Enclosure 2

Report of the Calvert Cliffs Unit 3 NO_X and VOC Emissions from Construction Activities, dated December 2009



Environment

Submitted to: Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC Baltimore, MD Submitted by: AECOM Westford, MA Project No. 60136676 December, 2009

NO_X and VOC Emissions from Construction Activities and Air Conformity Applicability Calvert Cliffs Unit 3



Environment

Submitted to: Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC Baltimore, MD Submitted by: AECOM Westford, MA Project No. 60136676 December, 2009

NO_X and VOC Emissions from Construction Activities and Air Conformity Applicability Calvert Cliffs Unit 3

randh iller

Prepared By Ian Miller and Phaneendra Uppalapati

Reviewed By

Reviewed By Robert Iwanchuk

i

Contents

1.0	Introd	uction	. 1-1
	1.1	Content of the Report	. 1-2
2.0	Emiss	sions Estimates	2-1
	2.1	Construction/Pre-Construction Emissions	. 2-1
	2.2	Operational Emissions	. 2-4
3.0	Emiss	sion Estimation Methodology	. 3-1
	3.1	Emissions from Non-Road Equipment	. 3-1
	3.2	On-Road Vehicles	. 3-2
	3.3	Marine Equipment	. 3-3
	3.4	Boiler	. 3-3
4.0	Refere	ences	4-1

List of Appendices

Appendix A Construction Schedule

Table A-1 Construction Equipment List / Hours of C	Operation
--	-----------

Appendix B Emissions Calculations

Table B-1	Diesel Non-Road Engine Emissions
Table B-2	Gasoline Non-Road Engine Emissions
Table B-3a	On-Road Vehicle Emissions 2010
Table B-3b	On-Road Vehicle Emissions 2011
Table B-3c	On-Road Vehicle Emissions 2012
Toble P. 2d	On Road Vahiala Emissiona 2012

- Table B-3d
 On-Road Vehicle Emissions 2013
- Table B-3e
 On-Road Vehicle Emissions 2014
- Table B-3f
 On-Road Vehicle Emissions 2015
- Table B-3g On-Road Vehicle Emissions 2016
- Table B-3h On-Road Vehicle Emissions 2017
- Table B-3i On-Road Vehicle Emissions 2018
- Table B-4 Marine Engine Emissions
- Table B-5 Boiler emissions

CC3 Construction Analysis Report Final.docx

AECOM Report Environment **List of Tables** Table 2-1 CC3 Total Construction Emissions within Washinton DC-MD-VA Ozone Nonattainment

Table 2-2 Table 2-3 CC3 10 CFR 50 Construction Emissions within Washinton DC-MD-VA Nonattainment Area......2-3

List of Figures

Figure 1-1	Washington, DC-MD-VA and Baltimore	, MD 8-hr Ozone Nonattainment Regions	1-3
------------	------------------------------------	---------------------------------------	-----

ii

Report

1.0 Introduction

Calvert Cliffs 3 Nuclear Project LLC ("CC3") and UniStar Nuclear Operating Services, LLC ("UNO") (Co-Applicants) are proposing to construct and operate a new nuclear power unit on the existing Calvert Cliffs Nuclear Power Plant (CCNPP) site. The new unit will be designated as CCNPP Unit 3 (CC3), and will have a gross electric generation capacity of about 1,710 megawatts.

Pursuant to the General Conformity Requirements under 40 CFR 93.150 et seq, the Nuclear Regulatory Commission (NRC) as the lead federal agency is required to make a conformity determination with regard to the proposed construction and operation of CC3. The General Conformity Rule applies only in locations designated in 40 CFR Part 81 as maintenance or nonattainment areas for any criteria air pollutant. As shown in Figure 1-1, the CC3 project site in Calvert County, Maryland is located within the Washington, DC-MD-VA moderate nonattainment area for the 8-hour ambient ozone standard. As such, construction-related emissions of ozone precursors, i.e., oxides of nitrogen (NO_X) and volatile organic compounds (VOC) from both direct and indirect project-related emissions have been evaluated to determine if annual emissions of these pollutants during the years of construction are above the applicable tonnage thresholds for applicability of General Conformity requirements. The applicable de minimis thresholds are 100 tons per year of NO_X and 50 tons per year of VOC emissions per 40 CFR 93.153.

Note that <u>operation</u> of CC3 will not result in significant generation of NO_x emissions, or significant releases of VOCs. Typical sources of NO_x during operation of CC3 will include vehicle operations (mobile sources) and periodic operation of diesel generators that are used to provide backup power (stationary sources). Potential emissions of NO_x and VOCs from CC3 stationary source operations will also be subject to restrictions imposed under the Certificate of Public Convenience and Necessity (CPCN) issued by Maryland Public Service Commission for CCNPP Unit 3 effective June 26, 2009. The CPCN constitutes the issuance of the Air Quality Minor New Source Review Permit to Construct, and a Major Prevention of Significant Deterioration (PSD) permit that was based on review by the Power Plant Research Program (PPRP) and the Maryland Department of the Environment (MDE). Potential NO_x and VOC emissions from operations will be below de minimis threshold values listed in 40 CFR 93.153(b). Mobile source emissions from operations were estimated by proportioning the worst case year of on-road emission during construction by the ratio of operational employees to the number of construction workers. Permitted emissions from the CC3 stationary sources are 24 tpy of NO_x and 4 tpy of VOC but these emissions are specifically excluded from the requirements for a conformity determination per the exclusion found in 40 CFR 93.153(d) for major new sources subject to PSD.

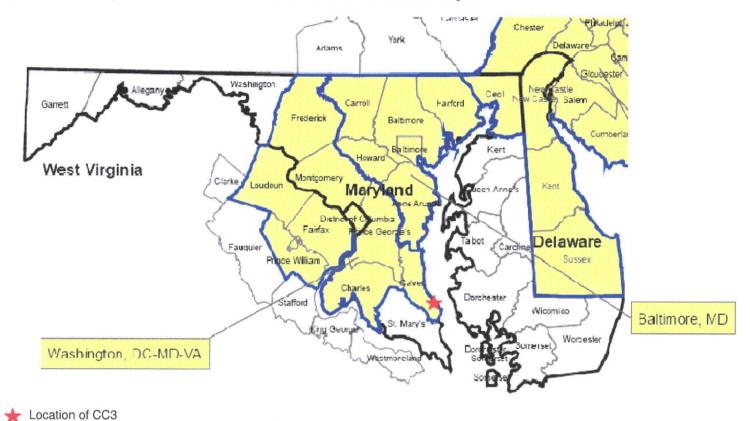
This report documents the NO_x and VOC emissions associated with the construction of CC3 for purposes of determining applicability to the federal Clean Air Act General Conformity Rule. This report satisfies the commitment by CC3 and UNO pursuant to CC-09-0002 (dated October 2, 2009) to provide updated construction emissions to the NRC by December 11, 2009. Prior estimates of construction-related emissions were provided in the CPCN Technical Reports filed with the Maryland Public Service Commission (PSC) in November 2007 and later amended in August 2008. These reports only evaluated onsite NO_x and VOC emissions related to construction and did not address indirect emissions from activities outside the construction site that are required in a formal conformity applicability analysis. Indirect activities included in this analysis are employee commuting, commercial deliveries, and emissions from materials delivered by barge to the on-site dock. Moreover, the construction equipment schedule and timeline has been revised since the previous filings.

Report

1.1 Content of the Report

This report consists of four sections and two appendices. Section 2.1 presents the estimated direct and indirect VOC and NO_X emissions from construction of the project. Section 2.2 provides estimates of the indirect emissions associated with CC3 operations. Section 3 describes the methodology for the emission inventory. Technical references are provided in section 4. Appendix A contains the projected construction equipment details and hours of use for each year of construction Appendix B contains detailed emissions calculations for the direct construction equipment and indirect emissions.

Report





and the second se

Report

2.0 Emissions Estimates

2.1 Construction/Pre-Construction Emissions

Tables 2-1 and 2-2 present the total VOC and NO_x emissions estimates over the construction of the project. These are broken up into separate tables for the two ozone nonattainment regions which are affected. As seen in Figure 1-1, CC3 is located in the Washington DC-MD-VA nonattainment area, but is also close to the Baltimore nonattainment area. Indirect emissions from employee commuting, commercial deliveries and barge deliveries are expected to be generated in both nonattainment areas.

At the request of NRC, Table 2-3 presents a breakout of construction emissions as defined under 10 CFR Part 50 – Domestic Licensing for Production and Utilization Facilities. The level of detail to precisely breakout preconstruction and construction activities as defined by NRC is unknown at this time so the emissions reported in Table 2-3 are based on estimated equipment types not expected to perform construction activities as defined in 10 CFR 50; for example: direct or indirect emissions from motor vehicles (except concrete trucks), air compressors, generation equipment, and small capital equipment. Equipment groups included are earthmoving, compacting, cranes, forklifts, manlifts, welding equipment, and concrete equipment.

The definition of construction under 10 CFR 50.2 reads as follows:

Construction or *constructing* means, for the purposes of §50.55(e), the analysis, design, manufacture, fabrication, quality assurance, placement, erection, installation, modification, inspection, or testing of a facility or activity which is subject to the regulations in this part and consulting services related to the facility or activity that are safety related.

Additional delineation of construction versus "pre-construction" activities is found under 10 CFR 50.10(a)(1) and (2) under limited work authorization. These are paraphrased below.

(1) Activities constituting construction are the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for: safety-related structures, systems, or components (SSCs)

(2) Construction does not include: Site exploration, preparation of a site for construction of a facility, including clearing of the site, grading, installation of drainage, erosion and other environmental mitigation measures, and construction of temporary roads and borrow areas; excavation; erection of support buildings building of service facilities

2-1

Report

Year	Off-Road Diesel VOC	Off-Road Gasoline VOC	On-Road Vehicles VOC	Marine VOC	Boiler VOC	VOC (Tons)	Exceeds Conformity Threshold (Yes/No)	Off-Road Diesel NOx	Off-Road Gasoline NOx		Marine NOx	Boiler NOx	NOx (Tons)	Exceeds Conformity Threshold (Yes/No)
2010	2.6	1.6	3.9	0	0	8.2	No	36.4	0.12	4.0	0	0	40.5	No
2011	9.9	5.2	17.3	0.34	0	32.7	No	138.1	0.5	20.6	6.8	0	166.0	Yes
2012	3.3	1.1	19.9	0.11	0.02	24.4	No	48.1	0.4	24.3	2.1	1.5	76.5	No
2013	9.9	3.8	26.8	0.11	0.05	40.7	No	150.9	1.8	34.4	2.1	4.6	193.8	Yes
2014	12.4	4.8	29.5	0.11	0.05	46.8	No	188.8	2.4	43.1	2.1	4.6	241.0	Yes
2015	12.7	4.8	25.8	0.11	0.05	43.4	No	193.0	2.4	39.8	2.1	4.6	242.0	Yes
2016	11.3	4.6	21.2	0.11	0.03	37.3	No	170.9	2.3	29.3	2.1	3.1	207.8	Yes
2017	6.7	4.5	10.0	0	0	21.2	No	101.3	2.2	14.5	0	0	118.0	Yes
2018	1.3	1.3	3.5	0	0	6.2	No	19.4	0.9	4.1	0	0	24.4	No

Table 2-1 CC3 Total Construction Emissions within the Washington DC-MD-VA Ozone Nonattainment Area

Includes activities not defined as construction under 10 CFR 50.

Table 2-2 CC3 Total Construction Emissions within Baltimore Nonattainment Area

Year	Off-Road Diesel VOC	Off-Road Gasoline VOC	On-Road Vehicles VOC	Marine VOC	Boiler VOC	VOC (Tons)	Exceeds Conformity Threshold (Yes/No)		Off-Road Gasoline NOx	On-Road Vehicles NOx	Marine NOx	Boiler NOx	NOx (Tons)	Exceeds Conformity Threshold (Yes/No)
2010	0	0	0.3	0	0	0.35	No	0	0	0.27	0	0	0.27	No
2011	0	0	1.5	0	0	1.48	No	0	0	1.1	0	0	1.1	No
2012	0	0	2.1	0.35	0	2.49	No	0	0	2.1	6.8	0	8.9	No
2013	0	0	2.7	0.35	0	3.06	No	0	Ö	2.5	6.8	0	9.3	No
2014	0	0	2.9	0.35	0	3.20	No	0	0	2.4	6.8	0	9.2	No
2015	0	0	2.4	0.35	0	2.71	No	0	0	1.8	6.8	0	8.6	No
2016	0	0	1.8	0.35	0	2.18	No	0	0	1.3	6.8	Ö	8.2	No
2017	0	0	0.8	0	0	0.82	No	0	0	0.6	0	0	0.6	No
2018	0	0	0.3	0	0	0.27	No	0	0	0.19	0	0	0.19	No

Includes activities not defined as construction under 10 CFR 50.

-

~

Report

Environment

Year	Off-Road Diesel VOC	Off-Road Gasoline VOC	On-Road Vehicles VOC	Marine VOC	Boiler VOC	VOC (Tons)	Exceeds Conformity Threshold (Yes/No)	Off-Road Diesel NOx	Off-Road Gasoline NOx		Marine NOx	Boiler NOx	NOx (Tons)	Exceeds Conformity Threshold (Yes/No)
2010	0	0	0	0	0	0	No	0	0	0	0	0	0	No
2011	0	0	0	0	0	0	No	0	0	0	0	0	0	No
2012	1.3	0.02	0.19	0	0	1.5	No	19.6	0.05	3.1	0	0	22.8	No
2013	7.5	0.15	0.37	0	0	8.1	No	113.6	0.29	5.5	0	0	119.3	Yes
2014	9.5	0.23	0.36	0	0	10.0	No	143.6	0,44	4.7	0	0	148.7	Yes
2015	9.6	0.23	0.34	0	0	10.2	No	146.3	0.44	4.1	0	0	150.8	Yes
2016	8.7	0.23	0.31	0	0	9.2	No	130.9	0.44	3.4	0	0	134.7	Yes
2017	4.5	0.23	0	0	0	4.7	No	68.5	0.44	0	0	0	69.0	No
2018	0.4	0.12	0	0	0	0.52	No	5.3	0.22	0	0.	0	5.5	No

Table 2-3 CC3 10 CFR 50 Construction Emissions within the Washington DC-MD-VA Ozone Nonattainment Area

As stated previously the emissions in Table 2-3 represent the best estimate of "construction" emissions as defined by 10 CFR Part 50. Construction of the reactor and cooling tower are not expected to start in great capacity until the middle of 2012. A detailed plan of construction has not yet been developed in order to specify the start of construction of individual equipment. For example, backfilling and soil compaction are considered construction so the entire group of operating earthmoving and compacting equipment is included in the emissions estimate. Other equipment groups included are cranes, forklifts, manlifts, welding equipment, and concrete equipment.

Based on the NRC definition of construction, Table 2-3 shows the same conclusion as Table 2-1 in regard to exceeding the conformity threshold for NO_X with the exception of 2011 and 2017. Pre-construction are the only activities expected to take place in 2011 and 2017 represents the beginning finalization of 10 CFR 50 defined construction activities.

December 2009

Report

2.2 **Operational Emissions**

As noted in Section 1, the operational emissions from CC3 stationary sources required a permit under the PSD program. As such, these emissions are specifically excluded from the requirements for a conformity determination per the exclusion found in 40 CFR 93.153(d).

The only other emissions of NOx and VOC from CC3 operations are indirect emissions associated with vehicular emissions from employee traffic. As stated in the Phase II traffic study prepared in June 2009 (Reference 10), 363 permanent employees are expected once CC3 begins operations resulting in at most 363 additional round trips. This is very similar to the 379 round trips estimated for the construction workforce in 2018 but well below the estimated number of peak daily round trips during construction of 3,000.

Using similar assumptions as with the construction workforce, emissions from indirect operational employee commuting are expected to be only 1.4 tons/yr of NO_X and 2.0 tons/yr of VOC in the Washington DC nonattainment area and 0.2 tons/yr of NO_X and 0.3 tons/yr of VOC in the Baltimore nonattainment area. These levels are well below the respective applicability thresholds of 100 tons/yr and 50 tons/yr.

2-4

3.0 Emission Estimation Methodology

Bechtel North American Power Corporation (Bechtel), UniStar's current project/construction engineering firm, was responsible for developing an estimate of fuel-burning equipment (non-road and on-road) needed to construct the proposed Unit 3. Bechtel provided an equipment schedule with equipment sizes and estimated annual hours of operation. This information is provided in Appendix A. Emissions calculations based on this equipment along with indirect NO_X and VOC emissions are presented in Appendix B.

3.1 Emissions from Non-Road Equipment

Emissions from non-road equipment (mobile, portable, and stationary fuel-burning equipment) were estimated using EPA's NONROAD2008 model and methodology. Bechtel provided a study of engines with horsepower and annual hours of operation for construction of CC3. Similar to the previously submitted construction emissions from 2008, AECOM developed a spreadsheet -based approach to estimate non-road engine emissions based on the NONROAD model guidance and NONROAD model data files. This allows the emissions estimates to be thoroughly checked and allows transparency to how emissions are developed.

Applicable engine tiers for this analysis are based on the estimated usage dates and the phase-in years for engine size ranges given in Table 1 of Reference 2 for diesel engines and Tables 1 through 7 of Reference 3 for gasoline engines. The applicable SCC codes for equipment were chosen (based on engine duty and fuel type) from the list in Appendix A of Reference 4. This cross reference allowed AECOM to match equipment from Bechtel's list to the NONROAD data files which contain the steady state pollutant emission factors and load factors. Note that this methodology is slightly different than that submitted in 2008, because the NONROAD 2008 data file used here has the transient adjustment factor (TAF) built into the steady state emission factor.

The Equation involved in determining the non-road construction emissions is as follows (from Page 1 of Reference 4):

EF_{adj} = EFss * DF.....Equation 1

 EF_{adj} = Final emission factor used in model after adjustments to account for transient operation and deterioration (g/hp-hr)

EFss = NONROAD 2008 steady state emission factor (g/hp-hr)

DF = Deterioration factor

The deterioration factor (DF) is a function of the technology type and age of the engine.

The NONROAD methodology addresses the effects of deterioration in the engines by multiplying the steady state emission factor for each category of engine by deterioration factor (DF). The following equation (from p 19 of Reference 2 and p 3 of Reference 5) is used to calculate DF as a function of engine age

$DF = 1 + A * (Age \ factor)^b$	for Age Factor	≤ 1 Equation 2

DF = 1 + A	for Age Factor	>	1Equation 3
------------	----------------	---	-------------

Where Age factor = fraction of median life expended = (cumulative hours * load factor) / median life at full load, in hours.

A = constants for a given pollutant / technology type

CC3 Construction Analysis Report Final.docx

Deterioration is capped at the end of an engine's median life (age factor = 1), under the assumption that an engine deteriorated to a point where any increased deterioration is offset by maintenance. For this analysis, all age factors were set to 1 ("fully deteriorated") in order to simplify the calculations.

Annual non-road emissions were estimated using the following equation from Page 1 of Reference 4

 $E_{Sta} = EF_{adj} * HP * Hours * Load Factor * \frac{Ton}{2000 \, lb} * \frac{lb}{453.6 \, g}$ Equation 4

E_{Sta} = Annual stationary source emissions in tons

EF_{adj} = Final adjusted emission factor (g/hp-hr)

HP = Rated horsepower hp

Hours = Annual operating hours of the equipment

Load Factor = fraction of available rated power

The load factor is an adjustment included in the model to avoid grossly over counting emissions. It is the average fraction of the rated power of an engine that is expected to be actually used in annual operation. This factor takes into account idling, partial load operation, and transient operation. For instance, a 100 hp diesel powered crane has a load factor of 0.43 from the NONROAD data table based on the SCC code. This means that in normal operation, the crane is expected to use an average of 43 hp for every available 100 hp capacity. These factors are based on surveys of equipment users.

One final adjustment that is special to VOC is the conversion from total hydrocarbons (HC). The NONROAD model steady state emission factors are all in terms of HC. This is so the model has a common basis to output emissions in terms of VOC, total organic gasses (TOG), or non-methane hydrocarbons (NMHC). Reference 6 gives the conversion from HC to VOC as 1.053 for diesel engines, 1.034 for 2-stroke gasoline engines, and 0.933 for 4-stroke gasoline engines.

3.2 On-Road Vehicles

Estimation of on-road vehicular emissions was calculated with EPA's MOBILE6.2 Vehicle Emission Modeling Software. MOBILE6.2 is an emission factor model for predicting gram of emissions (VOC, and NO_x) per mile as well as other criteria and air toxic emissions from cars, trucks, and motorcycles. The MOVES model (as a replacement for Mobile 6.2) is currently under development by EPA but has not been finalized at the time of this report.

