Appendix B

Record of Non-Applicability

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1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Manual 32-7002, Environmental Compliance and Pollution Prevention; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:
 Location: Fort George G. Meade
 State: Maryland
 County(s): Anne Arundel
 Regulatory Area(s): Anne Arundel County and Baltimore County, MD; Baltimore, MD

b. Action Title: Construct and Operate Child Development Center V at Fort George G. Meade, Maryland

c. Project Number/s (if applicable):

d. Projected Action Start Date: 4 / 2024

e. Action Description:

 The Proposed Action includes the design, construction, and operation of a new, approximately 26,450 SF, CDC V facility at FMMD. The proposed design is for a standard-design, medium-sized CDC supporting children 4 weeks to 6 years of age. The CDC V would have outdoor play areas with age-appropriate child development equipment, safety surfacing, and fencing. In total, the project includes the 26,450 SF building, 23,873 SF of the playground areas, and no more than 110 parking spaces. The parking spaces would be maximized for available space to achieve as close to or equal to the authorized number of parking stalls.
 Supporting the CDC facilities includes site development, utilities and connections, lighting, paving, parking, sidewalks, curbs and gutters, storm drainage, information systems, landscaping, and signage. Air conditioning would be provided by standalone chillers located adjacent to the facility.

f. Point of Contact:
 Name: Andrew Glucksman
 Title: Environmental Scientist
 Organization: Mabbett & Associates, Inc.
 Email: glucksman@mabbett.com
 Phone Number: 781-275-6050

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
                 __X__ not applicable

Conformity Analysis Summary:

2024

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	**Exceedance (Yes or No)**
Anne Arundel County and Baltimore County, MD			
VOC	0.227		
NOx	1.296		
CO	1.753		
SOx	0.004	100	No
PM 10	6.713		
PM 2.5	0.048		
Pb	0.000		
NH₃	0.001		
CO2e	407.6		
Baltimore, MD			
VOC	0.227	50	No
NOx	1.296	50	No
CO	1.753		
SOx	0.004		
PM 10	6.713		
PM 2.5	0.048		
Pb	0.000		
NH₃	0.001		
CO2e	407.6		

2025

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	**Exceedance (Yes or No)**
Anne Arundel County and Baltimore County, MD			
VOC	0.437		
NOx	0.555		
CO	1.196		
SOx	0.006	100	No
PM 10	0.028		
PM 2.5	0.028		
Pb	0.000		
NH₃	0.004		
CO2e	252.7		
Baltimore, MD			
VOC	0.437	50	No
NOx	0.555	50	No
CO	1.196		
SOx	0.006		
PM 10	0.028		
PM 2.5	0.028		
Pb	0.000		
NH₃	0.004		
CO2e	252.7		

2026 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Anne Arundel County and Baltimore County, MD			
VOC	0.059		
NOx	0.135		
CO	0.738		
SOx	0.006	100	No
PM 10	0.012		
PM 2.5	0.012		
Pb	0.000		
NH₃	0.005		
CO2e	171.8		
Baltimore, MD			
VOC	0.059	50	No
NOx	0.135	50	No
CO	0.738		
SOx	0.006		
PM 10	0.012		
PM 2.5	0.012		
Pb	0.000		
NH₃	0.005		
CO2e	171.8		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

_____

[Name, Title]   DATE

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ATTACHMENT 1 - Detailed Air Emissions Inventory

1. General Information

- Action Location
    Location: Fort George G. Meade
    State: Maryland
    County(s):   Anne Arundel
    Regulatory Area(s):   Anne Arundel County and Baltimore County, MD; Baltimore, MD

- Action Title: Construct and Operate Child Development Center V at Fort George G. Meade, Maryland

- Project Number/s (if applicable):

- Projected Action Start Date: 4 / 2024

- Action Purpose and Need:
The purpose of the Proposed Action is to design, construct and operate a permanent, medium-size standard design CDC facility to help alleviate the deficit of childcare services available to the families of active-duty military as well as staff of tenants on post, military retirees, and other eligible units and agencies off post.

- Action Description:
The Proposed Action includes the design, construction, and operation of a new, approximately 26,450 SF, CDC V facility at FMMD. The proposed design is for a standard-design, medium-sized CDC. The CDC V would have outdoor play areas with age-appropriate child development equipment, safety surfacing, and fencing. In total, the project includes the 26,450 SF building, 23,873 SF of the playground areas, and no more than 110 parking spaces. The parking spaces would be maximized for available space to achieve as close to or equal to the authorized number of parking stalls.

