

Rahway River Basin, NJ
Flood Risk Management Feasibility Study

APPENDIX A-6
General Conformity and Greenhouse Gas Analysis

RECORD OF NON-APPLICABILITY (RONA)

Project Name: Rahway River Basin Flood Risk Management Study

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Estimated Begin Date: March 2020

Estimated End Date: July 2023

1. The project described above has been evaluated for Section 176 of the Clean Air Act. Project related emissions associated with the federal action were estimated to evaluate the applicability of General Conformity regulations (40CFR§93 Subpart B).
2. The project is located in Union and Essex Counties, New Jersey, which has the following nonattainment-related designations with respect to the National Ambient Air Quality Standards (40CFR§81.133; as of September 30, 2016): ‘Moderate’ Nonattainment 2008 8-hour Ozone Standard (primary and secondary) and ‘Maintenance’ for 2006 PM_{2.5} Standard.
3. The requirements of this rule do not apply because the total direct and indirect emissions from this project are significantly less than the 100 tons trigger levels for NO_x, PM_{2.5}, and SO₂ for each project year and significantly below the 50 tons trigger level for VOC (40CFR§93.153(b)(1) & (2)), as VOCs, SO₂, and PM_{2.5} are typically a fraction of total NO_x emissions. The estimated emissions for the project for each pollutant are provided below.

Pollutant	Total Estimated Emissions
NO _x	14.88
VOC	1.65
PM _{2.5}	1.29
SO ₂	0.01
CO	6.60

4. The project conforms with the General Conformity requirements (40CFR§93.153(c)(1)) and is exempted from the requires of 40 CFR §93 Subpart B.

Sincerely,

Chief, Planning Division

**CLEAN AIR ACT GENERAL CONFORMITY
APPLICABILITY AND GREENHOUSE GAS
ANALYSIS AND EMISSIONS ESTIMATE FOR
RAHWAY RIVER WATERSHED FLOOD RISK
MANAGEMENT PROJECT, ESSEX AND
UNION COUNTIES, NEW JERSEY**



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September 2016

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ACRONYMS AND ABBREVIATIONS

CAA	Clean Air Act
CEQ	Council of Environmental Quality
CO	carbon monoxide
CO ₂	carbon dioxide
EPA	U.S. Environmental Protection Agency
GCR	General Conformity Rule
GHG	Greenhouse Gas
MOVES	Motor Vehicle Emission Simulator
NAAQS	National Ambient Air Quality Standards
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
PM ₁₀ and PM _{2.5}	particulate matter
SIP	State Implementation Plan
SO ₂	sulfur dioxide
VOC	volatile organic compounds

1.0 Introduction

1.1 Clean Air Act and General Conformity

The Project area is located in Union and Essex Counties, New Jersey, which are part of the New York, Northern New Jersey, Long Island, and Connecticut ozone nonattainment area. These counties have been designated with the following attainment status with respect to the National Ambient Air Quality Standards (NAAQS) for criteria pollutants: ‘moderate’ nonattainment area for the 2008 8-hour ozone standard, a maintenance area for the 1971 carbon dioxide (CO) standard, and a maintenance area for the 2006 particulate matter less than 2.5 microns (PM_{2.5}) standard (40 CFR §81.331). These counties are part of the Ozone Transport Region. Oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) are precursors for ozone, while sulfur dioxide (SO₂) (commonly reported as sulfur oxides (SO_x)) is a precursor pollutant for PM_{2.5}. Union and Essex Counties are in attainment of the NAAQS for all other criteria pollutants.

Emissions from the Project are associated with non-road construction equipment working on the site and on-road trucks moving on public roads to and from the Project site. Emissions from these two source categories, primarily generated from their diesel engines, include NO_x, VOCs, CO, SO₂, and PM_{2.5}. Emissions from Federal Actions, such as the Proposed Project, are regulated under 40 CFR §93 Subpart B General Conformity, which aims to ensure that emissions from Federal Actions do not impede a State’s progress toward achieving or maintaining compliance with NAAQS under their applicable State Implementation Plan (SIP). Fugitive dust on the worksite can potentially be generated due to trucks and equipment moving on unpaved surfaces, but can be significantly reduced through the use of best management practices relating to site work dust mitigation.

