

Appendix B

**Construction and Operations Emission
Estimates for the Kirby Hills Natural Gas Storage
Project**

URBEMIS Results for Kirby Hills Phase 2 Pipeline Construction within the Y-S AQMD

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Kirby Hills Pipeline
Construction within YSAQMD may07.urb
Project Name: Kirby Hills Pipeline Construction within Yolo-Solano AQMD
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT (Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2007 ***	ROG	NOX	CO	SO2	PM10	PM10
TOTALS (lbs/day, unmitigated)	7.63	53.35	60.70	0.00	TOTAL	DUST
					12.21	10.01
					EXHAUST	
					2.20	

URBEMIS 2002 For Windows 8.7.0

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Construction within YSAQMD may07.urb

Project Name: Kirby Hills Pipeline Construction within Yolo-Solano AQMD
 Project Location: Lower Sacramento Valley Air Basin
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
 (Pounds/Day - Summer)

Construction Start Month and Year: July, 2007
 Construction Duration: 1
 Total Land Use Area to be Developed: 1 acres
 Maximum Acreage Disturbed Per Day: 1 acres
 Single Family Units: 0 Multi-Family Units: 0
 Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

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
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	10.00	-	10.00
Off-Road Diesel	7.57	53.25	59.03	-	2.20	2.20	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.06	0.10	1.67	0.00	0.01	0.00	0.01
Maximum lbs/day	7.63	53.35	60.70	0.00	12.21	2.20	10.01
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	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	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	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	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max lbs/day all phases	7.63	53.35	60.70	0.00	0.00	12.21	2.20	10.01	

Phase 3 - Building Construction Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions
 Start Month/Year for Phase 2: Jul '07
 Phase 2 Duration: 1 months
 On-Road Truck Travel (VMT): 0

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
2	Other Equipment	190	0.620	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0
1	Trenchers	82	0.695	8.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

Compressor and Glycol Dehydration Emissions

	hp	hrs	# units	hp hrs/yr	POC		Nox		CO		BAAQMD's BACT
					THC	CO	THC	Nox	THC	CO	
Caterpillar G3612	3550	8760	1	31,098,000	0.069	0.600	0.150	4,664,700	18,658,800	grams/year	
					2,145,762	41,099	10,275	46,916	187,665	lbs/day	
					21.581	20.549	5.137			tons/year	
					2.363						
					THC	CO	Nox				
Caterpillar G3608	2370	8760	1	20,761,200	0.069	0.600	0.150	3,114,180.0	12,456,720.0	grams/year	
					1,432,522.8	27,437.7	6,859.4	31,322	125,286	lbs/day	
					3,155.3	13.719	3,430			tons/year	
					14.408						
					1.578						
					THC	CO	Nox				
Total Compressor Engine Emissions					35.989	312.952	78.238				
					3.941	34.268	8.567				
Glycol Dehydration System											
Previous					THC	CO	Nox				
1.4 mm btu/hr @ 100% load					0.0972	0.5347	0.1309				tons/year
@3.0 mm btu/hr @ 100% load					0.21	1.15	0.28				tons/year
Daily @ 100% load					1.90	10.46	2.56				lbs/day

Kirby Hills - Lodi Gas Storage Project Emissions of BTEX and Formaldehyde and Screening Level Health Risk Results

I. Compressor Engines

Pollutant	emission factor (lb/MMBtu) ¹	max emission rate (grams/sec)	Worst Case Concentration (ug/m ³) @ 1gram/sec	Estimated Concentration (ug/m ³)	Acute	Acute Risk	Chronic	Chronic Risk	Cancer 2.90E-05	Cancer Probability 8.97E-08
benzene	1.58E-03	3.00E-03	10.3	3.09E-02	1300	2.38E-05	60	5.15E-05	2.90E-05	8.97E-08
toluene	5.58E-04	1.06E-03	10.3	1.09E-02	37000	2.95E-07	300	3.64E-06	N/A	N/A
ethylbenzene	2.48E-05	4.71E-05	10.3	4.85E-04	N/A	N/A	2000	2.43E-08	N/A	N/A
xylene	1.95E-04	3.70E-04	10.3	3.82E-03	22000	1.73E-07	700	5.45E-07	N/A	N/A
formaldehyde	2.05E-02	3.89E-02	10.3	4.01E-01	94	4.27E-03	3	1.34E-02	6.00E-06	2.41E-07

¹ IC Engine emission factors from U.S. EPA AP-42 Emission Factors (U.S. EPA 2000)

II. Dehy boiler

Pollutant	emission factor (lb/mmcf) ¹	max emission rate (grams/sec)	Worst Case Concentration (ug/m ³) @ 1gram/sec	Estimated Concentration (ug/m ³)	Acute	Acute Risk	Chronic	Chronic Risk	Cancer 2.90E-05	Cancer Probability 5.03E-10
benzene	0.0185	6.88807E-06	25.2	1.74E-04	1300	1.34E-07	60	2.89E-07	2.90E-05	5.03E-10

toluene	0.0059	2.19674E-06	25.2	5.54E-05	37000	1.50E-09	300	1.85E-08	N/A	N/A
ethylbenzene	not available				N/A		2000		N/A	N/A
xylene	0.0022	8.19122E-07	25.2	2.06E-05	22000	9.38E-10	700	2.95E-09	N/A	N/A
formaldehyde	0.0409	1.52282E-05	25.2	3.84E-04	94	4.08E-06	3	1.28E-05	6.00E-06	2.30E-10

¹ Emission factors for boilers < 10 MMBtu/hr from Ventura County APCD reference for AB2588 emissions inventories. No factors available for ethylbenzene

	Total Cancer	Total Chronic	total acute
benzene	0.09	5.181E-05	2.391E-05
toluene	N/A	3.658E-06	2.966E-07
ethylbenzene	N/A	2.426E-08	N/A
xylene	N/A	5.480E-07	1.744E-07
formaldehyde	0.24	1.338E-02	4.271E-03