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# **Construction Emissions Estimates ICTF Modernization Project Long Beach, California**

prepared for:

**Union Pacific Railroad Company**

October 2007

prepared by:

Sierra Research, Inc.  
1801 J Street  
Sacramento, California 95811



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ICTF Modernization Project  
Long Beach, California**

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## **INTRODUCTION**

The construction of the modernized ICTF is expected to last approximately 36 months. The construction will be completed in multiple stages lasting approximately 4 to 6 months each. Construction will begin on the east side of the property and will be occurring while the facility is in operation.

Criteria pollutant, diesel particulate matter (DPM), and greenhouse gas (GHG) emission estimates have been prepared for the operation of onsite construction equipment, onsite construction vehicles (fuel truck, dump trucks, water trucks, etc), offsite construction vehicles, and worker vehicles. Estimates of fugitive PM<sub>10</sub> emissions from wind erosion, material handling, and roadways, have also been prepared. The methodology for calculating these emissions is discussed in the following section.

###

## CONSTRUCTION ACTIVITIES

As discussed above, the construction of the modernized ICTF is expected to last approximately 36 months. Construction will be completed in multiple stages lasting approximately 4 to 6 months each. A variety of heavy equipment and construction vehicles will be used throughout the Project. Per the ICTF Modernization Plan, construction activities will occur in the main phases outlined below.

- Implement container stacking and begin construction of wide span gantry (WSG) crane Module #1. This stage also includes mobilization of a concrete crushing facility and commencement of utility and drainage modifications. Loading operations will continue to be conducted using Diesel-fueled rubber tire gantry (RTG) cranes.
- Continue construction of Module #1, including Track 5 and lighting, utilities, drainage, electrical substations, temporary facilities and crane rails. Concrete crushing operations begun in Stage 1 continue. Loading operations continue to be conducted using RTG's.
- Continues track construction including rearrangement of ladder tracks for Module #1 and continues construction of crane rails, utilities and drainage. Construction of electrical substations continues and Module #1 crane power system construction begins. The first set of new WSG cranes will be erected. Loading operations continue to be conducted using RTG's.
- Complete erection and commissioning the first set of WSG cranes, erect and commission the second set of WSG cranes. Place Module #1 in service. Complete Module #1 track connections. Construct reefer outlets. Continue construction of utilities and drainage facilities focused on Modules 2 and 3. Concrete crushing operations continue. Loading operations are conducted primarily using the new WSG in Module #1, RTG operations continue on Tracks 811 and 812 to meet capacity needs.
- Commence construction of Module #2 WSG infrastructure. Continue construction of utilities and drainage focusing on Module #2. Begin construction of new Crane Parts Building and Repair Center. Complete construction of reefer outlets and commission them. Continue construction of utilities and drainage facilities focused on Modules 2 and 3. Loading operations are conducted primarily in Module #1, RTG operations continue on Tracks 811 and 812 to meet capacity needs.



- Construct Module #2 tracks and Module #2 and #3 ladder tracks. Complete the Crane Parts Building and Repair Center. Complete construction of Module 2 crane infrastructure. Erect and commission Module #2 WSG's. Continue construction of utilities and drainage facilities focused on Modules 2 and 3. Commence WSG operations in Module 2 – RTG operations cease. Concrete crushing operations continue.
- Construct Module 3 tracks. Construct Module 3 crane infrastructure. Erect and commission Module 3 WSG's. Complete Module 3 and ladder track construction and remove track to be retired. Complete construction of utilities, lighting and fire suppression systems. Construct a new inbound gate, including canopy, administration building and employee parking on Alameda Street. Modify the existing Sepulveda Street gate facility for outbound only operation.

Fugitive dust emissions from the construction of the project will result from:

- Dust entrained during site preparation and grading/excavation at the construction site;
- Dust entrained during onsite travel on paved and unpaved surfaces;
- Dust entrained during aggregate and soil loading and unloading operations; and
- Wind erosion of areas disturbed during construction activities.

Combustion emissions during construction will result from:

- Exhaust from the diesel construction equipment used for site preparation, grading, excavation, and construction of onsite structures;
- Exhaust from water trucks used to control construction dust emissions;
- Exhaust from portable welding machines;
- Exhaust from pickup trucks and diesel trucks used to transport workers and materials around the construction site;
- Exhaust from diesel trucks used to deliver concrete, fuel, and construction supplies to the construction site including the heavy hauling of major components using truck and/or rail; and
- Exhaust from automobiles used by workers to commute to the construction site.

###

## **AVAILABLE MITIGATION MEASURES**

The following typical mitigation measures are proposed to control exhaust emissions from the diesel heavy equipment and potential emissions of fugitive dust during construction of the project.

- Unpaved roads and disturbed areas in the project construction site will be watered as frequently as necessary to prevent fugitive dust plumes. The frequency of watering can be reduced or eliminated during periods of precipitation.
- The vehicle speed limit will be 15 miles per hour within the construction site.
- The construction site entrances shall be posted with visible speed limit signs.
- Construction equipment vehicle tires will be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other measures as specified in the Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.
- Paved roads within the construction site will be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
- At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on public roadways.
- Soil storage piles and disturbed areas that remain inactive for longer than 10 days will be covered or treated with appropriate dust suppressant compounds.
- Vehicles used to transport solid bulk material on public roadways and having the potential to cause visible emissions will be provided with a cover, or the materials will be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

###

# ESTIMATES OF EMISSIONS WITH MITIGATION MEASURES

## Onsite Equipment Emissions

Criteria pollutant, DPM, and GHG emissions from construction equipment were calculated based on activity data (i.e., fuel use and hours of operation) provided by HDR<sup>1</sup>. A summary of the activity data is included in Appendix A. It was assumed that all off-road heavy equipment operations were onsite. It was also assumed that 0.5 mile per trip for on-road construction vehicles<sup>2</sup> and 0.25 mile per trip for worker vehicles were onsite. The remaining travel for on-road construction vehicles and worker vehicles was considered to be offsite.

Equipment-specific criteria pollutant and DPM emission factors for off-road construction equipment were obtained from CARB's OFFROAD2007 model.<sup>3</sup> The OFFROAD2007 output is contained in Appendix B. Emission factors for on-road vehicles were calculated using CARB's EMFAC2007 model.<sup>4</sup> The EMFAC2007 output is contained in Appendix C. Greenhouse gas emission factors for both off-road and on-road equipment and vehicles were from CARB's *Draft Emission Factors for Mandatory Reporting Program* document (August 10, 2007).<sup>5</sup> A copy of the CARB document is contained in Appendix D.

## Fugitive Dust Emissions

Fugitive dust (PM<sub>10</sub>) emissions were calculated for material handling activities, vehicle travel on paved roads, vehicle travel on unpaved roads, and wind erosion. Emission factors for vehicle travel on paved roads, vehicle travel on unpaved roads, and material

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<sup>1</sup> Personal communication from Greg Chiodo of HDR on October 1, 2007.

<sup>2</sup> On-road construction vehicles include fuel delivery trucks, lube trucks, mechanics' trucks, and dump trucks.

<sup>3</sup> Available at <http://www.arb.ca.gov/msei/offroad/offroad.htm>

<sup>4</sup> Available at <http://www.arb.ca.gov/msei/msei.htm>

<sup>5</sup> Available at <http://www.arb.ca.gov/cc/ccei/reporting/reporting.htm>. On October 19, 2007, the CARB released revised GHG emission factors. The relevant CO<sub>2</sub> emission factors in the October draft document are slightly lower than the CO<sub>2</sub> emission factors in the August draft document. Therefore, the GHG emission estimates presented in this report were not revised to reflect the updated emission factors.

handling activities were from AP-42.<sup>6</sup> Emission factors for wind erosion were from *Improvement of Specific Emission Factors (BACM Project No. 1), Final Report*, prepared for South Coast AQMD by Midwest Research Institute, March 1996. The emission factor derivation for each source is shown in Appendix E.

### Off-Site Emissions

Criteria pollutant, DPM, and GHG emissions were also calculated for offsite operations associated with the construction. Off-site emissions sources included worker vehicles, fuel delivery trucks, lube trucks, mechanics' trucks, and dump trucks. Fugitive dust emissions from vehicle travel on paved roadways were also calculated.

### Emission Estimates

Tables 1 and 2 show the estimated maximum monthly and project total emissions from heavy equipment exhaust and fugitive dust emissions with recommended mitigation measures for onsite construction activities. Detailed emission calculations are included in Appendix F.

<b>Table 1</b>									
<b>Maximum Monthly Emissions from Construction Activities</b>									
<b>ICTF Modernization Project</b>									
Source	Maximum Emissions (tons/month)						Maximum Emissions (metric tons/month)		
	ROG	CO	NO <sub>x</sub>	PM <sub>10</sub>	DPM	SO <sub>x</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>
<b>Onsite</b>									
Off-Road Equipment	0.39	1.49	3.18	0.16	0.16	0.00	260.63	0.00	0.00
Fugitive Dust	-	-	-	1.62	-	-	-	-	-
<b>Offsite</b>									
Vehicles	0.13	0.90	1.12	0.06	0.05	0.00	174.47	0.00	0.00
Fugitive Dust	-	-	-	0.28	-	-	-	-	-
<b>Total</b>									
Total	0.52	2.39	4.3	2.12	0.21	0.00	435.1	0.00	0.00

<sup>6</sup> Available at <http://www.epa.gov/ttn/chief/ap42/>

<b>Table 2</b>									
<b>Total Emissions from Construction Activities</b>									
<b>ICTF Modernization Project</b>									
Source	Total Emissions (tons)						Total Emissions (metric tons)		
	ROG	CO	NO <sub>x</sub>	PM <sub>10</sub>	DPM	SO <sub>x</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>
<b>Onsite</b>									
Off-Road Equipment	7.47	27.47	56.23	3.25	3.25	0.06	4,626.98	0.01	0.02
Fugitive Dust	-	-	-	23.88	-	-	-	-	-
<b>Offsite</b>									
Vehicles	2.66	23.15	16.14	0.78	0.62	0.04	3,679.18	0.01	0.05
Fugitive Dust	-	-	-	7.26	-	-	-	-	-
<b>Total</b>									
Total	10.13	50.62	72.37	35.17	3.87	0.10	8,306.16	0.02	0.07

###

APPENDIX A  
ACTIVITY DATA

Activity Data for Construction Equipment  
ICTF Modernization Project, Long Beach, CA

Equipment/Vehicle	Month:															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Air Compressor, 175 CFM	98	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Backhoe, Cat 320, 1.0 CY	400	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
Backhoe, Cat 325, 1.5 CY	307	296	280	250	223	223	284	284	200	200	200	200	200	200	200	200
Backhoe/loader, Cat. 416, 1CY																
Hyd. Shear for Backhoe	107															
Hyd. Boom, Trk Mtd. 12T																
RT Crane, 45T			63	63												
Crush Concrete																
Cat D5 Dozer							50	50	50							
Cat D6 Dozer									100	100	250	200	200	200	200	12
Cat D7 Dozer	100	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Cat D8N Dozer											200	200	200	200	200	105
John Deere 9400									50	100	250	250	220	200	200	18
Cat 936 Loader	125	150	200	200	200	200	400	400	500	500	500	500	500	500	500	500
Cat 966 Loader																
Cat 980 Loader																
Cat 988 Loader																
Cat 14H Grader																
Telescopic Man Lift, 40 ft			63	63												
AC Paver																
Concrete Paving Spread																
Cat 563 Padfoot Roller									50	100	100	20				
Cat 563 Smooth Roller										100	100	100	100	100	50	50
Cat 815 Roller											200	200	200	200	200	16
Ramex Roller							500	500	500	500	500	500	500	500	500	500
Hand Tamp							500	500	500	500	500	500	500	500	500	500
Adzer Riding																
Clip Machine																
Rail Heater																
Regulator																
Ballast Stabilizer																
Speed Swing																
Track Laying Machine																
Tamper Small																
Tamper Large																
Vibratrac																
Hi-Rail Welder																
Cat 615 Elevating Scraper									100	200	100	100				
Cat 621 Scraper, 21 CY											600	600	600	600	600	300
Dump Truck, 6x4, 12 CY																
35 Ton Art Dump	200	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Truck, Flat Bed 14'															10	100
Fuel Truck, 2000 Gal	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Lube Truck	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Mechanics Truck, 1 Ton	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Pickup 4 x 4	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975
SUV	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175
Water Truck, 4000 Gal																
Water Truck, 8000 Gal Off Rd											200	200	200	200	200	16
<b>TOTAL</b>	<b>3712</b>	<b>4121</b>	<b>4281</b>	<b>4251</b>	<b>4098</b>	<b>4098</b>	<b>5409</b>	<b>5409</b>	<b>5725</b>	<b>5975</b>	<b>7375</b>	<b>7245</b>	<b>7095</b>	<b>7075</b>	<b>7035</b>	<b>5992</b>

Notes: Source of data: Estimate of monthly hours of usage provided by Gregory S. Chiodo of HDR ONE COMPANY via e-mail dated Mon 10/1/2007.



Activity Data for Construction Equipment  
ICTF Modernization Project, Long Beach, CA

Equipment/Vehicle	Month:																																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																
Air Compressor, 175 CFM																																																
Backhoe, Cat 320, 1.0 CY																																																
Backhoe, Cat 325, 1.5 CY																																																
Backhoe/loader, Cat. 416, 1CY																																																
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Hyd. Boom, Trk Mtd. 12T																																																
RT Crane, 45T																																																
Crush Concrete																																																
Cat D5 Dozer																																																
Cat D6 Dozer																																																
Cat D7 Dozer																																																
Cat D8N Dozer																																																
John Deere 9400																	0	0	0	0	0	0	0	0	150	300	750	750	660	600	600	54																
Cat 936 Loader																	24	28	38	38	38	38	76	76	95	95	95	95	95	95	95	95																
Cat 966 Loader																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
Cat 980 Loader																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
Cat 988 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																
Cat 14H Grader																																																
Telescopic Man Lift, 40 ft																																																
AC Paver																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
Concrete Paving Spread																																																
Cat 563 Padfoot Roller																																	0	0	0	0	0	0	0	0	150	300	300	60	0	0	0	0
Cat 563 Smooth Roller																																	0	0	0	0	0	0	0	0	0	300	300	300	300	300	150	150
Cat 815 Roller																																	0	0	0	0	0	0	0	0	0	600	600	600	600	600	600	48
Ramex Roller																																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hand Tamp																																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adzer Riding																																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clip Machine																																																
Rail Heater																																																
Regulator																																																
Ballast Stabilizer																																																
Speed Swing																																																
Track Laying Machine																																																
Tamper Small	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																
Tamper Large	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																
Vibratrac																																																
Hi-Rail Welder																																																
Cat 615 Elevating Scraper																																																
Cat 621 Scraper, 21 CY																																																
Dump Truck, 6x4, 12 CY																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
35 Ton Art Dump																	5,500	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000																
Truck, Flat Bed 14'																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	430	4,296																
Fuel Truck, 2000 Gal																	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222																
Lube Truck																	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222																
Mechanics Truck, 1 Ton																	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066																
Pickup 4 x 4																	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675																
SUV																	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993																
Water Truck, 4000 Gal																	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
Water Truck, 8000 Gal Off Rd																	0	0	0	0	0	0	0	0	0	0	1,500	1,500	1,500	1,500	1,500	120																
<b>TOTAL</b>																	<b>93,702</b>	<b>99,207</b>	<b>99,216</b>	<b>99,216</b>	<b>99,216</b>	<b>99,216</b>	<b>99,254</b>	<b>99,254</b>	<b>99,573</b>	<b>100,173</b>	<b>102,723</b>	<b>102,483</b>	<b>102,333</b>	<b>102,273</b>	<b>102,553</b>	<b>103,941</b>																

Notes: Estimated from hours of use and assumed speed.

monthly TOTAL mileage

Activity Data for Construction Equipment  
ICTF Modernization Project, Long Beach, CA

Equipment/Vehicle	Month:															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Air Compressor, 175 CFM																
Backhoe, Cat 320, 1.0 CY																
Backhoe, Cat 325, 1.5 CY																
Backhoe/loader, Cat. 416, 1CY																
Hyd. Shear for Backhoe																
Hyd. Boom, Trk Mtd. 12T																
RT Crane, 45T																
Crush Concrete																
Cat D5 Dozer																
Cat D6 Dozer																
Cat D7 Dozer																
Cat D8N Dozer																
John Deere 9400	0	0	0	0	0	0	0	0	150	300	750	750	660	600	600	54
Cat 936 Loader	24	28	38	38	38	38	76	76	95	95	95	95	95	95	95	95
Cat 966 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 980 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 988 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Grader																
Telescopic Man Lift, 40 ft																
AC Paver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Paving Spread																
Cat 563 Padfoot Roller	0	0	0	0	0	0	0	0	150	300	300	60	0	0	0	0
Cat 563 Smooth Roller	0	0	0	0	0	0	0	0	0	300	300	300	300	300	150	150
Cat 815 Roller	0	0	0	0	0	0	0	0	0	0	600	600	600	600	600	48
Ramex Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hand Tamp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adzer Riding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clip Machine																
Rail Heater																
Regulator																
Ballast Stabilizer																
Speed Swing																
Track Laying Machine																
Tamper Small	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamper Large	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratrac																
Hi-Rail Welder																
Cat 615 Elevating Scraper																
Cat 621 Scraper, 21 CY																
Dump Truck, 6x4, 12 CY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 Ton Art Dump	49	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98
Truck, Flat Bed 14'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	32
Fuel Truck, 2000 Gal	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Lube Truck	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Mechanics Truck, 1 Ton	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
Pickup 4 x 4	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243
SUV	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293
Water Truck, 4000 Gal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck, 8000 Gal Off Rd	0	0	0	0	0	0	0	0	0	0	1,500	1,500	1,500	1,500	1,500	120
<b>TOTAL</b>	<b>691</b>	<b>745</b>	<b>754</b>	<b>754</b>	<b>754</b>	<b>754</b>	<b>792</b>	<b>792</b>	<b>1,111</b>	<b>1,711</b>	<b>4,261</b>	<b>4,021</b>	<b>3,871</b>	<b>3,811</b>	<b>3,664</b>	<b>1,215</b>

Notes: Based on total VMT and % of unpaved VMT.

monthly UNPAVED mileage (on-site)

Activity Data for Construction Equipment  
ICTF Modernization Project, Long Beach, CA

Equipment/Vehicle	Month:															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Air Compressor, 175 CFM																
Backhoe, Cat 320, 1.0 CY																
Backhoe, Cat 325, 1.5 CY																
Backhoe/loader, Cat. 416, 1CY																
Hyd. Shear for Backhoe																
Hyd. Boom, Trk Mtd. 12T																
RT Crane, 45T																
Crush Concrete																
Cat D5 Dozer																
Cat D6 Dozer																
Cat D7 Dozer																
Cat D8N Dozer																
John Deere 9400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 936 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 966 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 980 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 988 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Grader																
Telescopic Man Lift, 40 ft																
AC Paver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Paving Spread																
Cat 563 Padfoot Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 563 Smooth Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 815 Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramex Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hand Tamp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adzer Riding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clip Machine																
Rail Heater																
Regulator																
Ballast Stabilizer																
Speed Swing																
Track Laying Machine																
Tamper Small	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamper Large	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratrac																
Hi-Rail Welder																
Cat 615 Elevating Scraper																
Cat 621 Scraper, 21 CY																
Dump Truck, 6x4, 12 CY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 Ton Art Dump	5,451	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902	10,902
Truck, Flat Bed 14'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	426	4,264
Fuel Truck, 2000 Gal	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197
Lube Truck	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197
Mechanics Truck, 1 Ton	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034
Pickup 4 x 4	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432
SUV	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700
Water Truck, 4000 Gal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck, 8000 Gal Off Rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>93,011</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,462</b>	<b>98,889</b>	<b>102,727</b>

Notes: Based on total VMT and % of paved VMT.

monthly PAVED mileage (off-site)

Activity Data for Construction Equipment  
ICTF Modernization Project, Long Beach, CA

Equipment/Vehicle	Month:																															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																
Air Compressor, 175 CFM																																
Backhoe, Cat 320, 1.0 CY																																
Backhoe, Cat 325, 1.5 CY																																
Backhoe/loader, Cat. 416, 1CY																																
Hyd. Shear for Backhoe																																
Hyd. Boom, Trk Mtd. 12T																																
RT Crane, 45T																																
Crush Concrete																																
Cat D5 Dozer																																
Cat D6 Dozer																																
Cat D7 Dozer																																
Cat D8N Dozer																																
John Deere 9400																																
Cat 936 Loader																																
Cat 966 Loader																																
Cat 980 Loader																																
Cat 988 Loader																																
Cat 14H Grader																																
Telescopic Man Lift, 40 ft																																
AC Paver																																
Concrete Paving Spread																																
Cat 563 Padfoot Roller																																
Cat 563 Smooth Roller																																
Cat 815 Roller																																
Ramex Roller																																
Hand Tamp																																
Adzer Riding																																
Clip Machine																																
Rail Heater																																
Regulator																																
Ballast Stabilizer																																
Speed Swing																																
Track Laying Machine																																
Tamper Small																																
Tamper Large																																
Vibratrac																																
Hi-Rail Welder																																
Cat 615 Elevating Scraper																																
Cat 621 Scraper, 21 CY																																
Dump Truck, 6x4, 12 CY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																
35 Ton Art Dump	49	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98																
Truck, Flat Bed 14'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	11																
Fuel Truck, 2000 Gal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8																
Lube Truck	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8																
Mechanics Truck, 1 Ton																																
Pickup 4 x 4																																
SUV																																
Water Truck, 4000 Gal																																
Water Truck, 8000 Gal Off Rd																																
<b>TOTAL</b>																	<b>66</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>115</b>	<b>116</b>	<b>126</b>

Notes: Based on estimated trips and idle time per trip.

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

Equipment/Vehicle	17	18	19	20	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	
Air Compressor, 175 CFM	100	100	100	100	100		75	75	75	75	75	75	75	75	75	75	75	75	100	100	
Backhoe, Cat 320, 1.0 CY	600	600	600	600	600		600	600	600	600	600	600	600	600	600	600	400	400	300	240	200
Backhoe, Cat 325, 1.5 CY	200	200	80																		
Backhoe/loader, Cat. 416, 1CY																			125	125	103
Hyd. Shear for Backhoe																					
Hyd. Boom, Trk Mtd. 12T														56		31					
RT Crane, 45T														18	11	100	200	200	300		
Crush Concrete	200	200	200	225																	
Cat D5 Dozer																		5	81	100	
Cat D6 Dozer	75	75	93	92																	
Cat D7 Dozer	200	200	100													12	12				
Cat D8N Dozer																					
John Deere 9400																					
Cat 936 Loader	500	800	800	800	800	800	800	800	800	800	800	800	600	656	675	780	713	500	400	200	
Cat 966 Loader	200	200	200	225																	
Cat 980 Loader	200	200	200	225	200	200	200	200	280	126	200	200	200	200	102						
Cat 988 Loader														36					22		
Cat 14H Grader	150	150	100	100	100		200	200	240	109	200	200	200	200	175	200	200	200	200	92	
Telescopic Man Lift, 40 ft																					
AC Paver																	200	200	35		
Concrete Paving Spread											200	200	200	200	175						
Cat 563 Padfoot Roller	50	50															200	120	16		
Cat 563 Smooth Roller	150	150	50	20			200	200	140	109	200	200	200	200	175	27					
Cat 815 Roller																					
Ramex Roller	500	500	550	550	550	550	550	550	550	550	560	650	850	850	850	830	683	500	500		
Hand Tamp	500	500	550	550	550	550	550	550	550	550	560	650	850	850	850	830	683	500	500		
Adzer Riding																			100	100	81
Clip Machine																			100	200	121
Rail Heater																			100	100	81
Regulator																			400	500	419
Ballast Stabilizer																			75	100	36
Speed Swing																			100	100	81
Track Laying Machine																			100	100	81
Tamper Small																			400	400	378
Tamper Large																			100	200	123
Vibratrac																			100	150	100
Hi-Rail Welder																			100	100	14
Cat 615 Elevating Scraper	75	75							77	77		58									
Cat 621 Scraper, 21 CY	15																				
Dump Truck, 6x4, 12 CY											1600	1600	1600	1600	1500	1200	1200		110		
35 Ton Art Dump	400	400	200	200	200	200	200	200	200	200	200	200	200	19							
Truck, Flat Bed 14'	100	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Fuel Truck, 2000 Gal	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	50	
Lube Truck	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	50	
Mechanics Truck, 1 Ton	75	75	75	75	75	75	75	75	75	75	75	93	200	200	200	200	200	98	100		
Pickup 4 x 4	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975	975	925
SUV	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	1175	763
Water Truck, 4000 Gal						200	200	200	240	200	200	200	200	200	175	200	200	200	102		
Water Truck, 8000 Gal Off Rd																					
<b>TOTAL</b>	<b>6590</b>	<b>6975</b>	<b>6398</b>	<b>6262</b>	<b>5675</b>	<b>5750</b>	<b>6150</b>	<b>6150</b>	<b>6327</b>	<b>5971</b>	<b>7970</b>	<b>8226</b>	<b>8294</b>	<b>8441</b>	<b>8063</b>	<b>7785</b>	<b>7391</b>	<b>7137</b>	<b>7059</b>	<b>4006</b>	
Notes:																					

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

Equipment/Vehicle	17	18	19	20	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36
Air Compressor, 175 CFM																				
Backhoe, Cat 320, 1.0 CY																				
Backhoe, Cat 325, 1.5 CY																				
Backhoe/loader, Cat. 416, 1CY																				
Hyd. Shear for Backhoe																				
Hyd. Boom, Trk Mtd. 12T																				
RT Crane, 45T																				
Crush Concrete																				
Cat D5 Dozer																				
Cat D6 Dozer																				
Cat D7 Dozer																				
Cat D8N Dozer																				
John Deere 9400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 936 Loader	95	152	152	152	152	152	152	152	152	152	152	152	114	124	128	148	135	95	76	38
Cat 966 Loader	38	38	38	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 980 Loader	38	38	38	43	38	38	38	38	53	24	38	38	38	38	19	0	0	0	0	0
Cat 988 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	4	0	0
Cat 14H Grader																				
Telescopic Man Lift, 40 ft																				
AC Paver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	600	600	105	0	0
Concrete Paving Spread																				
Cat 563 Padfoot Roller	150	150	0	0	0	0	0	0	0	0	0	0	0	0	0	600	360	48	0	0
Cat 563 Smooth Roller	450	450	150	60	0	0	600	600	420	327	600	600	600	600	525	81	0	0	0	0
Cat 815 Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramex Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hand Tamp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adzer Riding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	81
Clip Machine																				
Rail Heater																				
Regulator																				
Ballast Stabilizer																				
Speed Swing																				
Track Laying Machine																				
Tamper Small	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	400	378
Tamper Large	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	200	123
Vibratrac																				
Hi-Rail Welder																				
Cat 615 Elevating Scraper																				
Cat 621 Scraper, 21 CY																				
Dump Truck, 6x4, 12 CY	0	0	0	0	0	0	0	0	0	0	44,000	44,000	44,000	44,000	41,250	33,000	33,000	3,025	0	0
35 Ton Art Dump	11,000	11,000	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	523	0	0	0	0	0	0	0
Truck, Flat Bed 14'	4,296	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592	8,592
Fuel Truck, 2000 Gal	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	2,148	0
Lube Truck	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	3,222	2,148	0
Mechanics Truck, 1 Ton	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,066	3,802	8,176	8,176	8,176	8,176	8,176	4,006	4,088	0
Pickup 4 x 4	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	35,675	33,846
SUV	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	42,993	27,918
Water Truck, 4000 Gal	0	0	0	0	0	1,500	1,500	1,500	1,800	1,500	1,500	1,500	1,500	1,500	1,313	1,500	1,500	1,500	765	0
Water Truck, 8000 Gal Off Rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>104,245</b>	<b>108,598</b>	<b>102,648</b>	<b>102,567</b>	<b>102,460</b>	<b>103,960</b>	<b>104,560</b>	<b>104,560</b>	<b>104,695</b>	<b>104,273</b>	<b>148,560</b>	<b>149,296</b>	<b>148,655</b>	<b>148,149</b>	<b>145,115</b>	<b>137,809</b>	<b>137,476</b>	<b>103,088</b>	<b>97,185</b>	<b>70,976</b>

monthly TOTAL mileage

Notes:

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

Equipment/Vehicle	17	18	19	20	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	
Air Compressor, 175 CFM																					
Backhoe, Cat 320, 1.0 CY																					
Backhoe, Cat 325, 1.5 CY																					
Backhoe/loader, Cat. 416, 1CY																					
Hyd. Shear for Backhoe																					
Hyd. Boom, Trk Mtd. 12T																					
RT Crane, 45T																					
Crush Concrete																					
Cat D5 Dozer																					
Cat D6 Dozer																					
Cat D7 Dozer																					
Cat D8N Dozer																					
John Deere 9400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 936 Loader	95	152	152	152	152	152	152	152	152	152	152	152	114	124	128	148	135	95	76	38	
Cat 966 Loader	38	38	38	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 980 Loader	38	38	38	43	38	38	38	38	53	24	38	38	38	38	19	0	0	0	0	0	0
Cat 988 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	4	0	0
Cat 14H Grader																					
Telescopic Man Lift, 40 ft																					
AC Paver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	600	600	105	0	0	0
Concrete Paving Spread																					
Cat 563 Padfoot Roller	150	150	0	0	0	0	0	0	0	0	0	0	0	0	0	600	360	48	0	0	0
Cat 563 Smooth Roller	450	450	150	60	0	0	600	600	420	327	600	600	600	600	525	81	0	0	0	0	0
Cat 815 Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramex Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hand Tamp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adzer Riding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	81
Clip Machine																					
Rail Heater																					
Regulator																					
Ballast Stabilizer																					
Speed Swing																					
Track Laying Machine																					
Tamper Small	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	400	378
Tamper Large	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	200	123
Vibratrac																					
Hi-Rail Welder																					
Cat 615 Elevating Scraper																					
Cat 621 Scraper, 21 CY																					
Dump Truck, 6x4, 12 CY	0	0	0	0	0	0	0	0	0	0	393	393	393	393	368	295	295	27	0	0	0
35 Ton Art Dump	98	98	49	49	49	49	49	49	49	49	49	49	5	0	0	0	0	0	0	0	0
Truck, Flat Bed 14'	32	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64
Fuel Truck, 2000 Gal	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	17	0	0
Lube Truck	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	17	0	0
Mechanics Truck, 1 Ton	32	32	32	32	32	32	32	32	32	32	32	39	84	84	84	84	84	41	42	0	0
Pickup 4 x 4	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243	243	231
SUV	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	190
Water Truck, 4000 Gal	0	0	0	0	0	1,500	1,500	1,500	1,800	1,500	1,500	1,500	1,500	1,500	1,313	1,500	1,500	1,500	765	0	0
Water Truck, 8000 Gal Off Rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>1,518</b>	<b>1,607</b>	<b>1,108</b>	<b>1,027</b>	<b>920</b>	<b>2,420</b>	<b>3,020</b>	<b>3,020</b>	<b>3,155</b>	<b>2,733</b>	<b>3,413</b>	<b>3,421</b>	<b>3,383</b>	<b>3,396</b>	<b>3,087</b>	<b>3,958</b>	<b>3,624</b>	<b>3,070</b>	<b>2,216</b>	<b>1,104</b>	

monthly UNPAVED mileage (on-site)

Notes:

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

Equipment/Vehicle	17	18	19	20	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36
Air Compressor, 175 CFM																				
Backhoe, Cat 320, 1.0 CY																				
Backhoe, Cat 325, 1.5 CY																				
Backhoe/loader, Cat. 416, 1CY																				
Hyd. Shear for Backhoe																				
Hyd. Boom, Trk Mtd. 12T																				
RT Crane, 45T																				
Crush Concrete																				
Cat D5 Dozer																				
Cat D6 Dozer																				
Cat D7 Dozer																				
Cat D8N Dozer																				
John Deere 9400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 936 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 966 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 980 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 988 Loader	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 14H Grader																				
Telescopic Man Lift, 40 ft																				
AC Paver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Concrete Paving Spread																				
Cat 563 Padfoot Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 563 Smooth Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cat 815 Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramex Roller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hand Tamp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Adzer Riding	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clip Machine																				
Rail Heater																				
Regulator																				
Ballast Stabilizer																				
Speed Swing																				
Track Laying Machine																				
Tamper Small	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamper Large	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vibratrac																				
Hi-Rail Welder																				
Cat 615 Elevating Scraper																				
Cat 621 Scraper, 21 CY																				
Dump Truck, 6x4, 12 CY	0	0	0	0	0	0	0	0	0	43,607	43,607	43,607	43,607	40,882	32,705	32,705	2,998	0	0	0
35 Ton Art Dump	10,902	10,902	5,451	5,451	5,451	5,451	5,451	5,451	5,451	5,451	5,451	518	0	0	0	0	0	0	0	0
Truck, Flat Bed 14'	4,264	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528	8,528
Fuel Truck, 2000 Gal	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	2,131	0
Lube Truck	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	2,131	0
Mechanics Truck, 1 Ton	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,034	3,763	8,092	8,092	8,092	8,092	8,092	3,965	4,046	0
Pickup 4 x 4	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	35,432	33,615
SUV	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	42,700	27,728
Water Truck, 4000 Gal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Truck, 8000 Gal Off Rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>102,727</b>	<b>106,991</b>	<b>101,540</b>	<b>101,540</b>	<b>101,540</b>	<b>101,540</b>	<b>101,540</b>	<b>101,540</b>	<b>101,540</b>	<b>101,540</b>	<b>145,147</b>	<b>145,875</b>	<b>145,271</b>	<b>144,753</b>	<b>142,028</b>	<b>133,852</b>	<b>133,852</b>	<b>100,017</b>	<b>94,969</b>	<b>69,872</b>
Notes:																				

monthly PAVED mileage (off-site)



Activity Data for Construction Equip  
ICTF Modernization Project, Long B

Equipment/Vehicle	17	18	19	20	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36
Air Compressor, 175 CFM																				
Backhoe, Cat 320, 1.0 CY																				
Backhoe, Cat 325, 1.5 CY																				
Backhoe/loader, Cat. 416, 1CY																				
Hyd. Shear for Backhoe																				
Hyd. Boom, Trk Mtd. 12T																				
RT Crane, 45T																				
Crush Concrete																				
Cat D5 Dozer																				
Cat D6 Dozer																				
Cat D7 Dozer																				
Cat D8N Dozer																				
John Deere 9400																				
Cat 936 Loader																				
Cat 966 Loader																				
Cat 980 Loader																				
Cat 988 Loader																				
Cat 14H Grader																				
Telescopic Man Lift, 40 ft																				
AC Paver																				
Concrete Paving Spread																				
Cat 563 Padfoot Roller																				
Cat 563 Smooth Roller																				
Cat 815 Roller																				
Ramex Roller																				
Hand Tamp																				
Adzer Riding																				
Clip Machine																				
Rail Heater																				
Regulator																				
Ballast Stabilizer																				
Speed Swing																				
Track Laying Machine																				
Tamper Small																				
Tamper Large																				
Vibratrac																				
Hi-Rail Welder																				
Cat 615 Elevating Scraper																				
Cat 621 Scraper, 21 CY																				
Dump Truck, 6x4, 12 CY	0	0	0	0	0	0	0	0	0	0	393	393	393	393	368	295	295	27	0	0
35 Ton Art Dump	98	98	49	49	49	49	49	49	49	49	49	49	5	0	0	0	0	0	0	0
Truck, Flat Bed 14'	11	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Fuel Truck, 2000 Gal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	6	0
Lube Truck	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	6	0
Mechanics Truck, 1 Ton																				
Pickup 4 x 4																				
SUV																				
Water Truck, 4000 Gal																				
Water Truck, 8000 Gal Off Rd																				
<b>TOTAL</b>	<b>126</b>	<b>136</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>87</b>	<b>480</b>	<b>480</b>	<b>436</b>	<b>431</b>	<b>406</b>	<b>333</b>	<b>333</b>	<b>65</b>	<b>32</b>	<b>21</b>
Notes:																				

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

	<b>Equipment/Vehicle</b>	<b>Total</b>
<b>monthly hours of operation</b>	Air Compressor, 175 CFM	3273
	Backhoe, Cat 320, 1.0 CY	19940
	Backhoe, Cat 325, 1.5 CY	4227
	Backhoe/loader, Cat. 416, 1CY	353
	Hyd. Shear for Backhoe	107
	Hyd. Boom, Trk Mtd. 12T	87
	RT Crane, 45T	955
	Crush Concrete	825
	Cat D5 Dozer	336
	Cat D6 Dozer	1597
	Cat D7 Dozer	3624
	Cat D8N Dozer	1105
	John Deere 9400	1288
	Cat 936 Loader	19699
	Cat 966 Loader	825
	Cat 980 Loader	2933
	Cat 988 Loader	58
	Cat 14H Grader	3016
	Telescopic Man Lift, 40 ft	126
	AC Paver	435
	Concrete Paving Spread	975
	Cat 563 Padfoot Roller	706
	Cat 563 Smooth Roller	2621
	Cat 815 Roller	1016
	Ramex Roller	16673
	Hand Tamp	16673
	Adzer Riding	281
	Clip Machine	421
	Rail Heater	281
	Regulator	1319
	Ballast Stabilizer	211
	Speed Swing	281
	Track Laying Machine	281
	Tamper Small	1178
	Tamper Large	423
	Vibratrac	350
	Hi-Rail Welder	214
	Cat 615 Elevating Scraper	862
	Cat 621 Scraper, 21 CY	3315
	Dump Truck, 6x4, 12 CY	10410
	35 Ton Art Dump	9019
	Truck, Flat Bed 14'	4010
	Fuel Truck, 2000 Gal	2600
	Lube Truck	2600
	Mechanics Truck, 1 Ton	3316
Pickup 4 x 4	35050	
SUV	41888	
Water Truck, 4000 Gal	2717	
Water Truck, 8000 Gal Off Rd	1016	
	<b>TOTAL</b>	<b>225516</b>
	Notes:	

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

	Equipment/Vehicle	Total
	Air Compressor, 175 CFM	
	Backhoe, Cat 320, 1.0 CY	
	Backhoe, Cat 325, 1.5 CY	
	Backhoe/loader, Cat. 416, 1CY	
	Hyd. Shear for Backhoe	
	Hyd. Boom, Trk Mtd. 12T	
	RT Crane, 45T	
	Crush Concrete	
	Cat D5 Dozer	
	Cat D6 Dozer	
	Cat D7 Dozer	
	Cat D8N Dozer	
	John Deere 9400	3,864
	Cat 936 Loader	3,731
	Cat 966 Loader	156
	Cat 980 Loader	555
	Cat 988 Loader	11
	Cat 14H Grader	
	Telescopic Man Lift, 40 ft	
	AC Paver	1,305
	Concrete Paving Spread	
	Cat 563 Padfoot Roller	2,118
	Cat 563 Smooth Roller	7,863
	Cat 815 Roller	3,048
	Ramex Roller	0
	Hand Tamp	0
	Adzer Riding	281
	Clip Machine	
	Rail Heater	
	Regulator	
	Ballast Stabilizer	
	Speed Swing	
	Track Laying Machine	
	Tamper Small	1,178
	Tamper Large	423
	Vibratrac	
	Hi-Rail Welder	
	Cat 615 Elevating Scraper	
	Cat 621 Scraper, 21 CY	
	Dump Truck, 6x4, 12 CY	286,275
	35 Ton Art Dump	248,023
	Truck, Flat Bed 14'	172,270
	Fuel Truck, 2000 Gal	111,696
	Lube Truck	111,696
	Mechanics Truck, 1 Ton	135,558
	Pickup 4 x 4	1,282,480
	SUV	1,532,682
	Water Truck, 4000 Gal	20,378
	Water Truck, 8000 Gal Off Rd	7,620
	<b>TOTAL</b>	<b>3,933,210</b>
	Notes:	

monthly TOTAL mileage

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

	Equipment/Vehicle	Total
	Air Compressor, 175 CFM	
	Backhoe, Cat 320, 1.0 CY	
	Backhoe, Cat 325, 1.5 CY	
	Backhoe/loader, Cat. 416, 1CY	
	Hyd. Shear for Backhoe	
	Hyd. Boom, Trk Mtd. 12T	
	RT Crane, 45T	
	Crush Concrete	
	Cat D5 Dozer	
	Cat D6 Dozer	
	Cat D7 Dozer	
	Cat D8N Dozer	
	John Deere 9400	3,864
	Cat 936 Loader	3,731
	Cat 966 Loader	156
	Cat 980 Loader	555
	Cat 988 Loader	11
	Cat 14H Grader	
	Telescopic Man Lift, 40 ft	
	AC Paver	1,305
	Concrete Paving Spread	
	Cat 563 Padfoot Roller	2,118
	Cat 563 Smooth Roller	7,863
	Cat 815 Roller	3,048
	Ramex Roller	0
	Hand Tamp	0
	Adzer Riding	281
	Clip Machine	
	Rail Heater	
	Regulator	
	Ballast Stabilizer	
	Speed Swing	
	Track Laying Machine	
	Tamper Small	1,178
	Tamper Large	423
	Vibratrac	
	Hi-Rail Welder	
	Cat 615 Elevating Scraper	
	Cat 621 Scraper, 21 CY	
	Dump Truck, 6x4, 12 CY	2,556
	35 Ton Art Dump	2,214
	Truck, Flat Bed 14'	1,276
	Fuel Truck, 2000 Gal	873
	Lube Truck	873
	Mechanics Truck, 1 Ton	1,400
	Pickup 4 x 4	8,736
	SUV	10,441
	Water Truck, 4000 Gal	20,378
	Water Truck, 8000 Gal Off Rd	7,620
	<b>TOTAL</b>	<b>80,900</b>
	Notes:	

monthly UNPAVED mileage (on-site)

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

	Equipment/Vehicle	Total
	Air Compressor, 175 CFM	
	Backhoe, Cat 320, 1.0 CY	
	Backhoe, Cat 325, 1.5 CY	
	Backhoe/loader, Cat. 416, 1CY	
	Hyd. Shear for Backhoe	
	Hyd. Boom, Trk Mtd. 12T	
	RT Crane, 45T	
	Crush Concrete	
	Cat D5 Dozer	
	Cat D6 Dozer	
	Cat D7 Dozer	
	Cat D8N Dozer	
	John Deere 9400	0
	Cat 936 Loader	0
	Cat 966 Loader	0
	Cat 980 Loader	0
	Cat 988 Loader	0
monthly PAVED mileage (off-site)	Cat 14H Grader	
	Telescopic Man Lift, 40 ft	
	AC Paver	0
	Concrete Paving Spread	
	Cat 563 Padfoot Roller	0
	Cat 563 Smooth Roller	0
	Cat 815 Roller	0
	Ramex Roller	0
	Hand Tamp	0
	Adzer Riding	0
	Clip Machine	
	Rail Heater	
	Regulator	
	Ballast Stabilizer	
	Speed Swing	
	Track Laying Machine	
	Tamper Small	0
	Tamper Large	0
	Vibratrac	
	Hi-Rail Welder	
	Cat 615 Elevating Scraper	
	Cat 621 Scraper, 21 CY	
	Dump Truck, 6x4, 12 CY	283,719
	35 Ton Art Dump	245,808
	Truck, Flat Bed 14'	170,994
	Fuel Truck, 2000 Gal	110,823
	Lube Truck	110,823
	Mechanics Truck, 1 Ton	134,158
	Pickup 4 x 4	1,273,743
	SUV	1,522,241
	Water Truck, 4000 Gal	0
	Water Truck, 8000 Gal Off Rd	0
		<b>TOTAL</b>
	Notes:	

Activity Data for Construction Equip  
ICTF Modernization Project, Long B

	Total
Air Compressor, 175 CFM	
Backhoe, Cat 320, 1.0 CY	
Backhoe, Cat 325, 1.5 CY	
Backhoe/loader, Cat. 416, 1CY	
Hyd. Shear for Backhoe	
Hyd. Boom, Trk Mtd. 12T	
RT Crane, 45T	
Crush Concrete	
Cat D5 Dozer	
Cat D6 Dozer	
Cat D7 Dozer	
Cat D8N Dozer	
John Deere 9400	
Cat 936 Loader	
Cat 966 Loader	
Cat 980 Loader	
Cat 988 Loader	
Cat 14H Grader	
Telescopic Man Lift, 40 ft	
AC Paver	
Concrete Paving Spread	
Cat 563 Padfoot Roller	
Cat 563 Smooth Roller	
Cat 815 Roller	
Ramex Roller	
Hand Tamp	
Adzer Riding	
Clip Machine	
Rail Heater	
Regulator	
Ballast Stabilizer	
Speed Swing	
Track Laying Machine	
Tamper Small	
Tamper Large	
Vibratrac	
Hi-Rail Welder	
Cat 615 Elevating Scraper	
Cat 621 Scraper, 21 CY	
Dump Truck, 6x4, 12 CY	2,556
35 Ton Art Dump	2,214
Truck, Flat Bed 14'	425
Fuel Truck, 2000 Gal	291
Lube Truck	291
Mechanics Truck, 1 Ton	
Pickup 4 x 4	
SUV	
Water Truck, 4000 Gal	
Water Truck, 8000 Gal Off Rd	
<b>TOTAL</b>	<b>5,778</b>
Notes:	

Extended Idle Time (hours, on-site)

APPENDIX B  
OFFROAD2007 OUTPUT

OFFROAD2007 Output for Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA.

CY	Season	AvgDays	Code	Equipment	Fuel	MaxHP	Class	C/R	Pre	Hand	Port	County	Air Basin	Air Dist.	Population	Activity	Consumption	ROG Exhaust	CO Exhaust	NOX Exhaust	CO2 Exhaust	SO2 Exhaust	PM Exhaust	N2O Exhaust	CH4 Exhaust
2010	Annual	Mon-Sun	2270002003	Pavers	D	25	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	3,97E+00	8,94E+00	7,61E+00	1,24E-04	3,78E-04	7,16E-04	8,34E-02	1,06E-06	4,13E-05	0,00E+00	1,12E-05
2010	Annual	Mon-Sun	2270002003	Pavers	D	50	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	2,31E+02	5,29E+02	6,96E+02	4,29E-02	1,02E-01	8,22E-02	7,39E+00	9,56E-05	9,40E-03	0,00E+00	3,87E-03
2010	Annual	Mon-Sun	2270002003	Pavers	D	120	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	2,72E+02	6,23E+02	1,98E+03	5,09E-02	1,63E-01	2,65E-01	2,16E+01	2,53E-04	2,68E-02	0,00E+00	4,59E-03
2010	Annual	Mon-Sun	2270002003	Pavers	D	175	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1,69E+02	3,88E+02	2,27E+03	3,96E-02	1,54E-01	3,10E-01	2,48E+01	2,79E-04	1,75E-02	0,00E+00	3,57E-03
2010	Annual	Mon-Sun	2270002003	Pavers	D	250	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	2,04E+01	4,67E+01	4,13E+02	5,67E-03	1,64E-02	5,44E-02	4,53E+00	5,10E-05	2,23E-03	0,00E+00	5,12E-04
2010	Annual	Mon-Sun	2270002003	Pavers	D	500	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	2,09E+01	4,79E+01	5,09E+02	6,29E-03	2,80E-02	6,07E-02	5,58E+00	5,48E-05	2,46E-03	0,00E+00	5,67E-04
2010	Annual	Mon-Sun	2270002009	Plate Compactors	D	15	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	8,53E+01	1,40E+02	2,76E+01	3,54E-04	1,85E-03	2,22E-03	3,02E-01	4,70E-06	1,06E-04	0,00E+00	3,19E-05
2010	Annual	Mon-Sun	2270002015	Rollers	D	15	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1,60E+02	3,05E+02	8,81E+01	1,12E-03	5,89E-03	7,03E-03	9,64E-01	1,50E-05	2,88E-04	0,00E+00	1,01E-04
2010	Annual	Mon-Sun	2270002015	Rollers	D	25	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	6,70E+01	1,28E+02	7,75E+01	1,05E-03	3,51E-03	6,69E-03	8,51E-01	1,08E-05	3,44E-04	0,00E+00	9,43E-05
2010	Annual	Mon-Sun	2270002015	Rollers	D	50	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	2,08E+02	4,01E+02	4,87E+02	2,54E-02	6,34E-02	5,51E-02	5,20E+00	6,73E-05	8,55E-03	0,00E+00	2,29E-03
2010	Annual	Mon-Sun	2270002015	Rollers	D	120	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1,12E+03	2,15E+03	5,82E+03	1,29E-01	4,49E-01	7,93E-01	6,34E+01	7,44E-04	6,88E-02	0,00E+00	1,16E-02
2010	Annual	Mon-Sun	2270002015	Rollers	D	175	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	4,50E+02	8,65E+02	4,27E+03	6,37E-02	2,71E-01	5,19E-01	4,67E-01	5,26E-04	2,84E-02	0,00E+00	5,75E-03
2010	Annual	Mon-Sun	2270002015	Rollers	D	250	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	6,38E+01	1,23E+02	8,53E+02	9,46E-03	2,79E-02	9,95E-02	9,39E+00	1,06E-04	3,70E-03	0,00E+00	8,54E-04
2010	Annual	Mon-Sun	2270002015	Rollers	D	500	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	4,48E+01	8,61E+01	8,56E+02	8,56E-03	3,36E-02	9,82E-02	9,42E+00	9,25E-05	3,38E-03	0,00E+00	7,72E-04
2010	Annual	Mon-Sun	2270002018	Scrappers	D	120	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1,03E+01	3,16E+01	1,36E+02	3,52E-03	1,13E-02	2,06E-02	1,48E+00	1,74E-05	1,85E-03	0,00E+00	3,17E-04
2010	Annual	Mon-Sun	2270002018	Scrappers	D	175	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	9,45E+01	2,89E+02	1,96E+03	3,44E-02	1,34E-01	2,64E-01	2,14E+01	2,41E-04	1,52E-02	0,00E+00	3,11E-03
2010	Annual	Mon-Sun	2270002018	Scrappers	D	250	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	9,21E+01	2,82E+02	2,68E+03	3,69E-02	1,04E-01	3,49E-01	2,95E+01	3,32E-04	1,42E-02	0,00E+00	3,33E-03
2010	Annual	Mon-Sun	2270002018	Scrappers	D	500	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	2,54E+02	7,76E+02	1,14E+04	1,42E-01	5,91E-01	1,25E-02	1,22E-02	5,39E-02	0,00E+00	1,28E-02	
2010	Annual	Mon-Sun	2270002018	Scrappers	D	750	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	7,01E+01	2,14E+00	5,42E+01	6,79E-04	2,82E-03	6,45E-03	5,94E-01	5,98E-06	2,59E-04	0,00E+00	6,13E-05
2010	Annual	Mon-Sun	2270002036	Excavators	D	25	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	9,80E+00	3,75E+01	8,21E+01	3,73E-04	1,27E-03	2,36E-03	3,08E+01	3,91E-06	1,07E-04	0,00E+00	3,36E-05
2010	Annual	Mon-Sun	2270002036	Excavators	D	50	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	3,69E+02	1,44E+03	1,69E+03	8,12E-02	2,26E-01	1,90E-01	1,80E+01	2,33E-04	1,98E-02	0,00E+00	7,33E-03
2010	Annual	Mon-Sun	2270002036	Excavators	D	120	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1,00E+03	3,92E+03	1,32E+04	2,72E-01	1,04E+00	1,44E+02	1,69E+03	1,44E+02	5,12E-01	0,00E+00	2,46E-02
2010	Annual	Mon-Sun	2270002036	Excavators	D	175	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1,93E+03	7,55E+03	3,87E+04	5,51E-01	2,53E+00	4,19E+00	4,23E+02	4,76E-03	2,49E-01	0,00E+00	4,97E-02
2010	Annual	Mon-Sun	2270002036	Excavators	D	250	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	7,86E+02	3,07E+03	2,21E+04	2,23E-01	6,04E-01	2,29E+00	2,43E+02	2,74E-03	7,97E-02	0,00E+00	2,01E-02
2010	Annual	Mon-Sun	2270002036	Excavators	D	500	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	5,67E+02	2,22E+03	2,35E+04	2,20E-01	6,83E-01	2,13E+00	2,59E+02	2,54E-03	7,88E-02	0,00E+00	1,98E-02
2010	Annual	Mon-Sun	2270002036	Excavators	D	750	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	2,10E+01	8,20E+01	1,44E+01	1,36E-04	4,19E-04	1,35E-03	1,59E-01	1,60E-06	4,91E-05	0,00E+00	1,22E-05
2010	Annual	Mon-Sun	2270002045	Cranes	D	50	Construction and Mining Equipment	U	P	NHH	P	Los Angeles	SC	SC	9,00E+00	3,16E+01	3,45E+01	2,02E-03	5,93E-03	4,02E-03	3,66E-01	4,74E-06	4,55E-04	0,00E+00	1,83E-04
2010	Annual	Mon-Sun	2270002045	Cranes	D	120	Construction and Mining Equipment	U	P	NHH	P	Los Angeles	SC	SC	9,88E+01	3,47E+02	7,99E+02	1,93E-02	6,45E-02	1,13E-01	8,69E+00	1,02E-04	1,04E-02	0,00E+00	1,74E-03
2010	Annual	Mon-Sun	2270002045	Cranes	D	175	Construction and Mining Equipment	U	P	NHH	P	Los Angeles	SC	SC	9,88E+01	3,47E+02	1,27E+03	2,09E-02	8,46E-02	1,61E-01	1,39E+01	1,57E-04	9,31E-03	0,00E+00	1,89E-03
2010	Annual	Mon-Sun	2270002045	Cranes	D	250	Construction and Mining Equipment	U	N	NHH	P	Los Angeles	SC	SC	1,91E+02	6,73E+02	3,43E+03	4,18E-02	1,17E-01	4,15E-01	3,77E+01	4,24E-04	1,58E-02	0,00E+00	3,77E-03
2010	Annual	Mon-Sun	2270002045	Cranes	D	500	Construction and Mining Equipment	U	N	NHH	P	Los Angeles	SC	SC	7,02E+01	2,46E+02	2,02E+03	2,25E-02	8,18E-02	2,18E-01	2,22E+01	2,18E-04	8,45E-03	0,00E+00	2,03E-03
2010	Annual	Mon-Sun	2270002045	Cranes	D	750	Construction and Mining Equipment	U	N	NHH	P	Los Angeles	SC	SC	8,70E+01	3,06E+00	4,21E+01	4,71E-04	1,71E-03	4,66E-03	4,63E+01	4,65E-06	1,78E-04	0,00E+00	4,25E-05
2010	Annual	Mon-Sun	2270002045	Cranes	D	9999	Construction and Mining Equipment	U	N	NHH	P	Los Angeles	SC	SC	1,09E+00	3,84E+00	1,69E+02	2,09E-03	7,98E-03	2,34E-02	1,86E+00	1,87E-05	7,29E-04	0,00E+00	1,89E-04
2010	Annual	Mon-Sun	2270002048	Graders	D	50	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	3,71E+00	9,68E+00	1,22E+01	6,75E-04	1,73E-03	1,43E-03	1,33E-01	1,72E-06	1,56E-04	0,00E+00	6,09E-05
2010	Annual	Mon-Sun	2270002048	Graders	D	120	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	2,47E+02	6,46E+02	2,25E+03	4,99E-02	1,76E-01	2,99E-01	2,42E+01	2,84E-04	2,73E-02	0,00E+00	4,50E-03
2010	Annual	Mon-Sun	2270002048	Graders	D	175	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	8,45E+02	2,21E+03	1,25E+04	1,91E-01	8,16E-01	1,49E+00	1,37E-02	1,54E-03	8,59E-02	0,00E+00	1,73E-02
2010	Annual	Mon-Sun	2270002048	Graders	D	250	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	5,24E+02	1,37E+03	1,07E+04	1,20E-01	3,38E-01	1,22E+00	1,38E-02	1,32E-03	4,54E-02	0,00E+00	1,09E-02
2010	Annual	Mon-Sun	2270002048	Graders	D	500	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	1,48E+01	3,87E+01	4,03E+02	4,16E-03	1,46E-02	4,10E-02	4,44E+00	4,36E-05	1,56E-03	0,00E+00	3,75E-04
2010	Annual	Mon-Sun	2270002048	Graders	D	750	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	1,34E+02	3,50E+02	7,71E+01	8,01E-06	2,79E-05	8,53E-08	8,49E-03	8,53E-08	3,02E-06	0,00E+00	7,22E-07
2010	Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	175	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1,72E+01	9,40E+01	5,37E+02	8,11E-03	3,58E-02	6,00E-02	5,88E+00	6,61E-05	3,61E-03	0,00E+00	7,32E-04
2010	Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	250	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	1,27E+02	6,94E+02	5,25E+03	5,69E-02	1,49E-01	5,78E-01	6,50E+04	1,99E-02	4,26E-02	0,00E+00	5,13E-03
2010	Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	500	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	1,79E+02	9,78E+02	1,21E+04	1,22E-01	3,69E-01	1,13E+00	1,33E+02	1,31E-03	4,26E-02	0,00E+00	1,10E-02
2010	Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	750	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	2,81E+00	1,53E+01	3,07E+02	3,12E-03	9,39E-03	2,96E-02	3,39E+00	3,40E-05	1,10E-03	0,00E+00	2,81E-04
2010	Annual	Mon-Sun	2270002051	Off-Highway Trucks	D	1000	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	1,32E+00	7,15E+00	2,04E+02	2,32E-03	7,44E-03	2,63E-02	2,24E+01	2,26E-05	7,97E-04	0,00E+00	2,09E-04
2010	Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	50	Construction and Mining Equipment	U	P	NHH	P	Los Angeles	SC	SC	4,24E+01	1,11E+02	2,29E+02	1,23E-02	3,10E-02	2,60E-02	2,44E+00	3,15E-05	2,88E-03	0,00E+00	1,13E-03
2010	Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	120	Construction and Mining Equipment	U	P	NHH	P	Los Angeles	SC	SC	1,19E+02	3,13E+02	1,19E+03	2,74E-02	9,30E-02	1,62E-01	1,30E+01	1,52E-04	1,50E-02	0,00E+00	2,48E-03
2010	Annual	Mon-Sun	2270002054	Crushing/Proc. Equipment	D	175	Construction and Mining Equipment	U	P	NHH	P	Los Angeles	SC	SC	5,06E+01	1,32E+02	1,01E+03	1,56E-02	6,44E-02	1,23E-01	1,11E+01	1,25E-04	7,05E-03	0,00E+00	1,41



OFFROAD2007 Output for Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA.