1.2 Greenhouse Gas Emissions

In addition to the applicable regulated pollutants (Section 1.1), each Federal Agency project’s NEPA assessment needs to consider and evaluate GHGs consistent with the Council on Environmental Quality (CEQ) guidance on the consideration of GHGs emissions and the effects of climate change.¹

2.0 Emissions Analysis

The project will produce temporary localized emission increases from the diesel powered construction equipment working onsite. The localized emission increases from the diesel-powered equipment will last only during the project’s construction period and then end when the project is over, thus any potential impacts will be temporary in nature.

As stated in Section 1.1, Union and Essex Counties have been designated with the following attainment status with respect to the NAAQS for criteria pollutants: ‘moderate’ nonattainment area for the 2008 8-hour ozone standard, and maintenance areas for CO and PM_{2.5} standards. Ozone is controlled through the regulation of its precursor emissions, which include NO_x and VOCs. VOCs are emitted at a fractional rate compared to NO_x emissions. SO₂ is a precursor for PM_{2.5}. Because of these designations and since the project is a Federal Action taken by the

¹ See <https://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance>

USACE, this project triggers a General Conformity Review under 40 CFR §93.154. When conducting a General Conformity Review, emissions below specified annual thresholds are considered “de minimis” such that additional review or requirements are not needed. For the pollutants expected to be emitted by the project, the de minimis levels are: 100 tons of NO_x in any year, 50 tons of VOC in any year, 100 tons of CO in any year, 100 tons of PM_{2.5} in any year), and 100 tons of SO₂ in any year).

The emissions associated with the project estimated as part of the General Conformity Review, and the relevant de minimis levels, are summarized below.

Construction Element	Source	Emissions (Ton)					
		VOC	NO _x	CO	PM _{2.5}	SO ₂	CO ₂
Reservoir	Nonroad Equipment	0.62	5.18	2.16	0.43	0.01	1306.24
	Highway Vehicle	0.44	3.82	1.32	0.28	0.00	471.13
Fish and Wildlife Facility	Nonroad Equipment	0.08	2.01	1.70	0.25	0.00	404.01
	Highway Vehicle	0.11	0.94	0.32	0.07	0.00	115.71
Channels and Canals	Nonroad Equipment	0.09	0.85	0.31	0.05	0.00	211.56
	Highway Vehicle	0.09	0.77	0.27	0.06	0.00	94.70
Nonstructural	Nonroad Equipment	0.18	0.84	0.33	0.15	0.00	194.50
	Highway Vehicle	0.04	0.47	0.20	0.01	0.00	112.23
Total		1.65	14.88	6.60	1.29	0.01	2,911.36
<i>De Minimis Level</i>		<i>50</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>n/a</i>
Will Emissions Exceed <i>De Minimis</i> Threshold		No	No	No	No	n/a	n/a

The Project’s General Conformity-related emissions are significantly below all of the de minimis levels. Therefore, by rule (40 CFR §93.153 (b)), the Project is considered de minimis and will have only a temporary impact around the construction activities with no long-term impacts and no negative effects on the applicable SIP.

2.1 Greenhouse Gases

The 1 August 2016 CEQ Guidance ‘does not establish a specific threshold for GHG emissions as “significantly” affecting the quality of the human environment or give greater consideration of the effects of GHG emissions and climate change over other effects of the human environment.’ However, the U.S. EPA published a rule in October 2009 outlining mandatory reporting of greenhouse gases from sources that in general emit 25,000 metric tons or more of carbon dioxide per year in the US. Smaller sources and certain sectors such as the agricultural sector and land use changes are not included in the Greenhouse Gas Reporting Program. As the emissions for the Proposed Action are well below the 25,000 metric tons threshold, mandatory reporting is not required. There will be no ongoing sources of GHG emissions resulting from the proposed action once construction is completed.

3.0 Emission Estimates

A construction estimate was made based on equipment type, size, and usage data and truck running hours provided by U.S. Army Corps of Engineers (USACE) in its equipment report based on TRACES MII Version 4.0 forecasts (August 15, 2016) for the four construction elements listed below:

- Reservoir.
- Fish and Wildlife Facility.
- Channels and Canals.
- Nonstructural Measures

3.1 Equipment Emissions

Estimates of equipment emissions for each element were based on the USACE-provided hours of usage and emission factors for each motorized source. Emission factors for each pollutant related to each equipment were predicted using the U.S. EPA's Motor Vehicle Emission Simulator (MOVES) MOVES2014a emission factor model (U.S. EPA, 2015) in association with the national default input parameters applicable for Union County, New Jersey.

