Final

Air Quality and Climate Change Assessment: Technical Report

DFW Airport - Northwest Cargo Area Demolition/Restoration

March 2021

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Acronyms and Abbreviations

ACEIT	Airport Construction Emissions Inventory Tool
ACM	Asbestos-Containing Materials
ACRP	Airport Cooperative Research Program
APU	Auxiliary Power Unit
BHS	Baggage Handling System
CAA	Federal Clean Air Act
CAP	Criteria Air Pollutant
CATEX	Categorical Exclusion
C&D	Construction and Demolition
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalents
DFW	Dallas Fort Worth International Airport
EIS	Environmental Impact Statement
EV	Electric Vehicles
FAA	Federal Aviation Administration
FOD	Foreign Object Debris
GHG	Greenhouse Gases
GSE	Ground Support Equipment
GWP	Global Warming Potential
HAP	Hazardous Air Pollutants
MOVES3	Motor Vehicle Emission Simulator (version 3, Jan. 2021)
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAVAIDS	Navigational Aids

NEPA	National Environmental Policy Act
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NWS	National Weather Service
O_3	Ozone
Pb	Lead
PM_{10}	Particulate Matter Less Than 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter Less Than 2.5 Microns
RTC	Regional Transportation Council
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SOP	Standard Operating Procedure
tpy	Tons Per Year
TCEQ	Texas Commission on Environmental Quality
TRB	Transportation Research Board
USEPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

Executive Summary

This technical report provides an assessment of the air quality impacts associated with the Demolition and Restoration of the Northwest Cargo Area at Dallas Fort Worth International Airport (the Airport or DFW) (the "Proposed Project"). The Proposed Project will demolish the existing Northwest Cargo Area including the Evergreen Building and AeroTerm Buildings A, B, C, D and associated concrete paved parking/vehicle access areas. The five buildings encompass 297,000 square feet of building space and the total project area is approximately 17 acres. The Proposed Project will include the following components that will render the area ready for future redevelopment as needed:

- Complete building demolition
- Concrete slab/foundation pier demolition along with utilities and soil excavation down to five feet below grade of each building footprint
- Concrete demolition of all paved parking and surrounding vehicle access areas
- Placement of approximately 40,000 cubic yards of fill and grading
- Topsoil placement and sodding the entire project area, and
- Install fencing to separate an aircraft apron from the project area.

HDR evaluated impacts to air quality due to the Proposed Project for National Environmental Policy Act (NEPA) purposes in accordance with the guidelines provided in the Federal Aviation Administration (FAA) Aviation Emissions and Air Quality Handbook Version 3 Update 1 (FAA Handbook); FAA Order 5050.4B, NEPA Implementing Instructions for Airport Actions; and FAA Order 1050.1F, Environmental Impacts: Policies and Procedures.

HDR estimated criteria air pollutant (CAP) and greenhouse gas (GHG) emissions associated with construction of the Proposed Project. Proposed Project construction emission estimates were developed based on 1) activity estimates for vehicle, non-road equipment, and fugitive dust from the Airport Construction Emissions Inventory Tool (ACEIT) and 2) emission factors from the United States Environmental Protection Agency (USEPA) Motor Vehicle Emission Simulator (MOVES3, January 2021 release) and USEPA AP-42 guidance. The Proposed Project will not have any effect on aircraft, taxi, or ground support vehicle operations, adding or changing of haul routes/roads, or any other operational activities. Therefore, no operational emissions have been calculated.

HDR evaluated the Proposed Project's significance with respect to air pollutant emissions by comparing the estimated emissions to applicable USEPA *de minimis* levels under General Conformity Rules (40 CFR 93, Subpart B). DFW is in a Serious Ozone Non-Attainment Area; therefore, the Proposed Project is subject to 50 tons per year (tpy) volatile organic compounds (VOC) and nitrogen oxides (NOx) *de minimis* thresholds under the General Conformity Rules. This analysis was initiated to determine compliance with the Clean Air Act (CAA) and the Texas Commission on Environmental Quality (TCEQ) Dallas-Fort Worth Eight-Hour Ozone State Implementation Plan (SIP). Table 1 shows that maximum annual construction emissions are well below applicable *de minimis* thresholds. As noted above, the Proposed Project is expected to result in no net increases in operational emissions.

Table 1. Proposed Project Construction Emissions and Comparison to General Conformity *de minimis* Thresholds.

Project Year	Project Emissions (tons/yr)		General Conformity De Minimis Threshold[1]	
	NOx	VOC	NOx	VOC
2021	5.76	0.49	50	50

[1] Source: 40 CFR 93 § 153 *de minimis* thresholds applied to Dallas-Fort Worth Non-Attainment Area "serious" classification.

1 Introduction

This technical report has been prepared to address the potential air quality impacts associated with the Proposed Project. In conformance with the NEPA, this analysis identifies and assesses the impacts that would result from the Proposed Project's emission of CAPs and discloses emissions of GHGs.

This analysis evaluates the potential air quality-related impacts of the Proposed Project, which would demolish the Northwest Cargo Area and restore it to grade with fill, topsoil, sod, and limited fencing. This technical report describes the scope and methodology for evaluation of air quality from construction sources. The results of these evaluations are compared to the standards of significance identified by the Federal CAA, as outlined below.

1.1 Overall Approach and Regulatory Setting

NEPA provides for an environmental review process to disclose the potential impacts, including on air quality, from a proposed federal action on the human environment. Per the USEPA, NEPA's policy is to assure that all branches of government properly consider the environment prior to undertaking any major federal action that significantly affects the environment.

The impacts to air quality due to the Proposed Project for NEPA purposes are determined in accordance with the guidelines provided in the FAA Aviation Emissions and Air Quality Handbook Version 3 Update 1 (FAA Handbook); FAA Order 5050.4B, NEPA Implementing Instructions for Airport Actions; and FAA Order 1050.1F, Environmental Impacts: Policies and Procedures. Potential air quality and climate impacts are categories that are required to be analyzed per these orders and guidance.