CY	Season	AvgDays	Code	Equipment	Fuel	MaxHP	Class	C/R	Pre	Hand	Port	County	Air Basin	Air Dist.	Population	Activity	Consumption	ROG Exhaust	CO Exhaust	NOX Exhaust	CO2 Exhaust	SO2 Exhaust	PM Exhaust	N2O Exhaust	CH4 Exhaust
2010	Annual	Mon-Sun	2270002069	Crawler Tractors	D	1000	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	3.57E+01	1.03E+00	3.08E+01	4.11E-04	1.75E-03	4.42E-03	3.38E-01	3.40E-06	1.45E-04	0.00E+00	3.71E-05
2010	Annual	Mon-Sun	2270002081	Other Construction Equipment	D	15	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	8.76E+01	1.66E+02	7.65E+01	9.75E-04	5.11E-03	6.10E-03	8.37E-01	1.30E-05	2.50E-04	0.00E+00	8.79E-05
2010	Annual	Mon-Sun	2270002081	Other Construction Equipment	D	25	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1.48E+01	2.81E+01	1.69E+01	2.28E-04	7.64E-04	1.46E-03	1.85E-01	2.35E-06	7.49E-05	0.00E+00	2.05E-05
2010	Annual	Mon-Sun	2270002081	Other Construction Equipment	D	50	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	2.28E+01	4.40E+01	5.72E+01	2.26E-03	6.43E-03	6.12E-03	6.15E-01	7.95E-06	5.77E-04	0.00E+00	2.04E-04
2010	Annual	Mon-Sun	2270002081	Other Construction Equipment	D	120	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	3.76E+01	7.26E+01	2.69E+02	4.77E-03	1.97E-02	3.13E-02	2.93E+00	3.44E-05	2.68E-03	0.00E+00	4.31E-04
2010	Annual	Mon-Sun	2270002081	Other Construction Equipment	D	175	Construction and Mining Equipment	U	P	NHH	NP	Los Angeles	SC	SC	5.19E+01	1.00E+02	4.87E+02	5.83E-03	2.96E-02	4.96E-02	5.34E+00	6.00E-05	2.71E-03	0.00E+00	5.26E-04
2010	Annual	Mon-Sun	2270002081	Other Construction Equipment	D	500	Construction and Mining Equipment	U	N	NHH	NP	Los Angeles	SC	SC	1.20E+02	2.33E+02	2.68E+03	1.98E-02	7.07E-02	2.30E-01	2.96E+01	2.90E-04	7.89E-03	0.00E+00	1.79E-03
2010	Annual	Mon-Sun	2270003010	Aerial Lifts	D	15	Industrial Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1.75E+02	1.91E+02	7.54E+01	9.92E-04	5.05E-03	6.32E-03	8.26E-01	1.28E-05	3.51E-04	0.00E+00	8.95E-05
2010	Annual	Mon-Sun	2270003010	Aerial Lifts	D	25	Industrial Equipment	U	P	NHH	NP	Los Angeles	SC	SC	2.85E+02	3.12E+02	1.56E+02	3.30E-03	9.05E-03	1.58E-02	1.71E+00	2.17E-05	1.03E-03	0.00E+00	2.98E-04
2010	Annual	Mon-Sun	2270003010	Aerial Lifts	D	50	Industrial Equipment	U	P	NHH	NP	Los Angeles	SC	SC	1.04E+03	1.10E+03	9.98E+02	4.21E-02	1.07E-01	1.09E-01	1.07E+01	1.39E-04	1.04E-02	0.00E+00	3.80E-03
2010	Annual	Mon-Sun	2270003010	Aerial Lifts	D	120	Industrial Equipment	U	P	NHH	NP	Los Angeles	SC	SC	9.23E+02	9.72E+02	1.69E+03	3.45E-02	1.22E-01	2.20E-01	1.85E+01	2.17E-04	1.77E-02	0.00E+00	3.11E-03
2010	Annual	Mon-Sun	2270003010	Aerial Lifts	D	500	Industrial Equipment	U	N	NHH	NP	Los Angeles	SC	SC	1.18E+02	1.25E+02	1.20E+03	9.53E-03	3.66E-02	1.21E-01	1.32E+01	1.30E-04	3.77E-03	0.00E+00	8.60E-04
2010	Annual	Mon-Sun	2270003010	Aerial Lifts	D	750	Industrial Equipment	U	N	NHH	NP	Los Angeles	SC	SC	9.52E+00	1.00E+01	1.75E+02	1.42E-03	5.31E-03	1.80E-02	1.93E+00	1.94E-05	5.55E-04	0.00E+00	1.28E-04
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	15	Light Commercial Equipment	U	P	NHH	P	Los Angeles	SC	SC	1.55E+01	3.45E+01	1.14E+01	2.52E-04	8.90E-04	1.46E-03	1.24E-01	1.94E-06	1.06E-04	0.00E+00	2.27E-05
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	25	Light Commercial Equipment	U	P	NHH	P	Los Angeles	SC	SC	3.06E+01	6.83E+01	4.53E+01	1.13E-03	2.93E-03	4.79E-03	4.93E-01	6.26E-06	3.40E-04	0.00E+00	1.02E-04
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	50	Light Commercial Equipment	U	P	NHH	P	Los Angeles	SC	SC	2.78E+02	6.21E+02	6.49E+02	3.68E-02	8.84E-02	7.44E-02	6.91E+00	8.93E-05	8.32E-03	0.00E+00	3.32E-03
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	120	Light Commercial Equipment	U	P	NHH	P	Los Angeles	SC	SC	1.85E+03	4.14E+03	8.91E+03	2.13E-01	6.95E-01	1.25E+00	9.70E+01	1.14E-03	1.14E-01	0.00E+00	1.92E-02
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	175	Light Commercial Equipment	U	P	NHH	P	Los Angeles	SC	SC	7.02E+01	1.57E+02	6.33E+02	1.01E-02	4.01E-02	7.98E-02	6.92E+00	7.79E-05	4.51E-03	0.00E+00	9.14E-04
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	250	Light Commercial Equipment	U	N	NHH	P	Los Angeles	SC	SC	9.88E+01	2.20E+02	1.31E+03	1.37E-02	3.80E-02	1.56E-01	1.44E+01	1.62E-04	5.17E-03	0.00E+00	1.24E-03
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	500	Light Commercial Equipment	U	N	NHH	P	Los Angeles	SC	SC	1.29E+02	2.87E+02	3.02E+03	2.84E-02	9.89E-02	3.21E-01	3.33E+01	3.26E-04	1.10E-02	0.00E+00	2.56E-03
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	750	Light Commercial Equipment	U	N	NHH	P	Los Angeles	SC	SC	4.82E+01	1.07E+02	1.75E+03	1.67E-02	5.72E-02	1.90E-01	1.92E+01	1.93E-04	6.44E-03	0.00E+00	1.51E-03
2010	Annual	Mon-Sun	2270006015	Air Compressors	D	1000	Light Commercial Equipment	U	N	NHH	P	Los Angeles	SC	SC	1.19E+00	2.65E+00	5.87E+01	7.02E-04	2.52E-03	8.05E-03	6.45E-01	6.48E-06	2.44E-04	0.00E+00	6.33E-05

APPENDIX C

EMFAC2007 OUTPUT

EMFAC2007 Output for Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA.

# Title : Los Angeles County Avg Annual CYr 2010 Default Title  
 # Version : Emfac2007 V2.3 Nov 1 2006  
 # Run Date : 10/5/2007 10:13  
 # Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
 # Season : Annual  
 # Area : Los Angeles  
 # I/M Stat : Enhanced Interim (2005)  
 # Emissions: Tons Per Period

RecType	ScenNum	CalYr	Area	Veh	MdlYr	Tech	Period	Pop	VTM	Trips	ROG_RUNEX	ROG_IDLEX	ROG_STREX	ROG_TOTEX	ROG_DIURN	ROG_HTSK	ROG_RUNLS	ROG_RESTL	ROG_TOTAL
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd10_DSL	Day	24868.87	23310.33	0	0.2444105	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd15_DSL	Day	24868.87	94154.16	0	0.5116187	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd30_DSL	Day	24868.87	466167.9	0	0.662035	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	DSL	Day	24868.87	4993175	125849.1	7.506478	0.577454	0	8.083932	0	0	0	0	8.083932
Vh	1	2010	Los Angeles County	LHD1	AllMYr	Spd15_GAS	Day	73596.3	103122.9	0	0.1471285	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	LHD1	AllMYr	GAS	Day	73596.3	3559483	2433586	1.747499	0.1013886	2.249896	4.098783	9.73E-03	0.1658532	1.996239	3.22E-03	6.273828
Vh	1	2010	Los Angeles County	MDV	AllMYr	Spd15_GAS	Day	592728.9	795374.4	0	0.2877398	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	MDV	AllMYr	GAS	Day	592728.9	2.18E+07	3733744	3.88653	0	3.101863	6.988393	0.4546901	0.6610593	3.084907	0.321761	11.51081
Vh	1	2010	Los Angeles County	MHD	AllMYr	Spd15_DSL	Day	41044.54	59897.11	0	2.81E-02	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	MHD	AllMYr	DSL	Day	41044.54	2770861	1150889	0.6276438	1.40E-02	0	0.6416605	0	0	0	0	0.6416605

EMFAC2007 Output for Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA.

# Title : Los Angeles County Avg Annual CYr 2010 Default Title  
 # Version : Emfac2007 V2.3 Nov 1 2006  
 # Run Date : 10/5/2007 10:13  
 # Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
 # Season : Annual  
 # Area : Los Angeles  
 # I/M Stat : Enhanced Interim (2005)  
 # Emissions: Tons Per Period

RecType	ScenNum	CalYr	Area	Veh	MdlYr	Tech	CO_RUNEX	CO_IDLEX	CO_STREX	CO_TOTEX	NOx_RUNEX	NOx_IDLEX	NOx_STREX	NOx_TOTEX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CO2_TOTEX
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd10_DSL	0.4441299	0	0	0	0.8304395	0	0	0	89.71749	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd15_DSL	1.305837	0	0	0	2.337729	0	0	0	297.5474	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd30_DSL	3.244467	0	0	0	7.977944	0	0	0	1017.81	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	DSL	28.74464	2.233285	0	30.97793	86.2532	5.099021	0	91.35222	10283.11	306.0176	0	10589.12
Vh	1	2010	Los Angeles County	LHD1	AllMYr	Spd15_GAS	1.460361	0	0	0	9.83E-02	0	0	0	158.2833	0	0	0
Vh	1	2010	Los Angeles County	LHD1	AllMYr	GAS	24.977	0.6179985	27.65724	53.25224	4.326285	6.66E-03	5.305666	9.638615	2712.392	20.95225	109.2627	2842.607
Vh	1	2010	Los Angeles County	MDV	AllMYr	Spd15_GAS	5.097897	0	0	0	0.5992813	0	0	0	971.6725	0	0	0
Vh	1	2010	Los Angeles County	MDV	AllMYr	GAS	98.23204	0	33.94614	132.1782	13.14775	0	3.09043	16.23818	16347.6	0	512.7373	16860.34
Vh	1	2010	Los Angeles County	MHD	AllMYr	Spd15_DSL	0.2952366	0	0	0	0.5951637	0	0	0	99.36803	0	0	0
Vh	1	2010	Los Angeles County	MHD	AllMYr	DSL	6.152442	0.1161774	0	6.26862	27.92954	0.3315296	0	28.26107	4596.797	18.10246	0	4614.9

EMFAC2007 Output for Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA.

# Title : Los Angeles County Avg Annual CYr 2010 Default Title  
 # Version : Emfac2007 V2.3 Nov 1 2006  
 # Run Date : 10/5/2007 10:13  
 # Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
 # Season : Annual  
 # Area : Los Angeles  
 # I/M Stat : Enhanced Interim (2005)  
 # Emissions: Tons Per Period

RecType	ScenNum	CalYr	Area	Veh	MdlYr	Tech	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_TOTEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	Pb_RUNEX	Pb_IDLEX	Pb_STREX	Pb_TOTEX
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd10_DSL	5.87E-02	0	0	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd15_DSL	0.1573728	0	0	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	Spd30_DSL	0.3386621	0	0	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	HHD	AllMYr	DSL	4.29728	8.29E-02	0	4.380168	0.1981452	0.1553458	4.733659	0	0	0	0
Vh	1	2010	Los Angeles County	LHD1	AllMYr	Spd15_GAS	3.29E-03	0	0	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	LHD1	AllMYr	GAS	3.94E-02	0	7.98E-03	4.74E-02	4.71E-02	4.92E-02	0.143685	0	0	0	0
Vh	1	2010	Los Angeles County	MDV	AllMYr	Spd15_GAS	5.26E-02	0	0	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	MDV	AllMYr	GAS	0.6535181	0	5.48E-02	0.7083576	0.1920353	0.3011113	1.201504	0	0	0	0
Vh	1	2010	Los Angeles County	MHD	AllMYr	Spd15_DSL	3.39E-02	0	0	0	0	0	0	0	0	0	0
Vh	1	2010	Los Angeles County	MHD	AllMYr	DSL	0.7567873	4.26E-03	0	0.7610512	3.67E-02	3.83E-02	0.8360172	0	0	0	0

Title : Los Angeles County Avg Annual CYr 2010 Default Title  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2007/10/10 08:07:41  
 Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
 Season : Annual  
 Area : Los Angeles

Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Los Angeles County Average

Table 1: Running Exhaust Emissions (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22.205	23.126	3.173	19.755	22.205	23.04	3.173	14.862	22.205
Pollutant Name: Carbon Monoxide				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137.652	140.936	26.3	121.576	137.652	140.627	26.3	93.572	137.652
Pollutant Name: Oxides of Nitrogen				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.458	1.52	75.051	13.926	1.458	1.514	75.051	31.773	1.458
Pollutant Name: Carbon Dioxide				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4776.9	4776.901	4098	4662.357	4776.9	4776.899	4098	4497.543	4776.9
Pollutant Name: Sulfur Dioxide				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.049	0.049	0.039	0.047	0.049	0.049	0.039	0.045	0.049
Pollutant Name: PM10				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.789	0.133	0	0	0.99	0.408	0
Pollutant Name: Gasoline - mi/gal				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pollutant Name: Diesel - mi/gal				Temperature: 65F		Relative Humidity: 60%																				
Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Title : Los  
 Version : E  
 Run Date :  
 Scen Year:  
 Season : J  
 Area : LC  
 \*\*\*\*\*

Year:  
 Emfac2l

County Ave

Table 1: R

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	23.037	3.173	6.588	0	0	12.487	11.967	0	0	0	0	22.205	22.604	3.173	5.736	0	0	0	0	0.503	0.59	7.339	0.926

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	140.617	26.3	45.96	0	0	48.291	46.283	0	0	0	0	137.652	139.072	26.3	41.18	0	0	0	0	3.121	3.596	34.322	5.125

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	1.514	75.051	62.398	0	0	110.258	105.673	0	0	0	0	1.458	1.485	75.051	65.337	0	0	0	0	0.033	0.039	84.715	4.263

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	4776.899	4098	4214.813	0	0	6617.137	6341.961	0	0	0	0	4776.9	4776.901	4098.001	4187.649	0	0	0	0	108.296	121.978	4912.215	360.836

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0.049	0.039	0.041	0	0	0.063	0.061	0	0	0	0	0.049	0.049	0.039	0.04	0	0	0	0	0.001	0.001	0.047	0.004

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL	
0	0	0.965	0.799	0	0	1.792	1.718	0	0	0	0	0	0	1.119	0.972	0	0	0	0	0	0	0	1.26	0.063

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pollutant N:

Speed MPH	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX D

*CARB'S DRAFT EMISSION FACTORS FOR MANDATORY  
REPORTING PROGRAM DOCUMENT*



**DRAFT**

PRELIMINARY DRAFT  
FOR PUBLIC REVIEW AND COMMENT

8/10/07

**Air Resources Board  
Draft Emission Factors for  
Mandatory Reporting Program**

**August 10, 2007**

**The following emission factors are being considered as part of the regulation for mandatory reporting for greenhouse gas emissions.**

**Please provide comments as appropriate.**

**Carbon Dioxide Emission Factors and Oxidation Rates for Stationary Combustion  
(kg/MMBtu or kg/gallon)**

Fuel	kg CO <sub>2</sub> /MMBtu (California)	kg CO <sub>2</sub> /MMBtu (U.S.)	kg CO <sub>2</sub> /gallon	Fraction of Carbon Oxidized
<b>Coal and Natural Gas</b>				
Residential Coal	92.77	95.33	NA	99.0%
Commercial Coal	92.77	95.33	NA	99.0%
Industrial Coking Coal	NA	93.72	NA	99.0%
Industrial Other Coal	93.00	93.98	NA	99.0%
Utility Coal	NA	94.45	NA	99.0%
Natural Gas	NA	53.05	NA	99.5%
<b>Petroleum</b>				
Distillate Fuel(Diesel)	NA	73.15	10.15	99.0%
Kerosene	NA	72.31	9.77	99.0%
Liquefied Petroleum Gas (LPG)	NA	62.30	5.95	99.0%
Motor Gasoline	NA	70.91	8.87	99.0%
Residual Fuel	NA	78.80	11.79	99.0%
Propane	NA	NA	5.70	99.5%
Butane	NA	NA	6.52	99.5%
Methanol(neat)	NA	NA	4.11	99.0%
Crude Oil	NA	74.18	10.24	99.0%
Still Gas	NA	64.20	NA	99.5%

Notes: Emission factors are based on complete combustion and high heating value (HHV). Emission factors for coking and utility coals are not given for California because they are not consumed in the state. Sources: Emission factors are derived from: California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks: 1990-1999 (November 2002); and Energy Information Administration, Emissions of Greenhouse Gases in the United States 2000 (2001), Table B1, page 140. Propane and butane emission factors and fractions oxidized from U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition. Methanol emission factor is calculated from the properties of the pure compounds; the fraction oxidized is assumed to be the same as for other liquid fuels.

## Methane and Nitrous Oxide Emission Factors for Stationary Combustion by Sector and Fuel Type (kg/MMBtu)

NON-PETROLEUM FUELS			
Sector	Fuel	kg CH <sub>4</sub> /MMBtu	kg N <sub>2</sub> O/MMBtu
Industrial	Coal	0.0111	0.0016
	Petroleum	0.0022	0.0007
	Natural Gas	0.0059	0.0001
	Wood	0.0351	0.0047
Commercial/Institutional	Coal	0.0111	0.0016
	Petroleum	0.0111	0.0007
	Natural Gas	0.0059	0.0001
	Wood	0.3514	0.0047
Residential	Coal	0.3329	0.0016
	Petroleum	0.0111	0.0007
	Natural Gas	0.0059	0.0001
	Wood	0.3514	0.0047
PETROLEUM FUELS			
Sector	Fuel	kg CH <sub>4</sub> /MMBtu	kg N <sub>2</sub> O/MMBtu
Industrial	Distillate Fuel	0.0003	0.0001
	Kerosene	0.0003	0.0001
	Liquefied Petroleum Gas (LPG)	0.0002	0.0001
	Residual Fuel	0.0003	0.0001
Commercial/Institutional	Distillate Fuel	0.0014	0.0001
	Kerosene	0.0014	0.0001
	LPG	0.0010	0.0001
	Motor Gasoline	0.0013	0.0001
	Residual Fuel	0.0015	0.0001
Residential	Distillate Fuel	0.0014	0.0001
	Kerosene	0.0014	0.0001
	LPG	0.0010	0.0001
	Motor Gasoline	0.0013	0.0001
	Propane	9.1 x 10 <sup>-5</sup>	4.1 x 10 <sup>-4</sup>
	Butane	9.1 x 10 <sup>-5</sup>	4.1 x 10 <sup>-4</sup>

Note: All emission factors have been converted to higher heating value (HHV), assuming LHV is 95% of HHV for coal and petroleum and is 90% of HHV for natural gas and wood.

Sources: Emission factors are derived from: U.S. EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2000" (2002), Table C-2, page C-2. EPA obtained original emission factors from the Intergovernmental Panel on Climate Change, Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual (1996), Tables 1-15 through 1-19, pages 1.53-1.57.

**Table 5.2: Default Values for Heat Content, Carbon Content, and Fraction of Carbon Oxidized for Fuels used for Electric Power Generation**

Fossil Fuel	Heat Content (HHV)	Carbon Content	Fraction Oxidized
<b>Coal and Coke</b>	<b>(MMBtu/Short Ton)</b>	<b>(kg C/MMBtu)</b>	
Anthracite Coal	25.09	28.26	0.990
Bituminous Coal	24.93	25.50	0.990
Sub bituminous Coal	17.25	26.49	0.990
Lignite Coal	14.21	26.35	0.990
Coke	24.80	27.85	0.990
<b>Natural Gas</b>	<b>(Btu/standard Ft<sup>3</sup>)</b>	<b>(kg C/MMBtu)</b>	
Natural Gas	1,027.00	14.47	0.995
<b>Petroleum</b>	<b>(MMBtu/Barrel)</b>	<b>(kg C/MMBtu)</b>	
Distillate Oil	5.825	19.95	0.990
Residual Oil	6.287	21.49	0.990
Kerosene	5.670	19.72	0.990
Petroleum Coke	6.024	27.85	0.990
LPG	3.788	17.18	0.995
Ethane	2.916	16.25	0.995
Propane	3.824	17.20	0.995
Isobutane	4.162	17.75	0.995
n-Butane	4.328	17.72	0.995
<b>Non-Fossil Fuel</b>			
<b>Solid</b>	<b>(MMBtu/Short Ton)</b>	<b>(kg C/MMBtu)</b>	
Wood – dry	17.200	25.05	0.900
<b>Gas</b>	<b>(Btu/standard Ft<sup>3</sup>)</b>	<b>(kg C/MMBtu)</b>	
Landfill gas	502.500	14.20	0.995
Waste water treatment biogas	Varies (obtain from operator)	14.20	0.995

MSW 41.69 kg of CO<sub>2</sub>/MMBtu

**Table 10.1: Weighted Average Post Mining Fugitive CH<sub>4</sub> Emission Factors for Coal**

Coal Mine Type	Emission Factor (scf CH <sub>4</sub> /ton)
Underground	44.3
Surface	4.8

**Table 1.C.5. Carbon Dioxide Emission Coefficients for U.S. Natural Gas assuming 99.5 Percent Combusted**

HHV Btu Content per Standard Cubic Foot	Emission Factor (metric tons carbon per billion Btu)	
	CO <sub>2</sub>	Carbon
975 – 1,000	53.74	14.66
1,000 – 1,025	52.65	14.36
1,025 – 1,050	52.79	14.40
1,050 – 1,075	52.93	14.51
1,075 – 1,100	53.18	14.50

Source: Energy Information Administration, Documentation for Emissions of Greenhouse Gases in the United States 2003, May 2005, Table 6-5, p. 194, web site: [www.eia.doe.gov/oiaf/1605/ggrpt/documentation/pdf/0638\(2003\).pdf](http://www.eia.doe.gov/oiaf/1605/ggrpt/documentation/pdf/0638(2003).pdf).

**95113(e)(1) Wastewater Treatment**

<b>Default MCF Values for Industrial Wastewater</b>			
<b>Type of Treatment and discharge pathway or system</b>	<b>Comments</b>	<b>MCF</b>	<b>Range</b>
<b>Untreated</b>			
Sea, river and lake discharge	Rivers with high organic loading may turn anaerobic, however this is not considered here	0.1	0 – 0.2
<b>Treated</b>			
Aerobic treatment plant	Well maintained, some CH <sub>4</sub> may be emitted from settling basins	0	0 – 0.1
Aerobic treatment plant	Not well maintained, overloaded	0.3	0.2 – 0.4
Anaerobic digester for sludge	CH <sub>4</sub> recovery not considered here	0.8	0.8 – 1.0
Anaerobic reactor	CH <sub>4</sub> recovery not considered here	0.8	0.8 – 1.0
Anaerobic shallow lagoon	Depth less than 2 meters	0.2	0 – 0.3
Anaerobic deep lagoon	Depth more than 2 meters	0.8	0.8 – 1.0

MCF = methane correction factor – the fraction of waste treated anaerobically

B<sub>0</sub> = maximum CH<sub>4</sub> producing capacity (kg CH<sub>4</sub>/kg COD)  
Default factor = 0.25 kg CH<sub>4</sub>/kg COD

COD = chemical oxygen demand (kg COD/m<sup>3</sup>)  
Default factor = 1.0 kg COD/m<sup>3</sup>

EF<sub>N<sub>2</sub>O</sub> = 0.005 kg N<sub>2</sub>O-N/kg-N (Range 0.0005 – 0.25)

Source: IPCC 2006, IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5, Waste, Chapter 6: Wastewater Treatment and Discharge. Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds).

**95113(d)(4) Asphalt Production**

Default emission factor for uncontrolled asphalt blowing

EF = 2,555 scf CH<sub>4</sub>/10<sup>6</sup> bbl asphalt blown

Source: US EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005, Table A-127: 2005 CH<sub>4</sub> Emissions from Petroleum Refining, April 2007 USEPA #430-R-07-002

**95113(d)(1)(B)**

Coke burn rate material balance and conversion factors

$K_1 = 0.2932 \text{ (kg-min)/(hr-dscm-\%)} \text{ or } 0.0186 \text{ (lb-min)/(hr-dscf-\%)}$

$K_2 = 2.083 \text{ (kg-min)/(hr-dscm-\%)} \text{ or } 0.1303 \text{ (lb-min)/(hr-dscf-\%)}$

$K_3 = 0.0994 \text{ (kg-min)/(hr-dscm-\%)} \text{ or } 0.0062 \text{ (lb-min)/(hr-dscf-\%)}$

Source: U.S. EPA Title 40CFR63.1564

**95113(e)(4) Equipment Fugitive Emissions**

Component type/service type	Default Zero Factor (kg/hr)	Correlation Equation (kg/hr)	Pegged Factor (kg/hr)	
			10,000 ppmv	100,000 ppmv
Valves	7.8E-06	$2.27E-06(SV)^{0.747}$	0.064	0.138
Pump seals	1.9E-05	$5.07E-05(SV)^{0.622}$	0.089	0.610
Others	4.0E-06	$8.69E-06(SV)^{0.642}$	0.082	0.138
Connectors	7.5E-06	$1.53E-06(SV)^{0.736}$	0.030	0.034
Flanges	3.1E-07	$4.53E-06(SV)^{0.706}$	0.095	0.095
Open-ended lines	2.0E-06	$1.90E-06(SV)^{0.724}$	0.033	0.082

Source: California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities, February 1999, California Air Pollution Control Officers Association (CAPCOA) and California Air Resources Board

APPENDIX E

EMISSION FACTORS FOR FUGITIVE  
DUST EMISSION CALCULATIONS

Fugitive PM Emission Factors for Construction Emission Calculations  
ICTF Modernization Project, Long Beach, CA

**Wind Erosion of Active Construction Area - Source: MRI,1996<sup>(1)</sup>**

Parameter	Value	Source/Comments
Uncontrolled emission rate (ton/acre-month)	0.011	Level 2 from MRI, 1996.
Annual control efficiency	93.6%	Annual control applied uniformly since we do not know a start date
Final emission rate (ton/acre-month)	0.00070	

Notes:

(1) "Improvement of Specific Emission Factors (BACM Project No. 1), Final Report", prepared for South Coast AQMD by Midwest Research Institute, March 1996

**Unpaved Road Travel - Source: AP-42, Section 13.2.2, 11/06<sup>(1)</sup>**

Parameter	Value	Source/Comments
k = particle size constant	1.5	AP-42, PM10 basis
s = surface silt content (%)	8.50%	AP-42, Table 13.2.2-1, 11/06, construction sites
W = avg. vehicle weight (tons)	11.83	Vehicle/equipment average estimated from site data.
Preliminary emission rate (lb/mi)	2.04	AP-42 equation for PM10, uncontrolled, no precipitation adjustment.
Precipitation factor	0.890	Assumes annual occurrence of rainfall each month since we do not know actual start date; 40 rain days per year based on AP-42 Figure 13.2.2-1 and AP-42 unpaved adjustment equation.
Preliminary emission rate (lb/mi)	1.82	Factoring in rain days.
Annual control efficiency	93.6%	Annual control applied uniformly since we do not know a start date
Final emission rate (lb/mi)	0.116	

Notes:

(1) AP-42 unpaved fugitive equation derived and validated over aggregate vehicle groups (using group mean variables) and are not suited to predict emission rates for individual types of equipment or vehicles; therefore, a single facility-average emission rate is applied.

