepared the application and ambient analysis on their behalf.

3. SOURCE IMPACT ANALYSIS

Hilcorp used computer analysis (modeling) to predict the $PM_{2.5}$ ambient air quality impacts from the emissions that would be generated from operation of its proposed new stationary source, the Omega Pad. The Department's findings regarding Hilcorp's analysis are discussed below.

3.1. Approach

Hilcorp performed a cumulative ambient air quality impact analysis for the following pollutant with the following averaging periods: 24-hour and annual average $PM_{2.5}$.

Hilcorp's application materials indicate that construction activities (e.g., operation of temporary construction EUs) are not expected to overlap with the operation of the stationary source (e.g., operation of permanent EUs). As stated in its submitted application materials, "Hilcorp anticipates construction to commence in the first quarter of 2027 with the installation of vertical support members. This is expected to be followed by facility construction in the second and third quarters of 2027. Hilcorp anticipates operations to commence in the fourth quarter of 2027 or the first quarter of 2028."

Additionally, regarding construction activities, Hilcorp anticipates the following: emissions from construction activities to be predominantly generated from fuel-fired highway engines, small nonroad engines, and small portable heaters; construction activities to be short in duration; and emissions from construction activities to be negligible in comparison to emissions from the Omega Pad during the operations phase.

Based on its assumptions regarding construction activities discussed above, Hilcorp predicated its analysis on the operation of the stationary source, the Omega Pad, without the impact of concurrent construction activities. For this specific stationary source and

[1] The Department may request an applicant submit a modeling protocol in accordance with 18 AAC 50.540(c)(2).

permitting action, the Department finds Hilcorp's assumed characterization of Construction phase emissions are reasonable for the application supporting Minor Permit AQ1854MSS02.

3.2. Model Selection

There are several air dispersion models available to applicants and regulators. The U.S. Environmental Protection Agency (EPA) lists these models in their *Guideline on Air Quality Models* (Guideline), which the Department has adopted by reference in 18 AAC 50.040(f). Hilcorp used EPA's AERMOD Modeling System (AERMOD) for its ambient analysis. AERMOD is an appropriate modeling system for this permit application.

AERMOD consists of three major components: AERMAP, used to process terrain data and develop elevations for the receptor grid and EUs; AERMET, used to process the meteorological data; and the AERMOD dispersion model, used to estimate the ambient pollutant concentrations. Hilcorp used the latest versions of AERMOD and AERMET, both of which are version 24142. Hilcorp assumed flat terrain within the modeled domain rather than running AERMAP, which is common practice for new source review modeling on the Alaskan North Slope coastal plain.

3.3. Meteorological Data

AERMOD requires hourly meteorological data to estimate plume dispersion. A *minimum* of one year of site-specific data, or five years of representative National Weather Service (NWS) data is required, per Section 8.4 of the Guideline. When modeling with site-specific data, the Guideline states that up to five years should be used, when available, to account for year-to-year variation in meteorological conditions.

Hilcorp used five years of publicly available hourly surface meteorological data collected at the Prudhoe Bay A-Pad (A-Pad) station during calendar years 2014, 2015, 2016, 2019, and 2020.[2] Hilcorp also used concurrent twice-daily upper air meteorological data collected by the NWS at Utqiagvik, Alaska.

Hilcorp's application materials stated that the Department, in the past, reviewed the surface meteorological data collected during 2014, 2015, 2016, 2019, and 2020 at the A-Pad station and determined that these data meet the requirements in 40 C.F.R. 51, Appendix W (the Guideline). Regarding this statement, there are records indicating the Department did, in the past, review the surface meteorological data collected at the A-Pad during 2014, 2015, 2016, 2019, and 2020 and determined that these data meet the quality assurance requirements of the Prevention of Significant Deterioration (PSD) program (i.e., meets the requirements in the Guideline).

Hilcorp selected the meteorological data collected at the A-Pad station because of the A-Pad's proximity to the proposed location for the Omega Pad, the relatively consistent meteorological conditions across the Alaskan North Slope coastal plain, and the recent dates of collection for the meteorological data.