Mobile 6.2 gives emission rates in terms of grams per vehicle mile traveled. To obtain miles traveled for on-site vehicles, the estimated hours of vehicle use was multiplied by an estimated annual speed in mile/hr. Specific vehicle categories from Mobile6.2 for on-site vehicles are given in Appendix B. For employee commuting, the estimated annual number of construction employees was multiplied by a factor of 1.3 (for estimating carpooling) to get a number of vehicles. This assumption is consistent with the Phase II traffic study prepared in June 2009. Employees are assumed to have a typical daily commute which is constant for 312 working days per calendar year and have vehicles which fall into the LDGV category. The geographic breakdown was assumed to be 10% from St. Mary's County to the south and west (an attainment area for ozone), 25% from the Baltimore nonattainment area to the north, and the rest from the Washington DC-MD-VA ozone nonattainment area. The number of commercial deliveries was determined based on the expected goods to be delivered to the site during construction by truck. For this analysis, commercial deliveries are assumed to be in the HDDV8b category. Thirty percent of the commercial deliveries were assumed to come from the Baltimore nonattainment area with the balance from the Washington DC-MD-VA nonattainment area.

For indirect emissions from employee commuting and commercial deliveries, AECOM assumed a 15 year time span for the vehicle population as a reasonable estimation of typical vehicle ownership. That is, beginning in 2010, the emissions model used a vehicle population mix from model years 1995-2010. This progressively increased by one year until 2018.

Fuel consumption for these vehicles is gasoline and transportation diesel as noted in Appendix B. Emissions from on-road vehicles are estimated using Equation 1.

 $E_{Mob} = VMT * EF * \frac{Ton}{2000 \, lb} * \frac{lb}{453.6 \, g}$Equation 5

E_{Mob} = On-road vehicle emissions in tons per year

VMT = Vehicle miles travelled in a year

EF = Mobile 6.2 emission factor for on road vehicles in grams/mile.

3.3 Marine Equipment

The current Calvert Cliffs Nuclear Plant has an existing barge dock on-site which UniStar plans to use for receipt of some equipment by delivery. Additionally, UniStar will be dredging some off-shore areas during the CC3 construction period. Emissions from marine equipment used in these activities are included in this emissions inventory. Ancillary on-shore equipment (such as dump trucks or cranes) related to dredging and barge deliveries are accounted for in the non-road category.

US EPA has released a final report in April 2009 describing the methodologies used for the preparation of port-related emission inventory. This report is identified as reference number 8. Equations involved in determining the emissions from the marine sources are:

 $E_{Mar} = EF_{Pol} * HP * Hours * Load Factor * \frac{kWh}{1.341 HP-hr} * \frac{Ton}{2000 lb} * \frac{lb}{453.6 g}$Equation 6

Where

$$\begin{split} & \mathsf{E}_{\mathsf{Mar}} = \mathsf{Annual} \text{ marine emissions in tons} \\ & \mathsf{EF}_{\mathsf{pol}} = \mathsf{Emission} \text{ factor in } (g/\mathsf{kW-hr}) \\ & \mathsf{HP} = \mathsf{Rated} \text{ horse power } (\mathsf{hp}) \\ & \mathsf{Hours} = \mathsf{Annual} \text{ operating hours} \\ & \mathsf{Load} \text{ Factor} = \mathsf{Fraction} \text{ of available operating rated power} \end{split}$$

Emission factors, load factors, and guidance on typical engine sizes are taken from the referenced port inventory document. All of the marine dredging operations for this project occur during 2011 for barge dock preparation. Deliveries of materials by barge are assumed to begin in 2012 after dredging is completed. The dredging operations are expected to occur from October through December 2011, 10 hours per day, 6 days per week. Dredging is assumed to be performed by crane and dredged materials will be disposed of on-site. Deliveries of materials by barge are expected to originate at Harve de Grace, MD which is in the Baltimore nonattainment area. By ship, the distance is approximately 75 nautical miles (nm) with 18 nm assumed to occur within the state maritime zone boundaries of Calvert County and 57 nm occurring within the maritime zone boundaries of the Baltimore nonattainment area. Transportation emissions from barge deliveries were divided accordingly.

3.4 Boiler

The proposed concrete batch plant will require a small boiler (~ 20 MMBtu/hr) for the winter months to ensure the concrete does not freeze and to maintain consistency in batch preparation. The boiler is assumed to only use distillate oil for fuel. Emission factors for the boiler were taken from EPA's AP-42 document for fuel oil combustion. When operated, the boiler was assumed to operate at maximum capacity.

CC3 Construction Analysis Report Final.docx

December 2009

4.0 References

- 1. EPA's "MOBILE6.2 Vehicle Emission Modeling Software"
- EPA's "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling—Compression-Ignition" NR-009c April 2004, EPA420-P-04-009.
- 3. EPA's "Exhaust Emission Factors for Nonroad Engine Modeling: Spark Ignition" NR-010e December 2005, EPA420-R-05-019.
- EPA's "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling" NR-005c April 2004, EPA420-P-04-005
- 5. EPA's "Nonroad Spark-Ignition Engine Emission Deterioration Factors" NR-011c December 2005, EPA420-R-05-023.
- EPA's "Conversion Factors for Hydrocarbon Emission Components" NR-002c December 2005, EPA420-R-05-015
- 7. EPA's "NONROAD08 Model (nonroad engines, equipment, and vehicles)"
- 8. US EPA / ICF International "Current Methodologies in Preparing Mobile Source Port-Related Emission inventories" Final Report April 2009.
- 9. EPA's AP-42 Compilation of Emission Factors, Section 3.1 Fuel Oil Combustion, 9/98
- Traffic Impact Study at the Calvert Cliffs Nuclear Power Plant Draft Final Report, KLD Engineering, June 13, 2009 Rev. 1

Environment

Appendix A

Construction Schedule

+

.

1

							ť		
Ţ	esel EPOWER								
	Gas/Di HORSE	Oct-10 Nov-10 Dec-10 Dec-11 Jul-11 Jul-11 Jul-11 Jul-11 Jul-11 Dec-11 Dec-11 Dec-11 Dec-12 De		Jan-13 Feb-13 Apr-13 Apr-14 Apr-15 Apr-13 Apr-13 Apr-14 Apr-15 Apr-14 Apr-15 Apr-15 Apr-16 Apr-16 Apr-17 Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Ap	Jan-14 Feb-14 Mar-14 Apr-14 May-14 Juli-14 Juli-14 Juli-14 Sep-14 Sep-14 Dec-14		Jan-16 Feb-16 Mar-16 May-16 Jun-16 Jun-16 Jul-16 Sep-16 Oct-16 Nov-16 Dec-16	Jan-17 Feb-17 Apr-17 Apr-17 Jun-17 Jun-17 Jun-17 Jun-17 Sep-17 Sep-17 Sep-17 Nov-11	Dec-17 Feb-18 Mar-18 Mar-18 Jun-18 Jun-18 Jun-18 Jun-18 Jun-18 Sep-18 Sep-18 Sep-18 Dec-18
LIGHT DUTY	G 263	187	624	1,497	1,497	1,497	1,497	1,497	1,372
Light-Duty Gasoline Truck 2 G Light-Duty Gasoline Truck 2 G	G 292 G 292	1,404 5,616 4,212	4,680 3,900	9,360	9,360	9,360 16,848	9,360 18,720	9,360 17,940	8,580 7,800
Light-Duty Gasoline Truck 4 G	G 325 G 325		3,432	14,664 10,296	14,976	14,976 11,232	14,976	14,976 6,864	7,488
Light-Duty Gasoline Truck 3 G	G 225 G 200	468 936	1,872 1,872	3,744 7,956	3,744 9,360	3,744 9,360	3,744 7,800	3,744 4,992	3,432
TRUCKS - HEAVY DUTY						-			1
	D 350	2,246	7,300	15,724	15,724	15,724 .	15,537	10,296	5,990
Heavy-Duty Deisel Vehicle 2B D	D 230	I	1,872	7,862	11.232	11,232	11.232	11,044	4.492
	D 350 D 210	748	1,123 1,123	6,177 7,113	8,985 11,232	<u>8,985</u> 11,232	8,985 11,232	7,300 7,862	3,556
Light-Duty Diesel Truck 1 and 2 D Heavy-Duty Diesel Vehicle 8B D	D 210 D 350		1,497 234 1,872	7,113 7,020	8,985	8,985 8,424	8,985	5,616 8,424	1,497 3,978
Heavy-Duty Diesel Vehicle 8B	D 350		1,872	7,020	8,424	8,424	8,424	5,616	1,872
Heavy-Duty Diesel Vehicle 8B C	D 222 D 350	388	1,497 2,246	4,492 6,240	4,492 8,985	4,922 . 8,985	4,922	4,922 7,826	2,620
TRAILERS	D 350	312	2,496		12,048	12,048	12,048	14,976	2,808
Heavy-Duty Diesel Vehicle 5	D 483		1.00000000000000	1,684	4,492	4,492	2,620	748	
Light-Duty Diesel Truck 1 and 2	D 56	936 7,488 3,744	5,928	35,888	53,352	56,160 40,524	56,160	26,208 19344	12,792
Light-Duty Diesel Truck 1 and 2	D 290 D 20		5,928	16,692	28,080	18,720	23,712 18,720	6,240	2808
Light-Duty Diesel Truck 1 and 2 D	D 195		561	1,591	2,246	2,246	2,246	2,246	842
Heavy-Duty Diesel Vehicle 3	D 300		62	374	374	374	374	374	218
Sweeper/Scrubber D	D 85 D 105		156	936	936	936	936 5,616	936 3,588	858 625
Crawler Tractor D	D 210		312	4,992 7,332	5,616 7,800	5,616 7,488	5,304	3,588	025 312
	D 307 D 30		1,404 312	7,332 4,056	7,800 4,056	7,488 4,056	<u>3,666</u> 2,496	1,092 468	1
	D 268 D 321		936	6,864 4,056	7,488 4,056	7,488	6,084 2,340	936 156	
Excavator D	D 404 D 426		312	1,872	1,872 2,246	1,872	1,248		
Grader	D 135		1,248	2,246 5,865	5,990	2,246 4,992	2,246 2,995	1,872 2,995	1,248
Tractor/Loader/Backhoe . 0	D 80 D 174		1,497	5,990 8,049	6,739 · 8,049	6,739	3,739 6,739	1,310 1,872	
Skid Steer Loader D	D 75 D 199		312	4,056 5,304	. 4,056 5,616	<u>3.744</u> 5,616	3,744 5,616	624 312	
Tractor/Loader/Backhoe D	D 349 D 224		312 312		4,056	3,744 4.524		312 312	
Off-Higway Truck D	D 302 D 115	936	2,496	16,380 5,491	22,464	22,464 5,990	14,040	2.184 374	
PIPELAYING / TRENCHING EQUIPMENT			748		5,990	3,990	5,010		
COMPACTION	D 51	374	561	93 280		 Tage Arthurson Taken and the second sec		468	
	D 339 D 185		748 2,246	1,555 7,488	2,995 7,488	2,995 7,488	2,995 6,364	2,496	
CRANES	D 510		1.497	5,990	5,990	5,990	5,990		-
Crane	D 340 D 330		1,622	9,734	9,734 25,958	9,734 22,464	9.734 7,488	4,056	
Crane D	D 340	· · · · · · · · · · · · · · · · · · ·	811	7,300	9,734	9,734	9,734	6,489	
Crane	D 340 D 600		811		24,336 9,734	24,336 9,734	24,336 9,734	14,601 6,489	11
Crane D Crane D	D 600 D 500		1,662	9,734 20,592	9,734 22,464	9,734 22,464	9,734 22,464	4,056 16,848	
Crane D	D 152 D 174	873	1,747	13,104	15,724 10,483	15,724 10,483	15,724 10,483	14,851 10,046	1,747 2,184
Crane D	D 215 D 250	873 873	2,620	9,009 13,104 r 9,609	31,449	47,174	48,484	21,403	2,184
Crane	D 250		- 873	4,368	10.483	10,483	10,483	9,172	1.310
Forklift C	D 142		748		13,478	13,478	13,478	13,104	5,241
	D 290 G 52		624	5,616 17,596	7,488 22,464	7,488 22,464	7,488 22,464	3,744 22,089	<u>2,184</u> 9,734
Forklift D	D 89 D 113		748	9,734 33,696	13,478 33,696	13,478 33,696	13,478 33,696	11,232 15,912	468
Forklift	D 110		7,956	40,248	44,928	44,928	44,928	17,784	2,808
Pump D	D 80		3.1 4	2,096	5,390	4,192	1,497	and the first at the set	1
Heavy-Duty Diesel Vehicle 8B	D 350 D 350	624	936	<u> </u>	936 . 4,212	5,616	1.482		
Heavy-Duty Diesel Vehicte 6 D AIR COMPRESSORS	D 400		780	1,170	780	A di Antonio			
Air Compressor D	D 80 D 115	1,248	3,744 1,248	7,956 6,552	9,360 9,360	9,360 9,360	9,360	9,204 8,892	4.056
Air Compressor D	D 275		624	8,112	11,232	11,232	11,232	10,920	4,368
Air Compressor D	D 275 D 310		624 624	8,112 5,616	7,488	11,232 7,488	7,488	10,920 7,488	4,368 3,120
CLASS 25 CABLE LAYING / PULLING EQUIPMENT Dther Construction Equipment D	D 30		-	2,496	4,492	4,492	4,492	4,492	624
Other Construction Equipment D	D 30 D 30			2,496 2,496	4.492 4.492	4,492 4,492	4,492 4,492	4,492 4,492	624 624
MNCHES AND TUGGERS	1.1			4,770	2,246	6,739	6,177	2.246	
WELDING EQUIPMENT	D 140		· · · · · · · · · · · · · · · · · · ·						
	D 26 D 35		3,744	14,976	14,976	14,976 14,976	14,976	11,107 11,107	
	D 48		2,995	14,976	14,976	14,976	14,976	11,232	374

.