**Paved Road Travel - Source: AP-42, Section 13.2.1, 11/06**

Parameter	Value	Source/Comments
Particle size multiplier (lb/mi)	0.016	AP-42, PM10 basis
Road surface silt loading (g/m <sup>2</sup> )	0.017	High ADT roadways, South Coast Air Basin data only, source: MRI 1996 (citation above).
Road surface silt loading (g/m <sup>2</sup> )	0.124	Low ADT roadways, South Coast Air Basin data only, source: MRI 1996 (citation above).
Average vehicle weight (tons)	6.40	Estimated from site data.
Constant C (lb/mi)	0.000470	AP-42, PM10 basis
Preliminary emission rate (lb/mi)	0.001811	High ADT roadways, no precip adjustment, AP-42 equation.
Preliminary emission rate (lb/mi)	0.007715	Low ADT roadways, no precip adjustment, AP-42 equation.
Preliminary emission rate (lb/mi)	0.003878	High and low ADT roadways combined, proportions based on MRI 1996 (citation above).
Precipitation factor	0.973	Assumes annual occurrence of rainfall each month since we do not know actual start date; 40 rain days per year based on AP-42 Figure 13.2.1-1 and AP-42 paved road adjustment equation.
Final emission rate (lb/mi)	0.00377	Factoring in rain days.

Notes:

(1) AP-42 paved fugitive equation derived and validated over composite roadway vehicle fleets (using fleet mean variables) and are not suited to predict emission rates for individual vehicle types; a single fleet-average emission rate is derived from the construction-related on-road vehicles as the best representation of the paved roadway fugitive emissions resulting from this activity (recognizing that these vehicles do not make up the entirety of the fleet of the roadways on which they travel).

**Bulldozer Operation and Scraper Excavation - Source: AP-42, Table 11.9.1, 7/98**

Parameter	Value	Source/Comments
s = silt content	8.5%	AP-42, Table 13.2.2-1, 12/03, construction haul route.
Soil moisture content.	15.0%	SCAQMD CEQA Handbook, Table A9-9-G-1.
Emission factor (lb/hr)	1.65	AP-42 equation, PM10 basis.



Fugitive PM Emission Factors for Construction Emission Calculations  
ICTF Modernization Project, Long Beach, CA

**Finish Grading - Source: AP-42, Table 11.9-1, 7/98**

Parameter	Value	Source/Comments
S = mean vehicle speed (mph)	3.0	Estimated.
Emission factor (lb/mi)	0.374	AP-42 equation, PM10 basis.
Emission factor (lb/hr)	1.12	

**Backhoe Operation (Assuming Dragline Operation) - Source: AP-42, Table 11.9-1, 7/98**

Parameter	Value	Source/Comments
S = mean vehicle speed (mph)	3	ft (estimated)
Soil moisture content.	15.0%	SCAQMD CEQA Handbook, Table A9-9-G-1.
Emission factor (lb/hr)	0.0023	AP-42 equation; PM10 basis.
Backhoe, 1 yd3 bucket, excavation rate (yd3/hr)	120	30 sec cycle.
Backhoe, 1.5 yd3 bucket, excavation rate (yd3/hr)	180	30 sec cycle.
Backhoe, 2 yd3 bucket, excavation rate (yd3/hr)	240	30 sec cycle.
Backhoe, 1 yd3 bucket, emission rate (lb/hr)	0.295	
Backhoe, 1.5 yd3 bucket, emission rate (lb/hr)	0.442	
Backhoe, 2 yd3 bucket, emission rate (lb/hr)	0.590	

**Loader Unloading Operation - Source: AP-42, Section 13.2.4, 11/06.**

Parameter	Value	Source/Comments
k = particle size constant	0.35	for PM10
U = average wind speed	6.20	mph
Soil moisture content.	15.0%	SCAQMD CEQA Handbook, Table A9-9-G-1.
Emission factor (lb/ton)	0.0001	AP-42 equation, PM10 basis.
Loading rate (ton/hr)	105	5 yd3 bucket, 20 loads/hour.
Emission factor (lb/hr)	0.00926	

**Unpaved Road Travel and Active Excavation Area Control - Source: Control of Open Fugitive Dust Sources, U.S EPA, 9/88<sup>(1)</sup>**

Parameter	Value	Source/Comments
p = potential average hourly daytime evap rate	0.39	mm/hr (EPA document, Figure 3-2, summer)
p = potential average hourly daytime evap rate	0.294	mm/hr (EPA document, Figure 3-2, annual)
d = average hourly daytime traffic rate =	37.0	vehicles/hr (estimated)
t = time between watering applications =	1.00	hr/application (estimated)
i = application intensity =	1.4	L/m2 (typical level in EPA document, page 3-23)
C = average summer watering control efficiency =	91.5%	
C = average annual watering control efficiency =	93.6%	

Notes:

(1) Dust control efficiency for unpaved road travel and active excavation area is based on "Control of Open Fugitive Dust Sources", U.S. EPA, 9/88. Based on default evaporation rate shown in EPA document, Figure 3-2, and typical water application rate shown in EPA document, page 3-23.

APPENDIX F  
DETAILED EMISSION CALCULATIONS

Summary of Construction Emissions  
ICTF Modernization Project, Long Beach, CA

<b>36-Month Construction Emissions Total (tons)</b>			
<b>Source/Species<sup>(1),(2)</sup></b>	<b>On-Site</b>	<b>Off-Site<sup>(3)</sup></b>	<b>Total</b>
Fugitive PM10	23.88	7.26	31.15
Operational PM10	3.25	0.78	4.03
Total PM10	27.13	8.04	35.18
Operational DPM	3.25	0.62	3.87
Operational ROG	7.47	2.66	10.13
Operational CO	27.47	23.15	50.62
Operational NOx	56.23	16.14	72.37
Operational SOx	0.06	0.04	0.09
Operational CO2	5,100.85	4,055.98	9,156.82
Operational N2O	0.01	0.01	0.01
Operational CH4	0.02	0.05	0.07

Notes:

- (1) Fugitive sources = wind erosion, material handling, unpaved travel, paved travel.
- (2) Operational sources = off-road equipment, on-road trucks, worker vehicles.
- (3) Off-site = on-road construction vehicle operation outside the facility.



Equipment and Site Assumptions for Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

**Equipment and Site Assumptions**

Equipment	Average Speed (MPH) <sup>(1)</sup>	Total VMT per day or per trip (miles) <sup>(2)</sup>	Unpaved VMT per day or per trip (miles) <sup>(3)</sup>	% VMT Unpaved	Extended Idle Time per Trip (hrs)	Average Operating Weight (tons) <sup>(4)</sup>
Air Compressor, 175 CFM						
Backhoe, Cat 320, 1.0 CY						
Backhoe, Cat 325, 1.5 CY						
Backhoe/loader, Cat. 416, 1CY						
Hyd. Shear for Backhoe						
Hyd. Boom, Trk Mtd. 12T						
RT Crane, 45T						
Crush Concrete						
Cat D5 Dozer						
Cat D6 Dozer						
Cat D7 Dozer						
Cat D8N Dozer						
John Deere 9400	3			100.0%		15
Cat 936 Loader	0.19			100.0%		33.35
Cat 966 Loader	0.19			100.0%		33.35
Cat 980 Loader	0.19			100.0%		33.35
Cat 988 Loader	0.19			100.0%		33.35
Cat 14H Grader						
Telescopic Man Lift, 40 ft						
AC Paver	3			100.0%		3
Concrete Paving Spread						
Cat 563 Padfoot Roller	3			100.0%		3
Cat 563 Smooth Roller	3			100.0%		3
Cat 815 Roller	3			100.0%		14
Ramex Roller						
Hand Tamp						
Adzer Riding	1			100.0%		10
Clip Machine						
Rail Heater						
Regulator						
Ballast Stabilizer						
Speed Swing						
Track Laying Machine						
Tamper Small	1			100.0%		5
Tamper Large	1			100.0%		10
Vibratrac						
Hi-Rail Welder						
Cat 615 Elevating Scraper						
Cat 621 Scraper, 21 CY						
Dump Truck, 6x4, 12 CY	27.5	56	0.5	0.9%	0.50	22.5
			0.5	0.9%	0.50	26.3
			0.5	0.7%	0.17	9.2
Fuel Truck, 2000 Gal	42.96	64	0.5	0.8%	0.17	9.8
Lube Truck	42.96	64	0.5	0.8%	0.17	9.8
Mechanics Truck, 1 Ton	40.88	48.4	0.5	1.0%		3.5
Pickup 4 x 4	36.59	36.7	0.25	0.7%		3.0
SUV	36.59	36.7	0.25	0.7%		2.5
Water Truck, 4000 Gal	7.5			100.0%		12.8
Water Truck, 8000 Gal Off Rd	7.5			100.0%		26.2
<b>Unpaved average operating weight (tons)</b>						<b>11.83</b>
<b>Paved average operating weight (tons)</b>						<b>6.40</b>

Notes:

(1) Speed assumptions for SUV, pick-up truck, mechanic truck, fuel truck, lube truck and flat bed taken from EMFAC2007 Los Angeles County average annual speed for CY2010; speed assumption for loader based on 50 ft per load and 20 loads per hour; speed assumption for remaining equipment based on engineering judgment.

(2) Miles per trip for dumps based on single-mode truck transport of sand/soil/gravel as reported in the 1997 U.S. Census Commodity Flow Survey (California data only); miles per trip for fuel and lube trucks based on single-model truck transport for distillate deliveries (1997 CFS, CA data only); miles per day for remaining on-road vehicles taken from EMFAC2007.

(3) Unpaved, on-site VMT per vehicle day or trip estimated by assumption.

(4) Vehicle/equipment average operating weight (including load) based on research of specific examples of each equipment/vehicle type.

Equipment and Site Assumptions for Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

**Equipment and Site Assumptions**

<b>Site Parameter</b>	<b>Value</b>	<b>Source</b>
Construction Site Footprint (acres)	177	Provided by David Stone of SAIC via e-mail dated TUE 10/2/2007.
Soil moisture (%)	15.0%	SCAQMD CEQA Handbook, Table A9-9-G-1, moist soil.
Soil density (ton/yd <sup>3</sup> )	1.05	Caterpillar Performance Handbook, 10/89
Surface Silt Content (%)	8.5%	AP-42, Table 13.2.2-1, 11/06, construction sites
Annual Average Wind Speed (mph)	6.2	NOAA reported for Long Beach <a href="http://www.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.html">http://www.ncdc.noaa.gov/oa/climate/online/ccd/avgwind.html</a> .

Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA

**GHG Emission Rate Assumptions**

Fuel	Carbon Oxidation Factor(1)	GHG Emission Rate (g/gal of fuel)(1)		
		CO2	N2O(2)	CH4(2)
Diesel	0.99	10,150	0.014	0.042
Gasoline	0.99	8,870	0.012	0.160

Notes:

(1) From the Air Resources Board's Draft Emission Factors for Mandatory Reporting Programs, August 10, 2007.

(2). Based on a Diesel fuel HHV of 5.825 MMBtu/barrel (from ARB Draft Emission Factors for Mandatory Reporting Programs, August 10, 2007) and 42 gallons per barrel; based on a gasoline HHV of 122,697 BTU/gal, assuming ethanol content of 5.7 volume % (Source: TRANSPORTATION ENERGY DATA BOOK: EDITION 26, U.S. Department of Energy, 2007).







Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors				On-Site Operational Emissions (Offroad & Onroad) by Month (tons/month)																								
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
NOx	Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270006015	Air Compressor, 175 CFM	335.49				0.0362	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037		
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	298.61				0.1317	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975		
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	298.61				0.1011	0.0974	0.0922	0.0823	0.0734	0.0734	0.0935	0.0935	0.0658	0.0658	0.0658	0.0658	0.0658	0.0658	0.0658	0.0658	0.0658	0.0658	0.0658	0.0263	0	
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002066	Hyd. Shear for Backhoe	298.61				0.0352	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	516.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002045	RT Crane, 45T	516.36				0	0	0.0359	0.0359	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002054	Crush Concrete	643.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002063	Cat D5 Dozer	1315.36				0	0	0	0	0	0	0	0.0725	0.0725	0.0725	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002063	Cat D6 Dozer	1315.36				0	0	0	0	0	0	0	0	0.145	0.145	0.3625	0.29	0.29	0.29	0.29	0.0174	0.1087	0.1087	0.1348	0.1334	0	
	Offroad	2270002063	Cat D7 Dozer	1315.36				0.145	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.145	0
	Offroad	2270002063	Cat D8N Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0.29	0.29	0.29	0.29	0.29	0.1522	0	0	0	0	
	Offroad	2270002066	John Deere 9400	298.61				0	0	0	0	0	0	0	0	0	0.0165	0.0329	0.0823	0.0823	0.0724	0.0658	0.0658	0.0059	0	0	0	0	
	Offroad	2270002060	Cat 936 Loader	519.80				0.0716	0.0859	0.1146	0.1146	0.1146	0.1146	0.2292	0.2292	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.4584	0.4584	0.4584	
	Offroad	2270002060	Cat 966 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1146	0.1146	0.1146	0.1289	
	Offroad	2270002060	Cat 980 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1146	0.1146	0.1146	0.1289	
	Offroad	2270002060	Cat 988 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002048	Cat 14H Grader	648.43				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1072	0.1072	0.0715	0.0715
	Offroad	2270003010	Telescopic Man Lift, 40 ft	164.35				0	0	0.0114	0.0114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002003	AC Paver	447.13				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002003	Concrete Paving Spread	447.13				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Cat 563 Padfoot Roller	350.97				0	0	0	0	0	0	0	0	0	0.0193	0.0387	0.0387	0.0077	0	0	0	0	0	0.0193	0.0193	0	0
	Offroad	2270002015	Cat 563 Smooth Roller	350.97				0	0	0	0	0	0	0	0	0	0.0387	0.0387	0.0387	0.0387	0.0387	0.0387	0.0193	0.0193	0.058	0.058	0.0193	0.0077	
	Offroad	2270002015	Cat 815 Roller	350.97				0	0	0	0	0	0	0	0	0	0	0.0774	0.0774	0.0774	0.0774	0.0774	0.0062	0	0	0	0	0	
	Offroad	2270002015	Ramex Roller	350.97				0	0	0	0	0	0	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.1934	0.2128	0.2128
	Offroad	2270002009	Hand Tamp	14.37				0	0	0	0	0	0	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0087	0.0087
	Offroad	2270002081	Adzger Riding	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002081	Clip Machine	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Rail Heater	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Regulator	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Ballast Stabilizer	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Speed Swing	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002069	Track Laying Machine	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002009	Tamper Small	14.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002009	Tamper Large	14.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002081	Vibratrac	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002051	Hi-Rail Welder	916.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002018	Cat 615 Elevating Scraper	1293.67				0	0	0	0	0	0	0	0	0	0.1426	0.2852	0.1426	0.1426	0	0	0	0	0.107	0.107	0	0	0	
Offroad	2270002018	Cat 621 Scraper, 21 CY	1293.67				0	0	0	0	0	0	0	0	0	0	0.8556	0.8556	0.8556	0.8556	0.8556	0.8556	0.4278	0.0214	0	0	0	0	
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		22.524	110.258	16.597	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Onroad	HHDT-DSL	35 Ton Art Dump		22.524	110.258	16.597	0.0072	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0144	0.0072	0.0072	
Onroad	MHDT-DSL	Truck, Flat Bed 14'		9.014	75.051	9.253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0001	0.0012	0.0012	0.0024	0.0024	
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		9.014	75.051	9.253	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	
Onroad	MHDT-DSL	Lube Truck		9.014	75.051	9.253	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.865	2.457	0.676	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	
Onroad	MDV-CAT	Pickup 4 x 4		0.684	0.684	0.676	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
Onroad	MDV-CAT	SUV		0.684	0.684	0.676	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
Onroad	HHDT-DSL	Water Truck, 4000 Gal		32.319			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002051	Water Truck, 8000 Gal Off Rd		916.54			0	0	0	0	0	0	0	0	0	0	0	0	0.2021	0.2021	0.2021	0.2021	0.2021	0.2021	0.1692	0	0	0	
	<b>TOTAL</b>							<b>0.5303</b>	<b>0.7245</b>	<b>0.7952</b>	<b>0.7853</b>	<b>0.7292</b>	<b>0.7292</b>	<b>1.1377</b>	<b>1.1377</b>	<b>1.4907</b>	<b>1.6353</b>	<b>3.1846</b>	<b>3.0812</b>	<									



Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA

SPECIES	Source Type	ID/Code	Source	Operational Emission Factors				On-Site Operational Emissions (Offroad & Onroad) by Month (tons/month)																			
				Offroad Equipment (g/hr)	On-site Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Area	None	Wind Erosion																								
	Offroad	2270006015	Air Compressor, 175 CFM	24.19																							
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	23.31	0.0026	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	23.31	0.0103	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154		
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	23.31	0.0079	0.0076	0.0072	0.0064	0.0057	0.0057	0.0073	0.0073	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0021		
	Offroad	2270002066	Hyd. Shear for Backhoe	23.31	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	24.90	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002045	RT Crane, 45T	24.90	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002054	Crush Concrete	42.11	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002063	Cat D5 Dozer	56.95	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0104		
	Offroad	2270002063	Cat D6 Dozer	56.95	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0104		
	Offroad	2270002063	Cat D7 Dozer	56.95	0.0063	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0058		
	Offroad	2270002063	Cat D8N Dozer	56.95	0.0063	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0058		
	Offroad	2270002066	John Deere 9400	23.31	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002060	Cat 936 Loader	29.35	0.004	0.0049	0.0065	0.0065	0.0065	0.0065	0.0129	0.0129	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0259		
	Offroad	2270002060	Cat 966 Loader	29.35	0.004	0.0049	0.0065	0.0065	0.0065	0.0065	0.0129	0.0129	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0259		
	Offroad	2270002060	Cat 980 Loader	29.35	0.004	0.0049	0.0065	0.0065	0.0065	0.0065	0.0129	0.0129	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0259		
	Offroad	2270002060	Cat 988 Loader	29.35	0.004	0.0049	0.0065	0.0065	0.0065	0.0065	0.0129	0.0129	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0259		
	Offroad	2270002048	Cat 14H Grader	34.06	0.004	0.0049	0.0065	0.0065	0.0065	0.0065	0.0129	0.0129	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0259		
	Offroad	2270003010	Telescopic Man Lift, 40 ft	11.34	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002003	AC Paver	32.07	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002003	Concrete Paving Spread	32.07	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002015	Cat 563 Padfoot Roller	24.75	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002015	Cat 563 Smooth Roller	24.75	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002015	Cat 815 Roller	24.75	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002015	Ramex Roller	24.75	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002009	Hand Tamp	0.68	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002081	Adzer Riding	19.99	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002081	Clip Machine	19.99	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002069	Rail Heater	38.49	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002069	Regulator	38.49	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002069	Ballast Stabilizer	38.49	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002060	Speed Swing	29.35	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002069	Track Laying Machine	38.49	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002009	Tamper Small	0.68	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002009	Tamper Large	0.68	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002081	Vibratrac	19.99	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002051	Hi-Rail Welder	34.52	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002018	Cat 615 Elevating Scraper	56.09	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Offroad	2270002018	Cat 621 Scraper, 21 CY	56.09	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027		
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY				1.516		1.792		0.860																
	Onroad	HHDT-DSL	35 Ton Art Dump				1.516		1.792		0.860																
	Onroad	MHDT-DSL	Truck, Flat Bed 14'				0.514		0.965		0.274																
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal				0.514		0.965		0.274																

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors				On-Site Operational Emissions (Offroad & Onroad) by Month (tons/month)																										
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
DPM	Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Offroad	2270006015	Air Compressor, 175 CFM	24.19				0.0026	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027			
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	23.31				0.0103	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154			
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	23.31				0.0079	0.0076	0.0072	0.0064	0.0057	0.0057	0.0073	0.0073	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0051	0.0021		
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	23.31				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002066	Hyd. Shear for Backhoe	23.31				0.0027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	24.90				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002045	RT Crane, 45T	24.90				0	0	0.0017	0.0017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002054	Crush Concrete	42.11				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0093	0.0093	0.0093	0.0104		
	Offroad	2270002063	Cat D5 Dozer	56.95				0	0	0	0	0	0	0.0031	0.0031	0.0031													0		
	Offroad	2270002063	Cat D6 Dozer	56.95				0	0	0	0	0	0	0	0	0.0063	0.0063	0.0157	0.0126	0.0126	0.0126	0.0126	0.0126	0.0008	0.0047	0.0047	0.0058	0.0058			
	Offroad	2270002063	Cat D7 Dozer	56.95				0.0063	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0066	0.0066		
	Offroad	2270002063	Cat D8N Dozer	56.95				0	0	0	0	0	0	0	0	0	0	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0066	0.0066		
	Offroad	2270002066	John Deere 9400	23.31				0	0	0	0	0	0	0	0	0	0	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0126	0.0066	0.0066		
	Offroad	2270002060	Cat 936 Loader	29.35				0.004	0.0049	0.0065	0.0065	0.0065	0.0065	0.0129	0.0129	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0162	0.0259		
	Offroad	2270002060	Cat 966 Loader	29.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0065	0.0065	0.0065	0.0073	0.0073		
	Offroad	2270002060	Cat 980 Loader	29.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0065	0.0065	0.0065	0.0073	0.0073		
	Offroad	2270002060	Cat 988 Loader	29.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002048	Cat 14H Grader	34.06				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0056	0.0056	0.0038	0.0038	0.0038		
	Offroad	2270003010	Telescopic Man Lift, 40 ft	11.34				0	0	0.0008	0.0008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002003	AC Paver	32.07				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002003	Concrete Paving Spread	32.07				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Offroad	2270002015	Cat 563 Padfoot Roller	24.75				0	0	0	0	0	0	0	0	0	0.0014	0.0027	0.0027	0.0005	0	0	0	0	0.0014	0.0014	0.0014	0.0014	0.0014		
Offroad	2270002015	Cat 563 Smooth Roller	24.75				0	0	0	0	0	0	0	0	0	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0014	0.0014	0.0041	0.0041	0.0014	0.0005	0.0005			
Offroad	2270002015	Cat 815 Roller	24.75				0	0	0	0	0	0	0	0	0	0	0.0055	0.0055	0.0055	0.0055	0.0055	0.0004	0	0	0	0	0	0			
Offroad	2270002015	Ramex Roller	24.75				0	0	0	0	0	0	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.015			
Offroad	2270002009	Hand Tamp	0.68				0	0	0	0	0	0	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004			
Offroad	2270002081	Adzser Riding	19.99				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002081	Clip Machine	19.99				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Rail Heater	38.49				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Regulator	38.49				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Ballast Stabilizer	38.49				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002060	Speed Swing	29.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Track Laying Machine	38.49				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002009	Tamper Small	0.68				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002009	Tamper Large	0.68				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002081	Vibratrac	19.99				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002051	Hi-Rail Welder	34.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002018	Cat 615 Elevating Scraper	56.09				0	0	0	0	0	0	0	0	0	0.0062	0.0124	0.0062	0.0062	0	0	0	0	0.0046	0.0046	0	0	0			
Offroad	2270002018	Cat 621 Scraper, 21 CY	56.09				0	0	0	0	0	0	0	0	0	0	0.0371	0.0371	0.0371	0.0371	0.0371	0.0371	0.0185	0.0009	0	0	0	0			
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1.516	1.792	0.860	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Onroad	HHDT-DSL	35 Ton Art Dump		1.516	1.792	0.860	0.0002	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0002			
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.514	0.965	0.274	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3E-05	3E-05	3E-05	6E-05	6E-05	6E-05			
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.514	0.965	0.274	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05			
Onroad	MHDT-DSL	Lube Truck		0.514	0.965	0.274	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05			
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	MDV-CAT	Pickup 4 x 4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	MDV-CAT	SUV		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	34.52		2.283		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>TOTAL</b>								<b>0.0341</b>	<b>0.0435</b>	<b>0.0472</b>	<b>0.0465</b>	<b>0.0432</b>	<b>0.0432</b>	<b>0.0684</b>	<b>0.0684</b>	<b>0.0846</b>	<b>0.0931</b>	<b>0.1629</b>	<b>0.1575</b>	<b>0.15</b>	<b>0.1495</b>	<b>0.1482</b>	<b>0.0952</b>	<b>0.11</b>	<b>0.1188</b>	<b>0.1012</b>	<b>0.0948</b>				

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

CO2

Operational Emission Factors				On-Site Operational Emissions (Offroad & Onroad) by Month (tons/month)																							
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270006015	Air Compressor, 175 CFM	29,226				3.1571	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	3.2216	
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	29,824				13.15	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	29,824				10.093	9.7312	9.2052	8.2189	7.3313	7.3313	9.3367	9.3367	6.5752	6.5752	6.5752	6.5752	6.5752	6.5752	6.5752	6.5752	6.5752	6.5752	6.5752	2.6301	
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002066	Hyd. Shear for Backhoe	29,824				3.5177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	47,225				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002045	RT Crane, 45T	47,225				0	0	3.2796	3.2796	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002054	Crush Concrete	59,975				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.222	13.222	13.222	
Offroad	2270002063	Cat D5 Dozer	106,397				0	0	0	0	0	5.8641	5.8641	5.8641	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002063	Cat D6 Dozer	106,397				0	0	0	0	0	0	11.728	11.728	29.321	23.457	23.457	23.457	23.457	23.457	23.457	1.4074	8.7962	8.7962	10.907		
Offroad	2270002063	Cat D7 Dozer	106,397				11.728	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457	23.457		
Offroad	2270002063	Cat D8N Dozer	106,397				0	0	0	0	0	0	0	0	0	0	23.457	23.457	23.457	23.457	23.457	12.315	0	0	0		
Offroad	2270002066	John Deere 9400	29,824				0	0	0	0	0	0	0	0	1.6438	3.2876	8.2189	8.2189	7.2327	6.5752	6.5752	0.5918	0	0	0		
Offroad	2270002060	Cat 936 Loader	49,477				6.8173	8.1808	10.908	10.908	10.908	21.815	21.815	27.269	27.269	27.269	27.269	27.269	27.269	27.269	27.269	27.269	27.269	43.631	43.631		
Offroad	2270002060	Cat 966 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.908	10.908	10.908		
Offroad	2270002060	Cat 980 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.908	10.908	12.271		
Offroad	2270002060	Cat 988 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002048	Cat 14H Grader	60,761				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10.047	10.047	6.6978		
Offroad	2270003010	Telescopic Man Lift, 40 ft	15,973				0	0	1.1092	1.1092	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002003	AC Paver	35,964				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002003	Concrete Paving Spread	35,964				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002015	Cat 563 Padfoot Roller	30,830				0	0	0	0	0	0	0	1.6992	3.3984	3.3984	0.6797	0	0	0	0	0	1.6992	1.6992			
Offroad	2270002015	Cat 563 Smooth Roller	30,830				0	0	0	0	0	0	0	0	3.3984	3.3984	3.3984	3.3984	3.3984	1.6992	1.6992	5.0976	5.0976	1.6992			
Offroad	2270002015	Cat 815 Roller	30,830				0	0	0	0	0	0	0	0	0	6.7968	6.7968	6.7968	6.7968	6.7968	6.7968	0.5437	0	0	0		
Offroad	2270002015	Ramex Roller	30,830				0	0	0	0	0	0	16.992	16.992	16.992	16.992	16.992	16.992	16.992	16.992	16.992	16.992	16.992	16.992			
Offroad	2270002009	Hand Tamp	1,978				0	0	0	0	0	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903	1.0903			
Offroad	2270002081	Adzer Riding	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002081	Clip Machine	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Rail Heater	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Regulator	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Ballast Stabilizer	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002060	Speed Swing	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Track Laying Machine	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002009	Tamper Small	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002009	Tamper Large	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002081	Vibratrac	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002051	Hi-Rail Welder	103,197				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002018	Cat 615 Elevating Scraper	117,825				0	0	0	0	0	0	0	12.988	25.976	12.988	12.988	0	0	0	0	0	9.741	9.741			
Offroad	2270002018	Cat 621 Scraper, 21 CY	117,825				0	0	0	0	0	0	0	0	0	77.928	77.928	77.928	77.928	77.928	77.928	38.964	1.9482	0			
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1,918		1,918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Onroad	HHDT-DSL	35 Ton Art Dump		1,918		1,918	0.1038	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076	0.2076			
Onroad	MHDT-DSL	Truck, Flat Bed 14'		1,506		1,506	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0053	0.0528				
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		1,506		1,506	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418				
Onroad	MHDT-DSL	Lube Truck		1,506		1,506	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418				
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		742		742	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259				
Onroad	MDV-CAT	Pickup 4 x 4		706		706	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189				
Onroad	MDV-CAT	SUV		706		706	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278				
Onroad	HHDT-DSL	Water Truck, 4000 Gal		1,918		1,918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	103,197			103,197	0	0	0	0	0	0	0	0	0	22.751	22.751	22.751	22.751	22.751	22.751	1.8201	0				
<b>TOTAL</b>							<b>49.094</b>	<b>65.05</b>	<b>71.639</b>	<b>70.653</b>	<b>65.377</b>	<b>65.377</b>	<b>102.24</b>	<b>102.24</b>	<b>132.99</b>	<b>146.85</b>	<b>287.32</b>	<b>278.74</b>	<b>264.08</b>	<b>263.43</b>	<b>261.73</b>	<b>156.46</b>	<b>171.48</b>	<b>185.95</b>	<b>155.9</b>	<b>144.79</b>	

