

**APPENDIX D**  
**URBEMIS**

## District Recommended URBEMIS Construction Fleet Construction Fleet Calculator

**Applicant/Business Name:** City of Hughson  
**Project Name:** Hughson WWTP  
**Project Location:** Hanford, CA

21 Total Acreage  
5.25 Max Daily Disturbed

<u>Construction Phase</u>	<u>Equipment Type</u>	<u>URBEMIS Value</u>
<b>Demolition</b>	Rubber Tired Loader	<span style="border: 1px solid black; padding: 2px;">0.53</span>
<b>Grading</b>	Crawler Tractor	<span style="border: 1px solid black; padding: 2px;">2.63</span>
	Grader	<span style="border: 1px solid black; padding: 2px;">0.53</span>
	Off-Highway Truck	<span style="border: 1px solid black; padding: 2px;">1.58</span>
	Rubber Tired Loader	<span style="border: 1px solid black; padding: 2px;">1.05</span>
	Scraper	<span style="border: 1px solid black; padding: 2px;">0.53</span>
	Tractor/Loader/Backhoe	<span style="border: 1px solid black; padding: 2px;">1.05</span>
<b>Building Construction</b>	Other Equipment	<span style="border: 1px solid black; padding: 2px;">1.58</span>
<b>Asphalt</b>	Paver	<span style="border: 1px solid black; padding: 2px;">0.53</span>
	Roller	<span style="border: 1px solid black; padding: 2px;">0.53</span>

### To use this spreadsheet:

1. Use this spreadsheet if you do not know specifics of the construction fleet and activity for the construction of your project and want to perform an emissions analysis. The District will use this spreadsheet to calculate construction emissions unless other information is provided.
2. Enter the total acreage to be disturbed in the construction of your project.
3. Print this sheet.
4. Enter the "URBEMIS Value" amounts into the corresponding construction phase of URBEMIS.
  - A. In the Construction Emissions Module, click on the corresponding Construction Phase.
  - B. Locate the "Equip Exhaust" tabs.
  - C. Type the "URBEMIS Value" into the "Total #" field of the "Equip Exhaust" Tab.

Note: Some values may not be whole numbers. Enter in the exact value, even if not a whole number
5. Do NOT change the default construction length in URBEMIS.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\ElenaN\Desktop\URBEMIS-HUGHSON\Revised\_2007Operational.urb  
Project Name: Hughson WWTP Operations  
Project Location: San Joaquin Valley  
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT  
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	0.78	0.15	0.19	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	0.07	0.04	0.32	0.00	0.01

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	0.85	0.18	0.51	0.00	0.02

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\ElenaN\Desktop\URBEMIS-HUGHSON\Revised\_2007Operational.urb  
Project Name: Hughson WWTP Operations  
Project Location: San Joaquin Valley  
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT  
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)	ROG	NOx	CO	SO2	PM10
Source					
Natural Gas	0.01	0.15	0.12	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping	0.01	0.00	0.06	0.00	0.00
Consumer Prdcts	0.00	-	-	-	-
Architectural Coatings	0.76	-	-	-	-
TOTALS (tpy, unmitigated)	0.78	0.15	0.19	0.00	0.00

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
General light industry	0.07	0.04	0.32	0.00	0.01
TOTAL EMISSIONS (tons/yr)	0.07	0.04	0.32	0.00	0.01

Includes correction for passby trips.  
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2007 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
General light industry		0.50 trips/acres	30.00	15.00
			Sum of Total Trips	15.00
			Total Vehicle Miles Traveled	107.42

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.20	1.80	97.80	0.40
Light Truck < 3,750 lbs	15.10	3.30	94.00	2.70
Light Truck 3,751- 5,750	16.10	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.10	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The landscape year changed from 2005 to 2007.

The residential Arch. Coatings ROG emission factor changed from 0.0185 to .00602.

The nonresidential Arch. Coatings ROG emission factor changed from 0.0185 to .0116.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.

The operational emission year changed from 2005 to 2007.

