# AIR QUALITY EFFECTS ANALYSIS FOR PERMIT TO CONSTRUCT
ACP-17845 v1.1

**Applicant**:

Hiland Partners Holdings LLC
1001 Louisiana Street, Suite 1000
Houston, TX 77002

**Facility Location**:

Stony Creek Compressor Station
Williams County, North Dakota
48.0426, -103.498
NE ¼, SE ¼, Sec. 26, T153N, R100W

**Introduction**:

On May 16, 2023, The Department of Environmental Quality – Division of Air Quality (Department) received a permit to operate renewal application for Air Permit to Operate No. AOP-28040 v1.1 for the Stony Creek Compressor Station. Hiland Partners Holdings LLC (Hiland Partners) requested revisions to the compressor engine emission limits in response to an internal audit disclosed to the Department on December 18, 2020. These revisions for the Stony Creek Compressor Station necessitated a modification of Air Permit to Construct No. ACP-17845 v1.1. The station is used to compress field natural gas for pipeline transmission. The station is located approximately ten miles southeast of Williston, North Dakota, in Williams County.

***Table 1 – Emission units associated with the Stony Creek Compressor Station***

| Emission Unit Description | Emission Unit (EU) | Emission Point (EP) | Air Pollution Control Equipment |
|---|---|---|---|
| Waukesha 7044GSI (4SRB) natural gas-fired compressor engine rated at 1,680 bhp manufactured August 2016 (NSPS JJJJ, OOOOa) (MACT ZZZZ) | C1 | C1 | Non-Selective Catalytic Reduction (NSCR) |
| Waukesha 7044GSI (4SRB) natural gas-fired compressor engine rated at 1,680 bhp manufactured August 2016 (NSPS JJJJ, OOOOa) (MACT ZZZZ) | C2 | C2 | NSCR |

| Emission Unit Description | Emission Unit (EU) | Emission Point (EP) | Air Pollution Control Equipment |
|---|---|---|---|
| Waukesha 7044GSI (4SRB) natural gas-fired compressor engine rated at 1,680 bhp manufactured February 2018 (NSPS JJJJ, OOOOa) (MACT ZZZZ) | C3 | C3 | NSCR |
| Waukesha 7044GSI (4SRB) natural gas-fired compressor engine rated at 1,680 bhp manufactured post-June 2010 (NSPS JJJJ, OOOOa) (MACT ZZZZ) [A] | C4 | C4 | NSCR |
| Waukesha 7044GSI (4SRB) natural gas-fired compressor engine rated at 1,680 bhp manufactured October 2013 (NSPS JJJJ, OOOOa) (MACT ZZZZ) | C5 | C5 | NSCR |
| Waukesha 7044 GSI (4SRB) natural gas-fired compressor engine rated at 1,680 bhp manufactured September 2016 (NSPS JJJJ, OOOOa) (MACT ZZZZ) | C6 | C6 | NSCR |
| Triethylene glycol (TEG) reboiler rated at 1.0 x $10^6$ Btu/hr | 7 | 7 | None |
| TEG dehydration unit rated at 45 x $10^6$ scfd (MACT HH) | 8 | 7, 9, & 10 | BTEX Condenser & TEG Reboiler [B] |
| Two 400 barrel (bbl) produced water/condensate tanks | 9 & 10 | 9 & 10 | Submerged Fill Pipe (SFP) |
| Truck loading (produced water) [D] | 11 | 11 | None |
| Truck loading (NGLs) [D] | 12 | 12 | Vapor Return System |
| Fugitive Emissions | FUG | FUG | Leak Detection and Repair (LDAR) Program |
| Blowdowns and maintenance venting | BD | BD | Gas Recycle System [C] |
| Pigging [D] | - | - | - |
| Three methanol storage tanks [D] | - | - | - |

[A] Not currently installed.

[B] Emissions from the TEG dehydration unit flash tank are recycled back into the process. Emissions from the TEG reboiler still column are controlled by a BTEX condenser, with non-condensable vapors exiting the condenser combusted in the TEG reboiler firebox.

[C] Some blowdowns and maintenance venting does not go through the gas recycle system and is vented to atmosphere.

[D] Insignificant source of emissions.

**Current/Proposed Engine Emission Limits:**

| Unit | Current Emission Limits [A, C] | Proposed Emission Limit [B, C] |
|---|---|---|
| Six Waukesha engines rated at 1,680 bhp each | $NO_x$: 3.70 lb/hr and 1.0 g/hp-hr or 82 ppmvd<br>CO: 3.70 lb/hr and 2.0 g/hp-hr or 270 ppmvd<br>VOC: 2.46 lb/hr and 0.65 g/hp-hr or 60 ppmvd<br>Opacity: 20% | $NO_x$: 1.0 g/hp-hr or 82 ppmvd at 15% $O_2$<br>CO: 1.0 g/hp-hr<br>VOC: 0.65 g/hp-hr<br>Opacity: 20% |

A Emission limits apply to each individual emission point. Except for the VOC emissions limits in g/hp-hr, the emission limits in g/hp-hr and ppmvd at 15% $O_2$ are from 40 CFR 60, Subpart JJJJ. The 0.65 g/hp-hr VOC emission limit is more stringent than the Subpart JJJJ VOC emission limits of 0.7 g/hp-hr and 60 ppmvd at 15% $O_2$.