FAA 1050.1F, Exhibit 4-1 defines the significance threshold for air quality as when "[t]he action would cause pollutant concentrations to exceed one or more of the National Ambient Air Quality Standards (NAAQS), as established by the USEPA under the CAA, for any of the time period analyzed, or to increase the frequency or severity of any such existing violations." FAA guidance requests that Air Quality analysis focus on NAAQS criteria air pollutants and that a separate section of the assessment should address Climate.

The CAA requires adoption of NAAQS, which are periodically updated, to protect public health and welfare from the effects of air pollution. Current federal standards are set for sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and Lead (Pb).[1] Specific geographic areas are classified as either "attainment" or "non-attainment" areas for each pollutant based upon comparison of ambient monitoring data with NAAQS. Those areas designated as "non-attainment" for purposes of NAAQS compliance are required to prepare regional air quality plans, which set forth a strategy for bringing an area into compliance with the standards. These regional air

[1] USEPA. NAAQS Table. Available at: https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed: March 2021

quality plans are developed to meet federal requirements and are included in an overall program referred to as the SIP.

The Project site is in Dallas and Tarrant Counties which have been designated by the USEPA as being in attainment and non-attainment with the following NAAQS, respectively.[2]

- *Attainment or Unclassified:* CO (1-hr, 8-hr), NO_2 (1-hr, Annual), Sulfur Dioxide (SO_2) (1-hr, 3-hr), PM_{10} (24-hr), $PM_{2.5}$ (24-hr, Annual), and Pb (Rolling 3-month average);
- *Non-Attainment:* O_3 (2008 8-hr, Serious), O_3 (2015 8-hr, Marginal).

As indicated above, EPA NAAQS non-attainment classifications for the project area are limited to ozone. Ozone (O_3) is not directly emitted but is formed in the atmosphere when NO_x and VOC react under exposure to solar radiation. Ozone is considered a regional pollutant because NO_x and VOC emissions throughout the airshed are involved in the formation of ozone. A regional photochemical model that considers emissions throughout the airshed is used to model ozone concentrations. The potential impacts to ozone concentrations are typically based on estimates of the annual or daily emissions of NO_x and VOC. Air pollutant emissions from construction and any net increases in NOx or VOC emissions associated with operation of the Proposed Project would be relevant to ozone formation and concentration, especially if the emissions increases exceed the General Conformity *de minimis* thresholds.

1.2 Existing Conditions

DFW is jointly owned/controlled by the cities of Dallas and Fort Worth, Texas, as portions are included in both Dallas and Tarrant counties. In 2020, DFW serviced over 39 million passengers to over 200 nonstop destinations. DFW covers over 17,000 acres of land area and currently contains five terminals and 164 gates.

DFW growth and targets are described in its 2016 through 2020 Strategic Plan. This plan is currently undergoing an update for future years. Construction and operations are also governed by DFW's Green Building Standards, Sustainability Management Plan, and Clean Air policy.

The DFW Northwest Cargo Area operations were terminated within AeroTerm Buildings A through D and the Evergreen Building and moved to another location. Therefore, there are currently no operations ongoing in these buildings or associated paved parking and egress areas.

1.3 Proposed Project

The Proposed Project is to demolish the existing Northwest Cargo Area including the Evergreen Building and AeroTerm Buildings A, B, C, D and associated concrete paved parking/vehicle access areas. The Evergreen building encompasses 141,000 square feet and the other four buildings encompass 156,000 square feet. The total project area is approximately 17 acres. The subject

[2] USEPA. Greenbook. 2020. Texas Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Dallas-Fort Worth . Available at: https://www3.epa.gov/airquality/greenbook/anayo_tx.html. Accessed: February 2021.

buildings are not operational and are mostly empty. The Proposed Project will include the following components:

- Complete building demolition
- Concrete slab/foundation pier demolition along with utilities and soil excavation down to five feet below grade of each building footprint
- Concrete demolition of all paved parking and surrounding vehicle access areas
- Placement of approximately 40,000 cubic yards of fill and grading
- Topsoil placement and sodding the entire project area, and
- Install fencing to separate an aircraft apron from the project area.

After demolition and restoration is complete, the project area will be ready for future redevelopment as needed.

The Proposed Project would not cause an increase in aircraft operations including nighttime operations, change the aircraft fleet mix, nor change the airfield configuration, runway use, taxiing patterns, or flight patterns. This Proposed Project would be located entirely on Airport property and would not increase the number of operations or operational characteristics. It would not affect runway use percentages or number or type of aircraft operations. Therefore, HDR did not perform a quantitative evaluation of operational emissions as no project-related increases in operational emissions are expected.

The Proposed Project includes the following specific components in more detail:

- Demolition of AeroTerm Buildings A, B, C, and D which are each 39,000 square feet in area and approximately 27 feet in height (obtained from Google). Asbestos abatement is expected to be completed prior to demolition.
- Demolition of the Evergreen Building which is 141,000 square feet in area and approximately 29 feet in height. This includes some asbestos abatement of materials that cannot be removed prior to demolition. The demolition contractor is responsible for conducting asbestos abatement and proper asbestos disposal of approximately 59,163 square feet of asbestos-containing flooring, ceiling tiles, mastics, drywall/joint compound, ceramic tiles, tank insulation materials, exterior stucco, and roof flashing materials, and 10,759 linear feet of asbestos-containing caulking, mastic, elbow insulation, vibration damper, and exterior/interior expansion joint caulking materials. All ACM will be transported to and disposed in a local landfill approved for asbestos disposal. [*This assessment assumes there is no appreciable difference in the level of demolition activity and associated emissions if there was no asbestos abatement necessary and these same materials were disposed in a construction and debris (C&D) landfill vs. an asbestos-approved landfill.*]
- For the five buildings above, demolition of concrete building foundations, concrete parking and vehicle access areas around these buildings, underground structures/utilities and soils down to 5 feet below the building footprint concrete slab. This area encompasses 740,520 square feet based on the 17-acre project site. These buildings are unoccupied and operational equipment has been removed or will be removed prior to demolition.