[2] Note that data collected at the PBU A-Pad during 2017 and 2018 are unavailable and have not been submitted to the Department for PSD-data quality assurance review.

Furthermore, in response to an information request from the Department, dated February 2, 2024, regarding the use of meteorological data from the A-Pad for Minor Permit No. AQ1854MSS01 (the previous permit for the Omega Pad project), Hilcorp elaborated on its reasons for selecting the A-Pad meteorological data for the Omega Pad project. Hilcorp stated that it believes that the A-Pad meteorological data adequately represents meteorological conditions at the Omega Pad "because of the proximity of the Omega Pad to the PBU A-Pad and because of the similar terrain features that surround the two locations. The Omega Pad is located approximately 15 miles to the west of the PBU A-Pad monitoring site. The Omega Pad and the PBU A-Pad are located on the coastal plain of the Alaska North Slope and the area surrounding the Omega Pad and PBU A-Pad is relatively flat with no significant elevated terrain features. Additionally, the Omega Pad and the PBU A-Pad are located approximately 15 miles inland from the Beaufort Sea. As a result, the surrounding geographic features have a similar influence on ambient air temperatures and winds at the Omega Pad and PBU A-Pad. Furthermore, the Omega Pad and PBU A-Pad experience similar seasonal and diurnal changes to incoming solar radiation because the Omega Pad and the PBU A-Pad are both located approximately 70 degrees latitude."

The Department evaluated Hilcorp's use of meteorological data collected at the A-Pad station and Utqiagvik, Alaska, and found that these data are sufficient to represent atmospheric transport conditions at the Omega Pad at the time of review.

The Department notes that Hilcorp processed the A-Pad's and Utqiagvik's meteorological data using the most current version of AERMET, version 24142.

3.3.1. Surface Characteristics

AERMET requires the area surrounding the meteorological tower to be characterized by the following three surface characteristics: noon-time albedo, Bowen ratio, and surface roughness length. EPA has provided additional guidance regarding the selection and processing of values for these surface characteristics in their *AERMOD Implementation Guide*.

Hilcorp characterized the area surrounding the proposed location of the Omega Pad using surface parameters previously approved by the Department for tundra.[3] These surface parameters are appropriate for the proposed stationary source because its proposed location is on the Alaskan North Slope. The approved surface parameters are summarized below in Table 1.

Table 1. Approved AERMET Surface Parameters for the Omega Pad

Surface Parameter	Winter Value	Summer Value
Albedo	0.8	0.18
Bowen Ratio	1.5	0.80
Surface Roughness Length (m)	0.004	0.02

Table Note:
Summer is defined as June through September, and winter is defined as October through May, for purposes of processing the Omega Pad data with AERMET.

[3] The Department has reported the approved surface parameters for tundra in numerous North Slope modeling reviews as well as Section 2.6.4.2 of the Department's *Modeling Procedures Review Manual.*

3.4. Coordinate System

Air quality models need to know the relative location of the EUs, structures (if applicable), and receptors, to properly estimate ambient pollutant concentrations. Therefore, applicants must use a consistent coordinate system in their modeling analysis. Hilcorp's model references the Universal Transverse Mercator (UTM) system, Zone 6.

3.5. Terrain

Terrain features can influence the dispersion of exhaust plumes from EUs and the resulting ambient air concentrations of the pollutants being emitted. Digitized terrain elevation data is, therefore, generally included in a modeling analysis, unless the entire modeling domain is over water, or the terrain features are so slight that a flat terrain assumption can be made. AERMOD's terrain preprocessor, AERMAP, uses terrain data to obtain the base elevations for the modeled EUs, buildings, and receptors; and to calculate a "hill height scale" for each receptor.

Hilcorp did not include terrain data in their modeling analysis. Their application indicates the stationary source will be located within the Alaskan North Slope coastal plain, which may be assumed flat for the purposes of modeling. This is an appropriate assumption for the current ambient demonstration for the Omega Pad because the Alaska North Slope is mostly flat terrain, thus, lacking terrain features that can influence the dispersion of exhaust plumes from EUs.