Supporting the CDC facilities includes site development, utilities and connections, lighting, paving, parking, sidewalks, curbs and gutters, storm drainage, information systems, landscaping, and signage. Air conditioning would be provided by standalone chillers located adjacent to the facility.

- Point of Contact
    Name: Andrew Glucksman
    Title: Environmental Scientist
    Organization: Mabbett & Associates, Inc.
    Email: glucksman@mabbett.com
    Phone Number: 781-275-6050

- Activity List:

	Activity Type	Activity Title
2.	Construction / Demolition	Clear land and construct CDC and infrastructure
3.	Heating	Heating and Cooling
4.	Emergency Generator	Emergency Generator
5.	Personnel	Personnel/staff vehicles

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
    County: Anne Arundel
    Regulatory Area(s):   Baltimore, MD; Anne Arundel County and Baltimore County, MD

- Activity Title: Clear land and construct CDC and infrastructure

- Activity Description:
    Clear up to approximately 8 acres of wooded area.
    Construct CDC and associated parking and infrastructure.

- Activity Start Date
    Start Month: 4
    Start Month: 2024

- Activity End Date
    Indefinite: False
    End Month: 12
    End Month: 2025

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.619611
SO$_x$	0.005443
NO$_x$	1.750195
CO	2.395159
PM 10	6.732397

Pollutant	Total Emissions (TONs)
PM 2.5	0.067196
Pb	0.000000
NH$_3$	0.001752
CO$_2$e	531.4

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
    Start Month: 4
    Start Quarter: 1
    Start Year: 2024

- Phase Duration
    Number of Month: 2
    Number of Days: 0

2.1.2 Site Grading Phase Assumptions

- General Site Grading Information
    Area of Site to be Graded (ft^2):   300000
    Amount of Material to be Hauled On-Site (yd^3):   200
    Amount of Material to be Hauled Off-Site (yd^3):   200

- Site Grading Default Settings
    Default Settings Used: Yes
    Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3):	20 (default)
Average Hauling Truck Round Trip Commute (mile):	20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	Pb	NH$_3$	CO$_2$e
LDGV	000.201	000.002	000.113	003.023	000.004	000.004		000.024	00311.347
LDGT	000.220	000.003	000.199	003.428	000.006	000.005		000.026	00404.491
HDGV	000.878	000.006	000.931	014.208	000.025	000.022		000.052	00906.907
LDDV	000.077	000.001	000.086	003.165	000.003	000.002		000.008	00318.455
LDDT	000.084	000.001	000.131	002.208	000.003	000.003		000.009	00364.590
HDDV	000.132	000.004	002.600	001.607	000.051	000.047		000.032	01262.915
MC	002.458	000.003	000.662	012.239	000.022	000.020		000.053	00389.771

2.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
    Start Month: 6
    Start Quarter: 1
    Start Year: 2024

- Phase Duration
    Number of Month: 2
    Number of Days: 0

2.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
    Area of Site to be Trenched/Excavated (ft^2):   35000
    Amount of Material to be Hauled On-Site (yd^3):   0
    Amount of Material to be Hauled Off-Site (yd^3):   650

- Trenching Default Settings
    Default Settings Used: Yes
    Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
    Average Hauling Truck Capacity (yd^3):   20 (default)
    Average Hauling Truck Round Trip Commute (mile):   20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
    Average Worker Round Trip Commute (mile):   20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO$_x$**	**NO$_x$**	**CO**	**PM 10**	**PM 2.5**	**CH$_4$**	**CO$_2$e**
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	**SO$_x$**	**NO$_x$**	**CO**	**PM 10**	**PM 2.5**	**CH$_4$**	**CO$_2$e**
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								
	VOC	**SO$_x$**	**NO$_x$**	**CO**	**PM 10**	**PM 2.5**	**CH$_4$**	**CO$_2$e**
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	**SO$_x$**	**NO$_x$**	**CO**	**PM 10**	**PM 2.5**	**CH$_4$**	**CO$_2$e**
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO$_x$**	**NO$_x$**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH$_3$**	**CO$_2$e**
LDGV	000.201	000.002	000.113	003.023	000.004	000.004		000.024	00311.347
LDGT	000.220	000.003	000.199	003.428	000.006	000.005		000.026	00404.491
HDGV	000.878	000.006	000.931	014.208	000.025	000.022		000.052	00906.907
LDDV	000.077	000.001	000.086	003.165	000.003	000.002		000.008	00318.455
LDDT	000.084	000.001	000.131	002.208	000.003	000.003		000.009	00364.590
HDDV	000.132	000.004	002.600	001.607	000.051	000.047		000.032	01262.915
MC	002.458	000.003	000.662	012.239	000.022	000.020		000.053	00389.771