The paved road silt loading factor changed from 0.1 to .031.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\ElenaN\Desktop\URBEMIS-HUGHSON\2007\_Construction\_Emissions.urb  
Project Name: Hughson WWTP  
Project Location: San Joaquin Valley  
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT  
(Tons/Year)

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007 *** TOTALS (tpy, unmitigated)	0.34	2.38	2.72	0.00	0.85	0.10	0.75
*** 2008 *** TOTALS (tpy, unmitigated)	0.26	1.88	2.00	0.00	0.08	0.08	0.00

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\ElenaN\Desktop\URBEMIS-HUGHSON\2007\_Construction\_Emissions.urb  
 Project Name: Hughson WWTP  
 Project Location: San Joaquin Valley  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT  
 (Tons/Year)

Construction Start Month and Year: August, 2007  
 Construction Duration: 12  
 Total Land Use Area to be Developed: 21 acres  
 Maximum Acreage Disturbed Per Day: 5.25 acres  
 Single Family Units: 0 Multi-Family Units: 0  
 Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.75	-	0.75
Off-Road Diesel	0.21	1.36	1.69	-	0.05	0.05	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Total tons/year	0.21	1.36	1.73	0.00	0.80	0.05	0.75
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	0.13	1.02	0.99	-	0.05	0.05	0.00
Bldg Const Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.13	1.02	0.99	0.00	0.05	0.05	0.00
Total all phases tons/yr	0.34	2.38	2.72	0.00	0.85	0.10	0.75
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	0.25	1.83	1.94	-	0.08	0.08	0.00
Bldg Const Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.01	0.04	0.06	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.26	1.88	2.00	0.00	0.08	0.08	0.00
Total all phases tons/yr	0.26	1.88	2.00	0.00	0.08	0.08	0.00

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions  
Start Month/Year for Phase 2: Aug '07  
Phase 2 Duration: 1.3 months  
On-Road Truck Travel (VMT): 0  
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
3	Crawler Tractors	143	0.575	8.0
1	Graders	174	0.575	8.0
2	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions

Start Month/Year for Phase 3: Sep '07  
Phase 3 Duration: 10.7 months  
Start Month/Year for SubPhase Building: Sep '07  
SubPhase Building Duration: 10.7 months  
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Jun '08

SubPhase Architectural Coatings Duration: 1.1 months

Start Month/Year for SubPhase Asphalt: Jul '08

SubPhase Asphalt Duration: 0.5 months

Acres to be Paved: 2

Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

Architectural Coatings: # ROG/ft<sup>2</sup> (residential) changed from 0.0185 to 0.00602  
Architectural Coatings: # ROG/ft<sup>2</sup> (non-res) changed from 0.0185 to 0.0116

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\ElenaN\Desktop\URBEMIS-HUGHSON\2012\_Construction\_Emissions.urb  
Project Name: Hughson WWTP  
Project Location: San Joaquin Valley  
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT  
(Tons/Year)

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2012 ***							
TOTALS (tpy, unmitigated)	0.61	3.81	5.00	0.00	0.89	0.14	0.75

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\ElenaN\Desktop\URBEMIS-HUGHSON\2012\_Construction\_Emissions.urb  
 Project Name: Hughson WWTP  
 Project Location: San Joaquin Valley  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT  
(Tons/Year)

Construction Start Month and Year: January, 2012  
 Construction Duration: 12  
 Total Land Use Area to be Developed: 21 acres  
 Maximum Acreage Disturbed Per Day: 5.25 acres  
 Single Family Units: 0 Multi-Family Units: 0  
 Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (tons/year)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2012***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.75	-	0.75
Off-Road Diesel	0.21	1.25	1.74	-	0.04	0.04	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00
Total tons/year	0.21	1.25	1.77	0.00	0.79	0.04	0.75
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	0.39	2.51	3.17	-	0.10	0.10	0.00
Bldg Const Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.01	0.04	0.06	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons/year	0.40	2.56	3.23	0.00	0.10	0.10	0.00
Total all phases tons/yr	0.61	3.81	5.00	0.00	0.89	0.14	0.75

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions  
 Start Month/Year for Phase 2: Jan '12  
 Phase 2 Duration: 1.3 months  
 On-Road Truck Travel (VMT): 0  
 Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
3	Crawler Tractors	143	0.575	8.0
1	Graders	174	0.575	8.0
2	Off Highway Trucks	417	0.490	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Scrapers	313	0.660	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions

Start Month/Year for Phase 3: Feb '12  
 Phase 3 Duration: 10.7 months  
 Start Month/Year for SubPhase Building: Feb '12  
 SubPhase Building Duration: 10.7 months  
 Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Other Equipment	190	0.620	8.0

Start Month/Year for SubPhase Architectural Coatings: Nov '12  
 SubPhase Architectural Coatings Duration: 1.1 months  
 Start Month/Year for SubPhase Asphalt: Dec '12  
 SubPhase Asphalt Duration: 0.5 months  
 Acres to be Paved: 2  
 Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

Architectural Coatings: # ROG/ft<sup>2</sup> (residential) changed from 0.0185 to 0.00602

Architectural Coatings: # ROG/ft<sup>2</sup> (non-res) changed from 0.0185 to 0.0116