- Removal and proper disposal of other potential hazardous materials including lead fixtures, lead-based paint, universal wastes containing mercury, and refrigerants.
- Demolition and proper disposal of approximately eight electrical transformers (potentially PCB-containing).
- Adjustment and tie-in to the existing stormwater drainage system.
- Transport of approximately 40,000 cubic yards of earthen fill material from either of three on-site borrow sources to the project site for filling and grading the project area after demolition. [*This assessment assumes all earthen material will come from the DFW Airport borrow area farthest away which is the East Materials Management Site; approximately 8 miles by road from the project site.*]
- Construction of an Airport Operating Area barrier-mounted chain-link and barbed wire fence; 1,208 linear feet.
- Transport and placement of 4 inches of topsoil and overlay of sod over the entire project area, which covers 740,520 square feet (17 acres).
- All C&D debris will be transported and disposed in either of two local C&D landfills: Lewisville and Arlington C&D landfills. [*The ACEIT emissions model utilizes a default of 40 miles round-trip distance for material delivery/hauling which is conservative compared to the C&D landfill that is farthest from the project site; Lewisville at 14.8 miles one-way*.]
- As dust control and Foreign Object Debris (FOD) control measures, there will be regular daily applications of water and use of sweepers on the project site to keep dust down and prevent FOD from getting onto the adjacent aircraft apron area.

Air quality and greenhouse gas emissions from construction/demolition of the Proposed Project are analyzed for the anticipated construction year of 2021. Proposed Project construction/demolition emissions are described in Section 2.4.1 and evaluated for significance in Section 4.1.1 of this technical report.

The Proposed Project is expected to result in no increase in operational CAP or GHG emissions compared to existing conditions and future no project conditions. Therefore, operational emissions are not quantified but are discussed qualitatively in Section 2.4.2.

1.4 Project Design Features

The DFW Airport has on-going commitments to reduce its air emissions. The following are measures that are already implemented or will be implemented at the Airport:

Clean Air policy[3] (effective 8/1/2020), which requires measures including:

- 3.2.1 Ensure compliance by meeting or exceeding all applicable air quality laws, regulations, and Texas SIP requirements.

[3] DFW. 2020. Clean Air policy. Available at: https://www.dfwairport.com/cs/groups/webcontent/documents/webasset/p3_315435.pdf. Accessed: October 2020.

- 3.2.2 Achieve and maintain carbon neutrality certification on a pathway to net zero carbon emissions by 2030 in accordance with Level 4+ Airport Carbon Accreditation Program requirements.
- 3.2.3 Identify future air quality requirements and initiate procedures to meet or exceed them.
- 3.2.4 Incorporate energy efficiency and carbon emissions reduction priorities into the strategic plan.
- 3.2.5 Require use of 100 percent renewable energy in electricity supplied to the DFW Airport Board (Board).
- 3.2.6 Develop and utilize innovative strategies in expanding the Board's current commitments to improve air quality.
- 3.2.7 Establish, track and analyze metrics to monitor air quality performance, and to set goals for continuous improvement.
- 3.2.8 Actively engage with tenants and other business partners to improve energy performance, optimize operational efficiency, and reduce emissions through their own reduction plans or through measures initiated by the airport.
- 3.2.9 Maintain a Clean Fleet Standard Operating Procedure (SOP) that prioritizes zero emission vehicle and equipment purchases for fleet operations in accordance with the Regional Transportation Council's (RTC) Clean Fleet Policy.
- 3.2.10 Actively promote the transition to electric vehicles (EVs) through the provision of required infrastructure, incentives, and partnerships.
- 3.2.11 Discourage vehicle idling in order to support regional efforts to improve air quality.
- 3.2.12 Continue to integrate energy efficiency into its facilities, systems, processes, and operations and ensure the best available technologies are utilized.
- 3.2.13 Partner with agencies, academia, nongovernmental organizations, business associations, and other interested stakeholders to develop effective and sustainable solutions to local air quality challenges.

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2 Methodology and Inventory

The steps conducted in performing this air quality analysis are consistent with the FAA Handbook as follows: (1) determine the need for the assessment; (2) select the assessment methodology; and (3) conduct the assessment and assess the Proposed Project's impact relative to the numeric thresholds.

2.1 Need for Assessment

The FAA Handbook lays out the following steps to determine when an air quality assessment is required and the type of assessment that may be needed.

1. Determine the Project definition, described in Section 1.3.
2. Determine whether FAA involvement is associated with the Proposed Project; DFW has already been in discussions with the FAA regarding this Proposed Project. In this step, the Proposed Project has been confirmed not to fall under a categorical exclusion (CATEX), so an environmental assessment or environmental impact statement (EIS) will be developed.
3. Determine if the Proposed Project will cause or create a reasonably foreseeable increase in air emissions. As described further below, construction but not operations of this Proposed Project may cause a temporary increase in air emissions.
4. Establish the attainment/nonattainment status for the Project area and identify pollutants for which the area is designated nonattainment or maintenance, described in Section 1.1.
5. Evaluate agency/public scoping comments concerning air quality; this is only a requirement when preparing an EIS and is not addressed explicitly in this report.

Based on the results of Steps 1 through 4 above, an air quality assessment has been conducted as described below.

2.2 Assessment Methodology

The FAA Handbook describes several different potential assessment methodologies that could be pursued when an air quality assessment is needed. Figure 4-5 of the FAA Handbook provides examples that show which methodologies are appropriate, potentially appropriate, or unnecessary for various project action categories.