2.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

> $PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
> 20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
> ACRE: Total acres (acres)
> WD: Number of Total Work Days (days)
> 2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

> CEE_{POL}: Construction Exhaust Emissions (TONs)
> NE: Number of Equipment
> WD: Number of Total Work Days (days)
> H: Hours Worked per Day (hours)
> EF_{POL}: Emission Factor for Pollutant (lb/hour)
> 2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2024

- Phase Duration
Number of Month: 8
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
    Building Category: Office or Industrial
    Area of Building (ft^2):   27000
    Height of Building (ft):   16
    Number of Units: N/A

- Building Construction Default Settings
    Default Settings Used: Yes
    Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
    Average Hauling Truck Round Trip Commute (mile):   20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
    Average Worker Round Trip Commute (mile):   20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
    Average Vendor Round Trip Commute (mile):   40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0715	0.0013	0.4600	0.3758	0.0161	0.0161	0.0064	128.78
Forklifts Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0246	0.0006	0.0973	0.2146	0.0029	0.0029	0.0022	54.451
Generator Sets Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0303	0.0006	0.2464	0.2674	0.0091	0.0091	0.0027	61.061
Tractors/Loaders/Backhoes Composite								

	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875
Welders Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0227	0.0003	0.1427	0.1752	0.0059	0.0059	0.0020	25.653

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	Pb	NH$_3$	CO$_2$e
LDGV	000.201	000.002	000.113	003.023	000.004	000.004		000.024	00311.347
LDGT	000.220	000.003	000.199	003.428	000.006	000.005		000.026	00404.491
HDGV	000.878	000.006	000.931	014.208	000.025	000.022		000.052	00906.907
LDDV	000.077	000.001	000.086	003.165	000.003	000.002		000.008	00318.455
LDDT	000.084	000.001	000.131	002.208	000.003	000.003		000.009	00364.590
HDDV	000.132	000.004	002.600	001.607	000.051	000.047		000.032	01262.915
MC	002.458	000.003	000.662	012.239	000.022	000.020		000.053	00389.771

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

   CEE_{POL}: Construction Exhaust Emissions (TONs)
   NE: Number of Equipment
   WD: Number of Total Work Days (days)
   H: Hours Worked per Day (hours)
   EF_{POL}: Emission Factor for Pollutant (lb/hour)
   2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

   VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
   BA: Area of Building (ft^2)
   BH: Height of Building (ft)
   (0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
   HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

   V_{POL}: Vehicle Emissions (TONs)
   VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
   0.002205: Conversion Factor grams to pounds
   EF_{POL}: Emission Factor for Pollutant (grams/mile)
   VM: Worker Trips On Road Vehicle Mixture (%)
   2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

   VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
   WD: Number of Total Work Days (days)
   WT: Average Worker Round Trip Commute (mile)
   1.25: Conversion Factor Number of Construction Equipment to Number of Works
   NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

    V_{POL}: Vehicle Emissions (TONs)
    VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
    0.002205: Conversion Factor grams to pounds
    EF_{POL}: Emission Factor for Pollutant (grams/mile)
    VM: Worker Trips On Road Vehicle Mixture (%)
    2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

    VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
    BA: Area of Building (ft^2)
    BH: Height of Building (ft)
    (0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
    HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

    V_{POL}: Vehicle Emissions (TONs)
    VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
    0.002205: Conversion Factor grams to pounds
    EF_{POL}: Emission Factor for Pollutant (grams/mile)
    VM: Worker Trips On Road Vehicle Mixture (%)
    2000: Conversion Factor pounds to tons

2.4 Architectural Coatings Phase

2.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
    Start Month: 2
    Start Quarter: 1
    Start Year: 2025

- Phase Duration
    Number of Month: 2
    Number of Days: 0

2.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
    Building Category: Non-Residential
    Total Square Footage (ft^2): 27000
    Number of Units: N/A

- Architectural Coatings Default Settings
    Default Settings Used: Yes
    Average Day(s) worked per week: 5 (default)