The U.S. EPA recommends the following formula to calculate hourly emissions for the i^{th} pollutant from nonroad engine sources:

$$M_i = N \times \text{HP} \times \text{EF}_i$$

where:

- M_i = mass of emissions of i^{th} pollutants during inventory period;
- N = source population (units);
- HP = average rated horsepower; and
- EF_i = average emissions of i^{th} pollutant per unit of use (e.g., grams per horsepower-hour) predicted by MOVES2014a.

Estimated emissions from operation of nonroad equipment are presented in Tables 1 through 4 for each construction element, respectively.

3.2 Truck Emissions

MOVES2014a program was also used to predict on-road truck emission factors for both criteria pollutants and greenhouse gas. It was assumed that on an average, each truck would travel at a speed of 25 miles per hour. Estimated emissions from operation of trucks associated with each element are also presented in Tables 1 through 4.

4.0 Emissions Estimate Results

Tables 1-5 summarize the emissions analysis for the applicable NAAQS and for CO₂ as the primary Greenhouse Gas emission from construction and nonroad equipment.

5.0 References

Council on Environmental Quality. 1 August 2016. *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews.*

U.S. Army Corps of Engineers, 2016. Equipment Report: *Rahway River Watershed Flood Risk Management Project - Alternative # 4A. August 15.*

U.S. EPA, 2015. Motor Vehicle Emission Simulator (MOVES) 2014a User Guide. December.

Table 1: Emissions from Reservoir Construction

Non Road Equipment	Hours	Horsepower (HP)	Emission Factors (grams/hp-hr)						Emissions (tons)					
			VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM2.5	SO2	CO2
AIR COMPRESSOR, 250 CFM	278	80	0.31	2.95	1.69	0.25	0.00	589.50	0.01	0.07	0.04	0.01	0.00	14.45
ASPHALT PAVER, SELF PROPELLED	2	115	0.21	1.89	0.80	0.18	0.00	536.25	0.00	0.00	0.00	0.00	0.00	0.14
CONCRETE PUMP, TRUCK MOUNTED	153	210	0.36	3.93	1.09	0.21	0.00	530.01	0.01	0.14	0.04	0.01	0.00	18.77
CONCRETE VIBRATOR, W/7.5 HP (5.6 KW) GENERATOR	610	8	0.81	5.31	4.55	0.52	0.00	588.02	0.00	0.03	0.02	0.00	0.00	2.97
CRANE, HYDRAULIC, TRUCK MOUNTED, 25 TON	6389	152	0.22	2.14	0.57	0.14	0.00	530.43	0.24	2.29	0.61	0.14	0.00	567.82
CRANE, HYDRAULIC, TRUCK MOUNTED, 90 TON	8	335	0.21	2.89	0.74	0.11	0.00	530.46	0.00	0.01	0.00	0.00	0.00	1.57
CRANE, MECHANICAL, LATTICE BOOM, CRAWLER, 60 TON	29	263	0.20	1.95	0.43	0.08	0.00	530.49	0.00	0.02	0.00	0.00	0.00	4.46
GRADER, 135 HP	21	135	0.20	1.67	0.73	0.17	0.00	536.28	0.00	0.01	0.00	0.00	0.00	1.68
HYDRAULIC EXCAVATOR, 1.75 CY BUCKET	720	168	0.19	1.49	0.65	0.15	0.00	536.31	0.03	0.20	0.09	0.02	0.00	71.51
LOADER, FRONT END, CRAWLER, 1.30 CY	21	140	0.88	4.79	4.63	0.64	0.00	693.46	0.00	0.01	0.01	0.00	0.00	1.12
LOADER, FRONT END, CRAWLER, 2.60 CY (2.0 M3) BUCKET	332	149	0.68	3.99	2.33	0.45	0.00	624.61	0.04	0.22	0.13	0.02	0.00	34.06
LOADER/BACKHOE, 0.80 CY	1809	60	0.88	4.79	4.63	0.64	0.00	693.46	0.10	0.57	0.55	0.08	0.00	82.97
PAVING BREAKER, 100 CFM COMPRESSOR	555	144	0.25	2.43	0.97	0.21	0.00	536.13	0.02	0.21	0.09	0.02	0.00	47.23
ROLLER, STATIC, SELF-PROPELLED, 14 TON	2	70	0.26	3.44	2.07	0.22	0.00	595.43	0.00	0.00	0.00	0.00	0.00	0.09
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, 2.7 TON	3	33	0.21	3.64	0.80	0.12	0.00	595.56	0.00	0.00	0.00	0.00	0.00	0.06
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, 6 TON	21	70	0.26	3.44	2.07	0.22	0.00	595.43	0.00	0.01	0.00	0.00	0.00	0.96
TRACTOR, CRAWLER (DOZER), 101-135 HP	3813	135	0.20	1.70	0.74	0.17	0.00	536.28	0.11	0.97	0.42	0.10	0.00	304.30
TRACTOR, CRAWLER (DOZER), 181-250 HP	1029	250	0.19	1.55	0.52	0.10	0.00	536.31	0.05	0.44	0.15	0.03	0.00	152.08
TOTAL									0.62	5.18	2.16	0.43	0.00	1,306.24
Highway Vehicle	Hours	Emission Factors (grams/hp-hr)						Emissions (tons)						
		VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM2.5	SO2	CO2	
DUMP TRUCK, HIGHWAY, 16 - 20 CY, DUMP BODY, 75,000 LBS (34,000 KG) GVW, 2 AXLE, 6X4	73		0.07	0.61	0.21	0.04	0.00	75.16	0.00	0.02	0.01	0.00	0.00	2.74