The potential methodologies are summarized here, and methodologies that were used for the Proposed Project are described below. Although the type of project for this proposed action, i.e. demolition, is not specifically listed in Figure 4-5, it is assumed the category "New or Expanded Cargo Facility" would be the best representation for determining the assessment methodology. This category lists the construction emissions inventory as "appropriate" and all other methodologies as "potentially appropriate." The decision to evaluate the "potentially appropriate" methodologies were assessed using Project-specific information.

Qualitative Assessment: When it has been determined that the Proposed Project will not cause or create a reasonably foreseeable increase in air emissions, a qualitative assessment of air quality impacts is likely all that is necessary. This assessment should contain an explanation of the conditions and rationale upon which this finding is based. This is the methodology used to evaluate Project operations in Section 2.4.2 below.

- Construction Emissions Inventory: A construction emissions inventory is designed to quantify the mass of CAP emissions and precursors associated with construction activity in a proposed action. This is described in Sections 2.3.1 and 2.4.1 below.
- Operational Emissions Inventory: An operational emissions inventory is designed to quantify the mass of CAP emissions and precursors associated with operational activity in a proposed action. This is not performed as part of this Proposed Project, as described in Section 2.3.2 and 2.4.2 below.
- Hazardous Air Pollutants (HAP) Emissions Inventory: A HAPs inventory is designed to quantify the mass of HAP emissions associated with operational activity in a proposed action. This is not performed as part of this Proposed Project because operational emissions are not expected to increase.
- Greenhouse Gas Emissions Inventory: A GHG emissions inventory is designed to quantify the mass of GHG emissions associated with operational activity in a proposed action. GHG emissions are quantified for construction (temporary emissions) but not for operations as part of this Proposed Project.
- Atmospheric Dispersion Modeling: Dispersion modeling is used to predict the air quality effects of the operational and construction emissions inventory by distributing and dispersing the emissions across a project area both spatially and temporally based on the operational and physical characteristics of the emission source(s) combined with meteorological and local terrain data. This is not necessary for this Proposed Project given the nonattainment pollutant of interest (O_3) and the results of the construction emissions assessment below.
- Roadway “Hot-Spot” Analysis: Hot-spot modeling is designed to assess the effects of motor vehicle traffic emissions on local air quality conditions. This is not applicable to the Proposed Project given that it will not result in significant increases in vehicle traffic. In addition, the Proposed Project is not subject to Transportation Conformity, which is when a formal hot-spot analysis can be required.

2.3 Scenarios Evaluated

2.3.1 Construction Scenarios Evaluated

HDR evaluated CAP and GHG emissions associated with construction/demolition of the Proposed Project. The Proposed Project would include the following which is the only scenario evaluated:

- Complete building demolition of five buildings; 297,000 square feet
- Concrete slab/foundation pier demolition along with utilities and soil excavation down to five feet below grade of each building footprint

- Concrete demolition of all paved parking and surrounding vehicle access areas; 740,520 square feet
- Placement of approximately 40,000 cubic yards of fill and grading
- Topsoil placement and sodding the entire project area, and
- Install fencing to separate an aircraft apron from the project area

Construction/demolition emissions depend on activity levels for heavy-duty construction equipment, truck haul trips (bulk deliveries and demo debris to local landfill), and vehicle trips made by construction workers and vendors/material deliveries traveling to and from the Proposed Project site. Construction activities would take place in 2021. A list of associated project types, schedule, and the year of activity is provided in Table 2. The overall project is estimated to occur over 120 days between late June 2021 and late October 2021.

Table 2. Proposed Project Schedule by Project Type.

Project Type	Estimated Start Date	Estimated End Date	Percentage of Project Type in 2021
Demolition - Building	6/28/2021	10/28/2021	100%
Demolition - Concrete	7/28/2021	9/28/2021	100%
Apron (GA) [ACEIT surrogate for building footprint excavation/demo down to 5 feet below grade and subsequent placement of earthen fill] (1)	7/28/2021	9/28/2021	100%
Site Work – 10000 square feet [Rough Grading]	9/28/2021	10/28/2021	100%
Landscaping [topsoil/sod placement]	9/28/2021	10/28/2021	100%
Fencing [AOA fence]	9/28/2021	10/28/2021	100%
Runway Markings [ACEIT surrogate for FOD Sweeper for entire duration of the project]	6/28/2021	10/28/2021	100%

(1) Also includes a water truck for fugitive dust control for the entire duration of the project.

2.3.2 Operational Scenarios Evaluated

The FAA Handbook recommends evaluation of several operational scenarios including the Existing/Baseline emissions, Proposed Project, No Project, and any other Alternatives. However, in this case the Proposed Project is expected to result in no net increases in operational emissions. Therefore, HDR did not perform a quantitative evaluation of operational emissions. Section 2.4.2 below provides a qualitative discussion of the no net increase in emissions by source group expected from the Proposed Project.

2.4 Emission Inventory Development

This section describes the methodology that HDR used to develop construction and operational emissions inventories for the Proposed Project. This analysis evaluates CAPs and GHGs. Disclosure of HAPs is recommended for operational emissions but not for construction. This analysis only

evaluates construction emissions; therefore, HAPs are not considered. For this analysis, the following pollutants were considered:

- O_3 precursors: VOCs and NOx
- Other CAPs: CO, SO_2, PM_{10}, and $PM_{2.5}$
- GHGs: CO_2 (carbon dioxide),CH_4 (methane), N_2O (nitrous oxide); total GHG emissions are reported as CO_2e (carbon dioxide equivalents)

Because O_3 is a secondary pollutant (i.e., it is not directly emitted but is formed in the atmosphere), emissions of VOCs and NO_x, which react in the presence of sunlight to form ozone, were used to assess the potential for impacts on ozone levels.

CO_2e emissions were estimated based on 20-year global warming potential (GWP) estimates for CH_4 (84) and N_2O (264),[4] conservatively, as 20-year GWPs will result in higher CO_2e estimates compared to 100-year GWP estimates.