Page 1 of 2

Table A-1 Construction Equipment List / Hours of Operation

										* * ***	· · · · · · · · · · · · · · · · · · ·
· ·	e a										
	OWE I										
	Dles SEP	<u> 9</u> 9 9	==============	9 9 9 9 9 9	5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Jan-13 Jan-13 Apr-13 Apr-13 May-13 May-13 Sep-13 Sep-13 Nov-13 Nov-13	Lan-14 Feb-14 Mar-14 Mar-14 May-14 Jul-14 Jul-14 Sep-14 Sep-14 Sep-14 Doc-14 Nov-14	-15 -15 -15 -15 -15 -15 -15 -15 -15 -15		Jan-17 Feb-17 Mar-17 Mar-17 Jun-17 Jun-17 Sep-17 Sep-17 Sep-17 Doc-17 Nov-17 Doc-17	Jan-18 Feb-18 Mar-18 Mar-18 Julu-18 Jul-18 Jul-18 Sep-18 Sep-18 Sep-18 Sep-18 Dec-18 Dec-18 Jan-19
CONSTRUCTION EQUIPMENT & VEHICLES Based on categories from Mobile 6.2 and NONROAD2008 GENERATION EQUIPMENT	HOF Gas	Dev Z	Jan-11 Feb-11 Mar-11 May-11 Jun-11 Jun-11 Jul-11 Jul-11 Jul-11 Sep-11 Sep-11 Oct-11 Nov-11	Jan-12 Feb-12 Mar-12 May-12 Jun-12	Jul-12 Aug-12 Sep-12 Oct-12 Dec-12	D November 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Dec Ser	Nor	Devolution April 1 Apr	Do No Core Manual Lun Manual Lar Lar	<u></u>
GENERATION EQUIPMENT Generator	D 150	655	2,620	1,310	3,057	15,069	15,724	15,724	15,724	14,414 5,241	5,241
Generator Generator	D 86 D 345				436	4,804	5,241	5,241	5.241	5,241	3,057
Generator Generator	D 200 D 143				2,839	<u>6,552</u> 12,876	7,862	7,862	7,862 13,104	7,862	3,712 6,115
Generator Generator	D 143 D 14				873 8,798	<u>8,299</u> 52,603	10,483 81,806	10,483 83,088	10,483 23,328	<u>10,483</u> 37,440	4,804 20,592
MANLIFTS / SCISSORLIFTS		1.			0.72	748		22,464	22,464	6,552	
Aerial Lift	D 28 D 65			<u></u>		374	11,980	15,724	15,724	9,360 10,670	2,246
Aerial Lift	D 48 D 48					2,995 1,497	11,232 4,492	4,492	4,492	4,492	1,123 1,872
Aerial Lift Aerial Lift	D 78 D 70				748	5,616	6,739	23,774 6,739	33,508 6,739	17,305	1,0/2
Aerial Lift Aerial Lift	D 75 D 28				748	5,616	<u>6,739</u> 2,246	6,739 2,246	6,739	6,739 2,246	1,497
Aerial Lift	D 32					2,246	6,739 4,492	6,739 4,492	6,739	6,739 4,492	<u>3,183</u> 2,995
Aerial Lift SMALL CAPITAL EQUIPMENT	G 75	1. S. 1.		1	0.504	33.696	33,696	33,696	33,696	33,696	11,636
Plate Compactor Plate Compactor	D 8 D 15			936	9,594 2,340	12,636	16,848	16,848	16,848	16,848 21,762	7,254 12,870
Plate Compactor Plate Compactor	D 19 G 7				2,808 4,212	16,380 21,762	22,464 30,654	29,688	30,888	39,520	12,670 12,402 19,656
Generator Chipper/Stump Grinder	D 11 G 11			•	5,850 468	34,866 2,106	49,842 2,106	50,544 2,106	2,106	47,502 1,754	
Lawn Mower Cement & Mortar Mixer	G 3 G 13				936 936		5,616	5,616 8,424	5,616 8,424	5,616 8,424	3,276 3,978
Pump	G 6 D 7				2,808 468	16,380 5,148	22,464 . 5,616	22,464 5,616	22,464 5,616	19,332 5,616	9,360
Pump Pump	D 15			1	468		5,616 8,424	5,616 8,424	5,616 8,424	5,616	3,276
Concrete/Industrial Saw Snowblower	D 65 G 11				468	5,148	5,616	5,616	5.616 22,464	5,616 19,332	3,276 9,360
Tamper/Rammer Tamper/Rammer	D 3 D 3		· · · · · · · · · · · · · · · · · · ·		2,808 2,808	14,508 14,508	22,464	22,464	22,464	19,332	9,360
Cement & Mortar Mixer Cement & Mortar Mixer	G 6 G 8			1,404	4,914 4,914	16,146 16,146	<u>16,848</u> 16,848	16,848 16,848	11,700	9,360	
Concrete Equipment											
Pump	G 3 D 24			702	5,148 4,914	23,868	33,462 30,654	10,448 33,696 39,688	33,696 30,888	27,378 30,450	12,402
Pump CONCRETE BATCH PLANT	D 24			702	5,148 4,914	23,868 16,614	33,462	33,696	33,696	27,378	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler	D 24	<u> 75</u>		702	5,148 4,914 6,240 1,040	23,868 16,614 12,480 2,080 1,040	33,462 30,654 12,480 2,080 1,040	33,696 39,688	33,696 30,888	27,378 30,450	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B	D 24	<u>тк</u>		702	5,148 4,914	23,868 16,614 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 1.040	33,696 30,888 7,280 2,080	27,378 30,450	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC	D 24 D D D D D 350 D 10	2,340	9,360	2,340	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 2,080 12,480 1,040 12,480	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw	D 24 D D D 0 D 350 D 10 D 124 G 3	2,340 1,560 11,700	9,360 6,240 35,100	702	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 88 STE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor	D 24 	2,340 1,560 11,700 1,560 4,680	9,360 6,240 35,100 4,680 18,720	2,340	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw	D 24 	2,340 1,560 11,700 4,680 2,340 1,560	9,360 6,240 35,100 4,680 18,720 9,360 6,240	2,340 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH PLANT CONCRETE BATCH PLANT Generator OII-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B STFE PRE PARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plato Competion Air Compressor Crawler Tractor Crawler Tractor Crawler Tractor	D 24 	2,340 1,560 11,700 1,560 4,680 2,340 1,560 2,340	9,360 6,240 35,100 4,680 18,720 9,360 6,240 9,360	2,340 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Dissel Vehicle 8B STE PREPARATION All Terrain Vehicle/MC Chain Saw Chain Saw Chain Saw Chain Saw Chainer Plate Compactor Air Compressor Crawfer Tractor Crawfer Tr	D 24 D D D 80 D 350 D 10 D 124 G 3 D 353 D 124 G 3 D 354 D 355 D 354 D 355 D 96 D 145 D 308 D 250	2,340 1,560 11,700 1,560 4,680 2,340 1,560 2,340 4,680 4,680	9,360 6,240 35,100 4,680 18,720 9,360 6,240	2,340 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump GONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Chain Saw Chipper/Stump Grinder Plate Compactor Air Compressor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator	D 24 D D D 350 D 10 D 124 G 350 D 150 D 150 D 155 D 354 D 355 D 356 D 355 D 356 D 356 D 356 D 368 D 250 D 368 D	2,340 11,560 11,700 1,560 4,680 2,340 1,560 2,340 4,680 4,680 4,680	9,360 6,240 35,100 4,680 9,360 6,240 9,360 6,240 9,360 18,720 18,720 18,720 24,960 18,720	2,340 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump GONCRETE BATCH PLANT GONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor All Compressor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Exca	D 24 D D D D D 350 D 10 D 124 G 3 D 124 G 3 D 75 D 354 D 355 D 96 D 145 D 308 D 2500 D 308 D 2580 D 308 D 800	2,340 1,560 11,700 1,560 1,560 1,560 2,340 1,560 2,340 4,680 4,680 4,680 4,680 1,560 3,120	9,360 6,240 35,100 4,680 9,360 6,240 9,360 9,360 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 19,460	2,340 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump GONCRETE BATCH PLANT GONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B STFE PREPARATION Ali Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor Air Compressor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator Excavator Excavator Generator Grader Heavy-Duty Diesel Vehicle 3	D 24 D D D D D 350 D 10 D 124 G 3 D 123 D 75 D 354 D 355 D 360 D 354 D 355 D 96 D 360 D 259 D 258	2,340 1,560 1,560 1,560 1,560 1,560 2,340 4,680 2,340 4,680 4,680 4,680 1,560 3,120 1,560 2,340	9,360 6,240 35,100 4,680 9,360 6,240 9,360 9,360 18,720 19,360 18,720 19,360 10,360 10	702 2.340 1,560 4,680 3,120 2.340	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B STFE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor Ali Compressor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator Excavator Generator Generator Grader Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 8A Heavy-Duty Diesel Vehicle 8A Heavy-Duty Diesel Vehicle 8A	D 24 D D D B D 350 D 10 D 124 G 3 D 124 G 350 D 124 D 55 D 354 D 356 D 354 D 356 D 358 D 380 D 800 D 259 D 400 D 400 D 400	2.340 1.560 1.560 2.340 1.560 2.340 2.340 4.680 4.680 4.680 4.680 4.680 3.120 1.560 2.340 2.340 2.340 1.560	9,360 6,240 35,100 4,680 18,720 9,360 6,240 9,360 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 9,360 9,360 18,720 18,720 9,360 9,360 18,720 18,720 9,360 9,370 9,370 9,40 9,40 9,40 9,40 9	2,340 1,560 4,680 3,120 2,340 2,340 2,340 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH PLANT CONCRETE BATCH PLANT Coll-Fired Boiler Tractor/Loade//Backhoe Heavy-Duty Diesel Vehicle 8B STTE PREPARATION All Terrain Vehicle/MC Tractor/Loade//Backhoe Chain Saw Chipper/Stump Grinder Plato Compactor Air Compressor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Generator Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Truck 1 and 2 Roller	D 24 D D D B D 350 D 10 D 12 D 354 D 355 D 354 D 355 D 354 D 354 D 354 D 354 D 360 D 380 D 259 D 4000 D 2000 D 365 G 6	2,340 1,560 11,700 2,340 2,340 2,340 2,340 4,680 4,680 6,240 4,680 6,240 4,680 6,240 1,560 1,560 2,340	9,360 6,240 35,100 4,680 18,720 9,360 6,240 9,360 18,720 24,960 18,720 24,960 18,720 18,720 24,960 18,720 6,240 12,480 4,160 9,360 6,240 4,160 9,360 6,240 4,680 9,360	702 2,340 1,560 4,680 3,120 2,340 2,340	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CoNCRETE BATCH PLANT CONCRETE BATCH PLANT CONCRETE BATCH PLANT ORIGINAL Generator OII-Fired Boiler Tractor.Coader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor Air Compressor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator Generator Grader Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 3 Light-Duty Diesel Truck 1 and 2 Roller	D 24 D D D B D 350 D 10 D 12 D 12 D 12 D 350 D 12 D 350 D 355 D 96 D 145 D 308 D 250 D 360 D 250 D 360 D 255 D 360 D 250 D 360 D 250 D 360 D 250 D 260 D 250 D 200 D 200 D 365 G 8 D 168	2,340 1,560 1,560 1,560 1,560 1,560 2,340 2,340 4,680 1,560 2,340 4,680 1,560 1,2340 1,340 1,2340 1,340 1,2340 1,340 1,2340 1,	9,360 6,240 35,100 4,680 9,360 6,240 9,360 18,720 12,460 12,400 12,400 12,400 12,400 12,400 12,400 12,400 12,240 12,2	702 2.340 1.560 4.580 3.120 2.340 2.340 1.560 11,700	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CoNCRETE BATCH PLANT CONCRETE PLANT CONCRETE BATCH PLANT CONCRETE PLANT CONCRETE BATCH CONCRETE BATCH CONCRETE BATCH CONCRETE BATCH CONCRETE BATCH CONCRETE C	D 24 D D D B D 350 D 10 D 124 G 3 D 124 G 350 D 124 D 55 D 354 D 356 D 360 D 356 D 360 D 259 D 400 D 368 D 168 D 168 D 168 D 181 D 75	2.340 1.560 1.560 1.560 1.560 2.340 2.340 4.680 4.680 4.680 4.680 4.680 3.120 1.560 3.120 1.560 2.340 2.340 2.340 2.340 2.340 2.340 2.340 1.560	9,360 6,240 35,100 4,680 9,360 9,360 9,360 9,360 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 19,360 9,360 18,720 18,720 18,720 19,360 19,720 19,360 19,720 19,360 19,720 19,360 19,720 19,720 19,360 19,720 19,360 19,720 19,360 19,720 19,360 19,720 19,360 19,720 19,360 19,720 19,360 19,300 19,300 19,360	702 2.340 1.560 4.580 3.120 2.340 2.340 1.560 11,700	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH PLANT CONCRETE BATCH PLANT CONCRETE BATCH OII-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B STTE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor Air Compressor Crawfer Tractor Crawfer Tractor Excavator Excavator Excavator Excavator Generator Grader Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 3 Light-Duty Diesel Vehicle 3 Light-Duty Diesel Vehicle 3 Light-Duty Diesel Vehicle 3 Foller Rubber Tire Loader Scraper Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe	D 24 D D D D D 350 D 10 D 12 D 12 D 1354 D 354 D 354 D 355 D 354 D 355 D 364 D 355 D 360 D 354 D 364 D 259 D 400 D 259 D 400 D 3254 D 300 D 3200 D 300 D 365 D 168 D 168 D 189 D 189 D 189 D 189 D 189 D 450	2,340 1,560 1,560 2,340 1,560 2,340 4,680 4,680 4,680 4,680 4,680 4,680 4,680 1,560 2,3402	9,360 6,240 35,100 4,680 9,360 6,240 9,360 18,720 9,360 18,720 9,360 18,720 9,360 18,720 24,960 18,720 24,960 18,720 9,360 6,240 4,160 9,380 6,240 46,800 9,380 6,240 4,160 5,200 4,160 5,240	702 2.340 1.560 4.580 3.120 2.340 2.340 1.560 11,700	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH PLANT Generator Gil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor Air Compressor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator Generator Garder Heavy-Duty Diesel Vehicle 3 Carger Rubber Tire Loader Scraper Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tracto	D 24 D D D D D 350 D 10 D 124 G 3 D 124 G 3 D 75 D 354 D 555 D 96 D 145 D 308 D 259 D 400 D 265 G 6 D 181 D 755 D 185 D 450 D 189 D 450 D 260 G 4	2,340 1,560 11,700 1,560 1,560 1,560 2,340 1,560 2,340 4,680 4,680 4,680 4,680 4,680 1,560 1,560 2,340	9,360 6,240 35,100 4,680 18,720 9,360 18,720 9,360 18,720 18,720 24,960 18,720 18,	702 2.340 1.560 4.680 2.340 2.340 2.340 1.560 11,700 3.900	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor Alr Compressor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator Generator Grader Heavy-Duty Diesel Vehicle 3 Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Trencher	D 24 D D D D D 350 D 10 D 124 G 350 D 124 G 350 D 155 D 96 D 145 D 308 D 513 D 250 D 400 D 260 D 365 G 6 D 189 D 189 D 450 D 189 D 450 D 365 D 189 D 450 D 365 D 189 D 450 D 325 D 325 D 450 D 325 D 325 <th>2,340 1,560 1,560 1,560 1,560 1,560 2,340 2,340 4,680 4,680 4,680 4,680 1,560 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 1,560 11,700 2,340 2,340 3,120 11,560 11,5</th> <th>9,360 6,240 35,100 4,680 9,360 6,240 9,360 18,720 9,360 18,72</th> <th>702 2.340 1.560 4.580 3.120 2.340 2.340 1.560 11,700</th> <th>5,148 4,914 6,240 1,040 6,240</th> <th>23,868 16,614 12,480 2,080 12,480 12,480</th> <th>33,462 30,654 12,480 2.080 1,040 12,480 74,880</th> <th>33,696 39,688 12,480 2,080 12,480</th> <th>33,696 30,888 7,280 2,080 7,280</th> <th>27,378 30,450</th> <th></th>	2,340 1,560 1,560 1,560 1,560 1,560 2,340 2,340 4,680 4,680 4,680 4,680 1,560 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 1,560 11,700 2,340 2,340 3,120 11,560 11,5	9,360 6,240 35,100 4,680 9,360 6,240 9,360 18,720 9,360 18,72	702 2.340 1.560 4.580 3.120 2.340 2.340 1.560 11,700	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH CONCRETE CONCRETE BATCH CONTCRETE BATCH CONCRETE BATCH CONCRETE BATCH CON	D 24 D D D D D 350 D 10 D 124 G 3 D 124 G 3 D 124 D 55 D 96 D 145 D 380 D 250 D 365 D 260 D 260 D 365 G 8 D 168 D 189 D 450 D 250 G 4 D 325 D 469 Z 2400 D 469 D 345	2,340 1,560 1,560 1,560 1,560 1,560 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 3,120 1,560 3,120 1,560 1,760	9,360 6,240 35,100 4,680 9,360 6,240 9,360 18,720 9,360 18,720 9,360 18,720 9,360 18,720 9,360 18,720 24,960 18,720 6,240 4,160 9,360 6,240 4,6,800 9,360 6,240 4,6,800 9,360 6,240 4,160 5,200 4,160 5,240 2,080 12,480 9,360 68,640	702 2.340 1.560 4.680 3.120 2.340 1.560 11,700 3.900 4.680	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 1,040 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT CONCRETE BATCH PLANT CONCRETE BATCH PLANT Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B STTE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plato Compactor Air Compressor Crawfer Tractor Crawfer Tractor Excavator Excavator Excavator Excavator Excavator Generator Grader Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 3 Light-Duty Diesel Vehicle 3 Light-Duty Diesel Vehicle 3 Light-Duty Diesel Vehicle 3 Excavator Scraper Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe Trencher <	D 24 D 24 D D D 350 D 10 D 12 D 12 D 123 D 354 D 354 D 355 D 354 D 355 D 364 D 355 D 360 D 354 D 354 D 355 D 356 D 356 D 356 D 356 D 360 D 259 D 400 D 3200 D 366 D 186 D 1890 D 469 D 325 D 469	2,340 1,560 11,700 1,560 1,560 1,560 2,340 1,560 2,340 4,680 4,680 4,680 4,680 4,680 1,560 2,340 2,340 2,340 2,340 2,340 2,340 2,340 1,550 2,340 1,550 2,340 1,550 2,340 1,550 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 1,560 2,340 1,560	9,360 6,240 35,100 4,680 9,360 9,360 9,360 18,720 9,360 18,720 18,720 24,960 18,720 18,720 24,960 18,720 12,490 4,160 9,360 9,360 9,360 9,360 6,240 4,6,800 9,360 6,240 4,160 9,360 6,240 12,480 9,360 6,240 720 720 720 720 720 720 720 72	702 2.340 1.560 4.680 3.120 2.340 2.340 1.560 11,700 3.900 3.900 4.680	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump GONCRETE BATCH PLANT GONCRETE BATCH GONCRETE BATCH GONCRETE BATCH GONCRETE GONC	D 24 D D D D D 350 D 10 D 124 G 350 D 124 G 350 D 155 D 354 D 355 D 365 D 365 D 365 D 259 D 400 D 266 D 189 D 450 D 189 D 450 D 345 D 247 D 200 D 66	2.340 1,560 1,560 1,560 1,560 2,340 1,560 2,340 4,680 1,560 2,340 4,680 1,560 1,560 1,560 1,560 1,560 2,340 1,560 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 1,560 1,700 1,560 1,700 1,560 1,710	9,360 6,240 35,100 4,680 9,360 6,240 9,360 18,720 12,480 12,240 12,480 12,440 12,480 12,440 12,4	702 2,340 1,560 4,680 3,120 2,340 2,340 1,560 1,560 1,560 1,560 1,560 1,560 1,560 1,560 1,560 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CoNCRETE BATCH PLANT CONCRETE BATCH C	D 24 D D D B D 350 D 10 D 124 G 3 D 123 D 754 D 350 D 360 D 155 D 96 D 360 D 360 D 360 D 380 D 360 D 365 G 6 D 400 D 2000 D 365 G 6 D 168 D 189 D 460 D 200 G 4 D 325 D 189 D 469 D 200 G 4 D 2460	2,340 1,560 1,560 1,560 1,560 1,560 2,340 2,340 4,680 4,680 4,680 4,680 4,680 1,560 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 2,340 1,560 11,700 2,340 1,560 11,700 2,340 1,560 11,700 2,340 1,560 11,700 2,340 1,560 1,700 2,340 1,750 1,	9,360 6,240 35,100 4,680 9,360 9,360 9,360 18,720 18,7	702 2,340 1,560 4,680 2,340 2,340 2,340 1,560 11,700 3,900 4,680 17,160	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT Heavy-Duty Diesel Vehicle 8B STTE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chain Saw Chipper/Stump Grinder Plate Compactor Air Compressor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator Generator Grader Heavy-Duty Diesel Vehicle 3 <	D 24 D 24 D D D 350 D 10 D 124 G 350 D 124 G 354 D 354 D 354 D 354 D 354 D 354 D 368 D 3680 D 259 D 400 D 200 D 365 G 6 D 168 D 168 D 189 D 489 D 200 G 4 D 325 D 168 D 189 D 450 D 200 G 4 D 325 D 469	2.340 1,560 1,560 1,560 1,560 2,340 4,680 2,340 4,680 4,680 4,680 4,680 4,680 3,120 1,560 2,340 2,340 2,340 2,340 2,340 2,340 2,340 1,560 1,700 2,340 1,560 1,700 2,340 1,560 1,700 2,340 1,560 1,700 2,340 1,560 1,700 2,340 1,560 1,700 2,340 1,560 1,700 2,340 1,560 1,700	9,360 6,240 35,100 4,680 18,720 9,360 6,240 9,360 6,240 9,360 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 18,720 12,480 9,360 6,240 4,160 9,360 6,240 4,165 5,240 4,165 5,240 12,480 9,360 68,640 720 720 720 720 720 1,440 4,320	702 2.340 1.560 4.680 3.120 2.340 1.56	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	
Pump CONCRETE BATCH PLANT Generator Oil-Fired Boiler Tractor/Loader/Backhoe Heavy-Duty Diesel Vehicle 8B SITE PREPARATION All Terrain Vehicle/MC Tractor/Loader/Backhoe Chipper/Sump Grinder Plate Compactor Air Compressor Crawler Tractor Crawler Tractor Excavator Excavator Excavator Excavator Generator Grader Tractor Excavator Grader Robler Tractor/Loader/Backhoe Tractor/Loader/Backhoe Tractor/Loader/Backhoe	D 24 D 24 D D D 350 D 10 D 124 G 350 D 124 G 350 D 124 D 75 D 355 D 365 D 365 D 365 D 365 D 259 D 400 D 250 D 365 G 6 D 189 D 450 D 365 D 450 D 2450 D 345 D 247 D 200 D 345 D 200 D 303	2.340 1,560 1,560 2,340 1,560 2,340 4,680 4,680 4,680 4,680 4,680 4,680 1,560 2,340 1,560 2,340 1,560 2,340 1,560 2,340 2,340 2,340 1,560 2,340	9,360 6,240 35,100 4,680 9,360 9,360 9,360 18,720 9,360 18,720 9,360 18,720 18,720 24,960 18,720 24,960 4,150 9,360 9,360 6,240 4,160 6,240 5,200 4,160 6,240 2,080 2,080 12,480 9,360 68,640 720 720 720 720 720 720 720 720 720 720 720 720 720 720 720 720 720 720 720	702 2,340 1,560 4,680 2,340 2,340 1,560 11,700 1,560 11,700 1,560 11,700 1,560 11,700 1,560 11,700 1,560	5,148 4,914 6,240 1,040 6,240	23,868 16,614 12,480 2,080 12,480 12,480	33,462 30,654 12,480 2.080 12,480 12,480 74,880	33,696 39,688 12,480 2,080 12,480	33,696 30,888 7,280 2,080 7,280	27,378 30,450	