3.6. EU Inventory

Hilcorp modeled the EUs listed in Table 2. These EUs were characterized as point sources. Hilcorp assumed all the modeled EUs would operate concurrently and that each of them would operate continuously at maximum capacity for all 8,760 hours of the year.

Table 2. Modeled EU Inventory

EU ID	Stack ID	Description	Cumulative Rating
1	HEATER01	Hot Oil Heater 1	61.34 MMBtu/hr
2	HEATER02	Hot Oil Heater 2	61.34 MMBtu/hr
3	HEATER03	Hot Oil Heater 3	61.34 MMBtu/hr
5a	ENGINE01	Standby Engine 1	779 bhp
5b	ENGINE02	Standby Engine 2	779 bhp

3.6.1. Excluded EUs

Hilcorp excluded the following EUs from their modeling analysis:

- the Emulsion Breaker Tank (EU ID 6);
- the Anti Foam Tank (EU ID 7);
- the Pad Buster Tank (EU ID 8);
- the Corrosion Inhibitor Tank (EU ID 9); and
- the ULSD Tank (EU ID 10).

EU IDs 6 – 10 are not fuel-burning equipment. Instead, they are storage tanks that will hold petroleum fuels and other industrial liquids. Their only emissions will be volatile organic compounds, which are not included in this ambient demonstration.

3.7. EU Release Parameters

The assumed emission rates and characterization of how the emissions enter the atmosphere will significantly influence an applicant's modeled results. Therefore, applicants must provide stack height, diameter, location, and base elevation, in addition to the pollutant emission rates, exhaust plume exit velocity, and exhaust temperature for each exhaust stack.

3.7.1. Emission Rates

The Department generally found Hilcorp's modeled emission rates to be consistent with the emissions information provided throughout their application. The exceptions, or items that otherwise warrant additional discussion, are discussed below.

3.7.1.1. Operational Limits

As stated under Section 3.6, Hilcorp assumed that the modeled Omega Pad stationary source EUs would operate continuously throughout the year (i.e., 8,760 hours) at maximum capacity. Hilcorp did not request or assume any operational limits.

3.7.1.2. Weighted Standards as Emission Factors

Hilcorp's modeling analysis relies upon the vendor data for the two standby generator engines, EU IDs 5a and 5b. That vendor data for EU IDs 5a and 5b were used to characterize the $PM_{2.5}$ emissions from EU IDs 5a and 5b. Additionally, based on Hilcorp's submitted application materials, EU IDs 5a and 5b will meet EPA's Tier 4 emissions standards. The Department, therefore, is including enforceable conditions that require the Permittee to verify through vendor or manufacturer certifications or guarantees that emissions from EU IDs 5a and 5b will meet EPA's Tier 4 emissions standards. The Department is including these requirements to protect the 24-hour and annually averaged $PM_{2.5}$ AAAQS.

3.7.2. Point Source Parameters

In addition to the previously discussed emission rates, applicants must provide the stack height, diameter, location, base elevation, exhaust plume exit velocity, and exhaust temperature for each EU characterized as a point source.

The Department generally found the modeled stack parameters to be consistent with the vendor information or expectations for similarly sized EUs. The details that warrant additional discussion are discussed below.

3.7.2.1. Stack Heights

EU IDs 1 – 3 (the hot oil heaters) were each modeled with a stack height of 11.3 meters (m). EU IDs 5a and 5b (the standby engines) were each modeled with a stack height of 4.6 m. The heights of exhaust stacks influence the dispersion of

emissions. For instance, taller exhaust stacks generally correspond to greater dispersion of emissions and, consequently, lesser modeled impacts. Because of the impact of stack heights on the dispersion of emissions, the Department is imposing stack height requirements to ensure that the built stacks reflect the stacks that were modeled in the submitted ambient demonstration. Specifically, the Department is imposing requirements for the stacks of EU IDs 1 – 3 to be at least 11.3 m in height.

Hilcorp's analysis demonstrated that even with stack heights of 4.6 m for the engines modeled as EU IDs 5a and 5b, the stationary source would not cause or contribute to a violation of AAAQS. It is likely that no appreciable effect on the ambient air quality would be garnered by imposing a minimum stack height of 4.6 m for EU IDs 5a and 5b. Therefore, the Department is not imposing minimum stack height requirements for EU IDs 5a and 5b.