To estimate CAP and GHG emissions from the Proposed Project, HDR directly or indirectly relied primarily on emissions estimation guidance from government-sponsored organizations, Project specific studies (e.g., design documents), DFW-provided project activity data, and emission estimation software, i.e. ACEIT and MOVES3.

2.4.1 Construction Emissions Inventory

Proposed Project construction/demolition would generate CAP and GHG emissions from heavy-duty construction equipment activity, truck haul trips (bulk deliveries and demo debris to local landfill), and construction workers and vendor/material truck trips to and from the Proposed Project site. Mobile source emissions would be generated from on-road vehicles and construction equipment, including but not limited to dump trucks, excavators, dozers, graders, rollers, skid steer loaders, cutting machines, forklifts, sweepers, water truck, passenger vehicles/trucks, flatbed trucks, and tractor trailers. CAP and ozone precursor emissions include emissions of NO_x, CO, SO_2, VOC, PM_{10}, and $PM_{2.5}$. Diesel-powered off-road construction equipment and traffic to and from the construction site would also generate GHGs. The assessment of construction air quality impacts considers each of the above sources. As DFW purchases 100% renewable electricity, there would be no indirect GHG emissions associated with electricity generation for construction of the Proposed Project.

To calculate Proposed Project construction, HDR utilized activity estimates from the ACEIT developed by the Airport Cooperative Research Program (ACRP) of the Transportation Research Board (TRB)[5] combined with the most recent emission factors from the USEPA MOVES3[6]

[4] Intergovernmental Panel on Climate Change (IPCC), 2014. AR5 Synthesis Report: Climate Change 2014. Available at: https://www.ipcc.ch/report/ar5/syr/. Accessed: March 2021.

[5] Transportation Research Board. Transportation Research Board. Guidance for Estimating Airport Construction Emissions. Available at: http://www.trb.org/main/blurbs/170234.aspx. Accessed: March 2021.

[6] US Environmental Protection Agency. MOtor Vehicle Emission Simulator (MOVES3). Available at: https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves. Accessed: March 2021.

emissions model and USEPA AP-42 guidance.[7] Inventory activity and emission factors are described below.

2.4.1.1 Emissions Inventory Activities

2.4.1.1.1 Project Schedule

The Proposed Project consists of several supporting project phases or project types as defined in ACEIT: Apron (GA) [includes building footprint excavation/demo down to 5 feet below grade and subsequent placement of earthen fill, and fugitive dust control for the entire project], Demolition – Building, Demolition – Concrete, Fencing, Landscaping, Runway Markings (for FOD sweepers only), and Site Work. Each project type is further broken down into relevant construction activities or subphases. The overall project construction is anticipated to take place between late June 2021 and October 2021. Anticipated project types and construction activities, as defined in ACEIT, are shown in Table 3.

Table 3. Project Types and Demolition/Construction Activities for the Proposed Project.

Project Type	Construction Activities
Apron (GA)	Dust Control (entire site), Excavation (Cut to Fill), Subbase Placement, Material Movement (Paved Roads), Material Movement (Unpaved Roads), Soil Handling, Unstabilized Land and Wind Erosion, Employee Commute
Demolition - Building	Building Demolition, Employee Commute, Material Delivery, Material Movement (Paved Roads), Material Movement (Unpaved Roads)
Demolition - Concrete	Concrete Demolition, Employee Commute, Material Delivery, Material Movement (Paved Roads), Material Movement (Unpaved Roads), Soil Handling, Unstabilized Land and Wind Erosion
Fencing	Fencing, Material Delivery, Material Movement (Paved Roads), Material Movement (Unpaved Roads), Employee Commute
Landscaping	Material Delivery, Material Movement (Paved Roads), Material Movement (Unpaved Roads), Sodding, Soil Handling, Topsoil Placement Employee Commute
Site Work	Construction Mob & Layout, Employee Commute, Material Delivery, Material Movement (Paved Roads), Material Movement (Unpaved Roads), Site Restoration- Landscaping (Rough Grading), Soil Handling, Unstabilized Land and Wind Erosion
Runway Markings (for FOD Sweepers only)	Marking Removal, Employee Commute

2.4.1.1.2 Airport Construction Emissions Inventory Tool

The TRB developed ACEIT to provide a consistent approach and default values for construction emissions for airport projects. It includes default construction information based on surveys of airports. While ACEIT generates both construction activity and emission estimates, for this project,

[7] US Environmental Protection Agency. AP-42, Fifth Edition Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources. Available at https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors#5thed. Accessed: March 2021.

ACEIT was used exclusively to generate activity estimates (e.g., vehicle miles traveled) and ancillary information (e.g., vehicle types) for on-road vehicles, construction equipment, and fugitive emission sources.

ACEIT was not used to directly estimate emissions because emission factors included in ACEIT for on-road vehicles and construction equipment are not based on the most recent version of MOVES released by USEPA (MOVES3), which is required to be used in this analysis.

ACEIT provides activity assumptions from demolition, site preparation/restoration, material delivery, construction employee work commute, waste disposal transportation, and other construction activities. Activity data for off-road construction equipment and on-road vehicles (i.e., equipment type, equipment counts, average rated horsepower, load factor, hours of activity, vehicle trips and VMT were obtained from ACEIT and scaled where appropriate based on project specific activity (i.e., buildings and site work). ACEIT was run for the calendar year 2021 using project size inputs.

Project-specific overall size inputs applied in ACEIT are provided for reference in Appendix A, Table A1 to this report. Input data that was modified in ACEIT to be more project-specific is included in the ACEIT output file provided electronically in MS Excel file format with this report; refer to data in columns titled “User Activity Size”, “User Activity Data”, “User VMT”, and “User Value”. The ACEIT output file with modifications for incorporating the MOVES3 emission factors and subsequent emissions calculations is called “DFW NW Cargo Area Demo_ACEIT Run_031621_Initial detail_output_EF Replace_Calcs.xlsx”. This file also has a tab with the MOVES3 emission factors. The Excel file that provides the MOVES3 output data and emission factors is called “ DFW NW Cargo Area_MOVES3_Output for Emission Factors.xlsx”. The ACEIT input file is called “DFW_NW_Cargo Area Demo_ACEIT Run_031621_Input.csv”.