Environment

Appendix B

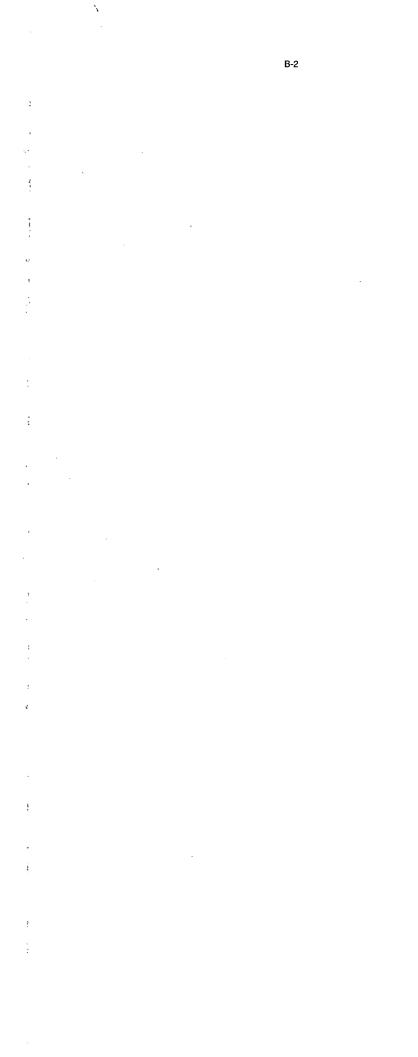
Emissions Calculations

Table B-1 Diesel Non-Road Engine Emissions

Equipmente degory based on NONROAD dessification	Scc 1	Fuel Type	Engine Technology Type	Equipment Horsepower	-2010 A	2011	42012	2013	2014	2015	2016	2017	2018	BSEC ²	EFSS (g	1000	Load! Factor	Age .		u0	fact		Adjusted (g/hp-hi	<u>)4</u>
		vanes	9002		2010 hrs	2011 Ihrs	2012. hrs	2013 hrs.	hrs	2015 hrs	2016 hrs	2017, hrst	hrs	lb/hp:hr	HC	NOx	2	Factor®	HC	NOX	Ш Э	NOX	HC, h	Nox
Eartmoving Sweeper/Scrubber	2270003030	Diesel	T3	85	0	0	156	936	936	936	936	936	858	0.408	0.18	3	0.43	1	0.027	0.008	1.027	1.008	0.185 3	3.024
Crawler Tractor	2270002069	Diesel	T3	105	0	0	312	4992	5616	5616	5616	3588	625	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008		2.631
Crawler Tractor	2270002069	Diesel	T3	210	0	0	1404	7332	7800	7488	5304	3588	312	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008		2.631
Crawler Tractor	2270002069	Diesel	<u>T3 '</u>	307	0	0	1404	7332	7800	7488	3666	1092	0	0.371	0.17	2.61	0.59	1	0.027	0.008	1.027	1.008		2.631
Excavator Excavator	2270002036 2270002036	Diesel Diesel	T4 T3	30 268	0	0	312 936	4056 6864	4056 7488	4056 7488	2496 6084	468 936	0	0.412	0.13	3 2.61	0.59		0.027	0.008	1.027	1.008		3.024
Excavator	2270002036	Diesel	T4	321	0	0	312	4056	4056	3744	2340	156	0	0.371	0.13	2.5	0.59	1	0.027	0.008	1.027	1.008		2.520
Excavator	2270002036	Diesel	T4	404	0	0	312	1872	1872	1872	1248	0	0	0.371	0.13	2.5	0.59	1	0.027	0.008	1.027	1.008		2.520
Crawler Tractor	2270002069	Diesel	T4	426	0	0	1310	2246	2246	2246	2246	1872	0	0.371	0.13	2.5	0.59	1	0.027	0.008	1.027	1.008		2.520
Grader .	2270002048	Diesel	<u>T3</u>	135 80	0	0	1248 1497	5865 5990	5990 6739	4992 6739	2995 3739	2995 1310	1248 0	0.371	0.19	2.61 3.64	0.59	 	0.027	0.008	1.027	1.008		2.631
Tractor/Loader/Backhoe Tractor/Loader/Backhoe	2270002066 2270002066	Diesel Diesel	T3 T3	174	0	0	1684	8049	8049	6739	6739	1872	0	0.433	0.42	3.04	0.21		0.027	0.008	1.027	1.008		3.054
Skid Steer Loader	2270002072	Diesel	T4	75	Ō	0	312	4056	4056	3744	3744	624	Ő	0.481	0.12	3	0.21	1	0.027	0.008	1.027	1.008		3.024
Tractor/Loader/Backhoe	2270002066	Diesel	Т3	199	0	0	312	5304	5616	5616	5616	312	0	0.433	0.42	3.03	0.21	1	0.027	0.008	1.027	1.008		3.054
Tractor/Loader/Backhoe	2270002066	Diesel	T4	349	0	0	312	4056	4056	3744	3744	312	0	0.433	0.13	2.5	0.21	1	0.027	0.008	1.027	1.008		2,520
Tractor/Loader/Backhoe	2270002066 2270002051	Diesel Diesel	T3 T4	224 302	0	0	312 3432	3900 16380	5616 22464	4524 22464	3744 14040	<u>312</u> 2184	0	0.433	0.42	3.03	0.21	1	0.027	0.008	1.027	1.008		3.054
Off-Higway Truck Off-Highway Tractor	2270002051	Diesel	T3	115	0	0	<u>3432</u> 748	5491	5990	5990	5616	374	0	0.371	0.13	2.5	0.59		0.027	0.008	1.027	1.008		2.631
Compaction	2210002010		2 2 1 5 R P] 1					283		N R D M		Sector 1			1:52	TTY SE	1.50	£	MORE -	120.	Mr.	1.000		362
Plate Compactor	2270002009	Diesel	T4	339	0	0	748	1555	2995	2995	2995	2496	0	0.367	0.13	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Plate Compactor	2270002009	Diesel	Т3	185	0	0	2246	7488	7488	7488	6364	2745	0	0.367	0.18	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Cranes		Key River	N MARCO		<u>0296786</u>		<u> </u>			2 #2 ps	1 dect	Sec. Co				<u>z (19</u> 0		500 AN	16-856X					
Crane	2270002045 2270002045	Diesel Diesel	T4 T4	510 340	0	0	1497 1622	5990 9734	5990 9734	5990 9734	5990 9734	0 4056	0	0.367	0.13	2.5	0.43		0.027	0.008	1.027	1.008		2.520
Crane Crane	2270002045	Diesel	T4	340	0	0	0	17971	25958	22464	7488	4030	0	0.367	0.13	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	T4	340	0	0	811	7300	9734	9734	9734	6489	Ő	0.367	0.13	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	T4	340	0	0	0	17035	24336	24336	24336	14601	0	0.367	0.13	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	T4	600	0	0	811	4056	9734	9734	9734	6489	0	0.367	0.13	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	T4 T4	600	0	0	1662 3744	9734 20592	9734 22464	9734 22464	9734 22464	4056 16848	0	0.367	0.13	2.5 2.5	0.43		0.027	0.008	1.027	1.008		2.520
Crane Crane	2270002045 2270002045	Diesel Diesel	T3	500 152	0	0	1747	13104	15724	15724	15724	14851	1747	0.367	0.13	2.5	0.43		0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	T3	174	0	0	3493	9609	10483	10483	10483	10046	2184	0.367	0.18	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	Т3	215	0	0	3493	13104	31449	47174	48484	21403	2184	0.367	0.18	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	T3	250	0	0	3493	9609	10483	10483	10483	9609	0	0.367	0.18	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Crane	2270002045	Diesel	T3	250	0	0	873	4368	10483	10483	10483	9172	1310	0.367	0.18	2.5	0.43	1 17.04474	0.027	0.008	1.027	1.008	0.185 2	2.520
Forklift Forklift	2270003020	Diesel	<u>т</u> 3	142	0	0	748	9734	13478	13478	13478	13104	5241	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008	0.195 2	2.631
Crane	2270002045	Diesel	T3	290	0	0	624	5616	7488	7488	7488	3744	2184	0.367	0.18	2.5	0.43	1	0.027	0.008	1.027	1.008		2.520
Forklift	2270003020	Diesel	Т3	89	0	0	748	9734	13478	13478	13478	11232	0	0.412	0.19	3.13	0.59	1	0.027	0.008	1.027	1.008	0.195 3	3.155
Forklift	2270003020	Diesel	T3	113	0	0	8424	33696	33696	33696	33696	15912	468	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008		2.631
Forklift	2270003020	Diesel	T3	110	0	0	7956	40248	44928	44928	44928	17784	2808	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008	1. Colored and the second s	2.631
Manlift / Scossorlifts	2270003010	Diesel	 T4	<u>1</u>	0	<u>222</u>	0	748	17971	22464	22464	6552	0	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008		3.024
Aerial Lift	2270003010	Diesel	T4	65	0	0	0	374	11980	15724	15724	9360	0	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008		3.024
Aerial Lift	2270003010	Diesel	T4	48	Ō	Ő	0	2995	11232	11232	11232	10670	2246	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008		3.024
Aerial Lift	2270003010	Diesel	T4	48	0	0	0	1497	4492	4492	4492	4492	1123	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008		3.024
Aerial Lift	2270003010	Diesel	T4	78	0	0	0	0	3931	23774	33508	17305	1872	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008	01101 0	3.024
Aerial Lift Aerial Lift	2270003010 2270003010	Diesel Diesel	T4 T4	70 75	0	0	748	5616 5616	6739 6739	6739 6739	6739 6739	0 6739	0	0.481	0.13	3	0.21		0.027		1.027	1.008		3.024
Aerial Lift	2270003010	Diesel	T4	28	0	0	0	0	2246	2246	2246	2246	1497	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008		3.024
Aerial Lift	2270003010	Diesel	T4	32	0	0	0	2246	6739	6739	6739	6739	3183	0.481	0.13	3	0.21	1	0.027			1.008		3.024
Welding Equipment 🤹 👔		<u>200</u> 0400		3.8 (P - 64)	Sac La	<u></u>	S. 182		1.3.03	2784	<u></u>	2.3		1. Com	2325	2.3.1.1	267	6.27			<u>0</u>	1 Maria	Summer	190.34
Welder	2270006025	Diesel	T4	26	0	· 0	3744	14976	14976	14976	14976	11107	0	0.481	0.13	3	0.21	1	0.027	0.008		1.008		3.024
Welder	2270006025	Diesel	T4 T4	35 48	0	0	1996 2995	14976 14976	14976 14976	14976	14976 14976	11107 11232	0 374	0.481 0.481	0.13	3	0.21	1	0.027	0.008		1.008		3.024
Welder Concrete // Aggregate	2270006025	Diesel	14 / * * * * * * * *	48 15 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	0 (565)	1 U	2995	14976	14976	14976	14976 g	11232	3/4 ***********	0.461	0.13	3	0.21	34.7 cm	0.027		1.027 @%_#44	1.000		5.024
Pump	2270002039	Diesel	T4	80	0	0	0	2096	5390	4192	1497	0	0	0.412	0.13	3	0.59	<u>2366</u>	0.027	0.008	- All and a second s	1.008	Manager and the second second	3.024
Air Compressors		26. 3. 4	2436N N (745)	8277 P. 38. (1979 (A.C.)	27755		C 1 2	1. A. A.	1. S. S. S.	(1)、个个					12033			1. 15	5.0	10 X 22		r 333 (2	
Air Compressor	2270006015	Diesel	T3	80	0	0	4992	7956	9360	9360	9360	9204	4056	0.408	0.3672	4.7	0.43	1	0.027	0.008	1.027	1.008	0.377 4	4.738
Air Compressor	2270006015	Diesel	T3	115	0	.0	1248	6552	9360	9360	9360	8892	3744	0.367	0.1836	2.5	0.43	1	0.027			1.008		2.520
Air Compressor	2270006015	Diesel	T3 T2	275	0	0	624	8112	11232	11232	11232	10920	4368	0.367	0.1836	2.5 2.5	0.43		0.027	0.008		1.008		2.520
Air Compressor Air Compressor	2270006015 2270006015	Diesel Diesel	T3 T4	275 310	0	0	624 624	8112 5616	11232 7488	11232 7488	11232 7488	10920 7488	4368 3120	0.367 0.367	0.1836	2.5 2.5	0.43		0.027	0.008	1.027	1.008		2.520
Pipelaying / Trenching Equipment	2270006015	Diesei		50-122 A. S.		0	024	JOID	1400	7400	7400	7400	3120	0.307	0.1314	2.5	0.45	De See	1 0.027	10.000	1.0L1	1.000		
Trencher	2270002030	Diesel	T4	51	0	0	935	373	187	0	0	468	0	0.412	0.13	3	0.59	1	0.027	0.008	1.027	1.008	مانتكاء والمادها المتعاطمة والمتعادة	3.024
Class 25 Cable Laying/Pulling Equ. 4		241 V (19 2)	STATE OF A					84.35	745 P.	7.20%	38-53-6	(199) Pr	24.222	5 M 2 S	28.53	1 P 54	5.4%	No. K	1.	228.5	60,036			24.3
Other Construction Equipment	2270002081	Diesel	T4	30	0	0	0	2496	4492	4492	4492	4492	624	0.412	0.13	3	0.59	1	0.027			1.008		3.024
Other Construction Equipment	2270002081	Diesel	T4	30	0	0	0	2496	4492	4492	4492	4492	624	0.412	0.13	3	0.59	1	0.027	0.008	1.027	1.008		3.024
Other Construction Equipment	2270002081	Diesel	T4	30	0	0	0	2496	4492	4492	4492	4492	624	0.412	0.13	3	0.59	•	0.027	0.008	1.027	1.008	0.134 3	3.024

Table B-1 Diesel Non-Road Engine Emissions

	VOC 5*	VOC	VOC	2 VOC<	VOC	-VOC	VOC	VOC	VOC.	NOx ⁶	NOx	NOx	NOx	NOx	NOX	NOx	NOx	NOx
Equipment category based on	tons	tons	tons	tons	tons .	tons	tons	tons	tons	tons	tons	tons 🧋	tons,	tons	tons	tons	tons	tons
NONROAD classification	2010	2011	2012	2013	2014	2015	2016	2017	2018	2010	- 2011	2012	2013	2014	2015	2016	2017	2018
	2010	. e V.		2013	14 C .	2015	2010			2010		4	32°	27.75	5. 45		1	
Eartmoving	<u> </u>																	
Sweeper/Scrubber	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.02	0.11	0.11	0.11	0.11	0.11	0.10
Crawler Tractor Crawler Tractor	0.00	0.00	0.00	0.07	0.08	0.08	0.08	0.05	0.01	0.00	0.00	0.06	0.90 2.63	2.80	1.01 2.69	1.01	0.64	0.11
Crawler Tractor	0.00	0.00	0.04	0.27	0.22	0.27	0.13	0.04	0.00	0.00	0.00	0.74	3.85	4.10	3.93	1.93	0.57	0.00
Excavator	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.24	0.24	0.24	0.15	0.03	0.00
Excavator	0.00	0.00	0.03	0.25	0.27	0.27	0.22	0.03	0.00	0.00	0.00	0.43	3.15	3.43	3.43	2.79	0.43	0.00
Excavator	0.00	0.00	0.01	0.12	0.12	0.11	0.07	0.00	0.00	0.00	0.00	0.16	2.13	2.13	1.97	1.23	0.08	0.00
Excavator	0.00	0.00	0.01	0.07	0.07	0.07	0.05	0.00	0.00	0.00	0.00	0.21	1.24	1.24	1.24	0.83	0.00	0.00
Crawler Tractor	0.00	0.00	0.05	0.09	0.09	0.09	0.09	0.07	0.00	0.00	0.00	0.91	1.57	1.57	1.57	1.57	1.31	0.00
Grader Trastar/Leader/Backbac	0.00	0.00	0.02	0.11	0.11	0.09	0.05	0.05	0.02	0.00	0.00	0.29	1.35 0.41	1.38 0.46	1.15 0.46	0.69	0.69	0.29
Tractor/Loader/Backhoe Tractor/Loader/Backhoe	0.00	0.00	0.01	0.05	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.10	0.99	0.99	0.40	0.83	0.03	0.00
Skid Steer Loader	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.21	0.21	0.20	0.20	0.03	0.00
Tractor/Loader/Backhoe	0.00	0.00	0.01	0.11	0.12	0.12	0.12	0.01	0.00	0.00	0.00	0.04	0.75	0.79	0.79	0.79	0.04	0.00
Tractor/Loader/Backhoe	0.00	0.00	0.00	0.05	0.05	0.04	0.04	0.00	0.00	0.00	0.00	0.06	0.83	0.83	0.76	0.76	0.06	0.00
Tractor/Loader/Backhoe	0.00	0.00	0.01	0.09	0.13	0.11	0.09	0.01	0.00	0.00	0.00	0.05	0.62	0.89	0.72	0.59	0.05	0.00
Off-Higway Truck	0.00	0.00	0.09	0.45	0.62	0.62	0.39	0.06	0.00	0.00	0.00	1.70	8.11	11.12	11.12	6.95	1.08	0.00
Off-Highway Tractor	0.00	0.00	0.01	0.08	0.09	0.09	0.09	0.01	0.00	0.00	0.00	0.15	1.08	1.18	1.18	1.11	0.07	0.00
Compaction Plate Compactor	0.00	0.00	0.02	0.04	0.07	0.07	0.07	0.06	0.00	0.00	0.00	0.30	0.63	1.21	1.21	1.21	1.01	0.00
Plate Compactor	0.00	0.00	0.02	0.04	0.13	0.07	0.07	0.05	0.00	0.00	0.00	0.50	1.65	1.65	1.65	1.41	0.61	0.00
Cranes	0.00	0.00	0.04	0.13	0.13	0.13		0.00	0.00	0.00	3.00	0.00	1.00	1.00				0.00
Crane	0.00	0.00	0.05	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.91	3.65	3.65	3.65	3.65	0.00	0.00
Crane	0.00	0.00	0.04	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.66	3.95	. 3.95	3.95	3.95	1.65	0.00
Crane	0.00	0.00	0.00	0.40	0.57	0.49	0.16	0.00	0.00	0.00	0.00	0.00	7.08	10.23	8.85	2.95	0.00	0.00
Crane	0.00	0.00	0.02	0.17	0.22	0.22	0.22	0.15	0.00	0.00	0.00	0.33	2.96	3.95	3.95	3.95	2.64	0.00
Crane	0.00	0.00	0.00	0.39	0.55	0.55	0.55	0.33	0.00	0.00	0.00	0.00	6.92	9.88	9.88	9.88	5.93	0.00
Crane	0.00	0.00	0.03	0.16	0.39	0.39	0.39	0.26	0.00	0.00	0.00	0.58	2.91	6.98	6.98	6.98	4.65	0.00
Crane	0.00	0.00	0.07	0.39	0.39	0.39	0.39 0.75	0.16	0.00	0.00	0.00	1.19 2.24	6.98 12.30	6.98 13.42	6.98 13.42	6.98 13.42	2.91	0.00
Crane Crane	0.00	0.00	0.02	0.09	0.22	0.73	0.73	0.30	0.00	0.00	0.00	0.32	2.38	2.85	2.85	2.85	2.70	0.32
Crane	0.00	0.00	0.06	0.15	0.17	0.17	0.17	0.16	0.04	0.00	0.00	0.73	2.00	2.18	2.18	2.18	2.09	0.45
Crane	0.00	0.00	0.07	0.26	0.62	0.94	0.96	0.42	0.04	0.00	0.00	0.90	3.37	8.08	12.11	12.45	5.50	0.56
Crane	0.00	0.00	0.08	0.22	0.24	0.24	0.24	0.22	0.00	0.00	0.00	1.04	2.87	3.13	3.13	3.13	2.87	0.00
Crane	0.00	0.00	0.02	0.10	0.24	0.24	0.24	0.21	0.03	0.00	0.00	0.26	1.30	3.13	3.13	3.13	2.74	0.39
Forklift	· · · ·		ر میں			. *.	·				·				± •••			
Forklift	0.00	0.00	0.01	0.18	0.26	0.26	0.26	0.25	0.10	0.00	0.00	0.18	2.37	3.27	3.27	3.27	3.18	1.27
Crane Forklift	0.00	0.00	0.02	0.15	0.20	0.20	0.20	0.10	0.06	0.00	0.00	0.22	1.95	2.59	2.59	2.59	1.30 2.05	0.76
Forklift	0.00	0.00	0.13	0.12	0.10	0.10	0.10	0.13	0.00	0.00	0.00	1.63	6.51	6.51	6.51	6.51	3.08	0.00
Forklift	0.00	0.00	0.12	0.59	0.66	0.66	0.66	0.26	0.04	0.00	0.00	1.50	7.58	8.46	8.46	8.46	3.35	0.53
Manlift / Scossorlifts					14 . J. A. 1						· · ·			1	1. A. A.			500) (C.S.
Aerial Lift	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.35	0.44	0.44	0.13	0.00
Aerial Lift	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.02	0.00	0.00	0.00	0.00	0.02	0.55	0.72	0.72	0.43	0.00
Aerial Lift	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.10	0.38	0.38	0.38	0.36	0.08
Aerial Lift	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.15	0.15	0.15	0.15	0.04
Aerial Lift	0.00	0.00	0.00	0.00	0.01	0.06	0.09	0.04	0.00	0.00	0.00	0.00	0.00	0.21	0.33	0.33	0.94	0.10
Aerial Lift	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.04	0.28	0.33	0.33	0.33	0.00	0.00
Aerial Lift	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.04	0.00	0.04	0.04	0.04	0.04	0.03
Aerial Lift	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.15	0.15	0.15	0.15	0.07
Welding Equipment																	•	
Welder	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.07	0.27	0.27	0.27	0.27	0.20	0.00
Welder	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.05	0.37	0.37	0.37	0.37	0.27	0.00
Welder	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.10	0.50	0.50	0.50	0.50	0.38	0.01
Concrete / Aggregate		· · · · · · · · · · · ·			· · · · ·	<u></u>						نسينيتنا		<u> </u>				
Pump	0.00	0.00	0.00	0.02	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.33	0.85	0.66	0.24	0.00	0.00
Air Compressors				0.10										1.00			1.05	
Air Compressor	0.00	0.00	0.08	0.12	0.14	0.14	0.14	0.14	0.06	0.00	0.00	0.90	1.43	1.68	1.68	1.68	1.65	0.73
Air Compressor	0.00	0.00	0.01	0.07	0.10	0.10	0.10	0.10	0.04	0.00	0.00	0.17 0.20	0.90	1.29	1.29 3.69	3.69	3.59	1.43
Air Compressor Air Compressor	0.00	0.00	0.02	0.21	0.29	0.29	0.29	0.28	0.11	0.00	0.00	0.20	2.66	3.69	3.69	3.69	3.59	1.43
Air Compressor	0.00	0.00	0.02	0.12	0.16	0.16	0.16	0.16	0.07	0.00	0.00	0.23	2.08	2.77	2.77	2.77	2.77	1.16
Pipelaying / Trenching Equipment	0.00	0.00	0.01									_						1
Trencher	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.04	0.02	0.00	0.00	0.05	0.00
Class 25 Cable Laying/Pulling Equ.							5.00 C						1.1				·	· .
Other Construction Equipment	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.15	0.27	0.27	0.27	0.27	0.04
Other Construction Equipment	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.15	0.27	0.27	0.27	0.27	0.04
Other Construction Equipment	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.15	0.27	0.27	0.27	0.27	0.04



.

۰.