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

N2O

Source Type	ID/Code	Source	Operational Emission Factors				On-Site Operational Emissions (Offroad & Onroad) by Month (tons/month)																			
			Offroad Equipment (g/hr)	On-site Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Area	None	Wind Erosion																								
Offroad	2270006015	Air Compressor, 175 CFM	0.0403																							
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.0412																							
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.0412																							
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.0412																							
Offroad	2270002066	Hyd. Shear for Backhoe	0.0412																							
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.0652																							
Offroad	2270002045	RT Crane, 45T	0.0652																							
Offroad	2270002054	Crush Concrete	0.0828																							
Offroad	2270002063	Cat D5 Dozer	0.1469																							
Offroad	2270002063	Cat D6 Dozer	0.1469																							
Offroad	2270002063	Cat D7 Dozer	0.1469																							
Offroad	2270002063	Cat D8N Dozer	0.1469																							
Offroad	2270002066	John Deere 9400	0.0412																							
Offroad	2270002060	Cat 936 Loader	0.0683																							
Offroad	2270002060	Cat 966 Loader	0.0683																							
Offroad	2270002060	Cat 980 Loader	0.0683																							
Offroad	2270002060	Cat 988 Loader	0.0683																							
Offroad	2270002048	Cat 14H Grader	0.0839																							
Offroad	2270003010	Telescopic Man Lift, 40 ft	0.0220																							
Offroad	2270002003	AC Paver	0.0496																							
Offroad	2270002003	Concrete Paving Spread	0.0496																							
Offroad	2270002015	Cat 563 Padfoot Roller	0.0426																							
Offroad	2270002015	Cat 563 Smooth Roller	0.0426																							
Offroad	2270002015	Cat 815 Roller	0.0426																							
Offroad	2270002015	Ramex Roller	0.0426																							
Offroad	2270002009	Hand Tamp	0.0027																							
Offroad	2270002081	Adzer Riding	0.0773																							
Offroad	2270002081	Clip Machine	0.0773																							
Offroad	2270002069	Rail Heater	0.0717																							
Offroad	2270002069	Regulator	0.0717																							
Offroad	2270002069	Ballast Stabilizer	0.0717																							
Offroad	2270002060	Speed Swing	0.0683																							
Offroad	2270002069	Track Laying Machine	0.0717																							
Offroad	2270002009	Tamper Small	0.0027																							
Offroad	2270002009	Tamper Large	0.0027																							
Offroad	2270002081	Vibratrac	0.0773																							
Offroad	2270002051	Hi-Rail Welder	0.1424																							
Offroad	2270002018	Cat 615 Elevating Scraper	0.1626																							
Offroad	2270002018	Cat 621 Scraper, 21 CY	0.1626																							
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.00265																						
Onroad	HHDT-DSL	35 Ton Art Dump		0.00265																						
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.00208																						
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.00208																						
Onroad	MHDT-DSL	Lube Truck		0.00208																						
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.00104																						
Onroad	MDV-CAT	Pickup 4 x 4		0.00099																						
Onroad	MDV-CAT	SUV		0.00099																						
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.00265																						
Onroad	2270002051	Water Truck, 8000 Gal Off Rd	0.1424																							
<b>TOTAL</b>																										

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

CH4

Operational Emission Factors				On-Site Operational Emissions (Offroad & Onroad) by Month (tons/month)																									
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270006015	Air Compressor, 175 CFM	0.1210				1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05		
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.1235				5E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05		
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.1235				4E-05	4E-05	4E-05	3E-05	3E-05	3E-05	4E-05	4E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05		
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002066	Hyd. Shear for Backhoe	0.1235				1E-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.1955				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002045	RT Crane, 45T	0.1955				0	0	1E-05	1E-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002054	Crush Concrete	0.2483				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5E-05	5E-05	5E-05	6E-05	
Offroad	2270002063	Cat D5 Dozer	0.4406				0	0	0	0	0	0	2E-05	2E-05	2E-05	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002063	Cat D6 Dozer	0.4406				0	0	0	0	0	0	0	0	5E-05	5E-05	0.0001	1E-04	1E-04	1E-04	1E-04	6E-06	4E-05	4E-05	5E-05	4E-05	0		
Offroad	2270002063	Cat D7 Dozer	0.4406				5E-05	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	5E-05	0
Offroad	2270002063	Cat D8N Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	1E-04	1E-04	1E-04	1E-04	1E-04	5E-05	0	0	0	0	0	
Offroad	2270002066	John Deere 9400	0.1235				0	0	0	0	0	0	0	0	7E-06	1E-05	3E-05	3E-05	3E-05	3E-05	3E-05	2E-06	0	0	0	0	0	0	
Offroad	2270002060	Cat 936 Loader	0.2049				3E-05	3E-05	5E-05	5E-05	5E-05	9E-05	9E-05	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Offroad	2270002060	Cat 966 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5E-05	5E-05	5E-05	5E-05	0	
Offroad	2270002060	Cat 980 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5E-05	5E-05	5E-05	5E-05	0	0	
Offroad	2270002060	Cat 988 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002048	Cat 14H Grader	0.2516				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4E-05	4E-05	3E-05	3E-05	
Offroad	2270003010	Telescopic Man Lift, 40 ft	0.0661				0	0	5E-06	5E-06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002003	AC Paver	0.1489				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002003	Concrete Paving Spread	0.1489				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002015	Cat 563 Padfoot Roller	0.1277				0	0	0	0	0	0	0	0	7E-06	1E-05	1E-05	3E-06	0	0	0	0	7E-06	7E-06	0	0	0		
Offroad	2270002015	Cat 563 Smooth Roller	0.1277				0	0	0	0	0	0	0	0	0	1E-05	1E-05	1E-05	1E-05	1E-05	7E-06	7E-06	2E-05	2E-05	7E-06	3E-06	0		
Offroad	2270002015	Cat 815 Roller	0.1277				0	0	0	0	0	0	0	0	0	0	3E-05	3E-05	3E-05	3E-05	3E-05	2E-06	0	0	0	0	0	0	
Offroad	2270002015	Ramex Roller	0.1277				0	0	0	0	0	0	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	7E-05	8E-05	8E-05	
Offroad	2270002009	Hand Tamp	0.0082				0	0	0	0	0	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	
Offroad	2270002081	Adzer Riding	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002081	Clip Machine	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002069	Rail Heater	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002069	Regulator	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002069	Ballast Stabilizer	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002060	Speed Swing	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002069	Track Laying Machine	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002009	Tamper Small	0.0082				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002009	Tamper Large	0.0082				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002081	Vibratrac	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002051	Hi-Rail Welder	0.4273				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002018	Cat 615 Elevating Scraper	0.4879				0	0	0	0	0	0	0	0	5E-05	0.0001	5E-05	5E-05	0	0	0	0	4E-05	4E-05	0	0	0	0	
Offroad	2270002018	Cat 621 Scraper, 21 CY	0.4879				0	0	0	0	0	0	0	0	0	0	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	8E-06	0	0	0		
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.00794			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Onroad	HHDT-DSL	35 Ton Art Dump		0.00794			0.00794	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	9E-07	
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.00624			0.00624	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.00624			0.00624	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	
Onroad	MHDT-DSL	Lube Truck		0.00624			0.00624	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.01349			0.01349	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	
Onroad	MDV-CAT	Pickup 4 x 4		0.01282			0.01282	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	
Onroad	MDV-CAT	SUV		0.01282			0.01282	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.00794			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Onroad	HHDT-DSL	Water Truck, 8000 Gal Off Rd		0.00794			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	0.4273				0	0	0	0	0	0	0	0	0	0	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	8E-06	0	0	0	0		
<b>TOTAL</b>							<b>0.0002</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0004</b>	<b>0.0004</b>	<b>0.0006</b>	<b>0.0006</b>	<b>0.0012</b>	<b>0.0012</b>	<b>0.0011</b>	<b>0.0011</b>	<b>0.0011</b>	<b>0.0007</b>	<b>0.0007</b>	<b>0.0008</b>	<b>0.0007</b>	<b>0.0006</b>	<b>0.0006</b>		



Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

ROG

Source Type	ID/Code	Source	Operational Emission Factors				21	22	23	24	25	26	28	29	30	31	32	33	34	35	36	Total			
			Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Extended Idling (g/hr)																	Off-site Operation (g/mi)		
Area	None	Wind Erosion																							
Offroad	2270006015	Air Compressor, 175 CFM	51.61																						
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	45.50																						
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	45.50																						
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	45.50																						
Offroad	2270002066	Hyd. Shear for Backhoe	45.50																						
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	59.91																						
Offroad	2270002045	RT Crane, 45T	59.91																						
Offroad	2270002054	Crush Concrete	96.74																						
Offroad	2270002063	Cat D5 Dozer	149.19																						
Offroad	2270002063	Cat D6 Dozer	149.19																						
Offroad	2270002063	Cat D7 Dozer	149.19																						
Offroad	2270002063	Cat D8N Dozer	149.19																						
Offroad	2270002066	John Deere 9400	45.50																						
Offroad	2270002060	Cat 936 Loader	64.93																						
Offroad	2270002060	Cat 966 Loader	64.93																						
Offroad	2270002060	Cat 980 Loader	64.93																						
Offroad	2270002060	Cat 988 Loader	64.93																						
Offroad	2270002048	Cat 14H Grader	77.89																						
Offroad	2270003010	Telescopic Man Lift, 40 ft	30.78																						
Offroad	2270002003	AC Paver	80.29																						
Offroad	2270002003	Concrete Paving Spread	80.29																						
Offroad	2270002015	Cat 563 Padfoot Roller	53.22																						
Offroad	2270002015	Cat 563 Smooth Roller	53.22																						
Offroad	2270002015	Cat 815 Roller	53.22																						
Offroad	2270002015	Ramex Roller	53.22																						
Offroad	2270002009	Hand Tamp	2.29																						
Offroad	2270002081	Adzser Riding	47.78																						
Offroad	2270002081	Clip Machine	47.78																						
Offroad	2270002069	Rail Heater	83.81																						
Offroad	2270002069	Regulator	83.81																						
Offroad	2270002069	Ballast Stabilizer	83.81																						
Offroad	2270002060	Speed Swing	64.93																						
Offroad	2270002069	Track Laying Machine	83.81																						
Offroad	2270002009	Tamper Small	2.29																						
Offroad	2270002009	Tamper Large	2.29																						
Offroad	2270002081	Vibratrac	47.78																						
Offroad	2270002051	Hi-Rail Welder	97.47																						
Offroad	2270002018	Cat 615 Elevating Scraper	142.80																						
Offroad	2270002018	Cat 621 Scraper, 21 CY	142.80																						
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		4.929		12.487		1.469				0.0075	0.0075	0.0075	0.0075	0.0071	0.0057	0.0057	0.0005						
Onroad	HHDT-DSL	35 Ton Art Dump		4.929		12.487		1.469				0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009			
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.426		3.173		0.210				0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.426		3.173		0.210	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05			
Onroad	MHDT-DSL	Lube Truck		0.426		3.173		0.210	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05			
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		1.294				1.599	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05			
Onroad	MDV-CAT	Pickup 4 x 4		0.328				0.480	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05	9E-05			
Onroad	MDV-CAT	SUV		0.328				0.480	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001			
Onroad	HHDT-DSL	Water Truck, 4000 Gal		9.512					0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157	0.0157			
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	97.47																						
<b>TOTAL</b>									<b>0.151</b>	<b>0.1567</b>	<b>0.1856</b>	<b>0.1856</b>	<b>0.2065</b>	<b>0.1793</b>	<b>0.2114</b>	<b>0.2261</b>	<b>0.2141</b>	<b>0.2255</b>	<b>0.2048</b>	<b>0.2116</b>	<b>0.197</b>	<b>0.2553</b>	<b>0.2528</b>	<b>0.1169</b>	<b>7.47</b>

Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA

SPECIES

CO

Source		Operational Emission Factors																							
Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Operation (g/mi)	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total	
Area	None	Wind Erosion						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270006015	Air Compressor, 175 CFM	164.93					0.0182	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0182	0.0182	0.60
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	176.33					0.1166	0.1166	0.1166	0.1166	0.1166	0.1166	0.1166	0.1166	0.1166	0.1166	0.1166	0.0777	0.0777	0.0583	0.0466	0.0389	3.88	
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	176.33					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.82	
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	176.33					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0243	0.0243	0.02	0.07	
Offroad	2270002066	Hyd. Shear for Backhoe	176.33					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	198.97					0	0	0	0	0	0	0	0	0	0.0123	0	0.0068	0	0	0	0	0.02	
Offroad	2270002045	RT Crane, 45T	198.97					0	0	0	0	0	0	0	0	0.0039	0.0024	0.0219	0.0439	0.0439	0.0658	0	0	0.21	
Offroad	2270002054	Crush Concrete	326.82					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.30	
Offroad	2270002063	Cat D5 Dozer	618.77					0	0	0	0	0	0	0	0	0	0	0	0.0034	0.0552	0.0682	0	0	0.23	
Offroad	2270002063	Cat D6 Dozer	618.77					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.09	
Offroad	2270002063	Cat D7 Dozer	618.77					0	0	0	0	0	0	0	0	0	0	0	0.0082	0.0082	0	0	0	2.47	
Offroad	2270002063	Cat D8N Dozer	618.77					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.75	
Offroad	2270002066	John Deere 9400	176.33					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	
Offroad	2270002060	Cat 936 Loader	229.52					0.2024	0.2024	0.2024	0.2024	0.2024	0.2024	0.2024	0.2024	0.1518	0.166	0.1708	0.1973	0.1804	0.1265	0.1012	0.0506	4.98	
Offroad	2270002060	Cat 966 Loader	229.52					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.21	
Offroad	2270002060	Cat 980 Loader	229.52					0.0506	0.0506	0.0506	0.0708	0.0319	0.0506	0.0506	0.0506	0.0258	0	0	0	0	0	0	0	0.74	
Offroad	2270002060	Cat 988 Loader	229.52					0	0	0	0	0	0	0	0	0	0.0091	0.052	0	0	0.0056	0	0	0.01	
Offroad	2270002048	Cat 14H Grader	286.18					0.0315	0	0.0631	0.0631	0.0757	0.0344	0.0631	0.0631	0.0631	0.0552	0.0631	0.0631	0.0631	0.029	0	0	0.95	
Offroad	2270003010	Telescopic Man Lift, 40 ft	95.47					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	
Offroad	2270002003	AC Paver	255.89					0	0	0	0	0	0	0	0	0	0	0	0.0564	0.0564	0.0099	0	0	0.12	
Offroad	2270002003	Concrete Paving Spread	255.89					0	0	0	0	0	0.0564	0.0564	0.0564	0.0564	0.0494	0	0	0	0	0	0	0.28	
Offroad	2270002015	Cat 563 Padfoot Roller	190.90					0	0	0	0	0	0	0	0	0	0	0.0421	0.0253	0.0034	0	0	0	0.15	
Offroad	2270002015	Cat 563 Smooth Roller	190.90					0	0	0.0421	0.0421	0.0295	0.0229	0.0421	0.0421	0.0421	0.0421	0.0368	0.0057	0	0	0	0	0.55	
Offroad	2270002015	Cat 815 Roller	190.90					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.21	
Offroad	2270002015	Ramex Roller	190.90					0.1157	0.1157	0.1157	0.1157	0.1157	0.1157	0.1178	0.1368	0.1789	0.1789	0.1789	0.1747	0.1437	0.1052	0.1052	0	3.51	
Offroad	2270002009	Hand Tamp	11.94					0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0074	0.0086	0.0112	0.0112	0.0112	0.0109	0.009	0.0066	0.0066	0	0.22	
Offroad	2270002081	Adzer Riding	186.31					0	0	0	0	0	0	0	0	0	0	0	0	0.0205	0.0205	0.0166	0	0.06	
Offroad	2270002081	Clip Machine	186.31					0	0	0	0	0	0	0	0	0	0	0	0	0.0205	0.0411	0.0249	0	0.09	
Offroad	2270002069	Rail Heater	288.84					0	0	0	0	0	0	0	0	0	0	0	0	0.0318	0.0318	0.0258	0	0.09	
Offroad	2270002069	Regulator	288.84					0	0	0	0	0	0	0	0	0	0	0	0	0.1274	0.1592	0.1334	0	0.42	
Offroad	2270002069	Ballast Stabilizer	288.84					0	0	0	0	0	0	0	0	0	0	0	0	0.0239	0.0318	0.0115	0	0.07	
Offroad	2270002060	Speed Swing	229.52					0	0	0	0	0	0	0	0	0	0	0	0	0.0253	0.0253	0.0205	0	0.07	
Offroad	2270002069	Track Laying Machine	288.84					0	0	0	0	0	0	0	0	0	0	0	0	0.0318	0.0318	0.0258	0	0.09	
Offroad	2270002009	Tamper Small	11.94					0	0	0	0	0	0	0	0	0	0	0	0	0.0053	0.0053	0.005	0	0.02	
Offroad	2270002009	Tamper Large	11.94					0	0	0	0	0	0	0	0	0	0	0	0	0.0013	0.0026	0.0016	0	0.01	
Offroad	2270002081	Vibratrac	186.31					0	0	0	0	0	0	0	0	0	0	0	0	0.0205	0.0308	0.0205	0	0.07	
Offroad	2270002051	Hi-Rail Welder	289.66					0	0	0	0	0	0	0	0	0	0	0	0	0.0319	0.0319	0.0045	0	0.07	
Offroad	2270002018	Cat 615 Elevating Scraper	554.28					0	0	0	0	0.047	0.047	0	0.0354	0	0	0	0	0	0	0	0	0	0.53
Offroad	2270002018	Cat 621 Scraper, 21 CY	554.28					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.03
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		12.582		48.291	5.628	0	0	0	0	0	0.0264	0.0264	0.0264	0.0264	0.0247	0.0198	0.0198	0.0018	0	0	0	0	0.17
Onroad	HHDT-DSL	35 Ton Art Dump		12.582		48.291	5.628	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0	0	0	0	0	0	0	0	0.15
Onroad	MHDT-DSL	Truck, Flat Bed 14'		4.472		26.300	2.052	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.02
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		4.472		26.300	2.052	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0002	0	0.01
Onroad	MHDT-DSL	Lube Truck		4.472		26.300	2.052	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0002	0	0.01
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		12.847			13.572	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0006	0.0012	0.0012	0.0012	0.0012	0.0012	0.0006	0.0006	0	0	0.02
Onroad	MDV-CAT	Pickup 4 x 4		5.815			5.506	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0015	0.06
Onroad	MDV-CAT	SUV		5.815			5.506	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0019	0.0012	0.07
Onroad	HHDT-DSL	Water Truck, 4000 Gal				17.285		0	0.0286	0.0286	0.0343	0.0286	0.0286	0.0286	0.0286	0.0286	0.0286	0.025	0.0286	0.0286	0.0286	0.0146	0	0	0.39
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	289.66					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.32
<b>TOTAL</b>								<b>0.5512</b>	<b>0.5436</b>	<b>0.6488</b>	<b>0.6488</b>	<b>0.7218</b>	<b>0.6293</b>	<b>0.7338</b>	<b>0.7895</b>	<b>0.7458</b>	<b>0.785</b>	<b>0.7167</b>	<b>0.7331</b>	<b>0.6793</b>	<b>0.892</b>	<b>0.8974</b>	<b>0.4213</b>	<b>27.47</b>	

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES		Operational Emission Factors																				Total		
Source Type	ID/Code	Source	Offroad	On-site Onroad	On-site Extended	Off-site Onroad	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total	
			Equipment (g/hr)	Operation (g/mi)	Idling (g/hr)	Operation (g/mi)																		
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270006015	Air Compressor, 175 CFM	335.49				0.037	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.0277	0.037	0.037	1.21	
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	298.61				0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1975	0.1317	0.0987	0.079	0.0658	6.56		
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.39	
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0.0411	0.0411	0.0339	0.12		
Offroad	2270002066	Hyd. Shear for Backhoe	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	516.36				0	0	0	0	0	0	0	0	0.0319	0	0.0176	0	0	0	0	0	0.05	
Offroad	2270002045	RT Crane, 45T	516.36				0	0	0	0	0	0	0	0	0.0102	0.0063	0.0569	0.1138	0.1138	0.1708	0	0	0.54	
Offroad	2270002054	Crush Concrete	643.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.59	
Offroad	2270002063	Cat D5 Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0.0072	0.1174	0.145	0	0	0.49	
Offroad	2270002063	Cat D6 Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.32	
Offroad	2270002063	Cat D7 Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0.0174	0.0174	0	0	0	5.25	
Offroad	2270002063	Cat D8N Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.60	
Offroad	2270002066	John Deere 9400	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.42	
Offroad	2270002060	Cat 936 Loader	519.80				0.4584	0.4584	0.4584	0.4584	0.4584	0.4584	0.4584	0.3438	0.3759	0.3868	0.4469	0.4085	0.2865	0.2292	0.1146	11.29		
Offroad	2270002060	Cat 966 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.47	
Offroad	2270002060	Cat 980 Loader	519.80				0.1146	0.1146	0.1146	0.1604	0.0722	0.1146	0.1146	0.1146	0.0584	0	0	0	0	0	0	0	1.68	
Offroad	2270002060	Cat 988 Loader	519.80				0	0	0	0	0	0	0	0	0.0206	0	0	0	0.0126	0	0	0	0.03	
Offroad	2270002048	Cat 14H Grader	648.43				0.0715	0	0.143	0.143	0.1715	0.0779	0.143	0.143	0.143	0.1251	0.143	0.143	0.143	0.0658	0	0	2.16	
Offroad	2270003010	Telescopic Man Lift, 40 ft	164.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	
Offroad	2270002003	AC Paver	447.13				0	0	0	0	0	0	0	0	0	0	0.0986	0.0986	0.0173	0	0	0	0.21	
Offroad	2270002003	Concrete Paving Spread	447.13				0	0	0	0	0	0.0986	0.0986	0.0986	0.0986	0.0863	0	0	0	0	0	0	0.48	
Offroad	2270002015	Cat 563 Padfoot Roller	350.97				0	0	0	0	0	0	0	0	0	0	0.0774	0.0464	0.0662	0	0	0	0.27	
Offroad	2270002015	Cat 563 Smooth Roller	350.97				0	0	0.0774	0.0774	0.0542	0.0422	0.0774	0.0774	0.0774	0.0677	0.0104	0	0	0	0	0	1.01	
Offroad	2270002015	Cat 815 Roller	350.97				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.39	
Offroad	2270002015	Ramex Roller	350.97				0.2128	0.2128	0.2128	0.2128	0.2128	0.2128	0.2167	0.2515	0.3288	0.3288	0.3288	0.3211	0.2642	0.1934	0.1934	0	6.45	
Offroad	2270002009	Hand Tamp	14.37				0.0087	0.0087	0.0087	0.0087	0.0087	0.0087	0.0089	0.0103	0.0135	0.0135	0.0135	0.0132	0.0108	0.0079	0.0079	0	0.26	
Offroad	2270002081	Adzer Riding	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0.0505	0.0505	0.0409	0	0.14	
Offroad	2270002081	Clip Machine	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0.0505	0.101	0.0611	0	0.21	
Offroad	2270002069	Rail Heater	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0.0686	0.0686	0.0556	0	0.19	
Offroad	2270002069	Regulator	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0.2745	0.3431	0.2875	0	0.91	
Offroad	2270002069	Ballast Stabilizer	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0.0515	0.0686	0.0247	0	0.14	
Offroad	2270002060	Speed Swing	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0.0573	0.0573	0.0464	0	0.16	
Offroad	2270002069	Track Laying Machine	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0.0686	0.0686	0.0556	0	0.19	
Offroad	2270002009	Tamper Small	14.37				0	0	0	0	0	0	0	0	0	0	0	0	0.0063	0.0063	0.006	0	0.02	
Offroad	2270002009	Tamper Large	14.37				0	0	0	0	0	0	0	0	0	0	0	0	0.0016	0.0032	0.0019	0	0.01	
Offroad	2270002081	Vibratrac	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0.0505	0.0757	0.0505	0	0.18	
Offroad	2270002051	Hi-Rail Welder	916.54				0	0	0	0	0	0	0	0	0	0	0	0	0.101	0.101	0.0141	0	0.22	
Offroad	2270002018	Cat 615 Elevating Scraper	1293.67				0	0	0	0.1098	0.1098	0	0.0827	0	0	0	0	0	0	0	0	0	1.23	
Offroad	2270002018	Cat 621 Scraper, 21 CY	1293.67				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.73	
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		22.524	110.258	16.597	0	0	0	0	0	0.0575	0.0575	0.0575	0.0575	0.0539	0.0431	0.0431	0.004	0	0	0	0.37	
Onroad	HHDT-DSL	35 Ton Art Dump		22.524	110.258	16.597	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0007	0	0	0	0	0	0	0	0.32	
Onroad	MHDT-DSL	Truck, Flat Bed 14'	9.014		75.051	9.253	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.05
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal	9.014		75.051	9.253	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0006	0	0.03	
Onroad	MHDT-DSL	Lube Truck	9.014		75.051	9.253	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0006	0	0.03	
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton	0.865			2.457	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	4E-05	8E-05	8E-05	8E-05	8E-05	8E-05	4E-05	4E-05	0	0.00	
Onroad	MDV-CAT	Pickup 4 x 4	0.684			0.676	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.01	
Onroad	MDV-CAT	SUV	0.684			0.676	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.01	
Onroad	HHDT-DSL	Water Truck, 4000 Gal		32.319			0	0.0534	0.0534	0.0534	0.0641	0.0534	0.0534	0.0534	0.0534	0.0468	0.0534	0.0534	0.0534	0.0273	0	0	0.73	
Onroad	2270002051	Water Truck, 8000 Gal Off Rd	916.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.03	
<b>TOTAL</b>							<b>1.1123</b>	<b>1.0851</b>	<b>1.3054</b>	<b>1.3054</b>	<b>1.4771</b>	<b>1.2725</b>	<b>1.4655</b>	<b>1.5844</b>	<b>1.4612</b>	<b>1.5554</b>	<b>1.4035</b>	<b>1.4632</b>	<b>1.3708</b>	<b>1.9088</b>	<b>1.9446</b>	<b>0.8984</b>	<b>56.23</b>	

Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA

SPECIES		Source		Operational Emission Factors												Total							
				Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	28		29	30	31	32	33	34	35
SOx	Area	None	Wind Erosion																				0.00
	Offroad	2270006015	Air Compressor, 175 CFM	0.32																			4E-05
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.34																			0.0002
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.34																			0.0002
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.34																			0.0002
	Offroad	2270002066	Hyd. Shear for Backhoe	0.34																			0.0002
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.51																			0.0002
	Offroad	2270002045	RT Crane, 45T	0.51																			0.0002
	Offroad	2270002054	Crush Concrete	0.65																			0.0002
	Offroad	2270002063	Cat D5 Dozer	1.08																			0.0002
	Offroad	2270002063	Cat D6 Dozer	1.08																			0.0002
	Offroad	2270002063	Cat D7 Dozer	1.08																			0.0002
	Offroad	2270002063	Cat D8N Dozer	1.08																			0.0002
	Offroad	2270002066	John Deere 9400	0.34																			0.0002
	Offroad	2270002060	Cat 936 Loader	0.54																			0.0002
	Offroad	2270002060	Cat 966 Loader	0.54																			0.0002
	Offroad	2270002060	Cat 980 Loader	0.54																			0.0002
	Offroad	2270002060	Cat 988 Loader	0.54																			0.0002
	Offroad	2270002048	Cat 14H Grader	0.68																			0.0002
	Offroad	2270003010	Telescopic Man Lift, 40 ft	0.18																			0.0002
	Offroad	2270002003	AC Paver	0.41																			0.0002
	Offroad	2270002003	Concrete Paving Spread	0.41																			0.0002
	Offroad	2270002015	Cat 563 Padfoot Roller	0.35																			0.0002
	Offroad	2270002015	Cat 563 Smooth Roller	0.35																			0.0002
	Offroad	2270002015	Cat 815 Roller	0.35																			0.0002
	Offroad	2270002015	Ramex Roller	0.35																			0.0002
	Offroad	2270002009	Hand Tamp	0.03																			0.0002
	Offroad	2270002081	Adzer Riding	0.58																			0.0002
	Offroad	2270002081	Clip Machine	0.58																			0.0002
	Offroad	2270002069	Rail Heater	0.57																			0.0002
	Offroad	2270002069	Regulator	0.57																			0.0002
	Offroad	2270002069	Ballast Stabilizer	0.57																			0.0002
	Offroad	2270002060	Speed Swing	0.54																			0.0002
	Offroad	2270002069	Track Laying Machine	0.57																			0.0002
	Offroad	2270002009	Tamper Small	0.03																			0.0002
	Offroad	2270002009	Tamper Large	0.03																			0.0002
	Offroad	2270002081	Vibratrac	0.58																			0.0002
	Offroad	2270002051	Hi-Rail Welder	1.05																			0.0002
	Offroad	2270002018	Cat 615 Elevating Scraper	1.20																			0.0002
	Offroad	2270002018	Cat 621 Scraper, 21 CY	1.20																			0.0002
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY			0.018		0.063	0.018														0.0002
	Onroad	HHDT-DSL	35 Ton Art Dump			0.018		0.063	0.018														0.0002
	Onroad	MHDT-DSL	Truck, Flat Bed 14'			0.014		0.039	0.014														0.0002
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal			0.014		0.039	0.014														0.0002
	Onroad	MHDT-DSL	Lube Truck			0.014		0.039	0.014														0.0002
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton			0.007			0.007														0.0002
	Onroad	MDV-CAT	Pickup 4 x 4			0.007			0.007														0.0002
	Onroad	MDV-CAT	SUV			0.007			0.007														0.0002
	Onroad	HHDT-DSL	Water Truck, 4000 Gal			0.018			0.018														0.0002
	Offroad	2270002051	Water Truck, 8000 Gal Off Rd	1.05																			0.0002
			<b>TOTAL</b>																				<b>0.06</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors																		Total										
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Idling (g/hr)	Off-site Operation (g/mi)	21	22	23	24	25	26	26	28	29	30		31	32	33	34	35	36				
PM10	Area	None	Wind Erosion						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00			
	Offroad	2270006015	Air Compressor, 175 CFM	24.19					0.0027	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.0027	0.0027	0.09		
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	23.31					0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0103	0.0103	0.0077	0.0062	0.0051	0.51			
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.11	
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0032	0.0032	0.0026	0.01			
	Offroad	2270002066	Hyd. Shear for Backhoe	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	24.90					0	0	0	0	0	0	0	0	0	0	0.0015	0	0.0009	0	0	0	0	0	0	0.00	
	Offroad	2270002045	RT Crane, 45T	24.90					0	0	0	0	0	0	0	0	0	0	0.0005	0.0003	0.0027	0.0055	0.0055	0.0082	0	0	0.03		
	Offroad	2270002054	Crush Concrete	42.11					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	
	Offroad	2270002063	Cat D5 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0.0003	0.0051	0.0063	0	0	0	0.02		
	Offroad	2270002063	Cat D6 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	
	Offroad	2270002063	Cat D7 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0.0008	0.0008	0	0	0	0	0	0.23	
	Offroad	2270002063	Cat D8N Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07	
	Offroad	2270002066	John Deere 9400	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	
	Offroad	2270002060	Cat 936 Loader	29.35					0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0194	0.0212	0.0218	0.0252	0.0231	0.0162	0.0129	0.0065	0.64			
	Offroad	2270002060	Cat 966 Loader	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	
	Offroad	2270002060	Cat 980 Loader	29.35					0.0065	0.0065	0.0065	0.0091	0.0041	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065	0.0033	0	0	0	0	0	0	0	0.09	
	Offroad	2270002060	Cat 988 Loader	29.35					0	0	0	0	0	0	0	0	0	0	0.0012	0	0	0	0.0007	0	0	0	0	0.00	
	Offroad	2270002048	Cat 14H Grader	34.06					0.0038	0	0.0075	0.0075	0.009	0.0041	0.0075	0.0075	0.0075	0.0075	0.0066	0.0075	0.0066	0.0075	0.0075	0.0035	0	0	0	0.11	
	Offroad	2270003010	Telescopic Man Lift, 40 ft	11.34					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002003	AC Paver	32.07					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0071	0.0071	0.012	0	0	0	0.02	
	Offroad	2270002003	Concrete Paving Spread	32.07					0	0	0	0	0	0	0.0071	0.0071	0.0071	0.0071	0.0062	0	0	0	0	0	0	0	0	0.03	
	Offroad	2270002015	Cat 563 Padfoot Roller	24.75					0	0	0	0	0	0	0	0	0	0	0	0	0.0055	0.0033	0.0004	0	0	0	0	0.02	
	Offroad	2270002015	Cat 563 Smooth Roller	24.75					0	0	0.0055	0.0055	0.0038	0.003	0.0055	0.0055	0.0055	0.0055	0.0048	0.0007	0	0	0	0	0	0	0	0.07	
	Offroad	2270002015	Cat 815 Roller	24.75					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	
	Offroad	2270002015	Ramex Roller	24.75					0.015	0.015	0.015	0.015	0.015	0.015	0.0153	0.0177	0.0232	0.0232	0.0232	0.0226	0.0186	0.0136	0.0136	0	0	0	0	0.45	
	Offroad	2270002009	Hand Tamp	0.68					0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0004	0.0004	0.0004	0	0	0.01	
	Offroad	2270002081	Adzer Riding	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0.0022	0.0018	0	0	0	0.01	
	Offroad	2270002081	Clip Machine	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0.0044	0.0027	0	0	0	0.01	
	Offroad	2270002069	Rail Heater	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0042	0.0042	0.0034	0	0	0	0.01	
	Offroad	2270002069	Regulator	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0.017	0.0212	0.0178	0	0	0	0.06	
	Offroad	2270002069	Ballast Stabilizer	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0032	0.0042	0.0015	0	0	0	0.01	
	Offroad	2270002060	Speed Swing	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0032	0.0032	0.0026	0	0	0	0.01	
	Offroad	2270002069	Track Laying Machine	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0042	0.0042	0.0034	0	0	0	0.01	
	Offroad	2270002009	Tamper Small	0.68					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0003	0.0003	0.0003	0	0	0	0.00	
	Offroad	2270002009	Tamper Large	0.68					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0002	0.0002	0.0002	0	0	0.00	
	Offroad	2270002081	Vibratrac	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0.0033	0.0022	0	0	0	0.01	
	Offroad	2270002051	Hi-Rail Welder	34.52					0	0	0	0	0	0	0	0	0	0	0	0	0	0.0038	0.0038	0.0005	0	0	0	0.01	
	Offroad	2270002018	Cat 615 Elevating Scraper	56.09					0	0	0	0	0.0048	0.0048	0	0.0036	0	0	0	0	0	0	0	0	0	0	0	0.05	
	Offroad	2270002018	Cat 621 Scraper, 21 CY	56.09					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1.516		1.792		0.860	0	0	0	0	0	0.0014	0.0014	0.0014	0.0014	0.0013	0.0013	0.0011	0.0011	1E-04	0	0	0	0	0.01	
	Onroad	HHDT-DSL	35 Ton Art Dump		1.516		1.792		0.860	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	2E-05	0	0	0	0	0	0	0	0	0	0.01
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.514		0.965		0.274	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	0.00	
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.514		0.965		0.274	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00	
	Onroad	MHDT-DSL	Lube Truck		0.514		0.965		0.274	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00	
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.029		0.037		0.037	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	1E-06	1E-06	0	0	0.00	
	Onroad	MDV-CAT	Pickup 4 x 4		0.060		0.050		0.050	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00	
Onroad	MDV-CAT	SUV		0.060		0.050		0.050	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00		
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.060		0.050		0.050	0	0.0038	0.0038	0.0045	0.0038	0.0038	0.0038	0.0038	0.0038	0.0038	0.0033										

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors																								
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Idling (g/hr)	Off-site Operation (g/mi)	21	22	23	24	25	26	28	29	30	31	32	33	34	35	36	Total	
	Area	None	Wind Erosion																						
	Offroad	2270006015	Air Compressor, 175 CFM	24.19					0.0027	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.0027	0.0027	0.09	
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	23.31					0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0154	0.0103	0.0103	0.0077	0.0062	0.0051	0.51	
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.11	
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0.0032	0.0032	0.0026	0.01	
	Offroad	2270002066	Hyd. Shear for Backhoe	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	24.90					0	0	0	0	0	0	0	0.0015	0	0.0009	0	0	0	0	0	0.00	
	Offroad	2270002045	RT Crane, 45T	24.90					0	0	0	0	0	0	0	0.0005	0.0003	0.0027	0.0055	0.0055	0.0082	0	0	0.03	
	Offroad	2270002054	Crush Concrete	42.11					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	
	Offroad	2270002063	Cat D5 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0.0003	0.0051	0.0063	0	0.02	
	Offroad	2270002063	Cat D6 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	
	Offroad	2270002063	Cat D7 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0.0008	0.0008	0	0	0	0.23	
	Offroad	2270002063	Cat D8N Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07	
	Offroad	2270002066	John Deere 9400	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	
	Offroad	2270002060	Cat 936 Loader	29.35					0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0194	0.0212	0.0218	0.0252	0.0231	0.0162	0.0129	0.0065	0.64	
	Offroad	2270002060	Cat 966 Loader	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	
	Offroad	2270002060	Cat 980 Loader	29.35					0.0065	0.0065	0.0065	0.0091	0.0041	0.0065	0.0065	0.0065	0.0065	0.0033	0	0	0	0	0	0.09	
	Offroad	2270002060	Cat 988 Loader	29.35					0	0	0	0	0	0	0	0.0012	0	0	0	0.0007	0	0	0	0.00	
	Offroad	2270002048	Cat 14H Grader	34.06					0.0038	0.0075	0.0075	0.009	0.0041	0.0075	0.0075	0.0075	0.0066	0.0075	0.0075	0.0075	0.0035	0	0	0.11	
	Offroad	2270003010	Telescopic Man Lift, 40 ft	11.34					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002003	AC Paver	32.07					0	0	0	0	0	0	0	0	0	0	0.0071	0.0071	0.012	0	0	0.02	
	Offroad	2270002003	Concrete Paving Spread	32.07					0	0	0	0	0	0.0071	0.0071	0.0071	0.0071	0.0062	0	0	0	0	0	0.03	
	Offroad	2270002015	Cat 563 Padfoot Roller	24.75					0	0	0	0	0	0	0	0	0	0	0.0055	0.0033	0.0004	0	0	0.02	
	Offroad	2270002015	Cat 563 Smooth Roller	24.75					0	0	0.0055	0.0055	0.0038	0.003	0.0055	0.0055	0.0055	0.0048	0.0007	0	0	0	0	0.07	
	Offroad	2270002015	Cat 815 Roller	24.75					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	
	Offroad	2270002015	Ramex Roller	24.75					0.015	0.015	0.015	0.015	0.015	0.015	0.0153	0.0177	0.0232	0.0232	0.0232	0.0226	0.0186	0.0136	0.0136	0.45	
	Offroad	2270002009	Hand Tamp	0.68					0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0005	0.0006	0.0006	0.0006	0.0006	0.0005	0.0004	0.0004	0	0.01	
	Offroad	2270002081	Adzger Riding	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0.0022	0.0018	0.01	
	Offroad	2270002081	Clip Machine	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0.0022	0.0044	0.0027	0.01	
	Offroad	2270002069	Rail Heater	38.49					0	0	0	0	0	0	0	0	0	0	0	0.0042	0.0042	0.0034	0	0.01	
	Offroad	2270002069	Regulator	38.49					0	0	0	0	0	0	0	0	0	0	0	0.017	0.0212	0.0178	0	0.06	
	Offroad	2270002069	Ballast Stabilizer	38.49					0	0	0	0	0	0	0	0	0	0	0	0.0032	0.0042	0.0015	0	0.01	
	Offroad	2270002060	Speed Swing	29.35					0	0	0	0	0	0	0	0	0	0	0	0.0032	0.0032	0.0026	0	0.01	
	Offroad	2270002069	Track Laying Machine	38.49					0	0	0	0	0	0	0	0	0	0	0	0.0042	0.0042	0.0034	0	0.01	
	Offroad	2270002009	Tamper Small	0.68					0	0	0	0	0	0	0	0	0	0	0	0.0003	0.0003	0.0003	0	0.00	
	Offroad	2270002009	Tamper Large	0.68					0	0	0	0	0	0	0	0	0	0	0	0	8E-05	0.0002	9E-05	0.00	
	Offroad	2270002081	Vibratrac	19.99					0	0	0	0	0	0	0	0	0	0	0	0.0022	0.0033	0.0022	0	0.01	
	Offroad	2270002051	Hi-Rail Welder	34.52					0	0	0	0	0	0	0	0	0	0	0	0	0.0038	0.0038	0.0005	0.01	
	Offroad	2270002018	Cat 615 Elevating Scraper	56.09					0	0	0	0.0048	0.0048	0	0.0036	0	0	0	0	0	0	0	0	0.05	
	Offroad	2270002018	Cat 621 Scraper, 21 CY	56.09					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1.516		1.792	0.860	0	0	0	0	0	0	0.0014	0.0014	0.0014	0.0014	0.0013	0.0011	0.0011	1E-04	0	0.01	
	Onroad	HHDT-DSL	35 Ton Art Dump		1.516		1.792	0.860	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	2E-05	0	0	0	0	0	0.01	
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.514		0.965	0.274	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	0.00	
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.514		0.965	0.274	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00	
	Onroad	MHDT-DSL	Lube Truck		0.514		0.965	0.274	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00	
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Onroad	MDV-CAT	Pickup 4 x 4						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Onroad	MDV-CAT	SUV						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Onroad	HHDT-DSL	Water Truck, 4000 Gal			2.283			0	0.0038	0.0038	0.0038	0.0045	0.0038	0.0038	0.0038	0.0038	0.0038	0.0033	0.0038	0.0038	0.0019	0	0.05	
	Offroad	2270002051	Water Truck, 8000 Gal Off Rd	34.52					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	
			<b>TOTAL</b>						<b>0.0699</b>	<b>0.0693</b>	<b>0.0822</b>	<b>0.0822</b>	<b>0.0902</b>	<b>0.0787</b>	<b>0.091</b>	<b>0.0971</b>	<b>0.0925</b>	<b>0.0975</b>	<b>0.089</b>	<b>0.0909</b>	<b>0.0839</b>	<b>0.1102</b>	<b>0.1103</b>	<b>0.0533</b>	<b>3.25</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

CO2

Operational Emission Factors																										
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total			
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
Offroad	2270006015	Air Compressor, 175 CFM	29,226				3.2216	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	2.4162	105.44		
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	29,824				19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	19.725	13.15	13.15	9.8627	7.8902	6.5752	655.54			
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	138.97		
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.1095	4.1095	3.3862	11.61		
Offroad	2270002066	Hyd. Shear for Backhoe	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.52		
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	47,225				0	0	0	0	0	0	0	0	0	2.9152	0	1.6138	0	0	0	0	0	4.53		
Offroad	2270002045	RT Crane, 45T	47,225				0	0	0	0	0	0	0	0	0	0.937	0.5726	5.2057	10.411	10.411	15.617	0	0	49.71		
Offroad	2270002054	Crush Concrete	59,975				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54.54		
Offroad	2270002063	Cat D5 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0.5864	9.4999	11.728	0	0	39.41		
Offroad	2270002063	Cat D6 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187.30		
Offroad	2270002063	Cat D7 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	1.4074	1.4074	0	0	0	425.03		
Offroad	2270002063	Cat D8N Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	129.60		
Offroad	2270002066	John Deere 9400	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42.34		
Offroad	2270002060	Cat 936 Loader	49,477				43.631	43.631	43.631	43.631	43.631	43.631	43.631	43.631	32.723	35.777	36.814	42.54	38.886	27.269	21.815	10.908	0	1074.36		
Offroad	2270002060	Cat 966 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44.99		
Offroad	2270002060	Cat 980 Loader	49,477				10.908	10.908	10.908	15.271	6.8719	10.908	10.908	10.908	10.908	10.908	5.5629	0	0	0	0	0	0	0	159.96	
Offroad	2270002060	Cat 988 Loader	49,477				0	0	0	0	0	0	0	0	0	1.9634	0	0	0	1.1998	0	0	0	0	3.16	
Offroad	2270002048	Cat 14H Grader	60,761				6.6978	0	13.396	13.396	16.075	7.3006	13.396	13.396	13.396	13.396	11.721	13.396	13.396	6.162	0	0	0	0	202.01	
Offroad	2270003010	Telescopic Man Lift, 40 ft	15,973				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.22	
Offroad	2270002003	AC Paver	35,964				0	0	0	0	0	0	0	0	0	0	0	0	0	7.9287	7.9287	1.3875	0	0	17.24	
Offroad	2270002003	Concrete Paving Spread	35,964				0	0	0	0	0	0	7.9287	7.9287	7.9287	7.9287	6.9376	0	0	0	0	0	0	0	38.65	
Offroad	2270002015	Cat 563 Padfoot Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	6.7968	4.0781	0.5437	0	0	0	23.99	
Offroad	2270002015	Cat 563 Smooth Roller	30,830				0	0	6.7968	6.7968	4.7577	3.7042	6.7968	6.7968	6.7968	6.7968	5.9472	0.9176	0	0	0	0	0	0	89.07	
Offroad	2270002015	Cat 815 Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34.53	
Offroad	2270002015	Ramex Roller	30,830				18.691	18.691	18.691	18.691	18.691	18.691	19.031	22.089	28.886	28.886	28.886	28.886	28.207	23.211	16.992	16.992	0	0	566.61	
Offroad	2270002009	Hand Tamp	1,978				1.1993	1.1993	1.1993	1.1993	1.1993	1.1993	1.2211	1.4174	1.8535	1.8535	1.8535	1.8099	1.4893	1.0903	1.0903	0	0	0	36.36	
Offroad	2270002081	Adzer Riding	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.1714	6.1714	4.9988	0	17.34	
Offroad	2270002081	Clip Machine	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	6.1714	12.343	7.4674	0	0	25.98	
Offroad	2270002069	Rail Heater	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	5.7236	5.7236	4.6361	0	0	16.08	
Offroad	2270002069	Regulator	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	22.894	28.618	23.982	0	0	75.49	
Offroad	2270002069	Ballast Stabilizer	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	4.2927	5.7236	2.0605	0	0	12.08	
Offroad	2270002060	Speed Swing	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	5.4539	5.4539	4.4176	0	0	15.33	
Offroad	2270002069	Track Laying Machine	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	5.7236	5.7236	4.6361	0	0	16.08	
Offroad	2270002009	Tamper Small	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0.8722	0.8722	0.8243	0	0	2.57	
Offroad	2270002009	Tamper Large	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0.2181	0.4361	0.2682	0	0	0.92	
Offroad	2270002081	Vibratrac	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	6.1714	9.2571	6.1714	0	0	21.60	
Offroad	2270002051	Hi-Rail Welder	103,197				0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.376	11.376	1.5926	0	24.34	
Offroad	2270002018	Cat 615 Elevating Scraper	117,825				0	0	0	10.001	10.001	0	7.5331	0	0	0	0	0	0	0	0	0	0	0	111.96	
Offroad	2270002018	Cat 621 Scraper, 21 CY	117,825				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	430.55	
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1,918			0	0	0	0	0	0.8306	0.8306	0.8306	0.8306	0.7786	0.6229	0.6229	0.0571	0	0	0	0	0	5.40	
Onroad	HHDT-DSL	35 Ton Art Dump		1,918			0.1038	0.1038	0.1038	0.1038	0.1038	0.1038	0.1038	0.1038	0.0099	0	0	0	0	0	0	0	0	0	0	4.68
Onroad	MHDT-DSL	Truck, Flat Bed 14'		1,506			0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	0.1057	2.12	
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		1,506			0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	1.45	
Onroad	MHDT-DSL	Lube Truck		1,506			0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	0.0418	1.45	
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		742			0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0259	0.0321	0.0691	0.0691	0.0691	0.0691	0.0691	0.0339	0.0346	0	0	0	1.15	
Onroad	MDV-CAT	Pickup 4 x 4		706			0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.189	0.1793	6.80	
Onroad	MDV-CAT	SUV		706			0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278	0.1479	8.12	
Onroad	HHDT-DSL	Water Truck, 4000 Gal		1,918			0	3.1712	3.1712	3.1712	3.8054	3.1712	3.1712	3.1712	3.1712	3.1712	2.7748	3.1712	3.1712	3.1712	3.1712	1.6173	0	0	43.08	
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	103,197				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	115.58	
<b>TOTAL</b>							<b>104.81</b>	<b>100.48</b>	<b>120.67</b>	<b>120.67</b>	<b>136.31</b>	<b>117.45</b>	<b>129.79</b>	<b>140.58</b>	<b>129.32</b>	<b>138.18</b>	<b>124.67</b>	<b>129.86</b>	<b>121.43</b> </							

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Source			Operational Emission Factors																					
	Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	28	29	30	31	32	33	34	35	36	Total	
	Area	None	Wind Erosion						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270006015	Air Compressor, 175 CFM	0.0403					4E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	4E-06	4E-06	0.00	
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.0412					3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	2E-05	2E-05	1E-05	1E-05	9E-06	0.00	
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.0412					0	0	0	0	0	0	0	0	0	0	0	6E-06	6E-06	5E-06	0.00		
	Offroad	2270002066	Hyd. Shear for Backhoe	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.0652					0	0	0	0	0	0	0	0	4E-06	0	2E-06	0	0	0	0	0.00	
	Offroad	2270002045	RT Crane, 45T	0.0652					0	0	0	0	0	0	0	0	1E-06	8E-07	7E-06	1E-05	1E-05	2E-05	0	0.00	
	Offroad	2270002054	Crush Concrete	0.0828					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002063	Cat D5 Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	8E-07	1E-05	2E-05	0	0.00	
	Offroad	2270002063	Cat D6 Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002063	Cat D7 Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	2E-06	2E-06	0	0	0.00	
	Offroad	2270002063	Cat D8N Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002066	John Deere 9400	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002060	Cat 936 Loader	0.0683					6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	6E-05	5E-05	5E-05	6E-05	5E-05	6E-05	5E-05	4E-05	3E-05	2E-05	0.00
	Offroad	2270002060	Cat 966 Loader	0.0683					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002060	Cat 980 Loader	0.0683					2E-05	2E-05	2E-05	2E-05	2E-05	9E-06	2E-05	2E-05	2E-05	8E-06	0	0	0	0	0	0.00	
	Offroad	2270002060	Cat 988 Loader	0.0683					0	0	0	0	0	0	0	0	3E-06	0	0	0	2E-06	0	0	0.00	
	Offroad	2270002048	Cat 14H Grader	0.0839					9E-06	0	2E-05	2E-05	2E-05	1E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	9E-06	0	0.00	
	Offroad	2270003010	Telescopic Man Lift, 40 ft	0.0220					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002003	AC Paver	0.0496					0	0	0	0	0	0	0	0	0	0	1E-05	1E-05	2E-06	0	0	0.00	
	Offroad	2270002003	Concrete Paving Spread	0.0496					0	0	0	0	0	0	1E-05	1E-05	1E-05	1E-05	1E-05	0	0	0	0	0.00	
	Offroad	2270002015	Cat 563 Padfoot Roller	0.0426					0	0	0	0	0	0	0	0	0	0	9E-06	6E-06	8E-07	0	0	0.00	
	Offroad	2270002015	Cat 563 Smooth Roller	0.0426					0	0	9E-06	9E-06	7E-06	5E-06	9E-06	9E-06	9E-06	8E-06	1E-06	0	0	0	0	0.00	
	Offroad	2270002015	Cat 815 Roller	0.0426					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270002015	Ramex Roller	0.0426					3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	4E-05	4E-05	4E-05	4E-05	3E-05	2E-05	2E-05	0	0.00
	Offroad	2270002009	Hand Tamp	0.0027					2E-06	2E-06	2E-06	2E-06	2E-06	2E-06	2E-06	2E-06	3E-06	3E-06	2E-06	2E-06	2E-06	2E-06	0	0.00	
	Offroad	2270002081	Adzer Riding	0.0773					0	0	0	0	0	0	0	0	0	0	0	0	9E-06	9E-06	7E-06	0.00	
	Offroad	2270002081	Clip Machine	0.0773					0	0	0	0	0	0	0	0	0	0	0	0	9E-06	2E-05	1E-05	0.00	
	Offroad	2270002069	Rail Heater	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	8E-06	8E-06	6E-06	0.00	
	Offroad	2270002069	Regulator	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	3E-05	4E-05	3E-05	0.00	
	Offroad	2270002069	Ballast Stabilizer	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	6E-06	8E-06	3E-06	0.00	
	Offroad	2270002060	Speed Swing	0.0683					0	0	0	0	0	0	0	0	0	0	0	0	8E-06	8E-06	6E-06	0.00	
	Offroad	2270002069	Track Laying Machine	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	8E-06	8E-06	6E-06	0.00	
	Offroad	2270002009	Tamper Small	0.0027					0	0	0	0	0	0	0	0	0	0	0	0	1E-06	1E-06	1E-06	0.00	
	Offroad	2270002009	Tamper Large	0.0027					0	0	0	0	0	0	0	0	0	0	0	0	3E-07	6E-07	4E-07	0.00	
	Offroad	2270002081	Vibratrac	0.0773					0	0	0	0	0	0	0	0	0	0	0	0	9E-06	1E-05	9E-06	0.00	
	Offroad	2270002051	Hi-Rail Welder	0.1424					0	0	0	0	0	0	0	0	0	0	0	0	2E-05	2E-05	2E-06	0.00	
	Offroad	2270002018	Cat 615 Elevating Scraper	0.1626					0	0	0	0	1E-05	1E-05	0	1E-05	0	0	0	0	0	0	0	0.00	
	Offroad	2270002018	Cat 621 Scraper, 21 CY	0.1626					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.00265				0	0	0	0	0	0	1E-06	1E-06	1E-06	1E-06	9E-07	9E-07	8E-08	0	0	0.00	
	Onroad	HHDT-DSL	35 Ton Art Dump		0.00265				1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	0.00
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.00208				1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	1E-07	0.00
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.00208				6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	4E-08	0	0.00
	Onroad	MHDT-DSL	Lube Truck		0.00208				6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	6E-08	4E-08	0	0.00
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.00104				4E-08	4E-08	4E-08	4E-08	4E-08	4E-08	4E-08	4E-08	1E-07	1E-07	1E-07	1E-07	1E-07	5E-08	5E-08	0	0.00
	Onroad	MDV-CAT	Pickup 4 x 4		0.00099				3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	0.00
	Onroad	MDV-CAT	SUV		0.00099				3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	3E-07	2E-07	0.00
	Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.00265				0	4E-06	4E-06	4E-06	5E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	2E-06	0	0.00
	Offroad	2270002051	Water Truck, 8000 Gal Off Rd		0.1424				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
			<b>TOTAL</b>						<b>0.0001</b>	<b>0.0001</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0003</b>	<b>0.0001</b>	<b>0.01</b>	