2.4.1.2 Emission Factors

ACEIT default off-road vehicle emission factors for non-road (off-road) equipment and on-road vehicles are from dated versions of the NONROAD and MOVES models, respectively.[8] For the Air Quality Technical Report analysis, HDR has not relied upon ACEIT emission factors for on-road vehicles or non-road equipment. HDR developed emission factors for on-road vehicles and non-road equipment for Dallas County using the latest MOVES model available at the time this work was conducted, MOVES3 (Jan. 2021 release). The assumptions used for generating the MOVES3 emission factors are:

- Average speed of 50 mph for vehicles travelling On-road
- Average speed of 10 mph for On-road vehicles travelling on-site
- For grams/equipment-day calculations, a work-day was assumed to be 8 hours
- On-road emission rates/factors assumed to be from 8AM on a July 2021 weekday
- Non-road emission rates/factors assumed to be from July 2021 weekday
- Road type assumed to be Urban Unrestricted

[8] Transportation Research Board. ACRP Report 102: Guidance for Estimating Airport Construction Emissions. Available at: http://www.trb.org/main/blurbs/170234.aspx. Accessed: March 2021.

HDR also refined specific AP-42 fugitive dust emission inventory input factors to be more relevant to the Proposed Project than default values used by ACEIT, as described in Section 2.4.1.2.3.

2.4.1.2.1 On-road

HDR used MOVES3 to estimate off-road equipment emission factors for calendar year 2021. MOVES3 was run at a national scale for Dallas County, Texas. The DFW airport is located in both Tarrant and Dallas Counties. HDR has followed ACRP Report 102 guidance on county choice: "If the project spans multiple counties, the county with the greatest populace should be used, as the county is used to select the appropriate emission factors."[8] Emissions and activity were output from MOVES by vehicle type, fuel type, road type, and process type for each calendar year. Emissions were aggregated over nine emission process types to facilitate application to activity for development of Proposed Project emissions.

Table 4 lists MOVES emission process types, aggregate groupings, road type and activity surrogates. Emission factors were estimated by aggregate grouping by dividing MOVES output emissions by MOVES output activity.

Table 4. MOVES Process Grouping and Activity Surrogates.

MOVES Emission Process	Road Type	Activity Surrogate	
		Description	Metric
Crankcase Running Exhaust[2]	Urban Unrestricted Access	Distance	Miles
Running Exhaust[2]	Urban Unrestricted Access	Distance	Miles
Brake Wear[3]	Urban Unrestricted Access	Distance	Miles
Tire Wear[3]	Urban Unrestricted Access	Distance	Miles
Evaporation Fuel Leaks[4]	Urban Unrestricted Access	Distance	Miles
Evaporation Fuel Vapor Venting[4]	Urban Unrestricted Access	Distance	Miles
Evaporation Permeation[4]	Urban Unrestricted Access	Distance	Miles
Crankcase Start Exhaust[5]	Off-Network	Starts	One-Way Trips[1]
Start Exhaust[5]	Off-Network	Starts	One-Way Trips[1]
Evaporation Fuel Vapor Venting[6]	Off-Network	Vehicle Population	Vehicle-days
Evaporation Fuel Leaks[7]	Off-Network	Vehicle Population	Vehicle-days
Evaporation Permeation[7]	Off-Network	Vehicle Population	Vehicle-days
Refueling Spillage Loss[8]	Off-Network	Vehicle Population	Vehicle-days
Refueling Displacement Vapor Loss[8]	Off-Network	Vehicle Population	Vehicle-days

1 Number of starts is assumed to be equivalent to number of one-way trips
2 Rate per distance for exhaust processes
3 Rate per distance for brake wear and tire wear processes
4 Rate per distance for evaporative processes
5 Rate per vehicle for start processes

MOVES Emission Process	Road Type	Activity Surrogate	
		Description	Metric
6 Rate per vehicle for diurnal processes			
7 Rate per vehicle for evaporative processes			
8 Rate per vehicle for refueling processes			

Detailed tables describing Proposed Project on-road vehicle data used (i.e., vehicle activity, vehicle emission factors) and estimated emissions are provided in the ACEIT output file described in Section 2.4.1.1.2 above.

2.4.1.2.2 Non-road

HDR used MOVES3 to estimate emission factors for calendar year 2021. MOVES3 was run at a national scale for Dallas County, Texas. The DFW airport is located in both Tarrant and Dallas County. As stated above, HDR followed ACRP Report 102 guidance on county choice and used Dallas County as it has the largest population of the two. Emission and activity were output from MOVES by equipment type, fuel type, and horsepower bin for construction and industrial sectors for 2021. ACEIT equipment activity was cross referenced to MOVES equipment types based on name matching and experience in assigning appropriate types. Emission factors were estimated for each equipment type and fuel type by dividing output emissions by output energy consumption. MOVES3 does not estimate N_2O emissions; therefore, N_2O was computed from the ratios of N_2O to CO_2 emissions from diesel combustion in Tables 13.1 and 13.7 of The Climate Registry Default Emission Factors, multiplied by CO_2 emissions from MOVES3 output.[9] A complete list of project non-road emission factors can be found in in the ACEIT output file described in Section 2.4.1.1.2 above.

2.4.1.2.3 Fugitives

Fugitive emissions and inputs from all fugitive source types are obtained from ACEIT. Emission factors and calculational methodologies applied in ACEIT are based on the most recent applicable USEPA AP-42 guidance documents. HDR reviewed ACEIT emission estimation methodology, emission factors and ancillary factors and made project-specific adjustments for the development of fugitive emissions as described in Table 5 below**.**

Table 5. Fugitives Emission Estimation Methodology and Project-Specific Adjustments.