3.7.2.2. Horizontal/Capped Stacks

Capped stacks or horizontal releases generally lead to higher impacts in the immediate near field than what would occur from uncapped, vertical releases. The presence of non-vertical stacks or stacks with rain caps therefore requires special handling in an AERMOD analysis. EPA describes the proper approach for characterizing these types of stacks in their *AERMOD Implementation Guide*.[4] EPA has also developed an option in AERMOD that will automatically revise the stack and exhaust parameters for any stack identified as horizontal (using the POINTHOR keyword) or capped (using the POINTCAP keyword).

Hilcorp used the options available in AERMOD to characterize EU IDs 1 – 3 as having vertical capped releases and EU IDs 5a and 5b as having horizontal uncapped releases. These assumed stack configurations represent a 'worst-case scenario' in context of possible stack configurations for EU IDs 1 – 3, 5a, and 5b (i.e., the EUs were modeled with the configuration that would most negatively affect the dispersion of pollutants). Thus, the Department will not be requiring EU IDs 1 – 3, 5a, and 5b to have vertical uncapped releases. Nor will the Department require a specific stack configuration.

3.8. Off-site Source Characterization

For a cumulative ambient air quality impact assessment, the potential emissions from the proposed project EU inventory and off-site stationary sources are modeled to compute a cumulative impact. In their application, Hilcorp indicated that the Omega Pad will not be located near any sources that will cause a significant concentration gradient in the area around the Omega Pad. Consequently, Hilcorp did not include any explicitly modeled off-site stationary sources in their cumulative impact analysis. The Department finds Hilcorp's assumptions regarding the ambient air impacts from off-site stationary sources to be reasonable for the application supporting Minor Permit AQ1854MSS02.

[4] *AERMOD Implementation Guide* (EPA-454/B-18-003); April 2018.

3.9. Pollutant Specific Considerations

The following pollutants warrant additional discussion.

3.9.1. $PM_{2.5}$

$PM_{2.5}$ is either directly emitted from a source or formed through chemical reactions in the atmosphere (secondary formation) from other pollutants (NO_X and SO_2).[5] AERMOD is an acceptable model for performing near-field analysis of the direct emissions, but EPA has not developed a near-field model that includes the necessary chemistry algorithms for estimating the secondary impacts. EPA instead recommends that applicants use "existing technical information" to assess the secondary impacts (a.k.a. a "Tier 1" analysis), or if warranted, a photochemical modeling analyses to assess the secondary impacts (a.k.a. a "Tier 2" analysis).[6] Tier 1 is the expected typical approach. Hilcorp's application materials did not include a discussion regarding their characterization of secondary $PM_{2.5}$ formation.

EPA noted in their May 2014 $PM_{2.5}$ modeling guidance that the maximum direct impacts and the maximum secondary impacts from a stationary source "*…are not likely well-correlated in time or space*", i.e., they will likely occur in different locations and at different times.[7] This difference occurs because secondary $PM_{2.5}$ formation is a complex photochemical reaction that requires a mix of precursor pollutants in sufficient quantities for significant formation to occur. As such, it is highly unlikely that there is sufficient time for the reaction to substantively occur within the immediate near-field, which is where the maximum direct impacts from the Omega Pad EUs occur.

Representative ambient monitoring data may be used to address the secondary formation that occurs from existing sources in an ambient standard demonstration. The background data that Hilcorp used in their $PM_{2.5}$ AAAQS analysis (see the *Off-Site Impacts* section of this report) meets this objective.

3.10. Downwash

Downwash refers to the situation where local structures influence the plume from an exhaust stack. Downwash can occur when a stack height is less than a height derived by a procedure called "Good Engineering Practice" (GEP), which is defined in 18 AAC 50.990(42). It is a consideration when there are receptors relatively near the applicant's structures and exhaust stacks.

EPA developed the "Building Profile Input Program – PRIME" (BPIPPRM) program to determine which stacks could be influenced by nearby structures and to generate the cross-sectional profiles needed by AERMOD to determine the resulting downwash. Hilcorp used the current version of BPIPPRM, version 04274, to determine the building profiles needed by AERMOD.