N20



Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

CH4

Operational Emission Factors																							
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	28	29	30	31	32	33	34	35	36	Total	
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270006015	Air Compressor, 175 CFM	0.1210				1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	0.00
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.1235				8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	5E-05	5E-05	4E-05	3E-05	3E-05		0.00
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	2E-05	2E-05	1E-05		0.00
Offroad	2270002066	Hyd. Shear for Backhoe	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.1955				0	0	0	0	0	0	0	0	1E-05	0	7E-06	0	0	0	0	0	0.00
Offroad	2270002045	RT Crane, 45T	0.1955				0	0	0	0	0	0	0	0	4E-06	2E-06	2E-05	4E-05	4E-05	6E-05	0	0	0.00
Offroad	2270002054	Crush Concrete	0.2483				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002063	Cat D5 Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	2E-06	4E-05	5E-05	0	0	0.00
Offroad	2270002063	Cat D6 Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002063	Cat D7 Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	6E-06	6E-06	0	0	0	0.00
Offroad	2270002063	Cat D8N Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002066	John Deere 9400	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002060	Cat 936 Loader	0.2049				0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	9E-05	5E-05		0.00
Offroad	2270002060	Cat 966 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002060	Cat 980 Loader	0.2049				5E-05	5E-05	5E-05	6E-05	3E-05	5E-05	5E-05	5E-05	5E-05	2E-05	0	0	0	0	0	0	0.00
Offroad	2270002060	Cat 988 Loader	0.2049				0	0	0	0	0	0	0	0	8E-06	0	0	0	5E-06	0	0	0	0.00
Offroad	2270002048	Cat 14H Grader	0.2516				3E-05	0	6E-05	6E-05	7E-05	3E-05	6E-05	6E-05	6E-05	5E-05	6E-05	6E-05	6E-05	3E-05	0	0	0.00
Offroad	2270003010	Telescopic Man Lift, 40 ft	0.0661				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002003	AC Paver	0.1489				0	0	0	0	0	0	0	0	0	0	0	3E-05	3E-05	6E-06	0	0	0.00
Offroad	2270002003	Concrete Paving Spread	0.1489				0	0	0	0	0	3E-05	3E-05	3E-05	3E-05	3E-05	0	0	0	0	0	0	0.00
Offroad	2270002015	Cat 563 Padfoot Roller	0.1277				0	0	0	0	0	0	0	0	0	0	0	3E-05	2E-05	2E-06	0	0	0.00
Offroad	2270002015	Cat 563 Smooth Roller	0.1277				0	0	3E-05	3E-05	2E-05	2E-05	3E-05	3E-05	3E-05	2E-05	4E-06	0	0	0	0	0	0.00
Offroad	2270002015	Cat 815 Roller	0.1277				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002015	Ramex Roller	0.1277				8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	8E-05	9E-05	0.0001	0.0001	0.0001	0.0001	1E-04	7E-05	7E-05	0	0.00
Offroad	2270002009	Hand Tamp	0.0082				5E-06	5E-06	5E-06	5E-06	5E-06	5E-06	6E-06	8E-06	8E-06	8E-06	7E-06	6E-06	5E-06	5E-06	0	0	0.00
Offroad	2270002081	Adzer Riding	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	3E-05	3E-05	2E-05		0.00
Offroad	2270002081	Clip Machine	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	3E-05	5E-05	3E-05		0.00
Offroad	2270002069	Rail Heater	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	2E-05	2E-05	2E-05		0.00
Offroad	2270002069	Regulator	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	9E-05	0.0001	1E-04		0.00
Offroad	2270002069	Ballast Stabilizer	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	2E-05	2E-05	9E-06		0.00
Offroad	2270002060	Speed Swing	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	2E-05	2E-05	2E-05		0.00
Offroad	2270002069	Track Laying Machine	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	2E-05	2E-05	2E-05		0.00
Offroad	2270002009	Tamper Small	0.0082				0	0	0	0	0	0	0	0	0	0	0	0	4E-06	4E-06	3E-06		0.00
Offroad	2270002009	Tamper Large	0.0082				0	0	0	0	0	0	0	0	0	0	0	0	9E-07	2E-06	1E-06		0.00
Offroad	2270002081	Vibratrac	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	3E-05	4E-05	3E-05		0.00
Offroad	2270002051	Hi-Rail Welder	0.4273				0	0	0	0	0	0	0	0	0	0	0	0	5E-05	5E-05	7E-06		0.00
Offroad	2270002018	Cat 615 Elevating Scraper	0.4879				0	0	0	0	4E-05	4E-05	0	3E-05	0	0	0	0	0	0	0	0	0.00
Offroad	2270002018	Cat 621 Scraper, 21 CY	0.4879				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.00794		0.00794	0	0	0	0	0	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	2E-07	0	0	0	0.00
Onroad	HHDT-DSL	35 Ton Art Dump		0.00794		0.00794	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	0.00
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.00624		0.00624	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	4E-07	0.00
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.00624		0.00624	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	1E-07	0	0.00
Onroad	MHDT-DSL	Lube Truck		0.00624		0.00624	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	2E-07	1E-07	0	0.00
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.01349		0.01349	5E-07	5E-07	5E-07	5E-07	5E-07	5E-07	6E-07	1E-06	1E-06	1E-06	1E-06	1E-06	6E-07	6E-07	0	0	0.00
Onroad	MDV-CAT	Pickup 4 x 4		0.01282		0.01282	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	0.00
Onroad	MDV-CAT	SUV		0.01282		0.01282	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	4E-06	3E-06	0.00
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.00794		0.00794	0	1E-05	1E-05	1E-05	2E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	1E-05	7E-06	0	0.00
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	0.4273				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
<b>TOTAL</b>							<b>0.0004</b>	<b>0.0004</b>	<b>0.0005</b>	<b>0.0005</b>	<b>0.0006</b>	<b>0.0005</b>	<b>0.0005</b>	<b>0.0006</b>	<b>0.0005</b>	<b>0.0006</b>	<b>0.0005</b>	<b>0.0005</b>	<b>0.0005</b>	<b>0.0007</b>	<b>0.0008</b>	<b>0.0004</b>	<b>0.02</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors				Off-Site Operational Emissions (Onroad) by Month (tons/month)																										
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
	Area	None	Wind Erosion																												
Offroad	2270006015	Air Compressor, 175 CFM	51.61					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	45.50					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	45.50					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	45.50					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Hyd. Shear for Backhoe	45.50					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	59.91					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002045	RT Crane, 45T	59.91					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002054	Crush Concrete	96.74					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D5 Dozer	149.19					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D6 Dozer	149.19					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D7 Dozer	149.19					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D8N Dozer	149.19					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	John Deere 9400	45.50					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 936 Loader	64.93					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 966 Loader	64.93					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 980 Loader	64.93					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 988 Loader	64.93					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002048	Cat 14H Grader	77.89					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270003010	Telescopic Man Lift, 40 ft	30.78					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002003	AC Paver	80.29					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002003	Concrete Paving Spread	80.29					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 563 Padfoot Roller	53.22					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 563 Smooth Roller	53.22					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 815 Roller	53.22					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Ramex Roller	53.22					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Hand Tamp	2.29					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Adzer Riding	47.78					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Clip Machine	47.78					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Rail Heater	83.81					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Regulator	83.81					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Ballast Stabilizer	83.81					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Speed Swing	64.93					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Track Laying Machine	83.81					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Tamper Small	2.29					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Tamper Large	2.29					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Vibratrac	47.78					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Hi-Rail Welder	97.47					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002018	Cat 615 Elevating Scraper	142.80					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002018	Cat 621 Scraper, 21 CY	142.80					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		4.929	12.487	1.469		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	HHDT-DSL	35 Ton Art Dump		4.929	12.487	1.469		0.0088	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0176	0.0088	0.0088			
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.426	3.173	0.210		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.426	3.173	0.210		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007			
Onroad	MHDT-DSL	Lube Truck		0.426	3.173	0.210		0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007			
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		1.294		1.599		0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053			
Onroad	MDV-CAT	Pickup 4 x 4		0.328		0.480		0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187			
Onroad	MDV-CAT	SUV		0.328		0.480		0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226			
Onroad	HHDT-DSL	Water Truck, 4000 Gal			9.512			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Water Truck, 8000 Gal Off Rd		97.47				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>TOTAL</b>								<b>0.057</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0658</b>	<b>0.0668</b>	<b>0.0668</b>	<b>0.0678</b>	<b>0.0589</b>	<b>0.0589</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors				Off-Site Operational Emissions (Onroad) by Month (tons/month)																						
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	CO	Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270006015	Air Compressor, 175 CFM	164.93				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	176.33				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	176.33				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	176.33				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Hyd. Shear for Backhoe	176.33				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	198.97				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002045	RT Crane, 45T	198.97				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002054	Crush Concrete	326.82				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D5 Dozer	618.77				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D6 Dozer	618.77				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D7 Dozer	618.77				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D8N Dozer	618.77				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	John Deere 9400	176.33				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 936 Loader	229.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 966 Loader	229.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 980 Loader	229.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 988 Loader	229.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002048	Cat 14H Grader	286.18				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270003010	Telescopic Man Lift, 40 ft	95.47				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002003	AC Paver	255.89				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002003	Concrete Paving Spread	255.89				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Cat 563 Padfoot Roller	190.90				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Cat 563 Smooth Roller	190.90				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Cat 815 Roller	190.90				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Ramex Roller	190.90				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002009	Hand Tamp	11.94				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002081	Adzer Riding	186.31				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002081	Clip Machine	186.31				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Rail Heater	288.84				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Regulator	288.84				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Ballast Stabilizer	288.84				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Speed Swing	229.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Track Laying Machine	288.84				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002009	Tamper Small	11.94				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002009	Tamper Large	11.94				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002081	Vibratrac	186.31				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002051	Hi-Rail Welder	289.66				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002018	Cat 615 Elevating Scraper	554.28				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002018	Cat 621 Scraper, 21 CY	554.28				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		12.582	48.291	5.628	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Onroad	HHDT-DSL	35 Ton Art Dump		12.582	48.291	5.628	0.0338	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0676	0.0338	0.0338
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		4.472	26.300	2.052	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		4.472	26.300	2.052	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072
	Onroad	MHDT-DSL	Lube Truck		4.472	26.300	2.052	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		12.847		13.572	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454
	Onroad	MDV-CAT	Pickup 4 x 4		5.815		5.506	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151
	Onroad	MDV-CAT	SUV		5.815		5.506	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592
	Onroad	HHDT-DSL	Water Truck, 4000 Gal		17.285			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002051	Water Truck, 8000 Gal Off Rd		289.66			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			<b>TOTAL</b>					<b>0.5679</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>	<b>0.6017</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

NOx

Operational Emission Factors				Off-Site Operational Emissions (Onroad) by Month (tons/month)																								
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270006015	Air Compressor, 175 CFM	335.49				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002066	Hyd. Shear for Backhoe	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	516.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002045	RT Crane, 45T	516.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002054	Crush Concrete	643.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002063	Cat D5 Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002063	Cat D6 Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002063	Cat D7 Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002063	Cat D8N Dozer	1315.36				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002066	John Deere 9400	298.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002060	Cat 936 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002060	Cat 966 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002060	Cat 980 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002060	Cat 988 Loader	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002048	Cat 14H Grader	648.43				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270003010	Telescopic Man Lift, 40 ft	164.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002003	AC Paver	447.13				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002003	Concrete Paving Spread	447.13				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002015	Cat 563 Padfoot Roller	350.97				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002015	Cat 563 Smooth Roller	350.97				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002015	Cat 815 Roller	350.97				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002015	Ramex Roller	350.97				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002009	Hand Tamp	14.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002081	Adzer Riding	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002081	Clip Machine	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Rail Heater	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Regulator	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Ballast Stabilizer	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002060	Speed Swing	519.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002069	Track Laying Machine	622.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002009	Tamper Small	14.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002009	Tamper Large	14.37				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002081	Vibratrac	458.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002051	Hi-Rail Welder	916.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002018	Cat 615 Elevating Scraper	1293.67				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002018	Cat 621 Scraper, 21 CY	1293.67				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		22.524	110.258	16.597	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Onroad	HHDT-DSL	35 Ton Art Dump		22.524	110.258	16.597	0.0997	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1995	0.1997	0.0997		
Onroad	MHDT-DSL	Truck, Flat Bed 14'		9.014	75.051	9.253	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0043	0.0435	0.0435	0.087	0.087	0.087		
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		9.014	75.051	9.253	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326		
Onroad	MHDT-DSL	Lube Truck		9.014	75.051	9.253	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326		
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.865	7.082	2.457	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082		
Onroad	MDV-CAT	Pickup 4 x 4		0.684	5.472	0.676	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264		
Onroad	MDV-CAT	SUV		0.684	5.472	0.676	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318		
Onroad	HHDT-DSL	Water Truck, 4000 Gal		32.319	161.595	16.597	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002051	Water Truck, 8000 Gal Off Rd		916.54	4582.70	16.597	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>TOTAL</b>							<b>0.2314</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3311</b>	<b>0.3355</b>	<b>0.3746</b>	<b>0.3746</b>	<b>0.4181</b>	<b>0.3184</b>	<b>0.3184</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors				Off-Site Operational Emissions (Onroad) by Month (tons/month)																							
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	SOx	Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270006015	Air Compressor, 175 CFM	0.32				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.34				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.34				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.34				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002066	Hyd. Shear for Backhoe	0.34				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.51				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002045	RT Crane, 45T	0.51				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002054	Crush Concrete	0.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002063	Cat D5 Dozer	1.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002063	Cat D6 Dozer	1.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002063	Cat D7 Dozer	1.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002063	Cat D8N Dozer	1.08				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002066	John Deere 9400	0.34				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002060	Cat 936 Loader	0.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002060	Cat 966 Loader	0.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002060	Cat 980 Loader	0.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002060	Cat 988 Loader	0.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002048	Cat 14H Grader	0.68				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270003010	Telescopic Man Lift, 40 ft	0.18				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002003	AC Paver	0.41				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002003	Concrete Paving Spread	0.41				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002015	Cat 563 Padfoot Roller	0.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002015	Cat 563 Smooth Roller	0.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002015	Cat 815 Roller	0.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002015	Ramex Roller	0.35				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002009	Hand Tamp	0.03				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002081	Adzer Riding	0.58				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002081	Clip Machine	0.58				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002069	Rail Heater	0.57				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002069	Regulator	0.57				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002069	Ballast Stabilizer	0.57				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002060	Speed Swing	0.54				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002069	Track Laying Machine	0.57				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002009	Tamper Small	0.03				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002009	Tamper Large	0.03				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002081	Vibratrac	0.58				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002051	Hi-Rail Welder	1.05				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002018	Cat 615 Elevating Scraper	1.20				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002018	Cat 621 Scraper, 21 CY	1.20				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.018	0.063	0.018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Onroad	HHDT-DSL	35 Ton Art Dump		0.018	0.063	0.018	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.014	0.039	0.014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.014	0.039	0.014	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	
	Onroad	MHDT-DSL	Lube Truck		0.014	0.039	0.014	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.007		0.007	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	
	Onroad	MDV-CAT	Pickup 4 x 4		0.007		0.007	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	
	Onroad	MDV-CAT	SUV		0.007		0.007	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	
	Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.018		0.018	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Offroad	2270002051	Water Truck, 8000 Gal Off Rd	1.05				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			<b>TOTAL</b>					<b>0.0008</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.0009</b>	<b>0.001</b>	<b>0.001</b>	<b>0.0011</b>	<b>0.001</b>	<b>0.001</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors			Off-Site Operational Emissions (Onroad) by Month (tons/month)																										
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
PM10	Area	None	Wind Erosion																											
	Offroad	2270006015	Air Compressor, 175 CFM	24.19																										
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	23.31																										
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	23.31																										
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	23.31																										
	Offroad	2270002066	Hyd. Shear for Backhoe	23.31																										
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	24.90																										
	Offroad	2270002045	RT Crane, 45T	24.90																										
	Offroad	2270002054	Crush Concrete	42.11																										
	Offroad	2270002063	Cat D5 Dozer	56.95																										
	Offroad	2270002063	Cat D6 Dozer	56.95																										
	Offroad	2270002063	Cat D7 Dozer	56.95																										
	Offroad	2270002063	Cat D8N Dozer	56.95																										
	Offroad	2270002066	John Deere 9400	23.31																										
	Offroad	2270002060	Cat 936 Loader	29.35																										
	Offroad	2270002060	Cat 966 Loader	29.35																										
	Offroad	2270002060	Cat 980 Loader	29.35																										
	Offroad	2270002060	Cat 988 Loader	29.35																										
	Offroad	2270002048	Cat 14H Grader	34.06																										
	Offroad	2270003010	Telescopic Man Lift, 40 ft	11.34																										
	Offroad	2270002003	AC Paver	32.07																										
	Offroad	2270002003	Concrete Paving Spread	32.07																										
	Offroad	2270002015	Cat 563 Padfoot Roller	24.75																										
	Offroad	2270002015	Cat 563 Smooth Roller	24.75																										
	Offroad	2270002015	Cat 815 Roller	24.75																										
	Offroad	2270002015	Ramex Roller	24.75																										
	Offroad	2270002009	Hand Tamp	0.68																										
	Offroad	2270002081	Adzer Riding	19.99																										
	Offroad	2270002081	Clip Machine	19.99																										
	Offroad	2270002069	Rail Heater	38.49																										
	Offroad	2270002069	Regulator	38.49																										
	Offroad	2270002069	Ballast Stabilizer	38.49																										
	Offroad	2270002060	Speed Swing	29.35																										
	Offroad	2270002069	Track Laying Machine	38.49																										
Offroad	2270002009	Tamper Small	0.68																											
Offroad	2270002009	Tamper Large	0.68																											
Offroad	2270002081	Vibratrac	19.99																											
Offroad	2270002051	Hi-Rail Welder	34.52																											
Offroad	2270002018	Cat 615 Elevating Scraper	56.09																											
Offroad	2270002018	Cat 621 Scraper, 21 CY	56.09																											
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1.516		1.792	0.860																							
Onroad	HHDT-DSL	35 Ton Art Dump		1.516		1.792	0.860	0.0052	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0052	0.0052		
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.514		0.965	0.274	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.514		0.965	0.274	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		
Onroad	MHDT-DSL	Lube Truck		0.514		0.965	0.274	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.029			0.037	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001		
Onroad	MDV-CAT	Pickup 4 x 4		0.060			0.050	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002		
Onroad	MDV-CAT	SUV		0.060			0.050	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024		
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0		2.283		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Offroad	2270002051	Water Truck, 8000 Gal Off Rd		34.52				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>TOTAL</b>								<b>0.0115</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0167</b>	<b>0.0168</b>	<b>0.018</b>	<b>0.018</b>	<b>0.0193</b>	<b>0.0141</b>	<b>0.0141</b>		

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors				Off-Site Operational Emissions (Onroad) by Month (tons/month)																						
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Area	None	Wind Erosion																								
Offroad	2270006015	Air Compressor, 175 CFM	24.19					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002066	Hyd. Shear for Backhoe	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	24.90					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002045	RT Crane, 45T	24.90					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002054	Crush Concrete	42.11					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002063	Cat D5 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002063	Cat D6 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002063	Cat D7 Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002063	Cat D8N Dozer	56.95					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002066	John Deere 9400	23.31					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002060	Cat 936 Loader	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002060	Cat 966 Loader	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002060	Cat 980 Loader	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002060	Cat 988 Loader	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002048	Cat 14H Grader	34.06					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270003010	Telescopic Man Lift, 40 ft	11.34					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002003	AC Paver	32.07					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002003	Concrete Paving Spread	32.07					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002015	Cat 563 Padfoot Roller	24.75					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002015	Cat 563 Smooth Roller	24.75					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002015	Cat 815 Roller	24.75					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002015	Ramex Roller	24.75					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002009	Hand Tamp	0.68					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002081	Adzer Riding	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002081	Clip Machine	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002069	Rail Heater	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002069	Regulator	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002069	Ballast Stabilizer	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002060	Speed Swing	29.35					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002069	Track Laying Machine	38.49					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002009	Tamper Small	0.68					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002009	Tamper Large	0.68					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002081	Vibratrac	19.99					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002051	Hi-Rail Welder	34.52					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002018	Cat 615 Elevating Scraper	56.09					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002018	Cat 621 Scraper, 21 CY	56.09					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1.516	1.792	0.860		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onroad	HHDT-DSL	35 Ton Art Dump		1.516	1.792	0.860		0.0052	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0052	0.0052
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.514	0.965	0.274		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.514	0.965	0.274		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Onroad	MHDT-DSL	Lube Truck		0.514	0.965	0.274		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onroad	MDV-CAT	Pickup 4 x 4		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onroad	MDV-CAT	SUV		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	34.52		2.283			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>TOTAL</b>						<b>0.0071</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0123</b>	<b>0.0124</b>	<b>0.0136</b>	<b>0.0136</b>	<b>0.0148</b>	<b>0.0097</b>	<b>0.0097</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

CO2

Operational Emission Factors				Off-Site Operational Emissions (Onroad) by Month (tons/month)																									
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270006015	Air Compressor, 175 CFM	29,226				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Hyd. Shear for Backhoe	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	47,225				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002045	RT Crane, 45T	47,225				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002054	Crush Concrete	59,975				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D5 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D6 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D7 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D8N Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	John Deere 9400	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 936 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 966 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 980 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 988 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002048	Cat 14H Grader	60,761				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270003010	Telescopic Man Lift, 40 ft	15,973				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002003	AC Paver	35,964				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002003	Concrete Paving Spread	35,964				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 563 Padfoot Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 563 Smooth Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 815 Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Ramex Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Hand Tamp	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Adzer Riding	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Clip Machine	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Rail Heater	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Regulator	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Ballast Stabilizer	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Speed Swing	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Track Laying Machine	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Tamper Small	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Tamper Large	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Vibratrac	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Hi-Rail Welder	103,197				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002018	Cat 615 Elevating Scraper	117,825				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002018	Cat 621 Scraper, 21 CY	117,825				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1,918		1,918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	HHDT-DSL	35 Ton Art Dump		1,918		1,918	11,524	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	23,048	11,524	11,524			
Onroad	MHDT-DSL	Truck, Flat Bed 14'		1,506		1,506	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		1,506		1,506	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078			
Onroad	MHDT-DSL	Lube Truck		1,506		1,506	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078	5,3078			
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		742		742	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833	2,4833			
Onroad	MDV-CAT	Pickup 4 x 4		706		706	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56	27,56			
Onroad	MDV-CAT	SUV		706		706	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213	33,213			
Onroad	HHDT-DSL	Water Truck, 4000 Gal		1,918		1,918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Water Truck, 8000 Gal Off Rd		103,197		103,197	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>TOTAL</b>							<b>85,396</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>96,92</b>	<b>97,628</b>	<b>104</b>	<b>104</b>	<b>111,08</b>	<b>99,556</b>	<b>99,556</b>



Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors			Off-Site Operational Emissions (Onroad) by Month (tons/month)																							
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
N2O	Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270006015	Air Compressor, 175 CFM	0.0403				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.0412				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.0412				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.0412				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	Hyd. Shear for Backhoe	0.0412				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.0652				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002045	RT Crane, 45T	0.0652				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002054	Crush Concrete	0.0828				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D5 Dozer	0.1469				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D6 Dozer	0.1469				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D7 Dozer	0.1469				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002063	Cat D8N Dozer	0.1469				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002066	John Deere 9400	0.0412				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 936 Loader	0.0683				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 966 Loader	0.0683				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 980 Loader	0.0683				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Cat 988 Loader	0.0683				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002048	Cat 14H Grader	0.0839				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270003010	Telescopic Man Lift, 40 ft	0.0220				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002003	AC Paver	0.0496				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002003	Concrete Paving Spread	0.0496				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Cat 563 Padfoot Roller	0.0426				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Cat 563 Smooth Roller	0.0426				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Cat 815 Roller	0.0426				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002015	Ramex Roller	0.0426				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002009	Hand Tamp	0.0027				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002081	Adzer Riding	0.0773				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002081	Clip Machine	0.0773				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Rail Heater	0.0717				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Regulator	0.0717				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Ballast Stabilizer	0.0717				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002060	Speed Swing	0.0683				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002069	Track Laying Machine	0.0717				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002009	Tamper Small	0.0027				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002009	Tamper Large	0.0027				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002081	Vibratrac	0.0773				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002051	Hi-Rail Welder	0.1424				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002018	Cat 615 Elevating Scraper	0.1626				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Offroad	2270002018	Cat 621 Scraper, 21 CY	0.1626				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.00265		0.00265		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Onroad	HHDT-DSL	35 Ton Art Dump		0.00265		0.00265		2E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05	3E-05
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.00208		0.00208		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.00208		0.00208		7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06
	Onroad	MHDT-DSL	Lube Truck		0.00208		0.00208		7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.00104		0.00104		3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	
Onroad	MDV-CAT	Pickup 4 x 4		0.00099		0.00099		4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	
Onroad	MDV-CAT	SUV		0.00099		0.00099		5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.00265		0.00265		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	2270002051	Water Truck, 8000 Gal Off Rd		0.1424		0.1424		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		<b>TOTAL</b>						<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0002</b>	<b>0.0001</b>	<b>0.0001</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

CH4

Operational Emission Factors				Off-Site Operational Emissions (Onroad) by Month (tons/month)																										
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270006015	Air Compressor, 175 CFM	0.1210				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	Hyd. Shear for Backhoe	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.1955				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002045	RT Crane, 45T	0.1955				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002054	Crush Concrete	0.2483				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D5 Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D6 Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D7 Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002063	Cat D8N Dozer	0.4406				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002066	John Deere 9400	0.1235				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 936 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 966 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 980 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Cat 988 Loader	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002048	Cat 14H Grader	0.2516				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270003010	Telescopic Man Lift, 40 ft	0.0661				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002003	AC Paver	0.1489				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002003	Concrete Paving Spread	0.1489				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 563 Padfoot Roller	0.1277				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 563 Smooth Roller	0.1277				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Cat 815 Roller	0.1277				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002015	Ramex Roller	0.1277				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Hand Tamp	0.0082				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Adzer Riding	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Clip Machine	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Rail Heater	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Regulator	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Ballast Stabilizer	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002060	Speed Swing	0.2049				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002069	Track Laying Machine	0.2150				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Tamper Small	0.0082				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002009	Tamper Large	0.0082				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002081	Vibratrac	0.2318				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Hi-Rail Welder	0.4273				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002018	Cat 615 Elevating Scraper	0.4879				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002018	Cat 621 Scraper, 21 CY	0.4879				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.00794		0.00794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Onroad	HHDT-DSL	35 Ton Art Dump		0.00794		0.00794	5E-05	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04	1E-04			
Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.00624		0.00624	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.00624		0.00624	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05			
Onroad	MHDT-DSL	Lube Truck		0.00624		0.00624	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05			
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.01349		0.01349	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05			
Onroad	MDV-CAT	Pickup 4 x 4		0.01282		0.01282	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005			
Onroad	MDV-CAT	SUV		0.01282		0.01282	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006			
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.00794		0.00794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	0.4273				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>TOTAL</b>							<b>0.0012</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>	<b>0.0013</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Operational Emission Factors																							
	Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total
	Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270006015	Air Compressor, 175 CFM	51.61				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	45.50				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	45.50				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	45.50				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002066	Hyd. Shear for Backhoe	45.50				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	59.91				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002045	RT Crane, 45T	59.91				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002054	Crush Concrete	96.74				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002063	Cat D5 Dozer	149.19				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002063	Cat D6 Dozer	149.19				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002063	Cat D7 Dozer	149.19				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002063	Cat D8N Dozer	149.19				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002066	John Deere 9400	45.50				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002060	Cat 936 Loader	64.93				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002060	Cat 966 Loader	64.93				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002060	Cat 980 Loader	64.93				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002060	Cat 988 Loader	64.93				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002048	Cat 14H Grader	77.89				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270003010	Telescopic Man Lift, 40 ft	30.78				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002003	AC Paver	80.29				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002003	Concrete Paving Spread	80.29				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002015	Cat 563 Padfoot Roller	53.22				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002015	Cat 563 Smooth Roller	53.22				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002015	Cat 815 Roller	53.22				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002015	Ramex Roller	53.22				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002009	Hand Tamp	2.29				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002081	Adzer Riding	47.78				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002081	Clip Machine	47.78				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002069	Rail Heater	83.81				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002069	Regulator	83.81				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002069	Ballast Stabilizer	83.81				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002060	Speed Swing	64.93				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002069	Track Laying Machine	83.81				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002009	Tamper Small	2.29				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002009	Tamper Large	2.29				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002081	Vibratrac	47.78				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002051	Hi-Rail Welder	97.47				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002018	Cat 615 Elevating Scraper	142.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002018	Cat 621 Scraper, 21 CY	142.80				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		4.929	12.487	1.469	0	0	0	0	0	0.0706	0.0706	0.0706	0.0706	0.0662	0.0529	0.0529	0.0049	0	0	0	0.46
	Onroad	HHDT-DSL	35 Ton Art Dump		4.929	12.487	1.469	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088	0.40
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.426	3.173	0.210	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.04
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.426	3.173	0.210	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0005	0.03
	Onroad	MHDT-DSL	Lube Truck		0.426	3.173	0.210	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0005	0.03
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		1.294		1.599	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0066	0.0143	0.0143	0.0143	0.0143	0.0143	0.007	0.0071	0	0.24
	Onroad	MDV-CAT	Pickup 4 x 4		0.328		0.480	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0187	0.0178	0.67
	Onroad	MDV-CAT	SUV		0.328		0.480	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0226	0.0147	0.80
	Onroad	HHDT-DSL	Water Truck, 4000 Gal		9.512			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	Offroad	2270002051	Water Truck, 8000 Gal Off Rd	97.47				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
			<b>TOTAL</b>					<b>0.0589</b>	<b>0.0589</b>	<b>0.0589</b>	<b>0.0589</b>	<b>0.0589</b>	<b>0.0589</b>	<b>0.1295</b>	<b>0.1308</b>	<b>0.1305</b>	<b>0.1296</b>	<b>0.1252</b>	<b>0.112</b>	<b>0.112</b>	<b>0.0566</b>	<b>0.0514</b>	<b>0.0344</b>	<b>2.66</b>

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Source			Operational Emission Factors				CO																	
	Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total	
	Area	None	Wind Erosion																						
	Offroad	2270006015	Air Compressor, 175 CFM	164.93																					0.00
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	176.33																					0.00
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	176.33																					0.00
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	176.33																					0.00
	Offroad	2270002066	Hyd. Shear for Backhoe	176.33																					0.00
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	198.97																					0.00
	Offroad	2270002045	RT Crane, 45T	198.97																					0.00
	Offroad	2270002054	Crush Concrete	326.82																					0.00
	Offroad	2270002063	Cat D5 Dozer	618.77																					0.00
	Offroad	2270002063	Cat D6 Dozer	618.77																					0.00
	Offroad	2270002063	Cat D7 Dozer	618.77																					0.00
	Offroad	2270002063	Cat D8N Dozer	618.77																					0.00
	Offroad	2270002066	John Deere 9400	176.33																					0.00
	Offroad	2270002060	Cat 936 Loader	229.52																					0.00
	Offroad	2270002060	Cat 966 Loader	229.52																					0.00
	Offroad	2270002060	Cat 980 Loader	229.52																					0.00
	Offroad	2270002060	Cat 988 Loader	229.52																					0.00
	Offroad	2270002048	Cat 14H Grader	286.18																					0.00
	Offroad	2270003010	Telescopic Man Lift, 40 ft	95.47																					0.00
	Offroad	2270002003	AC Paver	255.89																					0.00
	Offroad	2270002003	Concrete Paving Spread	255.89																					0.00
	Offroad	2270002015	Cat 563 Padfoot Roller	190.90																					0.00
	Offroad	2270002015	Cat 563 Smooth Roller	190.90																					0.00
	Offroad	2270002015	Cat 815 Roller	190.90																					0.00
	Offroad	2270002015	Ramex Roller	190.90																					0.00
	Offroad	2270002009	Hand Tamp	11.94																					0.00
	Offroad	2270002081	Adzer Riding	186.31																					0.00
	Offroad	2270002081	Clip Machine	186.31																					0.00
	Offroad	2270002069	Rail Heater	288.84																					0.00
	Offroad	2270002069	Regulator	288.84																					0.00
	Offroad	2270002069	Ballast Stabilizer	288.84																					0.00
	Offroad	2270002060	Speed Swing	229.52																					0.00
	Offroad	2270002069	Track Laying Machine	288.84																					0.00
	Offroad	2270002009	Tamper Small	11.94																					0.00
	Offroad	2270002009	Tamper Large	11.94																					0.00
	Offroad	2270002081	Vibratrac	186.31																					0.00
	Offroad	2270002051	Hi-Rail Welder	289.66																					0.00
	Offroad	2270002018	Cat 615 Elevating Scraper	554.28																					0.00
	Offroad	2270002018	Cat 621 Scraper, 21 CY	554.28																					0.00
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		12.582	48.291	5.628							0.2705	0.2705	0.2705	0.2536	0.2029	0.2029	0.0186					1.76
	Onroad	HHDT-DSL	35 Ton Art Dump		12.582	48.291	5.628	0.0338	0.0338	0.0338	0.0338	0.0338	0.0338	0.0338	0.0338	0.0338	0.0032								1.53
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		4.472	26.300	2.052	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.0193	0.39
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		4.472	26.300	2.052	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0048			0.25
	Onroad	MHDT-DSL	Lube Truck		4.472	26.300	2.052	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0048			0.25
	Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		12.847		13.572	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0454	0.0563	0.1211	0.1211	0.1211	0.1211	0.1211	0.0593	0.0605			2.01
	Onroad	MDV-CAT	Pickup 4 x 4		5.815		5.506	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.2151	0.204		7.73
	Onroad	MDV-CAT	SUV		5.815		5.506	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.2592	0.1683			9.24
	Onroad	HHDT-DSL	Water Truck, 4000 Gal			17.285																			0.00
	Offroad	2270002051	Water Truck, 8000 Gal Off Rd	289.66																					0.00
			<b>TOTAL</b>					<b>0.5872</b>	<b>0.5872</b>	<b>0.5872</b>	<b>0.5872</b>	<b>0.5872</b>	<b>0.5872</b>	<b>0.8578</b>	<b>0.8687</b>	<b>0.9028</b>	<b>0.8996</b>	<b>0.8827</b>	<b>0.832</b>	<b>0.832</b>	<b>0.5859</b>	<b>0.5637</b>	<b>0.3916</b>	<b>23.15</b>	