Fugitive Source	Methodology	Project-specific Input Adjustments
Soil Handling	AP-42 13.2.4	Applied average annual wind speed of 10.5 mph at DFW[1]
Unstabilized Land and Wind Erosion	AP-42 11.9	Emission inputs unchanged from ACEIT output
Material Movement (Paved Roads)	AP-42 13.2.1	ACEIT default VMT revised to correct ACEIT values calculated.
Material Movement (Unpaved Roads)	AP-42 13.2.2	ACEIT default VMT revised to correct ACEIT values calculated.
1 Dallas/Fort Worth - Normals (1981-2010), Means, and Extremes, NWS) https://www.weather.gov/fwd/dfwann, Accessed March 2021		

[9] The Climate Registry. Default Emission Factors, April 19, 2016. Available at: https://www.theclimateregistry.org/wp-content/uploads/2014/11/2016-Climate-Registry-Default-Emission-Factors.pdf. Accessed: March 2021.

The ratio of $PM_{2.5}$ to PM_{10} emissions for fugitives is provided in Table 6 by construction activity.

Table 6. Fugitives $PM_{2.5}$ to PM_{10} Emission Ratios.

Construction Activity	$PM_{2.5}/PM_{10}$	Source
Material Movement (Paved Roads)	0.25	AP-42 13.2.1-1
Material Movement (Unpaved Roads)	0.1	AP-42 13.2.2-2
Soil Handling	0.15	AP-42 13.2.4
Unstabilized Land and Wind Erosion	0.15	AP-42 13.2.5

A complete list of fugitive inputs and emissions by project type and construction activity is provided in the ACEIT output file.

2.5 Operational Emissions

Operation of the Proposed Project would result in no net increase in emissions. However, for informational purposes, this section describes each potential emissions source and the reasoning for which the Proposed Project would not result in an increase in emissions above the *de minimis* thresholds.

- Aircraft: The Northwest Cargo Area Demolition and Site Restoration would not increase aircraft operations at DFW or change aircraft taxiing routes. Therefore, the Proposed Project would not increase operational emissions from this source category.
- Auxiliary Power Units (APU): The Northwest Cargo Area Demolition and Site Restoration would not increase aircraft operations at DFW and thus would not increase the use of APUs. Therefore, the Proposed Project would not increase operational emissions from this source category.
- Ground Support Equipment (GSE): GSE includes air conditioners, air starts, aircraft tractors, baggage tractors, belt loaders, cabin service trucks, cargo loaders, catering trucks, forklifts, fuel trucks, hydrant trucks, lavatory trucks, service trucks and water service equipment. The Northwest Cargo Area Demolition and Site Restoration would not increase aircraft operations at DFW and thus would not increase the use of GSE. Therefore, the Proposed Project would not increase operational emissions from this source category.
- Mobile Sources: Mobile sources associated with the Airport's day-to-day operations include landside and airside vehicles owned and operated by the Airport and by third parties, such as on-site maintenance trucks, shuttle services, employee and passenger transportation, and other off-road equipment not included in GSE above. The Northwest Cargo Area Demolition and Site Restoration would not increase passenger throughput or the number of workers at DFW and thus would not increase mobile source emissions. Therefore, the Proposed Project would not increase operational emissions from this source category.
- DFW-Owned Airside Equipment: Completion of the Northwest Cargo Area Demolition and Site Restoration would not increase aircraft operations and negligibly increases landscaping (mowing) needs at DFW and thus would negligibly increase the use of non-GSE off-road

equipment. Therefore, the Proposed Project would not increase operational emissions from this source category.

- Stationary Sources: Stationary sources include heaters/boilers, emergency generators, and gasoline and diesel dispensing facilities. The Northwest Cargo Area Demolition and Site Restoration would not increase stationary source activity and thus would not increase mobile source emissions. Therefore, the Proposed Project would not increase operational emissions from this source category.
- Indirect Electricity Emissions: Purchased electricity generates indirect GHG emissions. The Northwest Cargo Area Demolition and Site Restoration is not expected to result in an increase in total electricity consumption, and therefore this change would not increase GHG emissions.

3 Significance Thresholds

This section discusses the criteria and general methods used to evaluate the Proposed Project's significance with respect to air quality impacts under NEPA.

The emissions inventories are used to determine the projected net annual increase in emissions, and the potential impact to air quality in the vicinity of DFW due to the Proposed Project. The General Conformity Rule helps ensure that federal activities do not cause or contribute to a violation of NAAQS. The General Conformity process begins with an Applicability Analysis. If General Conformity applies, the Agency must prepare a General Conformity Determination. Then federal, state and local air quality governance are engaged in a public review process of the agency's determination.

When performing a General Conformity applicability analysis, the FAA considers a range of factors, including:

- If action will occur in a Non-attainment or Maintenance Area
- If specific exemptions in the General Conformity Rule apply
- If the action is on the federal agency's list of "presumed to conform" activities
- If total emissions exceed General Conformity *de minimis* levels, and
- If an EPA-approved SIP has an emissions budget for which emissions with the action could be compared

If an action is not exempt or presumed to conform or found to cause emissions above applicable *de minimis* levels in any nonattainment or maintenance area, the agency must prepare a General Conformity Determination prior to taking the action.

DFW is in a Serious Ozone Non-Attainment Area[10] (based on 2008 ozone standards)[2]; therefore, the 50 tpy VOC and 50 tpy NO_x *de minimis* thresholds apply to this Project.[11] The maximum annual emissions are compared to applicable *de minimis* thresholds below to determine compliance under the General Conformity Rule and compliance with the CAA and the Texas SIP.

[10] DFW Airport is located in both Dallas and Tarrant Counties. Both Counties in their entirety are within 2008 Serious Ozone Non-Attainment Area.