Table B-1 Diesel Non-Road Engine Emissions

	The second second come	17. A.M. 199	La Martin Martin Martin			1	्रिक्ट हो	3. A. S. H	A. (* 15)	1.28.200.00	2 . 7 6 8 . 3 . 7	G REAR	11 - 11 - 11 - 11 - 11 - 11 - 11 - 11	10 - 2 - 2 - 2			Inc. toxic is		L ()) (्र देव स	- 1175 J. F.		
Winches and Tuggers				A	********	<u> </u>		لأشقعت	<u> </u>			<u> </u>	Land a			<u></u>		P. 43 9.	Sur Lat				<u> </u>	
Other Construction Equipment	2270002081	Diesel	T4	140	0	0	0	0	2246	6739	6177	2246	0	0.371	0.13	2.5	0.59	1	0.027	0.008	1.027	1.008	0.134	2.520
Generation Equipment	and the second second					2.	in the			- NE. 6	1.22	and the second		1. 1. 1.	Side Second	Jan Ster				en an	in the second			Sec. 15
Generator	2270006005	Diesel	T3	150	655	2620	4367	15069	15724	15724	15724	14414	5241	0.367	0.18	2.5	0.43	1	0.027	0.008	1.027	1.008	0.185	2.520
Generator .	2270006005	Diesel	T3	86	0	0	436	4804	5241	5241	5241	5241	3057	0.408	0.18	3	0.43	1 1	0.027	0.008	1.027	1.008	0.185	3.024
Generator	2270006005	Diesel	T4	345	0	0	0	4804	5241	5241	5241	5241	3057	0.367	0.13	2.5	0.43		0.027	0.008	1.027	1.008	0.134	2.520
Generator	2270006005	Diesel	T4	200	0	0	0	6552	7862	7862	7862	7862	3712	0.367	0.13	2.5	0.43	1	0.027	0.008	1.027	1.008	0.134	2.520
Generator	2270006005	Diesel	T3	143	0	0	2839	12876	13104	13104	13104	13104	6115	0.367	0.18	2.5	0.43	1	0.027	0.008	<u>-1.02</u> 7	1.008	0.185	2.520
Generator	2270006005	Diesel	T3	143	0	0	873	8299	10483	10483	10483	10483	4804	0.367	0.18	2.5	0.43	• 1	0.027	0.008	1.027	1.008	0.185	2.520
Generator	2270006005	Diesel	<u>T4</u>	14	0	0	8798	52603	81806	83088	23328	37440	20592	0.408	0.13	4.44	0.43	1	0.027	0.008	1.027	1.008	0.134	4.476
Small Capital Equipment	A Contractor	م. مشتقد	1 35 · · · · · · · · · · · · · · · · · ·	Carlo and a start	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	<u> </u>	1	لمعتقف	Sec. Way			فللم في الم	10.00	A		and the second		and a second	-		Sec. X		1. The second	المستشمار
Plate Compactor	2270002009	Diesel	T4	8	0	0	10530	33696	33696	33693_	33696	33696	11636	0.408	0.13	4.3	0.43	1	0.027	0.008	1.027	1.008	0.134	4.334
Plate Compactor	2270002009	Diesel	T4	15	0	0	2340	12636	16848	16848	16848	16848	7254	0.408	0.13	4.44	0.43		0.027	0.008	1.027	1.008	0.134	4.476
Plate Compactor	2270002009	Diesel	T4	19	0	· 0	2808	16380	22464	22464	22464	21762	12870	0.408	0.13	4.44	0.43		0.027	0.008	1.027	1.008	0.134	4.476
Generator	2270006005	Diesel	<u>T4</u>	11	0	0	5850	34866	49842	50544	50544	47502	19656	0.408	0.13	4.44	0.43	1	0.027	0.008	1.027	1.008	0.134	4.476
Pump	2270006010	Diesel	T4	- /	0	0	468	5148	5616	5616	5616	5616	3276	0:408	0.5508	4.3	0.43		0.027	0.008	1.027	1.008	0.566	4.334
Pump	2270006010	Diesel	T4	15	0	0	468	5148	5616	5616	5616	5616	3276	0.408	0.438	4.4399~	0.43		0.027	0.008	1.027	1.008	0.450	4.475
Concrete Saw	2270002039	Diesel	T4 T4	65 3	0	0	702	7020	8424 22464	8424	8424 22464	8424 19332	.3978	0.412	0.13	3 4.3	. 0.59	. 1	0.027	0.008	1.027	1.008	0.134	3.024
Tamper/Rammer	2270002006 2270002006	Diesel	14 . T4	3	0	· 0 0	2808	14508	22464	22464	22464	19332	9360 9360	0.408	0.13	4.3	0.43				1.027	1.008		4.334
Tamper/Rammer		Diesel	T4	3 24			2808 4914	14508 16614	30654	39688	30888	30450	9360	0.408	0.13	4.3	0.43		0.027	0.008	1.027	1.008	0.134	4.334
	2270006010	Diesel	5 8 M	24	0	0	4914	10014	30054	39088	30888				0.438	4.4399	0.43		0.027	0.008	1.027	1.008	0.450	
Concrete Batch Plant	007000001	Diesel	T4	470	0	0	6240	10490	12480	12480	7280	0	0	0.371	0.13	2.5	0.50	1	0.027	0.008	1.027	1.008	0.124	2.520
Generator	2270002081					0		12480	12480			0	0				0.59			0.008	1.027	1.008	0.134	3.669
Tractor/Loader/Backhoe	2270002066	Diesel	T3	80	0	12.20	6240	12480	12400	12480	7280	0 2	ં પ	0.481	0.42	3.64	0.21	N FRIDE .	0.027	0.008	1.027	1.000	0.431	3.009
Site Preparation	0070001000	AT A Y A Y		3 month Carte	Sec. B. Same	Sec. 1	0040				<u> </u>	0	- Constanting		0.5500	in the second state	- <u>-</u>	2 Bass	0.007	0.000	1.027		0.500	million .
All Terrain Vehicle/MC	2270001030	Diesel	T4 T2	10	2340	9360	2340	0	0	0	0	0	0	0.408	0.5508	4.3	0.42		0.027	0.008		1.008	0.566	4.334
Tractor/Loader/Backhoe	2270002066 2270004066	Diesel	T3 T4	124 75	1560 1560	6240 4680	1560 0	0	0	0	0	0	0	0.433	0.42	3.03 3	0.21	1	0.027	0.008	1.027	1.008	0.431	3.054 3.024
Chipper/Stump Grinder Plate Compactor	2270004088	Diesel	T3	354	4680	18720	4680	0	0	0	0	0	0	0.367	0.1314	2.5	0.43	1	0.027	0.008	1.027	1.008	0.135	2.520
Air Compressor	2270002009	Diesel		55	2340	9360	4000	0	0	0	0	0	0	0.307	0.1314	2.5	0.43	1	0.027	0.008	1.027	1.008	0.175	3.024
Crawler Tractor	2270002069	Diesel	T3	96	1560	6240	0	0	0	0	0	0	0	0.408	0.1314	3.13	0.59	+	0.027	0.008	1.027	1.008	0.135	3.155
Crawler Tractor	2270002069	Diesel	T3	145	2340	9360	0	0	0	0	0	0	0	0.371	0.19	2,61	0.59	1	0.027	0.008	1.027	1.008	0.195	2.631
Crawler Tractor	2270002069	Diesel	T3	308	4680	18720	0	0	0	0	0	0	<u> </u>	0.371	0.17	2.61	0.59	1	0.027	0.008	1.027	1.008	0.175	2.631
Excavator	2270002036	Diesel	T3	250	4680	18720	0	0	0	1 0	0	0	0	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008	0.195	2.631
Excavator	2270002036	Diesel	T3	380	6240	24960	0	0	0	0	0	0	0	0.371	0.17	2.61	0.59	1	0.027	0.008	1.027	1.008	0.175	2.631
Excavator	2270002036	Diesel	T3	513	4680	18720	0	0	Ö	0	0	0	0	0.371	0.17	2.61	0.59	1	0.027	0.008	1.027	1,008	0.175	2.631
Excavator	2270002036	Diesel	T3	258	1560	6240	0	0	0	0	0	0	0	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008	0.195	2.631
Generator	2270006005	Diesel	T3	80	3120	12480	3120	0	0	0	0	0	0	0.408	0.18	3	0.43	1	0.027	0.008	1.027	1.008	0.185	3.024
Grader	2270002048	Diesel	T3	259	1560	4160	0	0	0	0	0	0	0	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008	0.195	2.631
Rubber Tire Loader	2270002060	Diesel	T3	168	2340	6240	0	0	0	0	0	0	0	0.371	0.19	2.61	0.59	1	0.027	0.008	1.027	1.008	0.195	2.631
Scraper	2270002018	Diesel	T3	181	3120	5200	0	0	0	0	0	0	0	0.371	0.19	2.61	0.59	1	0.027	0.008	.1.027	1.008	0.195	2.631
Tractor/Loader/Backhoe	2270002066	Diesel	T4	75	1560	4160	0	0	0	0	0	0	0	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008	0.134	3.024
Tractor/Loader/Backhoe	2270002066	Diesel	T3	189	2340	6240	0	0	0	0	0	0	0	0.433	0.42	3.03	0.21	1	0.027	0.008	1.027	1.008	0.431	3.054
Trencher	2270002030	Diesel	T3	450	1560	0	0	0	0	0	0	0	0	0.371	0.17	2.61	0.59	. 1	0.027	0.008	1.027	1.008	0.175	2.631
Grinder	2270004066	Diesel	T3	200	780	2080	0	0	0	0	0	0	0	0.367	0.1836	2.5	0.43	. 1	0.027	0.008	1.027	1.008	0.189	2.520
Off-Higway Truck	2270002051	Diesel	T3	325	2340	9360	4680	0	0	0	0	0	0	0.371	0.17	2.61	0.59	1	0.027	0.008	1.027	1.008	0.175	2.631
Off-Higway Truck	2270002051	Diesel	<u>T3</u>	469	17160	68640	17160	0	0	0	0	0	0.	0.371	0.17	2.61	0.59	1	0.027	0.008	1.027	1.008	0.175	2.631
				8 - 1 - A /		A			7.1	1.00	- GA-3		1. 2			2	5	1418	·····*		5-12-		. S.>-	Server & P
Excavator	2270002036	Diesel	T3	345	0	720	0	0	0	0	0	0	0	0.371	0.17	2.61	0.59	1	0.027	0.008	1.027	1.008	0.175	2.631
Excavator	2270002036	Diesel	T3	247	0	720	0	0	0	0	0	0	0	0.371	0.19	2.61	0.59	- 1	0.027	0.008	1.027	1.008	0.195	2.631
Tractor/Loader/Backhoe	2270002066	Diesel	T3	200	. 0	1440	0	0.	. 0	0	0	0	. 0	0.433	0.42	3.03.	0.21	1	0.027	0.008	1.027	1.008	0.431	3.054
Tractor/Loader/Backhoe	2270002066	Diesel	T4	66	0	720	0	0	0	0	0.	0	0	0.481	0.13	3	0.21	1	0.027	0.008	1.027	1.008	0.134	3.024
Plate Compactor	2270002009	Diesel	T3	99	0	720	0	0	.0 ~	0	. 0	<u>⇒_</u> a0.~~	0	0.408	0.18	3	0.43	1	0.027	0.008	1.027	1.008	0.185	3.024
Crane	2270002045	Diesel	T3	300	0	1440	0	. 0	0	0	0	0	.0.	0.367	0.17	2.5	0.43	1	0.027	0.008	1.027	1.008	0.175	2.520
Welder	2270006025	Diesel	T4.	33	0	4320	0	0	0	0	0.	0	0	0.481	0.13	3	0.21	<u> </u>	0.027	0.008	. 1.027	1.008	0.134	3.024
Other Construction Equipment	2270002081	Diesel	T3	548	0	720	0	0	0	0	0	0	0	0.371	0.17	2.61	0.59	1 31 - 1	0.027	0.008	1.027	1.008	0.175	2.631
All Terrain Vehicle/MC	2270001030	Diesel	T4	10	0	2160	0	0	0	0	0	0	0	0.408	0.5508	4.3	0.42	1	0.027	0.008	1.027	1.008	0.566	4.334
								-								·		<u> </u>						I
TOTAL (Tons)																								

NOTES:

Note 1: SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Brake-specific fuel consumption, zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009.

EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Note 3: Age factor and Deterioration factors calculated using Equation 4 from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009.

Age Factor = LF * cumulative hours / median life (where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes). Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for desel engines and A is taken from Table A4 from source

Note 4: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition"; April 2004, EPA-420-P-04-009. Adjusted EF = Efss * TAF * DF. (as stated in Note 2, EFss have TAFs built in)

Note 5: Annual VOC Emissions are calculated using the following calculation (1.053 * Adj. HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

1.053 is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015. Note 6: Annual NOx Emissions are calculated using the following calculation (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

Table B-1 Diesel Non-Road Engine Emissions

Ninehoo and Tuggara								T	1								[- -
Vinches and Tuggers						0.00	0.00			0.00	0.00	0.00	0.00	0.52	1.55	- 1.42	0.52	0.00	
ther Construction Equipment	0.00	0.00	0.00	0.00	0.03	0.09	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.52	1.55	1.42	0.52	0.00	
eneration Equipment												0.70	0.70	0.00					
Benerator	0.01	0.04	0.06	0.21	0.22	0.22	0.22	0.20	0.07	0.12	0.47	0.78	2.70	2.82	2.82	2.82	2.58	0.94	
Generator	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.02	0.00	0.00	0.05	0.59	0.65	0.65	0.65	0.65	0.38	
Generator	0.00	0.00	0.00	0.11	0.12	0.12	0.12	0.12	0.07	0.00	0.00	0.00	1.98	2.16	2,16	2.16	2.16	1.26	
Generator	0.00	0.00	0.00	0.09	0.10	0.10	0.10	0.10	0.05	0.00	0.00	0.00	1.57	1.88	1.88	1.88	1.88	0.89	
Generator	0.00	0.00	0.04	0.17	0.17	0.17	0.17	0.17	0.08	0.00	0.00	0.48	2.20	2.24	2.24	2.24	2,24	1.04	
Generator	0.00	0.00	0.01	0.11	0.14	0.14	0.14	0.14	0.06	0.00	0.00	0.15	1.42	1.79	1.79	1.79	1.79	0.82	
Generator	0.00	0.00	0.01	0.05	0.08	0.08	0.02	0.03	0.02	0.00	0.00	0.26	1.56	2.43	2.47	_0.69	1.11	0.61	
Small Capital Equipment			·										·						
Plate Compactor	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.17	0.55	0.55	0.55	0.55	0.55	0.19	
Plate Compactor	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.07	0.40	0.54	0.54	0.54	0.54	0.23	· .
Plate Compactor	0.00	0.00	0.00	0.02	0.03	0.03	0.03	0.03	0.02	0.00	0.00	0.11	0.66	0.91	0.91	0.91	0.88	0.52	
Generator	0.00	0.00	0.00	0.03	0.04	0.04	0.04	0.03	0.01	0.00	0.00	0.14	0.81	1.16	1.18	1.18	1.11	0.46	
Pump	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.07	0.08	0.08	0.08	0.08	0.05	
Pump	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.01	0.00	0.00	0.01	0.16	0.18	0.18	0.18	0.18	0.10	
Concrete Saw	0.00	0.00	0.00	0.04	0.05	0.05	0.05	0.05	0.02	0.00	0.00	0.09	0.90	1.08	1.08	1.08	1.08	0.51	
amper/Rammer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.14	0.14	0.14	0.12	0.06	
Tamper/Rammer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.14	0.14	0.14	0.12	0.06	
Pump	0.00	0.00	0.03	0.09	0.17	0.21	0.17	0.16	0.07	0.00	0.00	0.25	0.85	1.56	2.02	1.57	1.55	0.63	
Concrete Batch Plant							T	1											
Generator	0.00	0.00	0.27	0.54	0.54	0.54	0.31	0.00	0.00	0.00	0.00	4.81	9.61	9.61	9.61	5.61	0.00	0.00	
ractor/Loader/Backhoe	0.00	0.00	0.05	0.34	0.04	0.10	0.06	0.00	0.00	0.00	0.00	0.42	0.85	0.85	0.85	0.49	0.00	0.00	
	0.00	0.00	0.05		0.10	0.10	0.00			0.00	0.00	0.42	0.00	0.00	0.00	0.43	0.00	0.00	-
Site Preparation										0.05		0.05		0.00		0.00		0.00	
Il Terrain Vehicle/MC	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.19	0.05	0.00	0.00	0.00	0.00	0.00	0.00	
ractor/Loader/Backhoe	0.02	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.55	0.14	0.00	0.00	0.00	0.00	0.00	0.00	
Chipper/Stump Grinder	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Plate Compactor	0.14	0.58	0.14	0.00	0.00	0.00	0.00	0.00	0.00	1.98	7.92	1.98	0.00	0.00	0.00	0.00	0.00	0.00	
Air Compressor	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crawler Tractor	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crawler Tractor	0.05	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	2.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crawler Tractor	0.17	0.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.47	9.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavator	0.16	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	8.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavator	0.28	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	16.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavator	0.29	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.11	16.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Excavator	0.05	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Generator	0.02	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.36	1.43	0.36	0.00	0.00	0.00	0.00	0.00	0.00	
Grader	0.05	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rubber Tire Loader	0.05	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Scraper	0.08	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.97	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tractor/Loader/Backhoe	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ractor/Loader/Backhoe	0.05	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Frencher	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Grinder	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Off-Higway Truck	0.09	0.36	0.18	0.00	0.00	0.00	0.00	0.00	0.00	1.30	5.20	2.60	0.00	0.00	0.00	0.00	0.00	0.00	
Dff-Higway Truck	0.96	3.85	0.96	0.00	0.00	0.00	0.00	0.00	0.00	13.77	55.08	13.77	0.00	0.00	0.00	0.00	0.00	0.00	
3						,											-	T T	
Excavator	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
xcavator	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
ractor/Loader/Backhoe	0.00	0.03	0.00	0.00	0.00	0.00	0:00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	· 0.00	0.00	0.00	0.00	
ractor/Loader/Backhoe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	. 0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Plate Compactor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crane	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Velder	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-0.00	0.00	0.00	0.00	.0.00	0.00	
Dther Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.00	- 0.00	0.00	0.00	
All Terrain Vehicle/MC	0.00				0.00	0.00	0.00		0.00	0.00	0.66	0.00	0.00		0.00	0.00	0.00	0.00	and the second sec
	0.00	0.01	0.00	0.00	. 0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
OTAL (Tons)	0.00	0.00	0.00	0.04	40.07	10.07	11.33	6.71		36.38	138.12	48.12	150.05	100	100.00	170.90	104-04		Total construction sun
	2.62	9.93	3.29	9.94	12.37	12.67	1 11 33	1 6/1	1.34	6 6 6 K	1304 12 1	4812	15085	188 /7	143113	1 170.90.	101.31	1 19.44	

NOTES:

Note 1: SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Brake-specific fuel consumption, zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009.

EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Note 3: Age factor and Deterioration factors calculated using Equation 4 from "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009. Age Factor = LF * cumulative hours / median life (where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes).

Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for desel engines and A is taken from Table A4 from source

Note 4: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009. Adjusted EF = Efss * TAF * DF (as stated in Note 2, EFss have TAFs built in)

Note 5: Annual VOC Emissions are calculated using the following calculation (1.053 * Adj, HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

1.053 is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015. Note 6: Annual NOx Emissions are calculated using the following calculation (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

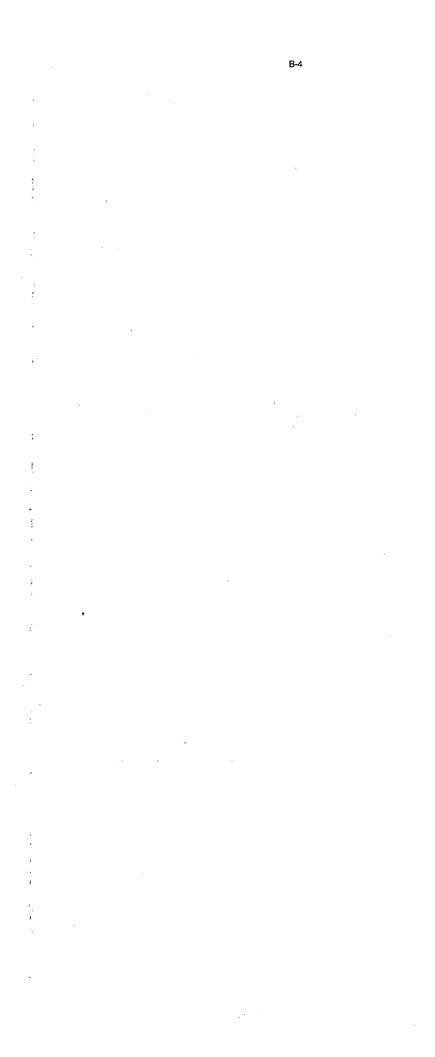


Table B-2 Gasoline Non-Road Engine Emissions

Equipment category based on	0001	Fuel	Engine Technology	Equipment										BSFC ²	EFss (g	/hp-hr) ²	Load	Age	"A'	. 3	Deterio fact	oration or ³	6 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	sted EF p-hr) ⁴
NONROAD classification	SCC1	Туре	Туре	Horsepower	2010 hrs	2011 hrs	2012 hrs	2013 hrs	2014 hrs	2015 hrs	2016 hrs	2017 hrs	2018 hrs	lb/hp-hr	нс	NOx	Factor 2	Factor ³	НС	NOx	HC	NOx	нс	NOx
			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·						-													· ,	
Forklift	2265003020	Gasoline	G4GT252	52	0	0	3369	17596	22464	22464	22464	22089	9734	0.484	0.27	0.69	0.3	1	0.64	0.15	1.640	1.150	0.443	0.79
		in the star							· · · ·						·		ļ						-	_
Aerial Lift	2265003010	Gasoline	G4GT252	75	0	0	0	1497	4492	4492	4492	4492	2995	0.484	0.27	0.69	0.46	1	0.64	0.15	1.640	1.150	0.443	0.79
																							15	
Plate Compactor	2260002009	Gasoline	G4N2O2	7	0	0	4212	21762	30654	29688	30888	39520	12402	0.74	4.16	2.77	0.55	1	1.095	. 0	2.095	1.000	9	2.770
Chipper/Stump Grinder	2265004066	Gasoline	L4N1	11	0	0	468	2106	2106	2106	2106	1754	0	0.693	3.91	5.25	0.78	1	1.095	0	2.095	1.000	8	5.250
Lawn Mower	2265004011	Gasoline	G4N1O2	3	0	0	936	5616	5616	5616	5616	5616	3276	0.781	6.51	2.446	0.78	1	1.753	0	2.753	1.000	18	2.446
Cement & Mortar Mixer	2260002042	Gasoline	G4N2O2	13	0	0	936	7020	8424	8424	8424	8424	3978	0.74	4.16	2,77	0.33	1	1.095	0	2.095	1.000	9	2.770
Pump	2265006010	Gasoline	G4GT25	6	0	0	2808	16380	22464	22464	22464	19332	9360	0.605	3.85	8.43	0.69	1	1.095	0	2.095	1.000	8	8.430
Snowblower	2265004036	Gasoline	G4N2O	11	0	0	468	5148	5616	5616	5616	5616	3276	0.94	5.2	3.5	0.35	1	1.095	0	2.095	1.000	11	3.500
Cement & Mortar Mixer	2260002042	Gasoline	G4N2O2	6	0	0	6318	16146	16848	16848	11700	9360	0	0.74	4.16	2.77	0.33	1	1.095	0	2.095	1.000	9	2.770
Cement & Mortar Mixer	2260002042	Gasoline	G4N2O2	8	0	0	6318	16146	16848	16848	11700	9360	0	0.74	4.16	2.77	0.33	1	1.095	0	2.095	1.000	9	2.770
Concrete Equipment	2260002039	Gasoline	G4N1O2	3	0	0	5850	23868	33462	33696	33696	27378	0	0.921	6.13	2.446	0.63	1	1.753	0	2.753	1.000	17	2.446
	and the second												1.1.1.1		4	•					ي کې د د		· • ·	T
Chain Saw	2260004021	Gasoline	G2H52	3	11700	35100	0	0	0	0	0	0	0	0.608	47.98	0.91	0.59	1	0.266	0	1.266	1.000	61	0.910
Roller	2265002015	Gasoline	G4N1O2	6	2340	9360	3900	0	0	0	0	0	0	0.781	6.51	2.446	0.62	1	1.095	0	2.095	1.000	14	2.446
Pump	2265006010	Gasoline	G4GT25	4	3120	12480	0	0	0	0	0	0	0	0.605	3.85	8.43	0.69	1	1.753	0	2.753	1.000	11	8.430
				ļ												• • •				ļ				+
TOTAL (Tons)											L									l				

NOTES:

Note 1: SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Brake-specific fuel consumption, zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009. Except forklift, aerial lift and cement/concrete equipment. EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Forklift, aerial lift, and concrete/cement equipment values are from Tables 1-7 of "Exhaust Emission Factors for Nonroad Erigine Modeling: Spark-Ignition", December2005, EPA420-R-05R-019

Note 3: Age factor and Deterioration factors calculated using Equation 4 from "Nonroad Spark-Ignition Engine Emission Deterioration Factors", December 2005, EPA-420-R-05-023.

Age Factor = LF * cumulative hours / median life {where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes}.

Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for 2-stroke engines =0.5 for 4-stroke engines and A is taken from Tables 1-7 from source

Note 4: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009. Adjusted EF = Efss * TAF * DF (as stated in Note 2, EFss have TAFs built in)

Note 5: Annual VOC Emissions are calculated using the following calculation (VOC/HC * Adj. HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

VOC/HR is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015. 0.933 for 4-stoke engines and 1.034 for 2-stroke engines Note 6: Annual NOx Emissions are calculated using the following calculation (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

B-5

Table B-2 Gasoline Non-Road Engine Emissions

Equipment category based on	VOC ⁵ tons	VOC tons	NOx ⁶ tons	NOx tons															
NONROAD classification	2010	2011	2012	2013	2014	2015	2016	2017	2018	2010	2011	2012	2013	2014	2015	2016*	2017	2018	
•								×											
Forklift	0.00	0.00	0.02	0.13	0.16	0.16	0.16	0.16	0.07	0.00	0.00	0.05	0.24	0.31	0.31	0.31	0.30	0.13	
	• •	•							-										
Aerial Lift	0.00	0.00	0.00	0.02	0.07	0.07	0.07	0.07	0.05	0.00	0.00	0.00	0.05	0.14	0.14	0.14	0.14	0.09	
		[٠,		-	····		ľ			1						1
Plate Compactor	0.00	0.00	0.15	0.75	1.06	1.02	1.07	1.36	0.43	0.00	0.00	0.05	0.26	0.36	0.35	0.36	0.46	0.15	
Chipper/Stump Grinder	0.00	0.00	0.03	0.15	0.15	0.15	0.15	0.13	0.00	0.00	0.00	0.02	0.10	0.10	0.10	0.10	0.09	0.00]
_awn Mower	0.00	0.00	0.04	0.24	0.24	0.24	0.24	0.24	0.14	0.00	0.00	0.01	0.04	0.04	0.04	0.04	0.04	0.02	
Cement & Mortar Mixer	0.00	0.00	0.04	0.27	0.32	0.32	0.32	0.32	0.15	0.00	0.00	0.01	0.09	0.11	0.11	0.11	0.11	0.05]
Pump	0.00	0.00	0.10	0.56	0.77	0.77	0.77	0.66	0.32	0.00	0.00	0.11	0.63	0.86	0.86	0.86	0.74	0.36	
Snowblower	0.00	0.00	0.02	0.22	0.24	0.24	0.24	0.24	0.14	0.00	0.00	0.01	0.08	0.08	0.08	0.08	0.08	0.05	
Cement & Mortar Mixer	0.00	0.00	0.11	0.29	0.30	0.30	0.21	0.17	0.00	0.00	0.00	0.04	0.10	0.10	0.10	0.07	0.06	0.00	
Cement & Mortar Mixer	0.00	0.00	0.15	0.38	0.40	0.40	0.28	0.22	0.00	0.00	0.00	0.05	0.13	0.14	0.14	0.09	0.08	0.00	
Concrete Equipment	0.00	0.00	0.19	0.78	1.10	1.11	1.11	0.90	0.00	0.00	0.00	0.03	0.12	0.17	0.17	0.17	0.14	0.00	
																			-
Chain Saw	1.43	4.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Roller	0.12	0.49	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.04	0.00	0.00	0.00	0.00	0.00	0.00]
Pump	0.09	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00]
TOTAL (Tons)	1.65	5.17	1.05	3.80	4.82	4.79	4.62	4.48	1.30	0.12	0.48	0.41	1.83	2.41	2.40	2.34	2.23	0.85	Total construction sum
	0	0	0.02	0.15	0.23	0.23	0.23	0.23	0.12	0.00	0	0.05	0.29	0.44	0.44	0.44	0.44	0.22	10 CFR 50 construction

NOTES:

Note 1: SCC code based on Appendix A of "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling", April 2004, EPA-420-P-04-005.

Note 2: Brake-specific fuel consumption, zero hour steady state emission factor (EFss; g/hp-hr), and load factor are from NMIM/NONROAD08 model factors dated April 5, 2009. Except forklift, aerial lift and cement/concrete equipment. EFss from NMIM/NONROAD08 have transient adjustment factors built in.

Forklift, aerial lift, and concrete/cement equipment values are from Tables 1-7 of "Exhaust Emission Factors for Nonroad Engine Modeling: Spark-Ignition", December2005, EPA420-R-05R-019

Note 3: Age factor and Deterioration factors calculated using Equation 4 from "Nonroad Spark-Ignition Engine Emission Deterioration Factors", December 2005, EPA-420-R-05-023.

Age Factor = LF * cumulative hours / median life {where Age factor is capped at 1. For this calculation, age factor is assumed to be 1 for simplification purposes}.

Deterioration Factor = 1 + (A * Age Factor^b), where b = 1 for 2-stroke engines =0.5 for 4-stroke engines and A is taken from Tables 1-7 from source

Note 4: Adjusted Emission Factors for HC and NOx are calculated using Equation 1 from, "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition", April 2004, EPA-420-P-04-009. Adjusted EF = Efss * TAF * DF (as stated in Note 2, EFss have TAFs built in)

Note 5: Annual VOC Emissions are calculated using the follow (VOC/HC * Adj. HC emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/b) VOC/HR is the ratio of VOC to HC from "Conversion Factors for Hydrocarbon Components", December 2005, EPA-420-P-05-015. 0.933 for 4-stoke engines and 1.034 for 2-stroke engines

Note 6: Annual NOx Emissions are calculated using the followi (Adj. NOx emission factor (g/hp-hr) * horsepower * hours operated * load factor) / (2000 lb/ton * 453.6 g/lb)

B-6

Table B-3a On-Road Vehicle Emissions 2010

Vehcle Classification	Fuel	Vehicle	scc	2010 Total operated	Avg.	Vehicular Miles Trav		ile 6.2 a/mi) ¹		nissions ns) ²
	Туре	Class		hrs	mph	VMT	voc	NOx	voc	NOx
Automotive				12 - 14 -			A /	ASS		
Light-Duty Gasoline Vehicle	Gasoline	LDGV	2201011	0	30.0	0	0.737	0.568	0.00	0.00
Light Duty		1. A. 199								¢.,
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	1404	20.0	28,080	0.785	0.731	0.02	0.02
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	0	20.0	0	0.785	0.731	0.00	0.00
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	0	20.0	0	1.421	1.375	0.00	0.00
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	0	20.0	0	1.421	1.375	0.00	0.00
Light-Duty Gasoline Truck 3	Gasoline	LDGT3	2201040	0	20.0	0	1.363	1.07	0.00	0.00
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	0	20.0	0	1.421	1.375	0.00	0.00
Trucks -Heavy Duty	1. No.	·	1.00			0				
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	0	15.0	0	0.411	7.776	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV2b	2230071	0	15.0	0	0.168	2.664	0.00	0.00
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	2230073	0	15.0	0	0.324	5.169	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	0	15.0	0	0.168	2.664	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	0	15.0	0	0.168	2.664	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.493	9.388	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.493	9.388	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	ő	15.0	0	0.168	2.664	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.493	9.388	0.00	0.00
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV7	2230073	0	15.0	0	0.402	6.444	0.00	0.00
Trailers				5 / J			с, ^с	1	0.00	0.00
Heavy-Duty Diesel Vehicle 5	Diesel	HDDV5	2230072	0	2.0	0	0.252	4.043	0.00	0.00
Personnel Carrier										
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	936	20.0	18,720	2.587	2.725	0.05	0.06
Diesel Commercial Bus	Diesel	HDDBT	2230075	0	35.0	0	0.29	13.105	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	20.0	0	2.587	2.725	0.00	0.00
Emergency Vehicles		1		······································		0		ga ago si	1	1. 1. 3.
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	30.0	0	2.587	2.725	0.00	0.00
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	20.0	0	0.18	2.831	0.00	0.00
Concrete / Aggregate										
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.493	9.388	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.493	9.388	0.00	0.00
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	2230073	0	15.0	0	0.324	5.169	0.00	0.00
Concrete Batch Plant		-								· · · ·
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	10.0	0	0.493	9.388	0.00	0.00
Site Preparation	545						e		16 16 N. 24	
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	2340	25.0	58,500	0.18	2.831	0.01	0.18
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	2340	20.0	46,800	0.411	7.776	0.02	0.40
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	1560	25.0	39,000	0.18	2.831	0.01	0.12
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	11700	30.0	351,000	2.587	2.725	1.00	1.05
a the second and the second		140 N. 1993		***Number.of	Round-	Vehicular	् Mob	ile 6.2	2010 En	nissions
Description	Fuel	Vehicle	SCC	Vehicles ³	Distance	Miles Trav		g/ml) ¹		ns) ²
	Туре	Class			miles	VMT	voc	NOx	voc	NOx
Employee Commute/ Delivery			1					4	S	
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	2201011	275	40.0	3432000	0.737	0.568	2.79	2.15
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV85	2230074	0	100.0	0	0.493	9.388	0.00	0.00
	I			DC	l NA Area on	road vehicle to	otal (direct	& indirect)	3.91	3.99
					L			1.4.1.1.1.1		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Employee Commute/ Delivery	and the second	<u>`</u> ```````````````````````````````````			5 2.0	No. 1				
Employee Commute/ Delivery	Gasoline	I DGV	2201011		20.0	430560	0 737	0 568	0.35	
Employee Commute/ Delivery 2 Light-Duty Gasoline Vehicle in Balt. NA Area Heavy-Duty Diesel Vehicle 8B in Balt. NA Area	Gasoline Diesel	LDGV HDDV8b	2201011 2230074	<u>69</u> 0	20.0 50.0	430560 0	0.737	0.568	0.35	0.27

Notes

Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation (VMT (miles) * Emission factor (g/mi)) / (2000 lb/ton * 453.6 g/lb) Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

...

)

Table B-3b On-Road Vehicle Emissions 2011

s Vehcle Classification	Fuel	Vehicle	SCC	2011 Total operated	Avg. Speed	Vehicular Miles Trav		ile 6.2 (g/ml) ¹ .		nissions ins)
	Туре	Class		hrs	mph	VMT	VOC	NOx	VOC	NOx
Automotive						e e e e e e e e e e e e e e e e e e e			4	9
Light-Duty Gasoline Vehicle	Gasoline	LDGV	2201011	0	30.0	0	0.743	0.571	0.00	0.00
Light Duty	-1 -				њ. 	6	1			
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	5616	20.0	112,320	0.827	0.715	0.10	0.09
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	0	20.0	0	0.827	0.715	0.00	0.00
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	0	20.0	0	1.488	1.182	0.00	0.00
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	0	20.0	0	1.488	1.182	0.00	0.00
Light-Duty Gasoline Truck 3	Gasoline	LDGT3	2201040	0	20.0	0	1.488	1.182	0.00	0.00
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	0	20.0	0	1.488	1.182	0.00	0.00
Trucks -Heavy Duty				Sec. 24. 18						·
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	0	15.0	0	0.39	6.593	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV2b	2230071	0	15.0	0	0.156	2.238	0.00	0.00
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	2230073	0	15.0	0	0.304	4.409	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	0	15.0	0	0.156	2.238	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	0	15.0	0	0.156	2.238	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.467	8.081	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.467	8.081	0.00	0.00
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	0	15.0	0	0.156	2.238	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	15.0	0	0.467	8.081	0.00	0.00
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV7	2230073	0	15.0	0	0.376	5.501	0.00	0.00
Trailers			#		1	1			the second	1.684
Heavy-Duty Diesel Vehicle 5	Diesel	HDDV5	2230072	0	2.0	0	0.241	3.562	0.00	0.00
Personnel Carrier										1. 1
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	7488	20.0	149,760	2.595	2.727	0.43	0.45
Diesel Commercial Bus	Diesel	HDDBT	2230075	0	35.0	0	0.278	11.752	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	20.0	0	2.595	2.727	0.00	0.00
Emergency Vehicles		100710								
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	30.0	0	2.595	2.727	0.00	0.00
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	20.0	0	0.168	2.329	0.00	0.00
Concrete / Aggregate	Discut	HDDV8b	0000074	a a ser a s	45.0			0.004		
Heavy-Duty Diesel Vehicle 8B	Diesel		2230074	0	15.0	0	0.467	8.081	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b HDDV6	2230074	0	15.0		0.467	8.081	0.00	0.00
Heavy-Duty Deisel Vehicle 6	Diesel	HUDV6	2230073	<u> </u>	15.0	0	0.304	4.409	0.00	0.00
Concrete Batch Plant Annual Plant Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	0	10.0	0	0.467	8.081	0.00	0.00
Site Preparation	Diesei	HUDVOD	2230074	<u> </u>	10.0	- -	0.407	0.001	0.00	0.00
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	9360	25.0	234,000	0.168	2.329	0.04	0.60
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8 HDDV8a	2230072	9360	20.0	187,200	0.166	6.593	0.04	1.36
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV8a HDDV3	2230074	6240	20.0	156,000	0.39	2.329	0.08	0.40
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230072	46800	30.0	1,404,000	2.595	2.329	4.02	4.22
Dredging Equipment	Diesei	LUDITZ	2230000	40000	30.0	1,404,000	2.090	2.121	4.02	4.22
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	18000	30.0	540000	0.39	6.593	0.23	3.92
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2230074	4320	45.0	194400	1.488	1.182	0.23	0.25
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201040	4320	45.0	194400	0.827	0.715	0.32	0.25
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	720	30.0	21600	0.168	2.329	0.00	0.15
10447 Daty Diddel 4011010 0	1010301	10010	2200072		<u> </u>	21000	0.100	1 2.020	0.00	10.00
				htunik ás ci		i. Vahlaulei	. Mak	lie 6.2	0010 5	- ITalacia
The second states and the se	- ∗Fuel		800	Number of	Round-trip	Vehicular		6 22		nissions
Description	Type	Vehicle #	SCC	Vehicles ³	Distance	Miles Trav		(g/mi) ¹		ns) ²
5.+ ····		Class			miles -	VMT	VOC	NOx	VOC *	NOx
Employee Commute/ Delivery	0	1 DOV	0001011	4404	40.0	14400000	0.740		14.07	0.40
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	2201011	1161	40.0	14489280	0.743	0.571	11.87	9.12
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	2230074	0	100.0	0	0.168	2.329	0.00	0.00
	L		I	L	<u> </u>	I		1		
					DC NA Area o	nroad vehicle	total (direc	t & indirect)	17.30	20.63
Employee Commute/ Delivery.	rae -		<u></u>	· 小学家的"	and the second second	5. S. M. C. A.		5 0 0	in Alteria	1 . A.A.
Light-Duty Gasoline Vehicle in Balt. NA Area	Gasoline	LDGV	2201011	290	20.0	1809600	0.743	0.571	1.48	1.14
Heavy-Duty Diesel Vehicle 88 in Balt. NA Area	Diesel	HDDV8b	2230074	0	50.0	0	0.168	2.329	0.00	0.00
					D.	altimore NA Are			1.48	1.14

Notes

Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulatin g the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation (VMT (miles) * Emission factor (g/mi)) / (2000 lb/ton * 453.6 g/lb) Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