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DUMP TRUCK, HIGHWAY, 10 - 13 CY, DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	12,382	0.07	0.61	0.21	0.04	0.00	75.16	0.44	3.78	1.30	0.28	0.00	465.31
TRUCK, HIGHWAY, 35,000 LB (15,876 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	61	0.07	0.61	0.21	0.04	0.00	75.16	0.00	0.02	0.01	0.00	0.00	2.29
TRUCK, HIGHWAY, 50,000 LB (22,680 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	21	0.07	0.61	0.21	0.04	0.00	75.16	0.00	0.01	0.00	0.00	0.00	0.79
Total								0.09	0.77	0.27	0.06	0.00	471.13
Total Emission								0.18	1.61	0.57	0.11	0.00	1,777.38

Table 2: Emissions from Fish and Wildlife Facility Construction

Non Road Equipment	Hours	Horsepower (HP)	Emission Factors (grams/hp-hr)						Emissions (tons)					
			VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM2.5	SO2	CO2*
HYDRAULIC EXCAVATOR, CRAWLER, 70,000 LB	243	222	0.18	1.34	0.44	0.08	0.00	536.34	0.01	0.08	0.03	0.00	0.00	31.89
LOADER, FRONT END, 3.50 CY	284	180	0.68	3.99	2.33	0.45	0.00	624.61	0.04	0.24	0.14	0.03	0.00	37.14
LOADER/BACKHOE, 0.80 CY	323	60	0.88	4.79	4.63	0.64	0.00	693.46	0.02	1.14	1.10	0.15	0.00	164.95
TRACTOR, CRAWLER (DOZER), 101-135 HP	57	135	0.20	1.70	0.74	0.17	0.00	536.28	0.00	0.10	0.04	0.01	0.00	31.89
TRACTOR, CRAWLER (DOZER), 181-250 HP	87	250	0.19	1.55	0.52	0.10	0.00	536.31	0.00	0.09	0.03	0.01	0.00	31.89
TRACTOR, CRAWLER (DOZER), 50-75 HP	248	75	0.22	2.03	2.01	0.26	0.00	595.55	0.00	0.36	0.36	0.05	0.00	106.24
TOTAL									0.08	2.01	1.70	0.25	0.00	404.01
Highway Vehicle	Hours	Emission Factors (grams/hp-hr)						Emissions (tons)						
		VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM2.5	SO2	CO2	
DUMP TRUCK, HIGHWAY, 10 - 13 CY, DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	2,905		0.07	0.61	0.21	0.04	0.00	75.16	0.10	0.89	0.31	0.06	0.00	109.17
DUMP TRUCK, HIGHWAY, 16 - 20 CY, DUMP BODY, 75,000 LBS (34,000 KG) GVW, 2 AXLE, 6X4	174		0.07	0.61	0.21	0.04	0.00	75.16	0.01	0.05	0.02	0.00	0.00	6.54
Total									0.11	0.94	0.32	0.07	0.00	115.71
Total Emission									0.19	2.95	2.02	0.31	0.00	519.72