- Worker Trips
    Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	Pb	NH$_3$	CO$_2$e
LDGV	000.201	000.002	000.113	003.023	000.004	000.004		000.024	00311.347
LDGT	000.220	000.003	000.199	003.428	000.006	000.005		000.026	00404.491
HDGV	000.878	000.006	000.931	014.208	000.025	000.022		000.052	00906.907
LDDV	000.077	000.001	000.086	003.165	000.003	000.002		000.008	00318.455
LDDT	000.084	000.001	000.131	002.208	000.003	000.003		000.009	00364.590
HDDV	000.132	000.004	002.600	001.607	000.051	000.047		000.032	01262.915
MC	002.458	000.003	000.662	012.239	000.022	000.020		000.053	00389.771

2.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase

$VMT_{WT} = (1 * WT * PA) / 800$

> VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
> 1: Conversion Factor man days to trips (1 trip / 1 man * day)
> WT: Average Worker Round Trip Commute (mile)
> PA: Paint Area (ft^2)
> 800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

> V_{POL}: Vehicle Emissions (TONs)
> VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
> 0.002205: Conversion Factor grams to pounds
> EF_{POL}: Emission Factor for Pollutant (grams/mile)
> VM: Worker Trips On Road Vehicle Mixture (%)
> 2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

> VOC_{AC}: Architectural Coating VOC Emissions (TONs)
> BA: Area of Building (ft^2)
> 2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
> 0.0116: Emission Factor (lb/ft^2)
> 2000: Conversion Factor pounds to tons

2.5 Paving Phase

2.5.1 Paving Phase Timeline Assumptions

- Phase Start Date
    Start Month: 3
    Start Quarter: 1
    Start Year: 2025

- Phase Duration
    Number of Month: 2
    Number of Days: 0

2.5.2 Paving Phase Assumptions

- General Paving Information
    Paving Area (ft²): 25000

- Paving Default Settings
    Default Settings Used: Yes
    Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
    Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
    Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0714	0.0014	0.3708	0.5706	0.0167	0.0167	0.0064	132.90
Other Construction Equipment Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0461	0.0012	0.2243	0.3477	0.0079	0.0079	0.0041	122.61
Rubber Tired Dozers Composite								

	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.1747	0.0024	1.1695	0.6834	0.0454	0.0454	0.0157	239.47
Tractors/Loaders/Backhoes Composite								
	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	CH$_4$	CO$_2$e
Emission Factors	0.0348	0.0007	0.1980	0.3589	0.0068	0.0068	0.0031	66.875

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	Pb	NH$_3$	CO$_2$e
LDGV	000.201	000.002	000.113	003.023	000.004	000.004		000.024	00311.347
LDGT	000.220	000.003	000.199	003.428	000.006	000.005		000.026	00404.491
HDGV	000.878	000.006	000.931	014.208	000.025	000.022		000.052	00906.907
LDDV	000.077	000.001	000.086	003.165	000.003	000.002		000.008	00318.455
LDDT	000.084	000.001	000.131	002.208	000.003	000.003		000.009	00364.590
HDDV	000.132	000.004	002.600	001.607	000.051	000.047		000.032	01262.915
MC	002.458	000.003	000.662	012.239	000.022	000.020		000.053	00389.771

2.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

3. Heating

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?   Add

- Activity Location
    County: Anne Arundel
    Regulatory Area(s):   Baltimore, MD; Anne Arundel County and Baltimore County, MD

- Activity Title: Heating and Cooling

- Activity Description:
    Heat and cool the new CDC V.

- Activity Start Date
    Start Month: 4
    Start Year: 2025

- Activity End Date
    Indefinite: Yes
    End Month: N/A
    End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.004413
SO$_x$	0.000481
NO$_x$	0.080229
CO	0.067392
PM 10	0.006097

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.006097
Pb	0.000000
NH$_3$	0.000000
CO$_2$e	96.6

3.2 Heating Assumptions

- Heating
    Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
    Area of floorspace to be heated (ft^2):   26000
    Type of fuel: Natural Gas
    Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
    Heat Value (MMBtu/ft^3):   0.00105
    Energy Intensity (MMBtu/ft^2):   0.0648

- Default Settings Used: Yes

- Boiler/Furnace Usage
    Operating Time Per Year (hours):   900 (default)

3.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO$_x$	NO$_x$	CO	PM 10	PM 2.5	Pb	NH$_3$	CO$_2$e
5.5	0.6	100	84	7.6	7.6			120390