[11] FAA. 2015. Aviation Emissions & Air Quality Handbook, Version 3, Update 1. Section 8.1.1.4. January

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4 Results

4.1 Emission Inventories Results

The following analysis addresses whether the Proposed Project would exceed the *de minimis* thresholds described above; and if so, if a General Conformity analysis would be needed. If a project's emissions do not exceed the *de minimis* thresholds, then the project is presumed to conform.

Criteria air pollutant and ozone precursor mass emissions were calculated based on methodology described in Section 2.4 above.

4.1.1 Construction Emissions Inventory

Table 7 presents CAP emissions associated with construction of the Proposed Project.

Table 7. Proposed Project Criteria Air Pollutant Construction/Demolition Emissions

Project Type	Emissions (tons/yr)					
	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	VOC
2021						
Demolition - Building	2.90	3.55	0.007	0.34	0.16	0.30
Demolition - Concrete	0.78	0.57	0.002	0.05	0.03	0.05
Apron (GA) [ACEIT surrogate for building footprint excavation/demo down to 5 feet below grade and subsequent placement of earthen fill] (1)	1.01	1.37	0.003	0.13	0.06	0.11
Site Work – 10000 square feet [Rough Grading]	0.12	0.15	<0.001	0.01	0.006	0.01
Landscaping [topsoil/sod placement]	0.10	0.07	<0.001	0.01	0.004	0.01
Fencing [AOA fence]	0.05	0.03	<0.001	0.003	0.002	0.003
Runway Markings [ACEIT surrogate for FOD Sweeper for entire length of project]	0.01	0.02	<0.001	0.001	0.001	0.002
Fugitive Dust (all project types)	---	---	---	2.34	0.58	---
2021 Emission Totals	**4.96**	**5.76**	**0.01**	**2.88**	**0.84**	**0.49**

(1) Also includes a water truck for fugitive dust control for the entire length of the project.

Table 8 presents GHG emissions associated with construction of the Proposed Project by construction project type.

Table 8. Proposed Project Greenhouse Gas Construction/Demolition Emissions

Project Type	Emissions (metric tons/yr)			
	CO_2	CH4	N_2O	CO_2e
2021				
Demolition - Building	1,992.95	0.030	0.012	1,998.26
Demolition - Concrete	387.93	0.005	0.003	388.93
Apron (GA) [ACEIT surrogate for building footprint excavation/demo down to 5 feet below grade and subsequent placement of earthen fill] (1)	758.07	0.010	0.006	760.47
Site Work – 10000 square feet [Rough Grading]	95.41	0.001	<0.000	95.39
Landscaping [topsoil/sod placement]	33.72	0.001	0.001	33.82
Fencing [AOA fence]	17.05	<0.001	<0.001	17.10
Runway Markings [ACEIT surrogate for FOD Sweeper for entire length of project]	13.28	<0.001	<0.001	13.36
Fugitive Dust (all project types)	---	---	---	---
2021 Emission Totals	**3,298.41**	**0.040**	**0.022**	**3,307.33**

(1) Also includes a water truck for fugitive dust control for the entire length of the project.

As shown in Table 9, Proposed Project construction emissions are below *de minimis* thresholds for 2021. Therefore, the Project is presumed to conform with CAA requirements and a General Conformity determination is not needed for the Project.

Table 9. Proposed Project Construction/Demolition Emissions Compared to Applicable General Conformity *de minimis* thresholds.

Project Year	Project Emissions (tons/yr)		General Conformity De Minimis Threshold[1]	
	NOx	VOC	NOx	VOC
2021	**5.76**	**0.49**	**50**	**50**

[1] Source: 40 CFR 93 § 153 de minimis thresholds applied to Dallas-Fort Worth Non-Attainment Area "serious" classification

4.1.2 Operational Emissions

As described in Section 2.4.2, there is expected to be no net increase in operational emissions from the Proposed Project; therefore, operational emissions were not quantified.

4.2 Project Alternatives

No alternatives for the Proposed Project have been identified.

Appendix A. Proposed Project ACEIT Inputs – Overall Size

Table A1. ACEIT Inputs: DFW Northwest Cargo Area – Overall Size

Table A1. ACEIT Inputs: DFW Northwest Cargo Area – Overall Size

Project Type	Project Size	Project Estimate	Units
Apron (GA)	What is the estimated cost of the project?	0.5	$ Million(s)
Apron (GA)	What is the maximum length of the apron (L) in feet?	1,607	Feet
Apron (GA)	What is the maximum width of the apron (W) in feet?	753	Feet
Demolition - Building	How many square feet of building will be demolished?	297,000	Square Feet
Demolition - Building	What is the estimated cost of the project?	5.9	$ Million(s)
Demolition - Building	What is the height of building (H) in feet?	28	Feet
Demolition - Building	What is the open space height (H) in feet?	20	Feet
Demolition - Concrete	What is the estimated cost of the project?	6.4	$ Million(s)
Demolition - Concrete	What is the maximum length of demolition area (L) in feet?	1,607	Feet
Demolition - Concrete	What is the maximum width of demolition area (W) in feet?	753	Feet
Fencing	What is the estimated cost of the project?	0.05	$ Million(s)
Fencing	What is the maximum length of the fence (L) in feet?	1,208	Feet
Landscaping	What is the estimated cost of the project?	0.15	$ Million(s)
Landscaping	What is the maximum length of the project area (L) in feet?	1,607	Feet
Landscaping	What is the maximum width of the project area (W) in feet?	753	Feet
Landscaping	What is the number of trees planted?	0	---
Landscaping	What is the number of trees pruned?	0	---
Runway Markings	What is the estimated cost of the project?	0.05	$ Million(s)
Runway Markings	What is the maximum length (L) of the markings in feet?	1,607	Feet
Runway Markings	What is the maximum width (W) of the markings in feet?	753	Feet
Site Work - 10000 sqft	What is the estimated cost of the project?	0.15	$ Million(s)