[5] The NO_x and SO_2 emissions are also referred to as "precursor emissions" in a $PM_{2.5}$ assessment.
[6] EPA's two-tiered approach for assessing secondary $PM_{2.5}$ formation is described in Section 5.4 of the Guideline.
[7] *Guidance for $PM_{2.5}$ Permit Modeling* (EPA-454/B-14-001); May 2014.

Hilcorp included all the modeled point sources in their downwash analysis. The Department used a proprietary 3-D visualization program to review Hilcorp's characterization of the exhaust stacks and structures. The characterization matches the figures and photos provided in Hilcorp's permit application. Hilcorp appropriately accounted for downwash in their modeling analysis. BPIPPRM indicated that the modeled exhaust stacks are within the GEP stack height requirements.

3.11. Ambient Air Boundary

The AAAQS only apply in *ambient air* locations, which has been defined by EPA as, "*that portion of the atmosphere, external to buildings, to which the general public has access*."[8] Applicants may, therefore, exclude areas that they own or lease from their ambient demonstration if the source "employs measures, which may include physical barriers, that are effective in precluding access to the land by the general public".[9] They conversely need to model that portion of their property/lease that has no such restriction, or where there is an easement or public right-of-way. Measures employed beyond physical barriers in precluding access to the land by the general public must be evaluated on a case-specific basis.

Hilcorp used the edges of the Omega Pad to represent their ambient air boundary. This is a typical approach and is generally suitable for stationary sources at the Alaskan North Slope on a case-specific basis.

3.12. Receptor Grid

A dispersion model will calculate the concentration of the modeled pollutant at locations defined by the user. These locations are called receptors. Designated patterns of receptors are called receptor grids.

Hilcorp used a rectangular receptor grid of decreasing resolution with distance from the ambient boundary. The receptor resolutions are:

- 25 m or less spacing along the ambient boundary;
- 25 m spacing within a 1.0 square kilometer (km^2) area centered over the Omega Pad;
- 100 m spacing within a 6.2 km^2 area centered over the Omega Pad; and
- 500 m spacing within a 64 km^2 area centered over the Omega Pad.

Hilcorp's grid has sufficient resolution and coverage to determine the maximum impacts.

3.13. Off-Site Impacts

The air quality impact from natural and regional sources, along with long-range transport from far away sources, must be accounted for in a cumulative AAAQS demonstration. The

[8] The term "ambient air" is defined in 40 C.F.R. 50.1. The Alaska Legislature has also adopted the definition by reference in AS 46.14.90(2).

[9] EPA has a revised policy on the exclusion of certain areas from the scope of "ambient air". This memo may be found in their NSR Policy and Guidance Database (see https://epa.gov/sites/default/files/2019-12/documents/revised_policy_on_exclusions_from_ambient_air.pdf).

approach for incorporating these impacts must be evaluated on a case-specific basis for each type of assessment and for each pollutant.

Section 8.3 of the Guideline discusses how the off-site impacts could be incorporated for purposes of demonstrating compliance with an air quality standard. In summary, the off-site impacts must either be represented through ambient monitoring data or through modeling. However, Section 8.3.3(b)(iii) notes, "*the number of nearby sources to be explicitly modeled in the air quality analysis is expected to be few except in unusual situations*." Section 8.3.3(b) further states, "*…sources that cause a significant concentration gradient in the vicinity of the [applicant's source] are not likely to be adequately characterized by the monitored data due to the high degree of variability of the source's impacts.*"

Hilcorp's application materials indicate that it does not anticipate any nearby sources to cause significant concentration gradients in the vicinity of the proposed Omega Pad stationary source. In response to an information request regarding Hilcorp's application for Minor Permit No. AQ1854MSS01, dated June 3, 2024, Hilcorp indicated that the closest permitted stationary source to the Omega Pad is the PBU Z-Pad, located approximately 8.5 km to the southeast of the Omega Pad. Hilcorp further indicated that an ambient demonstration in the PBU Z-Pad minor permit application showed that maximum project impacts are predicted to occur on or near the PBU Z-Pad ambient boundary (i.e., gravel pad edge). Consequently, Hilcorp did not explicitly model an off-site source.