Table 3: Emissions from Channels and Canals Construction

Non Road Equipment	Hours	Horsepower (HP)	Emission Factors (grams/hp-hr)						Emissions (tons)					
			VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM 2.5	SO2	CO2
AIR COMPRESSOR, 100 CFM	138	49	0.23	3.85	0.91	0.15	0.00	589.71	0.00	0.03	0.01	0.00	0.00	4.40
CONCRETE VIBRATOR, W/7.5 HP (5.6 KW) GENERATOR	75	8	0.81	5.31	4.55	0.52	0.00	588.02	0.00	0.00	0.00	0.00	0.00	0.36
CRANE, HYDRAULIC, TRUCK MOUNTED, 90 TON	2	335	0.21	2.89	0.74	0.11	0.00	530.46	0.00	0.00	0.00	0.00	0.00	0.39
CRANE, MECHANICAL, LATTICE BOOM, CRAWLER, 60 TON	629	263	0.20	1.95	0.43	0.08	0.00	530.49	0.04	0.35	0.08	0.01	0.00	95.29
GRADER, 135 HP	48	135	0.20	1.67	0.73	0.17	0.00	536.28	0.00	0.01	0.01	0.00	0.00	3.83
LOADER, FRONT END, CRAWLER, 2.00 CY	37	121	0.68	3.99	2.33	0.45	0.00	624.61	0.00	0.02	0.01	0.00	0.00	3.08
LOADER/BACKHOE, 0.80 CY	37	60	0.88	4.79	4.63	0.64	0.00	693.46	0.00	0.01	0.01	0.00	0.00	1.70
LOADER/BACKHOE, 1.25 CY	75	90	0.93	4.28	5.29	0.74	0.00	693.32	0.01	0.03	0.04	0.01	0.00	5.16
PAVING BREAKER, 66 LB, 100 CFM COMPRESSOR	275	144	0.25	2.43	0.97	0.21	0.00	536.13	0.01	0.11	0.04	0.01	0.00	23.40
PILE HAMMER, DRIVER/EXTRACTOR, VIBRATORY, 80 TON	29	325	0.31	4.19	1.25	0.18	0.00	530.15	0.00	0.04	0.01	0.00	0.00	5.51
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, 6 TON	10	70	0.26	3.44	2.07	0.22	0.00	595.43	0.00	0.00	0.00	0.00	0.00	0.46
ROLLER, VIBRATORY, SELF-PROPELLED, SINGLE DRUM, 12 TON	39	153	0.22	2.04	0.85	0.19	0.00	536.22	0.00	0.01	0.01	0.00	0.00	3.53
ROLLER, VIBRATORY, TOWED, SINGLE DRUM, 25.5 TON	347	50	0.26	3.44	2.07	0.22	0.00	595.43	0.00	0.07	0.04	0.00	0.00	11.39
TRACTOR, CRAWLER (DOZER), 181-250 HP	347	250	0.19	1.55	0.52	0.10	0.00	536.31	0.02	0.15	0.05	0.01	0.00	51.29
TRACTOR, CRAWLER (DOZER), 251-300 HP	10	300	0.19	2.22	0.89	0.12	0.00	536.32	0.00	0.01	0.00	0.00	0.00	1.77
TOTAL									0.09	0.85	0.31	0.05	0.00	211.56
Highway Vehicle	Hours	Emission Factors (grams/hp-hr)						Emissions (tons)						
		VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM2.5	SO2	CO2	
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	48	0.07	0.61	0.21	0.04	0.00	75.16	0.00	0.01	0.01	0.00	0.00	1.80	
DUMP TRUCK, HIGHWAY, 10 - 13 CY, DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	2,387	0.07	0.61	0.21	0.04	0.00	75.16	0.08	0.73	0.25	0.05	0.00	89.70	
TRUCK, HIGHWAY, 35,000 LB (15,876 KG) GVW, 4X2, 2 AXLE (ADD ACCESSORIES)	75	0.07	0.61	0.21	0.04	0.00	75.16	0.00	0.02	0.01	0.00	0.00	2.82	

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TRUCK, HIGHWAY, 50,000 LB (22,680 KG) GVW, 6X4, 3 AXLE (ADD ACCESSORIES)	10	0.07	0.61	0.21	0.04	0.00	75.16	0.00	0.00	0.00	0.00	0.00	0.38
Total								0.09	0.77	0.27	0.06	0.00	94.70
Total Emission								0.18	1.61	0.57	0.11	0.00	306.26