3.4 Heating Formula(s)

- Heating Fuel Consumption ft³ per Year

$FC_{HER} = HA * EI / HV / 1000000$

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement ($MMBtu/ft^2$)
HV: Heat Value ($MMBTU/ft^3$)
1000000: Conversion Factor

- Heating Emissions per Year

$HE_{POL} = FC * EF_{POL} / 2000$

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

4. Emergency Generator

4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?   Add

- Activity Location
    County: Anne Arundel
    Regulatory Area(s):   Baltimore, MD; Anne Arundel County and Baltimore County, MD

- Activity Title: Emergency Generator

- Activity Description:
    Emergency Generator for CDC V

- Activity Start Date
    Start Month: 4
    Start Year: 2025

- Activity End Date
    Indefinite: Yes
    End Month: N/A
    End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.005650
SO_x	0.004759
NO_x	0.023288
CO	0.015552
PM 10	0.005083

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.005083
Pb	0.000000
NH_3	0.000000
CO_2e	2.7

4.2 Emergency Generator Assumptions

- Emergency Generator
    Type of Fuel used in Emergency Generator: Diesel
    Number of Emergency Generators: 1

- Default Settings Used: Yes

- Emergency Generators Consumption
    Emergency Generator's Horsepower: 135 (default)
    Average Operating Hours Per Year (hours):   30 (default)

4.3 Emergency Generator Emission Factor(s)

- Emergency Generators Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251			1.33

4.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year

$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

5. Personnel

5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline?   Add

- Activity Location
    County: Anne Arundel
    Regulatory Area(s):   Baltimore, MD; Anne Arundel County and Baltimore County, MD

- Activity Title: Personnel/staff vehicles

- Activity Description:
    Emissions from staff passenger cars driven to and from the CDC V.

- Activity Start Date
    Start Month: 4
    Start Year: 2025

- Activity End Date
    Indefinite: Yes
    End Month: N/A
    End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.049167
SO$_x$	0.000526
NO$_x$	0.031210
CO	0.655420
PM 10	0.001113

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000984
Pb	0.000000
NH$_3$	0.005165
CO$_2$e	72.5

5.2 Personnel Assumptions

- Number of Personnel
    Active Duty Personnel: 0
    Civilian Personnel: 0
    Support Contractor Personnel: 35
    Air National Guard (ANG) Personnel: 0
    Reserve Personnel: 0

- Default Settings Used: Yes

- Average Personnel Round Trip Commute (mile):   20 (default)

- Personnel Work Schedule
    Active Duty Personnel: 5 Days Per Week (default)
    Civilian Personnel: 5 Days Per Week (default)
    Support Contractor Personnel: 5 Days Per Week (default)
    Air National Guard (ANG) Personnel: 4 Days Per Week (default)
    Reserve Personnel: 4 Days Per Month (default)

5.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	**LDGT**	**HDGV**	**LDDV**	**LDDT**	**HDDV**	**MC**
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

5.4 Personnel Emission Factor(s)

- On Road Vehicle Emission Factors (grams/mile)

	VOC	**SO$_x$**	**NO$_x$**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH$_3$**	**CO$_2$e**
LDGV	000.192	000.002	000.099	002.870	000.004	000.004		000.024	00303.869
LDGT	000.209	000.003	000.175	003.239	000.006	000.005		000.026	00396.310
HDGV	000.856	000.006	000.851	013.446	000.024	000.021		000.051	00912.039
LDDV	000.074	000.001	000.080	003.109	000.003	000.002		000.008	00307.078
LDDT	000.081	000.001	000.120	002.137	000.003	000.003		000.009	00358.668
HDDV	000.118	000.004	002.424	001.549	000.042	000.039		000.032	01234.892
MC	002.457	000.003	000.660	012.092	000.022	000.020		000.054	00389.894

5.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

> VMT_P: Personnel Vehicle Miles Travel (miles/year)
> NP: Number of Personnel
> WD: Work Days per Year
> AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

> VMT_{Total}: Total Vehicle Miles Travel (miles)
> VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)
> VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
> VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
> VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
> VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year

$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

> V_{POL}: Vehicle Emissions (TONs)
> VMT_{Total}: Total Vehicle Miles Travel (miles)
> 0.002205: Conversion Factor grams to pounds
> EF_{POL}: Emission Factor for Pollutant (grams/mile)
> VM: Personnel On Road Vehicle Mixture (%)
> 2000: Conversion Factor pounds to tons