B Emission limits apply to each individual emission point. The $NO_x$ emission limits in g/hp-hr and ppmvd at 15% $O_2$ are from 40 CFR 60, Subpart JJJJ. The proposed 1.0 g/hp-hr CO emission limit and 0.65 g/hp-hr VOC emission limit are more stringent than the Subpart JJJJ CO emission limits of 2.0 g/hp-hr and 270 ppmvd at 15% $O_2$ and VOC emission limits of 0.7 g/hp-hr and 60 ppmvd at 15% $O_2$. The permittee must also meet all applicable emission limits established by 40 CFR 63, Subpart ZZZZ.

C 40% opacity is permissible for not more than one six-minute period per hour.

**Facility Wide Emissions Profile**
**Potential to Emit (PTE)**

*Table 2 - PTE (tons per year)* [A]

| Emission Unit Description | EU | CO | NOx | $SO_2$ | VOCs | Total PM | $PM_{10}$ | $PM_{2.5}$ | Total HAPs | HAP Name (Largest HAP) |
|---|---|---|---|---|---|---|---|---|---|---|
| Waukesha L7044GSI compressor engine | C1 | 16.22 | 16.22 | 0.04 | 10.79 | 1.32 | 1.32 | 1.32 | 0.65 | Formaldehyde |
| Waukesha L7044GSI compressor engine | C2 | 16.22 | 16.22 | 0.04 | 10.79 | 1.32 | 1.32 | 1.32 | 0.65 | Formaldehyde |
| Waukesha L7044GSI compressor engine | C3 | 16.22 | 16.22 | 0.04 | 10.79 | 1.32 | 1.32 | 1.32 | 0.65 | Formaldehyde |
| Waukesha L7044GSI compressor engine | C4 | 16.22 | 16.22 | 0.04 | 10.79 | 1.32 | 1.32 | 1.32 | 0.65 | Formaldehyde |
| Waukesha L7044GSI compressor engine | C5 | 16.22 | 16.22 | 0.04 | 10.79 | 1.32 | 1.32 | 1.32 | 0.65 | Formaldehyde |
| Waukesha L7044GSI compressor engine | C6 | 16.22 | 16.22 | 0.04 | 10.79 | 1.32 | 1.32 | 1.32 | 0.65 | Formaldehyde |
| TEG regenerator reboiler | 7 | 0.25 | 0.29 | 0.00 | 0.02 | 0.03 | 0.03 | 0.03 | 0.01 | Hexane |
| TEG dehydration unit | 8 | --- | --- | --- | 2.02 | --- | --- | --- | 0.83 | Benzene |
| 400-bbl produced water/condensate tank | 9 | --- | --- | --- | 1.00 | --- | --- | --- | --- | |
| 400-bbl produced water/condensate tank | 10 | --- | --- | --- | 1.00 | --- | --- | --- | --- | |
| Fugitive emissions | FUG | --- | --- | --- | 5.52 | --- | --- | --- | 0.19 | |
| Compressor blowdowns | BD | --- | --- | --- | 18.53 | --- | --- | --- | 0.37 | |
| Produced water truck loading | PW-TL | --- | --- | --- | 0.44 | --- | --- | --- | --- | |
| NGL truck loading | PW-NGL | --- | --- | --- | 0.82 | --- | --- | --- | --- | |
| Pigging | PIG | --- | --- | --- | 1.04 | --- | --- | --- | --- | |
| Three methanol chemical storage tanks | TK | --- | --- | --- | 0.03 | --- | --- | --- | --- | |
| **Total (without Fugitives):** | | **97.57** | **97.61** | **0.24** | **89.64** | **7.95** | **7.95** | **7.95** | **5.11** | |
| **Total (with Fugitives):** | | **97.57** | **97.61** | **0.24** | **95.16** | **7.95** | **7.95** | **7.95** | **5.30** | |

[A] Abbreviations:
Total PM: filterable and condensable particulate matter
$PM_{10}$: particulate matter with an aerodynamic diameter less than or equal to 10 microns ($\leq$10 μm) including $PM_{2.5}$
$PM_{2.5}$: particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($\leq$2.5 μm)
$SO_2$: sulfur dioxide
$NO_X$: oxides of nitrogen
CO: carbon monoxide
VOCs: volatile organic compounds
HAPs: hazardous air pollutants as defined in Section 112(b) of the Clean Air Act

As shown in Table 2, the facility wide PTE is below 100 tons per year (tpy) for all criteria air pollutants, below 10 tpy for any single hazardous air pollutant (HAP), and below 25 tpy for the combined HAP emissions. Detailed calculations were provided in the updated PTE emissions from April 22, 2021. The Department has reviewed these calculations and believes they accurately represent the proposed facility operations.

The facility PTE is based on enforceable emissions restrictions put in place on the six natural gas compressor engines, limiting the allowable amount of CO and VOC emissions. These restrictions mean the facility will be a synthetic minor source of air pollution, as the emissions are limited to below major source thresholds for both the prevention of significant deterioration (PSD) and Title V programs.

**Summary and Recommendations**:

A complete review of the proposed project indicates that the Stony Creek Compressor Station is expected to comply with the applicable federal and state air pollution rules and regulations. The Department will make a final recommendation on the issuance of a modified Permit to Construct for the Stony Creek Compressor Station following completion of a 30-day public comment period.

Update post comment period:
[Reserved]

**Date of Draft Analysis**: June 20, 2024
**Date of Final Analysis**: [Reserved]

**Analysis By**:

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RSM