Table B-3c On-Road Vehicle Emissions 2012

Description	Fuel	Vehicle	SCC	2012 Total operated	Avg.	Vehicular Miles Trav		le 6.2 a/mi) ¹		nissions ns)
Description	Туре		500		mak	VMT	HC		нс	
Automotive		Class		hrs	mph	VMI	nu	NOx		NOx
Light-Duty Gasoline Vehicle	Gasoline	LDGV	2201011	811	30.0	24,330	0.612	0.47	0.02	0.01
Light Duty	Clasoline		2201011	011	0	24,000	0.012		0.02	
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	8892	20.0	177,840	0.666	0.611	0.13	0.12
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	3900	20.0	78.000	0.666	0.611	0.06	0.05
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	3432	20.0	68,640	1.243	1.234	0.00	0.03
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	2184	20.0	43.680	1.243	1.234	0.09	0.05
Light-Duty Gasoline Truck 3	Gasoline	LDGT3	2201040	2340	20.0	46,800	1.187	0.961	0.06	0.08
Light-Duty Gasoline Truck 3	Gasoline	LDG13	2201040	2808	20.0	46,800 56,160	1.243	1.234	0.08	0.03
	Gasoine	LDG14	2201040	2000	20.0	0	0	1.234	0.00	0.08
Trucks -Heavy Duty	and the second second		0000074						,	
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	9546	15.0	143,190	0.36	5.588	0.06	0.88
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV2b	2230071	1872	15.0	28,080	0.146	1.874	0.00	0.06
Heavy-Duty Delsel Vehicle 6	Diesel	HDDV6	2230073	1123	15.0	16,845	0.282	3.754	0.01	0.07
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	1871	15.0	28,065	0.146	1.874	0.00	0.06
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	1497	15.0	22,455	0.146	1.874	0.00	0.05
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	2106	15.0	31,590	0.429	6.98	0.01	0.24
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	2106	15.0	31,590	0.429	6.98	0.01	0.24
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	1885	15.0	28,275	0.146	1.874	0.00	0.06
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	2246	15.0	33,690	0.429	6.98	0.02	0.26
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV7	2230073	2808	15.0	42,120	0.349	4.705	0.02	0.22
Trailers	oy 8.	, <u> </u>			0	0	° 0 *	: 0		100
Heavy-Duty Diesel Vehicle 5	Diesel	HDDV5	2230072		2.0	0	0.232	3.132	0.00	0.00
Personnel Carrier	Υ.				0	0	0	.0		1 <u>2</u> ~ · ·
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	9672	20.0	193,440	2.595	2.727	0.55	0.58
Diesel Commercial Bus	Diesel	HDDBT	2230075		35.0	0	0.264	10.469	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	5928	20.0	118,560	2.595	2.727	0.34	0.36
Emergency Vehicles				1.1	0	0	0 .	0		
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	561	30.0	16,830	2.595	2.727	0.05	0.05
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	62	20.0	1,240	0.155	1.871	0.00	0.00
Concrete / Aggregate	1 m	1.14		The second second	0	0 *	0	 ○ ○ 	2	1.13.1
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	624	15.0	9,360	0.429	6.98	0.00	0.07
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	1560	15.0	23,400	0.429	6.98	0.01	0.18
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	2230073	0	15.0	0	0.282	3.754	0.00	0.00
Concrete Batch Plant		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		e				<u>, , , , , , , , , , , , , , , , , , , </u>		
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	37440	10.0	374,400	0.429	6.98	0.18	2.88
Site Preparation	-512 L		1	1. • 1. • 1. · 1.	0	0	0	0	2	
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	2340	25.0	58,500	0.155	1.871	0.01	0.12
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	2340	20.0	46,800	0.36	5.588	0.02	0.29
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	1560	25.0	39,000	0.155	1.871	0.01	0.08
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	11700	30.0	351,000	2.595	2.727	1.00	1.06
	Fuel			Number of	Round-	Vehicular	Mob	ile 6.2	2010 En	nissions
Description		Vehicle	SCC	Vehicles ³	Distance	Miles Trav	EFs (g/mi) ¹	(to	ns) ²
	Туре	Class	·		miles	VMT	VOC	NOx	VOC	NOx
Employee Commute/ Delivery	· · ·				0		0	0		
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	2201011	2008	40.0	25059840	0.612	0.47	16.91	12.98
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	2230074	3930	100.0	393000	0.429	6.98	0.19	3.02
They buy blobbly tollicle ob in DO NA Alda	0.030	1	22000.4	0000	100.0	000000	0.425	0.00	0.10	0.02
	I	t		DC	NA Area on	road vehicle to	tal (direct	& indirect)	19.90	24.28
Employee Commute/ Delivery						1. .		1.0		1.1.1.1
cilipioyee commute/ Delivery	1. 2 S. 4.	J	1 2 2 2 2	1 · · · ·	1		N 12 N 12	1. 1. 1. 1. 1. 1.		4 în 1 i

Employee Commute/ Delivery						1. Mar 1. 1. 1. 1.	N	1		
Light-Duty Gasoline Vehicle in Balt. NA Area	Gasoline	LDGV	2201011	502	20.0	3132480	0.612	0.47	2.11	1.62
Heavy-Duty Diesel Vehicle 8B in Balt. NA Area	Diesel	HDDV8b	2230074	1179	50.0	58950	0.429	6.98	0.03	0.45
					Bal	timore NA Are	a onroad v	ehicle total	2.14	2.08

Notes Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

1

Table B-3d On-Road Vehicle Emissions 2013

Description	Fuel	Vehicle	scc	2013 Total operated	Average Speed	Vehicular Miles Trav	Criteria EFs (Pollutants	2013 En (to	
recemption	Туре	Class		hrs	mph	VMT	HC	NOx	нс	NÖx
Automotive		01033				V 101 1				1100
Light-Duty Gasoline Vehicle	Gasoline	LDGV	2201011	1,497	30.0	44,910	0.563	0.428	0.03	0.02
Light Duty	Clasemie	LUGI	2201011	1,437	50.0	44,010	0.500	0.420	0.00	0.02
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	9360	20.0	187,200	0.624	0.554	0.13	0.11
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	14040	20.0	280,800	0.624	0.554	0.10	0.17
Light-Duty Gasoline Truck 4	Gasoline	LDGT2	2201020	14664	20.0	293,280	1.175	1.158	0.13	0.37
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	10296	20.0	205,920	1.175	1.158	0.38	0.26
Light-Duty Gasoline Truck 3	Gasoline	LDGT3	2201040	3744	20.0	74.880	1.12	0.9	0.09	0.20
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	7956	20.0	159,120	1.175	1.158	0.03	0.20
Trucks -Heavy Duty	Clasuinie	10014	2201040	/ 330	20.0	133,120	1.1/3	1.150	0.21	0.20
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	15724	15.0	235.860	0.345	4.764	0.09	1.24
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV8a HDDV2b	2230074	7862	15.0	117,930	0.345	1.601	0.09	0.21
Heavy-Duty Deisel Vehicle 2	Diesel	HDDV25	2230071	6177	15.0	92,655	0.14	3.237	0.02	0.21
Heavy-Duty Deisel Vehicle 8	Diesel	LDDT12	2230073	7113	15.0	106,695	0.200	1.601	0.03	0.19
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	7113	15.0	106,695	0.14	1.601	0.02	0.19
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230000	7020	15.0	105,300	0.14	6.028	0.02	0.19
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	7020	15.0	105,300	0.41	6.028	0.05	0.70
Heavy-Duty Desel Vehicle 2B	Diesel	LDDT12	2230074	4492	15.0	67,380	0.41	1.601	0.05	0.12
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230080	6240	15.0	93,600	0.14	6.028	0.01	0.12
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV80	2230074	12324	15.0	184,860	0.331	4.054	0.04	0.82
Trailers		HDDV/	2230073	12324	15.0	104,000	0.001	4.034	0.07	0.63
	Diesel	HDDV5	2230072	1684	2.0	3,368	0.225	2,792	0.00	0.01
Heavy-Duty Diesel Vehicle 5 Personnel Carrier		HUDVS	2230072	1004	2.0	3,308	0.225	2.792	0.00	0.01
Personnel Carrier	Diesel	LDDT12	2230060	35888	20.0	717 760	2.595	2.727	2.05	2.16
Diesel Commercial Bus	Diesel	HDDBT	2230060	30000	35.0	0	0.258	9.26	2.05	0.00
	Diesel	LDDT12	2230075	16692	20.0	333,840	2.595	9.26	0.00	1.00
Light-Duty Diesel Truck 1 and 2	Diesei	LUDTIZ	2230060	10092	20.0	333,040	2.595	2.121	0.95	1.00
Emergency Vehicles	Diesel	LDDT12	2230060	1591	··· ·	47,730	2 D E DE	2.727	0.14	0.14
Light-Duty Diesel Truck 1 and 2	Diesel	HDDV3	2230060	374	30.0	7,480	2.595	1.556	0.14	0.14
Heavy-Duty Diesel Vehicle 3 Concrete / Aggregate	Diesei	HDDV3	2230072	3/4	20.0	7,400	0.140	1,556	0.00	0.01
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	936	15.0	14,040	0.41	, 6.028	0.01	0.09
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	3900	15.0	58,500	0.41	6.028	0.01	0.09
	Diesel	HDDV80 HDDV6	2230074	0	15.0	0	0.268	. 3.237	0.03	0.00
Heavy-Duty Deisel Vehicle 6 Concrete Batch Plant	Diesei	HDDV6	2230073	U	15.0	0	0.200	. 3.23/	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	74880	10.0	748,800	0.41	6.028	0.34	4.98
Site Preparation	Diesei		2230074	74000	10.0	740,000	0.41	0.020	0.34	4.95
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	25.0	0	0.148	1.556	0.00	0.00
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV3 HDDV8a	2230072	0	20.0	0	0.345	4.764	0.00	0.00
		HDDV0a HDDV3	2230074	0	25.0	0	0.345	1.556	0.00	
Heavy-Duty Diesel Vehicle 3	Diesel									0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	30.0	0	2.595	2.727	0.00	0.00
				Abim binis of st	Description	Vahlaulas	Mak	1.0.0	0040.5-	
	Fuel			Number of	Round-	Vehicular		le 6.2	2010,En	
Description	Туре	Vehicle	SCC	Vehicles ³	Distance	Miles Trav	EFs ((tor	
14 Q		Class (miles	VMT	VOC	NOx		NOx
Employee Commute/ Delivery		3			0					
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	2201011	2769	40.0	34557120	0.563	0.428	21.45	16.30
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	2230074	4400	100.0	440000	0.41	6.028	0.20	2.92
· · · · · · · · · · · · · · · · · · ·						L				
				DC	NA Area on	road vehicle t	otal (direct	& Indirect)	26.84	34.35
Employee Commute/ Delivery					(#R)		Part No.	1	- 1 35-1	4
Light-Duty Gasoline Vehicle in Balt. NA Area	Gasoline	LDGV	2201011	692	20.0	4318080	0.563	0.428	2.68	2.04

Light-Duty Gasoline Vehicle in Balt. NA Area	Gasoline	LDGV	2201011	692	20.0	4318080	0.563	0.428	2.68	2.04
Heavy-Duty Diesel Vehicle 8B in Balt. NA Area	Diesel	HDDV8b	2230074	1320	50.0	66000	0.41	6.028	0.03	0.44
						timore NA Area		ehicle total	2.71	2.48

Notes Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

Table B-3e On-Road Vehicle Emissions 2014

Description	Fuel	Vehicle	scc	2014 Total	Average Speed	Vehicular Miles Trav	N 2 .	Pollutants q/mi) ¹	2014 Em	
	Туре	Class		hrs	mph	VMT	HC	NOx	HC	NOx
Automotive		Cluss		100 C				1107	1949 ^e	1100
ight-Duty Gasoline Vehicle	Gasoline	LDGV	2201011	1,497	30.0	44,910	0.52	0.391	0.03	0.02
light Duty	Clasomito		LLOIDII	1,40, 1,40,	0000			0.001	0.00 (4) (4)	· ()
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	9360	20.0	187,200	0.590	0.507	0.12	0.10
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	14976	20.0	299,520	0.590	0.507	0.19	0.17
Light-Duty Gasoline Truck 4	Gasoline	LDGT2	2201040	14976	20.0	299,520	1.113	1.092	0.37	0.36
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	11232	20.0	224,640	1.113	1.092	0.28	0.27
Light-Duty Gasoline Truck 3	Gasoline	LDGT3	2201040	3744	20.0	74,880	1.06	0.848	0.09	0.07
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	9360	20.0	187,200	1.113	1.092	0.23	0.23
Trucks -Heavy Duty	Clasoline	LDCIT	2201040		20.0	107,200		1.052	1 8 8	0.20
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	15724	15.0	235.860	0.332	3.998	0.09	1.04
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV8a HDDV2b	2230074	11232	15.0	168,480	0.133	1.384	0.03	0.26
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	2230073	8985	15.0	134,775	0.254	2.774	0.02	0.41
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230073	11232	15.0	168,480	0.133	1.384	0.04	0.41
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	8985	15.0	134,775	0.133	1.384	0.02	0.20
Heavy-Duty Diesel Vehicle 28	Diesel	HDDV8b	2230080	8424	15.0	126,360	0.392	5.122	0.02	0.21
Heavy-Duty Diesel Venicle 88 Heavy-Duty Diesel Vehicle 88	Diesel	HDDV8b	2230074	8424	15.0	126,360	0.392	5.122	0.05	0.71
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230074	4492	15.0	67,380	0.133	1.384	0.05	0.10
Heavy-Duty Delsel Vehicle 28	Diesel	HDDV8b	2230080	8985	15.0	134,775	0.392	5.122	0.01	0.76
Heavy-Duty Diesel Vehicle 88 Heavy-Duty Diesel Vehicle 7	Diesel	HDDV80 HDDV7	2230074	12048	15.0	180,720	0.392	3.454	0.06	0.69
Trailers	Diesei		2230073	12040	15.0	160,720	0.312	3.454	0.06	0.69
	Diesel	HDDV5	2230072	4492	2.0	8,984	0.213	2.491	0.00	0.02
Heavy-Duty Diesel Vehicle 5	Diesei	HDUV5	2230072	4492	2.0	6,964		2.491	0.00	0.02
Personnel Carrier	Dissal	LDDT12	2230060	53352	20.0	1.067.040	2.595	2.727	3.05	3.21
Light-Duty Diesel Truck 1 and 2 Diesel Commercial Bus	Diesel Diesel	HDDBT	2230060	28080	35.0	982,800	0.253	8.118	0.27	8.79
	Diesel	LDDT12	2230073	18720	20.0	374,400	2.595	2.727	1.07	1.13
Light-Duty Diesel Truck 1 and 2	Diesei		2230060	10/20	20.0	374,400	2.595	2.121	1.07	
Emergency Vehicles	Distal	LDDT12	2230060	2246	30.0	67,380	2.595	2.727	0.19	0.20
Light-Duty Diesel Truck 1 and 2	Diesel Diesel	HDDV3	2230060	374	20.0	7,480	0.142	1.309	0.00	0.20
Heavy-Duty Diesel Vehicle 3	Diesei	HDDV3	2230072		20.0	7,460	0.142	1.309	0.00	0.01
	Distal	HDDV8b	2230074	936	15.0	14.040	0.392	5.122	0.01	0.08
Heavy-Duty Diesel Vehicle 8B	Diesel		2230074	4212	15.0			·	0.01	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b				63,180	0.392	5.122		0.36
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	2230073	0	15.0	0	0.254	2.774	0.00	0.00
Concrete Batch Plant			0000071	25	100	740.000	<u> </u>	C 400		1. 28
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	74880	10.0	748,800	0.392	5.122	0.32	4.23
Site Preparation			0000070				- 14 K K - 1 - 1			
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	25.0	0	0.142	1.309	0.00	0.00
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	0	20.0	0	0.332	3.998	0.00	0.00
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	25.0	0	0.142	1.309	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	30.0		2.595	2.727	0.00	0.00
Description	Fuel	Vehicle	scc	Number of Vehicles 3	Round- Distance	Vehicular Miles Trav	あたい たい たまご	ile 6.2 g/mi) ¹	2010 En	
Description	Туре	Class	,,	venicies	miles	VMT	VOC	g/mi) NOx	VOC	NOx
		Class			miles	VIVII				NOX
Employee Commute/ Delivery					and the second		2	0.001		
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	2201011	3167	40.0	39524160	0.52	0.391	22.66	17.04
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	2230074	2940	100.0	294000	0.392	5.122	0.13	1.66
		L	L	L		l				40.05
		1		DC	NA Area on	road vehicle t	otal (direct	& indirect)	29.47	43.09
Employee Commute/ Delivery		1. .			an and an		1. 7. 4. 5		×	

Employee Commuter Derivery			14 a a	A Second Second	S. S. 18 (6) 11 11	1	A State of the		an in	
Light-Duty Gasoline Vehicle in Balt. NA Area	Gasoline	LDGV	2201011	792	20.0	4942080	0.52	0.391	2.83	2.13
Heavy-Duty Diesel Vehicle 8B in Balt. NA Area	Diesel	HDDV8b	2230074	882	50.0	44100	0.392	5.122	0.02	0.25
					Balt	imore NA Area	a onroad v	ehicle total	2.85	2.38

Notes Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

,

.

Table B-3f On-Road Vehicle Emissions 2015

÷

Description	Fuel	Vehicle	scc	2015 Total operated	Average Speed	Vehicular Miles Trav		Pollutants a/mi) ¹	2015 Emissions (tons)		
Description	Type	Class	300	hrs	mph	VMT	HC	NOx	HC	NOx	
Automotive		91033								THOX	
ight-Duty Gasoline Vehicle	Gasoline	LDGV	2201011	1,497	30.0	44,910	0.483	0.359	0.02	0.02	
Light Duty	Gasolino		LLOIOII	1,407	00.0		0.400	0.000	0.02	0.02	
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	9360	20.0	187,200	0.561	0.468	0.12	0.10	
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	16848	20.0	336,960	0.561	0.468	0.12	0.10	
Light-Duty Gasoline Truck 4	Gasoline	LDGT2	2201020	14976	20.0	299,520	1.056	1.033	0.35	0.34	
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	11232	20.0	299,520	1.056	1.033	0.35	0.34	
Light-Duty Gasoline Truck 3	Gasoline	LDGT4	2201040	3744	20.0	74,880	1.004	0.802	0.26	0.26	
	Gasoline	LDGT3	2201040	9360	20.0		1.004		0.08		
Light-Duty Gasoline Truck 4	Gasoline		2201040	9360	20.0	187,200	1.056	1.033	0.22	0.21	
	Diseal		0000074				0.010	1 N N	0.00	1.16.201	
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	15724	15.0	235,860	0.316	3.425	0.08	0.89	
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV2b HDDV6	2230071	11232 8985	15.0	168,480	0.128	1.188	0.02	0.22	
Heavy-Duty Deisel Vehicle 6	Diesel		2230073		15.0	134,775	0.241	2.397	0.04	0.36	
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	11232	15.0	168,480	0.128	1.188	0.02	0.22	
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	8985	15.0	134,775	0.128	1.188	0.02	0.18	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	8424	15.0	126,360	0.37	4.455	0.05	0.62	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	8424	15.0	126,360	0.37	4.455	0.05	0.62	
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	4922	15.0	73,830	0.128	1.188	0.01	0.10	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	8985	15.0	134,775	0.37	4.455	0.05	0.66	
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV7	2230073	12048	15.0	180,720	0.297	2.983	0.06	0.59	
Trailers					s		•				
Heavy-Duty Diesel Vehicle 5	Diesel	HDDV5	2230072	4492	2.0	8,984	0.204	2.183	0.00	0.02	
Personnel Carrier				Sec. Car	25					1. A.	
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	56160	20.0	1,123,200	2.595	2.727	3.21	3.38	
Diesel Commercial Bus	Diesel	HDDBT	2230075	40524	35.0	1,418,340	0.25	7.082	0.39	11.07	
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	18720	20.0	374,400	2.595	2.727	1.07	1.13	
Emergency Vehicles								1. A.	÷		
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	2246	30.0	67,380	2.595	2.727	0.19	0.20	
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	374	20.0	7,480	0.137	1.095	0.00	0.01	
Concrete / Aggregate		1	1. S.								
Heavy-Duty Diesel Vehicle 8B	Dieseł	HDDV8b	2230074	0	15.0	0.	0.37	4.455	0.00	0.00	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	5616	15.0	84,240	0.37	4.455	0.03	0.41	
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	2230073	0	15.0	0	0.241	2.397	0.00	0.00	
Concrete Batch Plant			1					* •		·	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	74880	10.0	748,800	0.37	4.455	0.31	3.68	
Site Preparation		1 A 41			×			5,11			
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	25.0	0	0.137	1.095	0.00	0.00	
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	0	20.0	0	0.316	3.425	0.00	0.00	
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	25.0	0	0.137	1.095	0.00	0.00	
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	30.0	0	2.595	2.727	0.00	0.00	
				Number of	Round-	Vehicular	Mob	ile 6.2	2010 En	nissions	
Description	Fuel	Vehicle	SCC	Vehicles ³	Distance	Miles Trav		g/mi) ¹		ns) ²	
	Туре	Class		Veniciea	miles	VMT	voc	NOx	VOC	NOx	
Employee Commute/ Ballyers		01035		· · · · ·	0	****	0	****	100	NUX	
Employee Commute/ Delivery	Ossalia	·	0001011	0000	i and a state of the	05410040		0	10.00		
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	2201011	2838	40.0	35418240	0.483	0.359	18.86	14.02	
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	2230074	500	100.0	50000	0.37	4.455	0.02	0.25	
	L	L	I	L	<u> </u>	L	L.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
		1		DC	NA Area on	road vehicle to	otal (direct	& indirect)	25.76	39.78	
Employee Commute/ Delivery						2.1 1	· · · · ·				
Light-Duty Gasoline Vehicle in Balt. NA Area	Gasoline	LDGV	2201011	710	20.0	4430400	0.483	0.359	2.36	1.75	
Heavy-Duty Diesel Vehicle 8B in Balt. NA Area	Diese	HDDV8b	2230074	150	50.0	7500	0.37	4.455	0.00	0.04	