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES

NOx

Operational Emission Factors				21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Idling (g/hr)	Extended Idling (g/hr)	Off-site Operation (g/mi)												
Area	None	Wind Erosion																		0.00
Offroad	2270006015	Air Compressor, 175 CFM	335.49																	0.00
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	298.61																	0.00
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	298.61																	0.00
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	298.61																	0.00
Offroad	2270002066	Hyd. Shear for Backhoe	298.61																	0.00
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	516.36																	0.00
Offroad	2270002045	RT Crane, 45T	516.36																	0.00
Offroad	2270002054	Crush Concrete	643.37																	0.00
Offroad	2270002063	Cat D5 Dozer	1315.36																	0.00
Offroad	2270002063	Cat D6 Dozer	1315.36																	0.00
Offroad	2270002063	Cat D7 Dozer	1315.36																	0.00
Offroad	2270002063	Cat D8N Dozer	1315.36																	0.00
Offroad	2270002066	John Deere 9400	298.61																	0.00
Offroad	2270002060	Cat 936 Loader	519.80																	0.00
Offroad	2270002060	Cat 966 Loader	519.80																	0.00
Offroad	2270002060	Cat 980 Loader	519.80																	0.00
Offroad	2270002060	Cat 988 Loader	519.80																	0.00
Offroad	2270002048	Cat 14H Grader	648.43																	0.00
Offroad	2270003010	Telescopic Man Lift, 40 ft	164.35																	0.00
Offroad	2270002003	AC Paver	447.13																	0.00
Offroad	2270002003	Concrete Paving Spread	447.13																	0.00
Offroad	2270002015	Cat 563 Padfoot Roller	350.97																	0.00
Offroad	2270002015	Cat 563 Smooth Roller	350.97																	0.00
Offroad	2270002015	Cat 815 Roller	350.97																	0.00
Offroad	2270002015	Ramex Roller	350.97																	0.00
Offroad	2270002009	Hand Tamp	14.37																	0.00
Offroad	2270002081	Adzer Riding	458.08																	0.00
Offroad	2270002081	Clip Machine	458.08																	0.00
Offroad	2270002069	Rail Heater	622.52																	0.00
Offroad	2270002069	Regulator	622.52																	0.00
Offroad	2270002069	Ballast Stabilizer	622.52																	0.00
Offroad	2270002060	Speed Swing	519.80																	0.00
Offroad	2270002069	Track Laying Machine	622.52																	0.00
Offroad	2270002009	Tamper Small	14.37																	0.00
Offroad	2270002009	Tamper Large	14.37																	0.00
Offroad	2270002081	Vibratrac	458.08																	0.00
Offroad	2270002051	Hi-Rail Welder	916.54																	0.00
Offroad	2270002018	Cat 615 Elevating Scraper	1293.67																	0.00
Offroad	2270002018	Cat 621 Scraper, 21 CY	1293.67																	0.00
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		22.524		110.258		16.597		0.7978	0.7978	0.7978	0.7978	0.7479	0.5984	0.5984	0.0548			5.19
Onroad	HHDT-DSL	35 Ton Art Dump		22.524		110.258		16.597	0.0997	0.0997	0.0997	0.0997	0.0997	0.0997	0.0997	0.0997	0.0095			4.50
Onroad	MHDT-DSL	Truck, Flat Bed 14'	9.014		75.051			9.253	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	0.087	1.74
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal	9.014		75.051			9.253	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	1.13
Onroad	MHDT-DSL	Lube Truck	9.014		75.051			9.253	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	0.0326	1.13
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton	0.865		7.051			2.457	0.0082	0.0082	0.0082	0.0082	0.0082	0.0102	0.0219	0.0219	0.0219	0.0219	0.0107	0.36
Onroad	MDV-CAT	Pickup 4 x 4	0.684		5.588			0.676	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.0264	0.95
Onroad	MDV-CAT	SUV	0.684		5.588			0.676	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	0.0318	1.14
Onroad	HHDT-DSL	Water Truck, 4000 Gal		32.319					0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	916.54						0	0	0	0	0	0	0	0	0	0	0	0.00
<b>TOTAL</b>									<b>0.3184</b>	<b>0.3184</b>	<b>0.3184</b>	<b>0.3184</b>	<b>0.3184</b>	<b>1.1162</b>	<b>1.1182</b>	<b>1.0397</b>	<b>1.0302</b>	<b>0.9803</b>	<b>0.8307</b>	<b>16.14</b>









Construction Emission Estimates  
 ICTF Modernization Project, Long Beach, CA

SPECIES

CO2

Operational Emission Factors																									
Source Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total		
Area	None	Wind Erosion					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270006015	Air Compressor, 175 CFM	29,226				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002066	Hyd. Shear for Backhoe	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	47,225				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002045	RT Crane, 45T	47,225				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002054	Crush Concrete	59,975				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002063	Cat D5 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002063	Cat D6 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002063	Cat D7 Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002063	Cat D8N Dozer	106,397				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002066	John Deere 9400	29,824				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002060	Cat 936 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002060	Cat 966 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002060	Cat 980 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002060	Cat 988 Loader	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002048	Cat 14H Grader	60,761				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270003010	Telescopic Man Lift, 40 ft	15,973				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002003	AC Paver	35,964				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002003	Concrete Paving Spread	35,964				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002015	Cat 563 Padfoot Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002015	Cat 563 Smooth Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002015	Cat 815 Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002015	Ramex Roller	30,830				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002009	Hand Tamp	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002081	Adzer Riding	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002081	Clip Machine	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002069	Rail Heater	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002069	Regulator	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002069	Ballast Stabilizer	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002060	Speed Swing	49,477				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002069	Track Laying Machine	51,923				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002009	Tamper Small	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002009	Tamper Large	1,978				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002081	Vibratrac	55,986				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002051	Hi-Rail Welder	103,197				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002018	Cat 615 Elevating Scraper	117,825				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	2270002018	Cat 621 Scraper, 21 CY	117,825				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		1,918		1,918	0	0	0	0	0	92.191	92.191	92.191	92.191	86.429	69.143	69.143	6.3381	0	0	0	0	599.82	
Onroad	HHDT-DSL	35 Ton Art Dump		1,918		1,918	11.524	11.524	11.524	11.524	11.524	11.524	11.524	11.524	10.948	0	0	0	0	0	0	0	0	0	519.67
Onroad	MHDT-DSL	Truck, Flat Bed 14'		1,506		1,506	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	14.16	283.91
Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		1,506		1,506	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	184.00
Onroad	MHDT-DSL	Lube Truck		1,506		1,506	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	5.3078	184.00
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		742		742	2.4833	2.4833	2.4833	2.4833	2.4833	2.4833	2.4833	2.4833	3.0792	6.622	6.622	6.622	6.622	6.622	3.2448	3.311	0	109.79	
Onroad	MDV-CAT	Pickup 4 x 4		706		706	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	27.56	26.147	990.75
Onroad	MDV-CAT	SUV		706		706	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	33.213	21.567	1184.03
Onroad	HHDT-DSL	Water Truck, 4000 Gal		1,918		1,918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	103,197			103,197	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
<b>TOTAL</b>							<b>99.556</b>	<b>99.556</b>	<b>99.556</b>	<b>99.556</b>	<b>99.556</b>	<b>99.556</b>	<b>191.75</b>	<b>192.34</b>	<b>185.46</b>	<b>184.36</b>	<b>178.6</b>	<b>161.31</b>	<b>161.31</b>	<b>95.132</b>	<b>85.321</b>	<b>61.874</b>	<b>4055.98</b>		

Construction Emission Estimates  
ICTF Modernization Project, Long Beach, CA

SPECIES	Source			Operational Emission Factors																	Total					
	Type	ID/Code	Source	Offroad Equipment (g/hr)	On-site Operation (g/mi)	Onroad Operation (g/mi)	On-site Extended Idling (g/hr)	Off-site Onroad Operation (g/mi)	21	22	23	24	25	26	26	28	29	30	31	32		33	34	35	36	
N2O	Area	None	Wind Erosion						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
	Offroad	2270006015	Air Compressor, 175 CFM	0.0403					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002066	Backhoe, Cat 320, 1.0 CY	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002066	Backhoe, Cat 325, 1.5 CY	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002066	Backhoe/loader, Cat. 416, 1CY	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002066	Hyd. Shear for Backhoe	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002045	Hyd. Boom, Trk Mtd. 12T	0.0652					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002045	RT Crane, 45T	0.0652					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002054	Crush Concrete	0.0828					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002063	Cat D5 Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002063	Cat D6 Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002063	Cat D7 Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002063	Cat D8N Dozer	0.1469					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002066	John Deere 9400	0.0412					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002060	Cat 936 Loader	0.0683					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002060	Cat 966 Loader	0.0683					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002060	Cat 980 Loader	0.0683					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002060	Cat 988 Loader	0.0683					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002048	Cat 14H Grader	0.0839					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270003010	Telescopic Man Lift, 40 ft	0.0220					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002003	AC Paver	0.0496					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002003	Concrete Paving Spread	0.0496					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002015	Cat 563 Padfoot Roller	0.0426					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002015	Cat 563 Smooth Roller	0.0426					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002015	Cat 815 Roller	0.0426					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002015	Ramex Roller	0.0426					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002009	Hand Tamp	0.0027					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002081	Adzer Riding	0.0773					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002081	Clip Machine	0.0773					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002069	Rail Heater	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002069	Regulator	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002069	Ballast Stabilizer	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002060	Speed Swing	0.0683					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002069	Track Laying Machine	0.0717					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002009	Tamper Small	0.0027					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002009	Tamper Large	0.0027					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002081	Vibratrac	0.0773					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002051	Hi-Rail Welder	0.1424					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002018	Cat 615 Elevating Scraper	0.1626					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Offroad	2270002018	Cat 621 Scraper, 21 CY	0.1626					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
	Onroad	HHDT-DSL	Dump Truck, 6x4, 12 CY		0.00265				0.00265	0	0	0	0	0	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	1E-04	1E-04	9E-06	0	0.00	
	Onroad	HHDT-DSL	35 Ton Art Dump		0.00265				0.00265	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00	
	Onroad	MHDT-DSL	Truck, Flat Bed 14'		0.00208				0.00208	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	2E-05	0.00	
	Onroad	MHDT-DSL	Fuel Truck, 2000 Gal		0.00208				0.00208	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	0.00	
	Onroad	MHDT-DSL	Lube Truck		0.00208				0.00208	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	7E-06	0.00	
Onroad	LHDT1-CAT	Mechanics Truck, 1 Ton		0.00104				0.00104	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	3E-06	4E-06	9E-06	9E-06	9E-06	9E-06	9E-06	5E-06	5E-06	0.00		
Onroad	MDV-CAT	Pickup 4 x 4		0.00099				0.00099	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	4E-05	0.00		
Onroad	MDV-CAT	SUV		0.00099				0.00099	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	5E-05	0.00		
Onroad	HHDT-DSL	Water Truck, 4000 Gal		0.00265				0.00265	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
Offroad	2270002051	Water Truck, 8000 Gal Off Rd	0.1424					0.1424	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00		
<b>TOTAL</b>									<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0001</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0003</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0002</b>	<b>0.0001</b>	<b>0.0001</b>	<b>9E-05</b>	<b>0.01</b>



Fugitive PM Emissions from Construction Activities  
ICTF Modernization Project

Source Type	Source	Fugitive PM10 Emission Factors				On-Site Fugitive PM10 (Material Handling; Unpaved Travel; Wind Erosion) by Month (tons/month)																		
		Material Handling Fugitive (lb/hr) <sup>(1)</sup>	Unpaved Fugitive (lb/mi)	Paved Fugitive (lb/mi)	Wind Erosion (ton/acre-month)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Area	Wind Erosion				0.000704	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246
Offroad	Air Compressor, 175 CFM					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offroad	Backhoe, Cat 320, 1.0 CY	0.295				0.059	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	
Offroad	Backhoe, Cat 325, 1.5 CY	0.442				0.0679	0.0655	0.0619	0.0553	0.0493	0.0493	0.0628	0.0628	0.0442	0.0442	0.0442	0.0442	0.0442	0.0442	0.0442	0.0442	0.0442	0.0442	
Offroad	Backhoe/loader, Cat. 416, 1CY	0.295				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hyd. Shear for Backhoe	0.590				0.0316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hyd. Boom, Trk Mtd. 12T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	RT Crane, 45T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Crush Concrete					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat D5 Dozer	1.65				0	0	0	0	0	0	0.0412	0.0412	0.0412	0	0	0	0	0	0	0	0	0	
Offroad	Cat D6 Dozer	1.65				0	0	0	0	0	0	0	0	0.0825	0.0825	0.2062	0.1649	0.1649	0.1649	0.1649	0.1649	0.0099	0.0619	
Offroad	Cat D7 Dozer	1.65				0.0825	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	
Offroad	Cat D8N Dozer	1.65				0	0	0	0	0	0	0	0	0	0.1649	0.1649	0.1649	0.1649	0.1649	0.1649	0.0866	0	0	
Offroad	John Deere 9400		0.116			0	0	0	0	0	0	0	0.0087	0.0174	0.0436	0.0383	0.0349	0.0349	0.0031	0	0	0	0	
Offroad	Cat 936 Loader	0.00926	0.116			0.002	0.0023	0.0031	0.0031	0.0031	0.0031	0.0063	0.0063	0.0078	0.0078	0.0078	0.0078	0.0078	0.0078	0.0078	0.0078	0.0078	0.0125	
Offroad	Cat 966 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0031	0.0031	0.0031	
Offroad	Cat 980 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0031	0.0031	0.0031	
Offroad	Cat 988 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 14H Grader	1.12				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0842	0.0842	
Offroad	Telescopic Man Lift, 40 ft					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	AC Paver		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Concrete Paving Spread					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 563 Padfoot Roller		0.116			0	0	0	0	0	0	0	0.0087	0.0174	0.0174	0.0035	0	0	0	0	0.0087	0.0087	0	
Offroad	Cat 563 Smooth Roller	0.116				0	0	0	0	0	0	0	0	0.0174	0.0174	0.0174	0.0174	0.0174	0.0087	0.0087	0.0261	0.0261	0.0087	
Offroad	Cat 815 Roller	0.116				0	0	0	0	0	0	0	0	0.0349	0.0349	0.0349	0.0349	0.0349	0.0028	0	0	0	0	
Offroad	Ramex Roller	0.116				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hand Tamp	0.116				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Adzer Riding		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Clip Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Rail Heater					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Regulator					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Ballast Stabilizer					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Speed Swing					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Track Laying Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Tamper Small		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Tamper Large		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Vibratrac					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hi-Rail Welder					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 615 Elevating Scraper	1.65				0	0	0	0	0	0	0	0	0.0825	0.1649	0.0825	0.0825	0	0	0	0	0.0619	0.0619	
Offroad	Cat 621 Scraper, 21 CY	1.65				0	0	0	0	0	0	0	0	0	0.4948	0.4948	0.4948	0.4948	0.4948	0.2474	0.0124	0	0	
Onroad	Dump Truck, 6x4, 12 CY		0.116	0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Onroad	35 Ton Art Dump		0.116	0.00377		0.0029	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0029	
Onroad	Truck, Flat Bed 14'		0.116	0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0002	0.0018	0.0018	0.0037	
Onroad	Fuel Truck, 2000 Gal		0.116	0.00377		0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	
Onroad	Lube Truck		0.116	0.00377		0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	
Onroad	Mechanics Truck, 1 Ton		0.116	0.00377		0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	
Onroad	Pickup 4 x 4		0.116	0.00377		0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	
Onroad	SUV		0.116	0.00377		0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	
Onroad	Water Truck, 4000 Gal		0.116	0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Water Truck, 8000 Gal Off Rd		0.116			0	0	0	0	0	0	0	0	0	0.0871	0.0871	0.0871	0.0871	0.0871	0.0871	0.007	0	0	
<b>TOTAL</b>					<b>0.4062</b>	<b>0.4874</b>	<b>0.4846</b>	<b>0.478</b>	<b>0.472</b>	<b>0.472</b>	<b>0.5299</b>	<b>0.5299</b>	<b>0.6952</b>	<b>0.7713</b>	<b>1.6204</b>	<b>1.5652</b>	<b>1.4741</b>	<b>1.4706</b>	<b>1.462</b>	<b>0.839</b>	<b>0.7348</b>	<b>0.729</b>	<b>0.5159</b>	

Notes:

(1) Loader material handling emission factor does not include in-motion emissions, therefore, separate unpaved travel emissions are also estimated.

(2) Backhoe, dozer and scraper/grader material handling emission rates include in-motion emissions.

Fugitive PM Emissions from Construction Activities  
ICTF Modernization Project

		Fugitive PM10 Emission Factors																					
Source Type	Source	Material Handling Fugitive (lb/hr) <sup>(1)</sup>	Unpaved Fugitive (lb/mi)	Paved Fugitive (lb/mi)	Wind Erosion (ton/acre-month)	20	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total
Area	Wind Erosion				0.000704	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	0.1246	4.49
Offroad	Air Compressor, 175 CFM					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Backhoe, Cat 320, 1.0 CY	0.295				0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.0885	0.059	0.059	0.0442	0.0354	0.0295	2.94
Offroad	Backhoe, Cat 325, 1.5 CY	0.442				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.93
Offroad	Backhoe/loader, Cat. 416, 1CY	0.295				0	0	0	0	0	0	0	0	0	0	0	0	0	0.0184	0.0184	0.0152		0.05
Offroad	Hyd. Shear for Backhoe	0.590				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Offroad	Hyd. Boom, Trk Mtd. 12T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	RT Crane, 45T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Crush Concrete					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Cat D5 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0.0041	0.0668	0.0825	0	0.28
Offroad	Cat D6 Dozer	1.65				0.0759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.32
Offroad	Cat D7 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0.0099	0.0099	0	0	0	2.99
Offroad	Cat D8N Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.91
Offroad	John Deere 9400		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.22
Offroad	Cat 936 Loader	0.00926	0.116			0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0094	0.0103	0.0106	0.0122	0.0111	0.0078	0.0063	0.0031	0.31
Offroad	Cat 966 Loader	0.00926	0.116			0.0035	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01
Offroad	Cat 980 Loader	0.00926	0.116			0.0035	0.0031	0.0031	0.0031	0.0031	0.0044	0.002	0.0031	0.0031	0.0031	0.0031	0.0016	0	0	0	0	0	0.05
Offroad	Cat 988 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0.0006	0	0	0	0.0003	0	0	0.00
Offroad	Cat 14H Grader	1.12				0.0561	0.0561	0	0.1122	0.1122	0.1347	0.0612	0.1122	0.1122	0.1122	0.1122	0.0982	0.1122	0.1122	0.1122	0.0516	0	1.69
Offroad	Telescopic Man Lift, 40 ft					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	AC Paver		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0.0349	0.0349	0.0061	0	0	0.08
Offroad	Concrete Paving Spread					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Cat 563 Padfoot Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0.0349	0.0209	0.0028	0	0	0.12
Offroad	Cat 563 Smooth Roller	0.116				0.0035	0	0	0.0349	0.0349	0.0244	0.019	0.0349	0.0349	0.0349	0.0349	0.0305	0.0047	0	0	0	0	0.46
Offroad	Cat 815 Roller	0.116				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.18
Offroad	Ramex Roller	0.116				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Hand Tamp	0.116				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Adzer Riding		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0058	0.0058	0.0047	0.02
Offroad	Clip Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Rail Heater					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Regulator					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Ballast Stabilizer					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Speed Swing					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Track Laying Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Tamper Small		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0232	0.0232	0.022	0.07
Offroad	Tamper Large		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0058	0.0116	0.0071	0.02
Offroad	Vibratrac					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Hi-Rail Welder					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Offroad	Cat 615 Elevating Scraper	1.65				0	0	0	0	0	0.0635	0.0635	0	0.0478	0	0	0	0	0	0	0	0	0.71
Offroad	Cat 621 Scraper, 21 CY	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.73
Onroad	Dump Truck, 6x4, 12 CY		0.116	0.00377		0	0	0	0	0	0	0.0228	0.0228	0.0228	0.0228	0.0214	0.0171	0.0171	0.0016	0	0	0	0.15
Onroad	35 Ton Art Dump	0.116		0.00377		0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0003	0	0	0	0	0	0	0	0.13
Onroad	Truck, Flat Bed 14'	0.116		0.00377		0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.07
Onroad	Fuel Truck, 2000 Gal	0.116		0.00377		0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.001	0.05
Onroad	Lube Truck	0.116		0.00377		0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.001	0.05
Onroad	Mechanics Truck, 1 Ton	0.116		0.00377		0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0023	0.0049	0.0049	0.0049	0.0049	0.0049	0.0049	0.0024	0.0025	0.08
Onroad	Pickup 4 x 4	0.116		0.00377		0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0141	0.0134	0.51
Onroad	SUV	0.116		0.00377		0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.011	0.61
Onroad	Water Truck, 4000 Gal	0.116		0.00377		0	0	0.0871	0.0871	0.0871	0.1046	0.0871	0.0871	0.0871	0.0871	0.0871	0.0762	0.0871	0.0871	0.0871	0.0444	0	1.18
Offroad	Water Truck, 8000 Gal Off Rd	0.116		0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.44
<b>TOTAL</b>						<b>0.4105</b>	<b>0.3272</b>	<b>0.3582</b>	<b>0.5053</b>	<b>0.5053</b>	<b>0.5995</b>	<b>0.5008</b>	<b>0.5282</b>	<b>0.5764</b>	<b>0.5255</b>	<b>0.5267</b>	<b>0.4942</b>	<b>0.5392</b>	<b>0.5236</b>	<b>0.547</b>	<b>0.4431</b>	<b>0.2343</b>	<b>23.88</b>

Notes:

(1) Loader material handling emission factor does not include in-motion emissions, therefore, separate unpaved travel emissions are also estimated.

(2) Backhoe, dozer and scraper/grader material handling emission rates include in-motion emissions.

Fugitive PM Emissions from Construction Activities  
ICTF Modernization Project

		Fugitive PM10 Emission Factors				Off-Site Fugitive PM10 (Paved Travel) by Month (tons/month)																			
Source Type	Source	Material Handling Fugitive (lb/hr) <sup>(1)</sup>	Unpaved Fugitive (lb/mi)	Paved Fugitive (lb/mi)	Wind Erosion (ton/acre-month)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Area	Wind Erosion				0.000704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Air Compressor, 175 CFM					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Backhoe, Cat 320, 1.0 CY	0.295				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Backhoe, Cat 325, 1.5 CY	0.442				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Backhoe/loader, Cat. 416, 1CY	0.295				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hyd. Shear for Backhoe	0.590				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hyd. Boom, Trk Mtd. 12T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	RT Crane, 45T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Crush Concrete					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat D5 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat D6 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat D7 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat D8N Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	John Deere 9400		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 936 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 966 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 980 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 988 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 14H Grader	1.12				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Telescopic Man Lift, 40 ft					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	AC Paver		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Concrete Paving Spread					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 563 Padfoot Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 563 Smooth Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 815 Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Ramex Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hand Tamp		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Adzer Riding		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Clip Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Rail Heater					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Regulator					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Ballast Stabilizer					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Speed Swing					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Track Laying Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Tamper Small		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Tamper Large		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Vibratrac					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Hi-Rail Welder					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 615 Elevating Scraper	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Cat 621 Scraper, 21 CY	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Onroad	Dump Truck, 6x4, 12 CY		0.116	0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Onroad	35 Ton Art Dump		0.116	0.00377		0.0103	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0206	0.0103	
Onroad	Truck, Flat Bed 14'		0.116	0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0008	0.008	0.008	0.0161	0.0161	
Onroad	Fuel Truck, 2000 Gal		0.116	0.00377		0.0006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.0006	
Onroad	Lube Truck		0.116	0.00377		0.0006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.0006	
Onroad	Mechanics Truck, 1 Ton		0.116	0.00377		0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	
Onroad	Pickup 4 x 4		0.116	0.00377		0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	
Onroad	SUV		0.116	0.00377		0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	
Onroad	Water Truck, 4000 Gal		0.116	0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Offroad	Water Truck, 8000 Gal Off Rd		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>TOTAL</b>						<b>0.1754</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1857</b>	<b>0.1865</b>	<b>0.1937</b>	<b>0.1937</b>	<b>0.2018</b>	<b>0.1915</b>

Notes:

(1) Loader material handling emission factor does not include in-motion emissions, therefore, separate unpaved travel emissions are also estimated.

(2) Backhoe, dozer and scraper/grader material handling emission rates include in-motion emissions.

Fugitive PM Emissions from Construction Activities  
ICTF Modernization Project

		Fugitive PM10 Emission Factors																							
Source Type	Source	Material Handling Fugitive (lb/hr) <sup>(1)</sup>	Unpaved Fugitive (lb/mi)	Paved Fugitive (lb/mi)	Wind Erosion (ton/acre-month)	20	21	22	23	24	25	26	26	28	29	30	31	32	33	34	35	36	Total		
Area	Wind Erosion				0.000704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Air Compressor, 175 CFM					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Backhoe, Cat 320, 1.0 CY	0.295				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Backhoe, Cat 325, 1.5 CY	0.442				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Backhoe/loader, Cat. 416, 1CY	0.295				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Hyd. Shear for Backhoe	0.590				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Hyd. Boom, Trk Mtd. 12T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	RT Crane, 45T					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Crush Concrete					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat D5 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat D6 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat D7 Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat D8N Dozer	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	John Deere 9400		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 936 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 966 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 980 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 988 Loader	0.00926	0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 14H Grader	1.12				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Telescopic Man Lift, 40 ft					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	AC Paver		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Concrete Paving Spread					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 563 Padfoot Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 563 Smooth Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 815 Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Ramex Roller		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Hand Tamp		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Adzer Riding		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Clip Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Rail Heater					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Regulator					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Ballast Stabilizer					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Speed Swing					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Track Laying Machine					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Tamper Small		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Tamper Large		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Vibratrac					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Hi-Rail Welder					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 615 Elevating Scraper	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Cat 621 Scraper, 21 CY	1.65				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Onroad	Dump Truck, 6x4, 12 CY		0.116	0.00377		0	0	0	0	0	0	0.0822	0.0822	0.0822	0.0822	0.0771	0.0617	0.0617	0.0057	0	0	0	0	0.54	
Onroad	35 Ton Art Dump		0.116	0.00377		0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103	0.001	0	0	0	0	0	0	0	0	0.46	
Onroad	Truck, Flat Bed 14'		0.116	0.00377		0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.0161	0.32	
Onroad	Fuel Truck, 2000 Gal		0.116	0.00377		0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0	0.21	
Onroad	Lube Truck		0.116	0.00377		0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0	0.21	
Onroad	Mechanics Truck, 1 Ton		0.116	0.00377		0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0071	0.0153	0.0153	0.0153	0.0153	0.0153	0.0075	0.0076	0	0	0.25	
Onroad	Pickup 4 x 4		0.116	0.00377		0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0668	0.0634	0	2.40	
Onroad	SUV		0.116	0.00377		0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0805	0.0523	0	2.87
Onroad	Water Truck, 4000 Gal		0.116	0.00377		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
Offroad	Water Truck, 8000 Gal Off Rd		0.116			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	
<b>TOTAL</b>					<b>0.1915</b>	<b>0.1915</b>	<b>0.1915</b>	<b>0.1915</b>	<b>0.1915</b>	<b>0.1915</b>	<b>0.1915</b>	<b>0.1915</b>	<b>0.2737</b>	<b>0.2751</b>	<b>0.2739</b>	<b>0.273</b>	<b>0.2678</b>	<b>0.2524</b>	<b>0.2524</b>	<b>0.1886</b>	<b>0.1791</b>	<b>0.1318</b>	<b>7.26</b>		

Notes:

(1) Loader material handling emission factor does not include in-motion emissions, therefore, separate unpaved travel emissions are also estimated.

(2) Backhoe, dozer and scraper/grader material handling emission rates include in-motion emissions.