However, while Hilcorp did not explicitly model an off-site source, it did include background ambient air quality data in their cumulative impact analysis to represent the contribution of ambient air pollutant concentrations from non-modeled sources. Hilcorp included the most recent PSD-quality ambient air pollutant concentrations data (monitoring year 2021) collected at the PBU Central Compressor Plant (CCP) monitoring station to represent the contribution of non-modeled sources of $PM_{2.5}$.

Additionally, in an information request for Minor Permit No. AQ1854MSS01 dated February 2, 2024, the Department requested Hilcorp to provide a narrative justifying the use of ambient air pollutant concentrations data collected at the CCP for the Omega Pad project. In response, Hilcorp stated "the Omega Pad is generally influenced by similar air pollutant emissions sources that influence ambient air pollutant levels at the… CCP monitoring sites. The PBU CCP monitoring site is located between the Central Compressor Plant and Central Gas Facility, which are two of the largest sources of air pollutant emissions on the Alaska North Slope… As a result, the [PBU CCP] ambient air data provide a conservative representation of background ambient air pollutant levels at the Omega Pad."

The Department evaluated Hilcorp's use of ambient data collected at the CCP station and found that these data are sufficient to represent ambient concentrations of $PM_{2.5}$ at the Omega Pad at the time of review. Therefore, the Department has determined these data, on a case-specific basis, are appropriate for use in this cumulative impact analysis for Minor Permit No. AQ1854MSS02.

3.14. Modeled Design Concentrations

EPA generally allows applicants to use modeled concentrations that are consistent with the form of the standard as their modeled design concentration. Applicants must always compare their highest modeled concentrations to the deterministic annually average standards, increments, and SILs.

Hilcorp's assumed design concentrations are summarized in Table 4.

Table 4. Design Concentrations for Minor Permit No. AQ1854MSS01

Pollutant	Avg. Period	Allowed Value
$PM_{2.5}$	24-hr	The maximum five-year average of the highest eighth-high (H8H) 24-hour average concentration of the five model years.
	Annual	The maximum annual concentration from any year.

4. RESULTS AND DISCUSSION

The maximum modeled $PM_{2.5}$ impacts from Hilcorp's cumulative impact analysis are presented in Table 5. The background concentration, total impact, and respective ambient standard are also presented for comparison. The total modeled $PM_{2.5}$ impacts are less than the respective AAAQS. Therefore, Hilcorp has demonstrated compliance with the AAAQS.

Table 5. Maximum Impacts Compared to the Ambient Standards

Pollutant	Avg. Period	Modeled Design Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	AAAQS ($\mu g/m^3$)	Percent of AAAQS
$PM_{2.5}$	24-hour	21.2	7.0	28.2	35	80%
	Annual	4.4	2.3	6.7	12	56%

5. CONCLUSION

The Department concludes the following based on its review of Hilcorp's modeling analysis:

1. The emissions from the proposed EUs will not cause or contribute to a violation of the 24-hour and annually averaged $PM_{2.5}$ AAAQS listed in 18 AAC 50.010.
2. Hilcorp's modeling analysis complies with the ambient demonstration requirements of 18 AAC 50.540(c)(2).
3. Hilcorp conducted their modeling analysis in a manner consistent with the Guideline, as required under 18 AAC 50.215(b)(1).

The Department developed conditions in Minor Permit No. AQ1854MSS02 to ensure Hilcorp complies with the AAAQS. These conditions are summarized as follows:

- To protect the 24-hour and annually averaged $PM_{2.5}$ AAAQS, the Permittee shall:

- **Stack Heights.** Construct and maintain the exhaust stacks of EU IDs 1 – 3 with a stack height of at least 11.3 m.
- **EPA Tier 4 Standards.** The Permittee shall verify that EU IDs 5a and 5b meets the EPA Tier 4 Final emission standards found in Table 1 of 40 C.F.R. 1039.101 after the engine becomes fully operational.