2.36

1.79

Baltimore NA Area onroad vehicle total

Notes

Note 3: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

Table B-3g On-Road Vehicle Emissions 2016

Description	Fuel	Vehicle	SCC	2016 Total operated	Average Speed	Vehicular Miles Trav		Pollutants a/mi) ¹	2016 Emissions (tons)		
	Туре	Class		hrs	mph	VMT	HC	NOx	HC	NOx	
Automotive		8.845					·			19 m (19) 19 / 19 /	
Light-Duty Gasoline Vehicle	Gasoline	LDGV	2201011	1,497	30.0	44,910	0.453	0.33	0.02	0.02	
Light Duty										N	
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	9360	20.0	187,200	0.536	0.431	0.11	0.09	
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	2201020	18720	20.0	374,400	0.536	0.431	0.22	0.18	
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	14976	20.0	299,520	0.997	0.97	0.33	0.32	
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	11232	20.0	224,640	0.997	0.97	0.25	0.24	
Light-Duty Gasoline Truck 3	Gasoline	LDGT3	2201040	3744	20.0	74,880	0.947	0.752	0.08	0.06	
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2201040	7800	20.0	156.000	0.997	0.97	0.17	0.17	
Trucks -Heavy Duty											
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	15537	15.0	233,055	0.308	2.973	0.08	0.76	
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV2b	2230071	11232	15.0	168,480	0.124	1.019	0.02	0.19	
Heavy-Duty Deisel Vehicle 6	Diese	HDDV6	2230073	8985	15.0	134,775	0.232	2.073	0.02	0.31	
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230073	11232	15.0	168,480	0.124	1.019	0.02	0.19	
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	2230060	8985	15.0	134,775	0.124	1.019	0.02	0.15	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	8424	15.0	126,360	0.359	3.942	0.02	0.55	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV85	2230074	8424	15.0	126,360	0.359	3.942	0.05	0.55	
Heavy-Duty Diesel Vehicle 2B	Diesel	LDDT12	2230074	4922	15.0	73,830	0.339	1.019	0.05	0.08	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230080	8985	15.0	134,775	0.124	3.942	0.01	0.08	
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV80	2230074	12048	15.0	180,720	0.335	2.587	0.05	0.59	
	Diazei		2230073	12040	15.0	180,720	0.200	2.30/	0.00	0.52	
Trailers	Diesel	HDDV5	2230072	2620	2.0	5,240	0.198	1.957	0.00	0.01	
Heavy-Duty Diesel Vehicle 5 Personnel Carrier	Diesei	HUUVS	2230072	2020	2.0	5,240	0.190	1.957	0.00	0.01	
	D		2230060	56160		1.123.200	0.505	2.727	0.01		
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12 HDDBT	2230080	23712	20.0		2.595 0.247	· · · · · ·	3.21 0.23	3.38	
Diesel Commercial Bus	Diesel	LDDT12			35.0	829,920		6.117	1.07	5.60	
Light-Duty Diesel Truck 1 and 2	Diesel	LUDTIZ	2230060	18720	20.0	374,400	2.595	2.727	1.07	1.13	
Emergency Vehicles	Distal	LDDT12	0000000	0040	30.0	67.000	0.505	2.727	0.19	0.20	
Light-Duty Diesel Truck 1 and 2	Diesel		2230060	2246 374	20.0	67,380	2.595 0.133	0.927	0.19		
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	3/4	20.0	7,480	0.155		0.00	0.01	
Concrete / Aggregate	Disast	HDDV8b	2230074	0	15.0	0	0.359	3.942	0.00	0.00	
Heavy-Duty Diesel Vehicle 8B	Diesel										
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b HDDV6	2230074 2230073	1482 0	15.0 15.0	22,230	0.359	3.942	0.01	0.10	
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6		U	15.0		0.232	2.073	0.00	0.00	
	Discal		0000074	74000	10.0		0.050	0.040	0.00	-	
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2230074	74880	10.0	748,800	0.359	3.942	0.30	3.25	
Site Preparation	Discol			<u> </u>	05.0	0	0.400	0.007	0.00	0.00	
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	25.0		0.133	0.927	0.00	0.00	
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	2230074	0	20.0	0	0.308	2.973	0.00	0.00	
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	2230072	0	25.0	0	0.133	0.927	0.00	0.00	
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2230060	0	30.0	0	2.595	2.727	0.00	0.00	
				L Number of the last	Der	37-1-2 ···		Un 6 0 1	00.10 -		
	Fuel	1		Number of	Round-	Vehicular		lle 6.2		nissions	
Description	Туре	Vehicle	scc	Vehicles ³	Distance	Miles Trav		g/mi) ¹		ns) ²	
Freedow Armonita (Delivera		Class		;	miles	VMT	voc	NOx	VOC	NOx	
Employee Commute/ Delivery	Oraclic	L DOV	2201011	0050	40.0	00050000	0.450	0.00	14.00	10.00	
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV		2352	40.0	29352960	0.453	0.33	14.66	10.68	
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	2230074	70	100.0	7000	0.359	3.942	0.00	0.03	
	L	<u> </u>		DC	NA Area on	road vehicle to	tal (direct	& indirect)	21.25	29.33	
		•									
Employee Commute/ Delivery					à					A	
Light-Duty Gasoline Vehicle in Balt, NA Area	Gasoline	LDGV	2201011	588	20.0	3669120	0.453	0.33	1.83	1.33	

Light-Duty Gasoline Vehicle in Balt. NA Area Heavy-Duty Diesel Vehicle 8B in Balt. NA Area 2201011 2230074 Gasoline Diesel LDGV HDDV8b 588 21 3669120 1050 1.83 20.0 0.453 0.33 1.33 50.0 0.359 3.942 0.00 Baltimore NA Area onroad vehicle total 1.83 1.34

Notes Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

(

Table B-3h On-Road Vehicle Emissions 2017

Description	Fuel	Vehicle	2017 Total operated	Average Speed	Vehicular Miles Trav		Poilutants ¤/mi) ¹	2017 Em (tol	
	Туре	Class	hrs	mph	VMT	HC	NOx	HC	NOx
Automotive					1. A.		a construction		
ight-Duty Gasoline Vehicle	Gasoline	LDGV	1,497	30.0	44,910	0.428	0.306	0.02	0.02
Light Duty		-						and the second sec	
ight-Duty Gasoline Truck 2	Gasoline	LDGT2	9360	20.0	187,200	0.514	0.404	0.11	0.08
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	17940	20.0	358,800	0.514	0.404	0.20	0.16
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	14976	20.0	299,520	0.946	0.92	0.31	0.30
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	6864	20.0	137,280	0.946	0.92	0.14	0.14
ight-Duty Gasoline Truck 3	Gasoline	LDGT3	3744	20.0	74,880	0.896	0.712	0.07	0.06
_ight-Duty Gasoline Truck 4	Gasoline	LDGT4	4992	20.0	99,840	0.946	0.92	0.10	0.10
Trucks -Heavy Duty			a a a a a a a a a a a a a a a a a a a					т. Т	ì. • Ì
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	10296	15.0	154,440	0.301	2.578	0.05	0.44
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV2b	11044	15.0	165,660	0.121	0.891	0.02	0.16
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	7300	15.0	109,500	0.225	1.817	0.03	0.22
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	7862	15.0	117,930	0.121	0.891	0.02	0.12
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	5616	15.0	84,240	0.121	0.891	0.01	0.08
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	8424	15.0	126.360	0.349	3.401	0.05	0.47
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	5616	15.0	84,240	0.349	3.401	0.03	0.32
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	4922	15.0	73,830	0.121	0.891	0.00	0.02
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	7826	15.0	117,390	0.349	3.401	0.05	0.44
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV7	14976	15.0	224,640	0.278	2.261	0.07	0.56
Trailers	Diesei	TIDDVI	14570	13.0	224,040	0.270	2.201	0.07	0.00
Heavy-Duty Diesel Vehicle 5	Diesel	HDDV5	748	2.0	1,496	0.193	1.757	0.00	0.00
Personnel Carrier	Diesei	*		2.0	1,430	0.155	1.757	0.00	0.00
ight-Duty Diesel Truck 1 and 2	Diesel	LDDT12	26208	20.0	524,160	2.595	2.727	1.50	1.58
Diesel Commercial Bus	Diesel	HDDBT	19344	35.0	677,040	0.24	5.21	0.18	3.89
_ight-Duty Diesel Truck 1 and 2	Diesel	LDDT12	6240	20.0	124,800	2.595	2.727	0.36	0.38
Emergency Vehicles	Diesei	LODITZ	0240	20.0	124,000	2.333	E./ E/	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	2246	30.0	67,380	2.595	2,727	0.19	0.20
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	374	20.0	7,480	0.131	0.794	0.00	0.01
Concrete / Aggregate	Diesei	10043		20.0	7,400	0.131	0.754	0.00	0.01
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	0	15.0	0	0.349	3,401	0.00	0.00
Heavy-Duty Diesel Vehicle 88	Diesel	HDDV8b	0	15.0	0	0.349	3.401	0.00	0.00
	Diesel	HDDV85	0	15.0	0	0.225	1.817	0.00	0.00
Heavy-Duty Deisel Vehicle 6 Concrete Batch Plant	Diesei		U	15.0	, U	0.225	1.017	0.00	0.00
	Diesel	HDDV8b	0	10.0	0	0.349	3.401	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesei		<u> </u>	10.0			3.401	0.00	0.00
Site Preparation	Diese	HDDV3	0	25.0	0	0.131	0.794	0.00	0.00
Heavy-Duty Diesel Vehicle 3 Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV3 HDDV8a	0	25.0	0	0.131	2.578	0.00	0.00
	Diesel	HDDV8a HDDV3	0	20.0	0	0.301	0.794	0.00	0.00
Heavy-Duty Diesel Vehicle 3	Diesel	LDDT12	0	30.0	0	2.595	0.794	0.00	0.00
ight-Duty Diesel Truck 1 and 2	Diesei		·····	30.0	0	2.595	2.727	0.00	0.00
			Number of	Round-	Vehicular	Mobi	le 6.2	2010 En	viccione
Description	Fuel	Vahiala		Distance	Miles Trav			1	
Description	Туре	Vehicle	Vehicles ³		VMT		g/mi) ¹	(tor VOC	
		Class		miles		voc	NOx	VUC	NOx
Employee Commute/ Delivery	0	1.001	4400	40.0	40007040	0.400	0.000	0.50	4.00
ight-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	1108	40.0	13827840	0.428	0.306	6.52	4.66
leavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	0	100.0	0	0.349	3.401	0.00	0.00
			DC	I NA Area on	road vehicle to	tal (direct	& indirect)	10.05	14.46
······································			•				,		
Employee Commute/ Delivery									
Light-Duty Gasoline Vehicle in Balt. NA Area	Gasoline	LDGV	277	20.0	1728480	0.428	0.306	0.82	0.58
Heavy-Duty Diesel Vehicle 8B in Balt. NA Area	Diesel	HDDV8b	0	50.0	0	0.349	3.401	0.00	0.00
				D - 11	imore NA Area			0.82	0.58

Notes Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

Table B-3i On-Road Vehicle Emissions 2018

Description	Fuel	Vehicle	2018 operating	Average Speed	Vehicular Miles Trav		lle 6.2 g/mi) ¹	2018 Em (to)	
	Туре	Class	hrs	mph	VMT	НС	NOx	HC	NOx
Automotive					*	8 J. 9			
Light-Duty Gasoline Vehicle	Gasoline	LDGV	1,372	30.0	41,160	0.407	0.285	0.02	0.01
Light Duty	1 A A				*		· · · · ·	• •	
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	8580	20.0	171,600	0.494	0.381	0.09	0.07
Light-Duty Gasoline Truck 2	Gasoline	LDGT2	7800	20.0	156,000	0.494	0.381	0.08	0.07
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	7488	20.0	149,760	0.891	0.866	0.15	0.14
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	0	20.0	0	0.891	0.866	0.00	0.00
Light-Duty Gasoline Truck 3	Gasoline	LDGT3	3432	20.0	68,640	0.843	0.669	0.06	0.05
Light-Duty Gasoline Truck 4	Gasoline	LDGT4	2184	20.0	43,680	0.891	0.866	0.04	0.04
Trucks -Heavy Duty	1.1.1								1
Heavy-Duty Diesel Vehicle 8A	Diesel	HDDV8a	5990	15.0	89,850	0.295	2.183	0.03	0.22
Heavy-Duty Deisel Vehicle 2B	Diesel	HDDV2b	4492	15.0	67,380	0.115	0.754	0.01	0.06
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	1872	15.0	28,080	0.217	1.577	0.01	0.05
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	3556	15.0	53,340	0.115	0.754	0.01	0.04
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	1497	15.0	22,455	0.115	0.754	0.00	0.02
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	3978	15.0	59,670	0.341	2.843	0.02	0.19
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	1872	15.0	28,080	0.341	2.843	0.01	0.09
Heavy-Duty Deisel Vehicle 2B	Diesel	LDDT12	1872	15.0	28,080	0.115	0.754	0.00	0.02
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	2620	15.0	39,300	0.341	2.843	0.00	0.12
Heavy-Duty Diesel Vehicle 7	Diesel	HDDV7	2808	15.0	42,120	0.268	1.968	0.01	0.09
Trailers			2000	10.0		0.200	1.500	0.01	0.00
Heavy-Duty Diesel Vehicle 5	Diesel	HDDV5	0	2.0	0	0.181	1.533	0.00	0.00
Personnel Carrier	210301	*		2.0		0.701	1.000	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	12792	20.0	255,840	2.595	2.727	0.73	0.77
Diesel Commercial Bus	Diesel	HDDBT	2808	35.0	98,280	0.236	4.41	0.03	0.48
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	0	20.0	0	2.595	2.727	0.00	0.00
Emergency Vehicles	Diesei	CODITE		20.0		2.000	2.121	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	842	30.0	25,260	2.595	2.727	0.07	0.08
Heavy-Duty Diesel Vehicle 3	Diesel	HDDV3	218	20.0	4,360	0.127	0.682	0.00	0.00
Concrete / Aggregate	Diesei	110040	210	20.0	4,000	0.127	0.002	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	0	15.0	0	0.341	2.843	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	0	15.0	0	0.341	2.843	0.00	0.00
Heavy-Duty Deisel Vehicle 6	Diesel	HDDV6	0	15.0	0	0.217	1.577	0.00	0.00
Concrete Batch Plant	Diesei	1100 10		13.0	··· · ·	0.217	1.577	0.00	0.00
Heavy-Duty Diesel Vehicle 8B	Diesel	HDDV8b	0	10.0	0	0.341	2.843		0.00
Site Preparation	Diesei		<u> </u>	10.0	U	0.341	2.843	0.00	0.00
Heavy-Duty Diesel Vehicle 3	Disast	HDDV3	0	25.0	0	0.407	0.000		
	Diesel					0.127	0.682	0.00	0.00
Heavy-Duty Diesel Vehicle 8A	Diesel Diesel	HDDV8a HDDV3	0	20.0	0	0.295	2.183	0.00	0.00
Heavy-Duty Diesel Vehicle 3				25.0	-	0.127	0.682	0.00	0.00
Light-Duty Diesel Truck 1 and 2	Diesel	LDDT12	0	30.0	0	2.595	2.727	0.00	0.00
····									
	Fuel		Number of	Round-	Vehicular	1	ile 6.2	2010 Em	
Description	Туре	Vehicle	Vehicles ³	Distance	Miles Trav		g/mi) 1	tor	
	, ,	Class	1 1 1 No.	miles	VMT 🐜	VOC	NOx	VOC	NOx
Employee Commute/ Delivery						·		1.	. •
Light-Duty Gasoline Vehicle in DC NA Area	Gasoline	LDGV	379	40.0	4729920	0.407	0.285	2.12	1.49
Heavy-Duty Diesel Vehicle 8B in DC NA Area	Diesel	HDDV8b	0	100.0	0	0.341	2.843	0.00	0.00
				r i					
·····			DC	NA Area or	road vehicle t	otal (direct	& Indirect)	3.52	4.09
Employee Commute/ Delivery			07		500000	0.407	0.005	0.07	0.10
Light-Duty Gasoline Vehicle in Balt. NA Area Heavy-Duty Diesel Vehicle 8B in Balt. NA Area	Gasoline	LDGV	95	20.0	592800	0.407	0.285	0.27	0.19
	Diesel	HDDV8b	0	50.0	0	0.341	2.843	0.00	0.00

Notes

Note 1: U.S. Environmental Protection Agency "Mobile Source Emission Factor Model". Values generated by simulating the model at the project conditions Note 2: Annual Emissions are calculated using the following calculation Note 3: Number of vehicles is daily vehicles for employee commuting and annual number of trips for commerical deliveries

Baltimore NA Area onroad vehicle total

0.27

0.19

Table B-4 Marine Engine Emissions

		Equipment				٩		<u> </u>		Emissio	n Factor	Corr	ection	VOC	VOC	VOC	VOC	VOC	VOC	NOx	NOx	NOx	NOx	NOx	NOx
Description	Fuel	Horsepower			3		• •	•	Load	(a/kV	(-hr) ²	Fac	tor ³	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons	tons
Description	Туре	, hp	2011 hrs	2012 hrs	2013 hrs	2014 hrs	2015 hrs	2016 hrs	Factor	HC (voc)	NOx	HC	NOx	2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016
Barge - in DC-MD-VA nonattainment area	Diesel	2400	0	135	135	135	135	135	0.79	0.50	9.8	1.00	1.00	0.00	0.11	0.11	0.11	0.11	0.11	0.00	2.06	2.06	2.06	2.06	2.06
Barge Auxiliary - in DC-MD-VA NA area	Diesel	205	0	135	135	135	135	135	0,56	0.27	6.8	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.09	0.09	0.09
TugBoat - for degding activity	Diesel	1200	720	0	0	0	0	0	0.79	0.50	9.8	1.00	1.00	0.28	0.00	0.00	0.00	0.00	0.00	5.50	0.00	0.00	0.00	0.00	0.00
TugBoat Auxiliary - for dredging activity	Diesel	100	720	0	0	0	0	0	0.56	0.27	6.8	1.00	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00
18' Boat - for dredging activity	Gasoline	225	720	0	0	0	0	0	0.79	0.50	9.8	1.00	1.00	0.05	0.00	0.00	0.00	0.00	0.00	1.03	0.00	0.00	0.00	0.00	0.00
											TOTAL D	C area	(Tons)	0.34	0.11	0.11	0.11	0.11	0.11	6.75	2.15	2.15	2.15	2.15	2.15
Description	Fuel	Equipment Horsepower			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		-		Load	· · ·	n Factor (-br) ²		ection tor ³	VOC tons		VOC tons					1 1 F TA 1				
Description	Туре	* hp	2011 hrs	2012 hrs	2013 hrs		2015 hrs	2016 hrs	Factor	HC (voc)	NOx	ΗĆ	NOx	2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016
Barge - in Baltimore nonattainment area	Diesel	2400	0	430	430	430	430	430	0.79	0.50	9.8	1.00	1.00	0.00	0.34	0.34	0.34	0.34	0.34	0.00	6.57	6.57	6.57	6.57	6.57
Barge Auxiliary - in Baltimore NA area	Diesel	205	0	430	430	430	430	430	0.56	0.27	6.8	1.00	1.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.28	0.28	0.28	0.28	0.28
										TOTA	L Baltimor	re area	(Tons)	0.00	0.35	0.35	0.35	0.35	0.35	0.00	6.84	6.84	6.84	6.84	6.84

NOTES:

Note 1: EPA Load Factors for Harbor Crafts from Table 3-3 of "USEPA Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories Final Report" April 2009

Note 2: Harbor Craft Emission Factors from Table 3-8 of * USEPA Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories Final Report* April 2009

Note 3: Harbor Craft Fuel Correction Factors from Otfroad Diesel Fuel from Table 3-9 of USEPA Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories Final Report April 2009

Note 4: Annual Emissions are calculated using the following equation from Section 3.0 Harbor Craft of * USEPA Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories Final Report* April 2009 (Emission factor (g/kW-hr) * horsepower * hours operated * load factor*correction factor) / (1.341 hp-hr/kWh*2000 lb/ton * 453.59 g/lb)

Table B-5 Boiler Emissions

	2010 hrs			2013 hrs	2014 hrs	*	2016 hrs	2017 hrs	2018 hrs
Concrete Batch Plant									
Auxiliary Oil-fired Boiler	0	0	1040	3120	3120	3120	2080	0	0
NOx emissions (tons)	0	0	1.54	4.62	4.62	4.62	3.08	0	0
VOC emissions (tons)	0	0	0.02	0.05	0.05	0.05	0.03	0	0

Boiler Heat Input Rating Typical Distillate Oil HHV 20 MMBtu/hr (assumed)

0.135 MMBtu/gallon

NOx emission factor VOC emission factor 20 lb/1,000 gallons 0.2 lb/1,000 gallons AP-42 Section 1.3 9/98, Table 1.3-1 AP-42 Section 1.3 9/98, Table 1.3-3 Enclosure 3

Regulatory Commitment

The regulatory commitment in this correspondence is summarized below:

Regulatory Commitment No.	Regulatory Commitment Description	Regulatory Commitment Due Date
CC-09-0009	UNE will transmit the proposed mitigation measures for CCNPP Unit 3 NOx emissions to the NRC.	March 31, 2010

ŧ