Table 4: Emissions from Nonstructural Measures

Non Road Equipment	Hours	Horsepower (HP)	Emission Factors (grams/hp-hr)*						Emissions (tons)					
			VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM2.5	SO2	CO2
AIR COMPRESSOR, 250 CFM	181	80	0.31	2.95	1.69	0.25	0.00	589.50	0.00	0.02	0.02	0.00	0.00	9.05
CONCRETE PUMP, TRUCK MOUNTED	75	210	0.36	3.93	1.09	0.21	0.00	530.01	0.00	0.05	0.01	0.00	0.00	9.0
CONCRETE VIBRATOR, W/7.5 HP (5.6 KW) GENERATOR	15	8	0.81	5.31	4.55	0.52	0.00	588.02	0.00	0.00	0.00	0.00	0.00	0.07
GRADER, 135 HP	21	135	0.20	1.67	0.73	0.17	0.00	536.28	0.00	0.00	0.00	0.00	0.00	0.08
LOADER, FRONT END, CRAWLER, 1.30 CY	570	140	0.88	4.79	4.63	0.64	0.00	693.46	0.01	0.07	0.01	0.01	0.00	30.04
LOADER, FRONT END, CRAWLER, 2.60 CY (2.0 M3) BUCKET	395	149	0.68	3.99	2.33	0.45	0.00	624.61	0.00	0.04	0.05	0.01	0.00	40.52
LOADER/BACKHOE, 0.80 CY	350	60	0.88	4.79	4.63	0.64	0.00	693.46	0.10	0.02	0.04	0.08	0.00	16.05
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, 2.7 TON	300	33	0.21	3.64	0.80	0.12	0.00	595.56	0.00	0.03	0.02	0.00	0.00	6.0
ROLLER, VIBRATORY, SELF-PROPELLED, DOUBLE DRUM, 6 TON	150	70	0.26	3.44	2.07	0.22	0.00	595.43	0.00	0.03	0.02	0.00	0.00	6.85
TRACTOR, CRAWLER (DOZER), 101-135 HP	500	135	0.20	1.70	0.74	0.17	0.00	536.28	0.02	0.21	0.09	0.02	0.00	39.90
TRACTOR, CRAWLER (DOZER), 181-250 HP	250	250	0.19	1.55	0.52	0.10	0.00	536.31	0.05	0.44	0.15	0.03	0.00	36.94
TOTAL									0.18	0.84	0.33	0.15	0.00	194.50
Highway Vehicle	Hours	Emission Factors (grams/hp-hr)						Emissions (tons)						
		VOC	NOx	CO	PM2.5	SO2	CO2	VOC	NOx	CO	PM2.5	SO2	CO2	
DUMP TRUCK, HIGHWAY, 16 - 20 CY, DUMP BODY, 75,000 LBS (34,000 KG) GVW, 2 AXLE, 6X4	40		0.07	0.61	0.21	0.04	0.00	75.16	0.00	0.01	0.00	0.00	0.00	1.50
DUMP TRUCK, HIGHWAY, 10 - 13 CY, DUMP BODY, 35,000 LBS (15,900 KG) GVW, 2 AXLE, 4X2	1,400		0.07	0.61	0.21	0.04	0.00	75.16	0.02	0.22	0.10	0.00	0.00	54.87
TRUCK, HIGHWAY, 45,000 LB (20,412 KG) GVW, 6X4, 3 AXLE	1,488		0.07	0.61	0.21	0.04	0.00	75.16	0.02	0.24	0.10	0.01	0.00	55.86
Total									0.04	0.47	0.20	0.01	0.00	112.23
Total Emission									0.22	1.31	0.53	0.16	0.00	306.73

Table 5: Total Combined Construction Emissions

Construction Element	Source	Emissions (Ton)					
		VOC	NOx	CO	PM2.5	SO2	CO2
Reservoir	Nonroad Equipment	0.62	5.18	2.16	0.43	0.01	1306.24
	Highway Vehicle	0.44	3.82	1.32	0.28	0.00	471.13
Fish and Wildlife Facility	Nonroad Equipment	0.08	2.01	1.70	0.25	0.00	404.01
	Highway Vehicle	0.11	0.94	0.32	0.07	0.00	115.71
Channels and Canals	Nonroad Equipment	0.09	0.85	0.31	0.05	0.00	211.56
	Highway Vehicle	0.09	0.77	0.27	0.06	0.00	94.70
Nonstructural	Nonroad Equipment	0.18	0.84	0.33	0.15	0.00	194.50
	Highway Vehicle	0.04	0.47	0.20	0.01	0.00	112.23
Total		1.65	14.88	6.60	1.29	0.01	2,911.36
<i>De Minimis Level</i>		<i>50</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>n/a</i>	<i>n/a</i>
Will Emissions Exceed <i>De Minimis</i> Threshold		No	No	No	No	n/a	n/a