PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: Pre-Decommissioning Debris Survey
Criteria Pollutants

						Emission Factors: In-Use g/BHP-hr[2]					Peak Pounds/Day						Tons				
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	NO_x	ROG	PM10	SOx	CO	NO_x	ROG	PM10	SOx	CO	Days	NO_x	ROG	PM10	SOx	CO
Survey boat - main engine	Diesel	298	1	38	10	5.06	0.20	0.22	0.11	3.73	12.63	0.50	0.55	0.27	9.31	1	0.006	0.000	0.000	0.000	0.005
											12.6	**0.5**	**0.5**	**0.27**	**9.3**		**0.01**	**0.00**	**0.00**	**0.000**	**0.00**

Notes:
[1] Load Factors for Survey boat derived from Port of Long Beach 2010 Air Emissions Inventory, assuming Work boat as listed within Table 3.3, page 72 "Harbor Craft Engine Load Factors"
[2] Emission Factors derived from Port of Long Beach 2005 Air Emissions Inventory, assuming Tier 2 engines, Table 3.7, Page 106. The units g/kW-hr was converted to lb/bhp-hr using the multiplier (conversion) of 0.001644 (knowns: 1 gram = 0.0022046 lb & 1 kw = 1.341 bhp)

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: North Landing
Criteria Pollutants

OFF-ROAD SOURCES

						Emission Factors: In-Use g/BHP-hr [2]					Peak Pounds/Day						Tons				
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	NO_x	ROG	PM10	SOx	CO	NO_x	ROG	PM10	SOx	CO	Days[4]	NO_x	ROG	PM10	SOx	CO
Excavator - CAT 329	Diesel	286	1	38	8	1.83	0.23	0.06	0.00	0.70	3.50	0.44	0.12	0.01	1.34	5	0.01	0.00	0.00	0.00	0.00
Compactor - CAT CP54	Diesel	131	1	43	8	2.97	0.46	0.25	0.00	2.16	2.95	0.46	0.24	0.00	2.15	5	0.01	0.00	0.00	0.00	0.01
Skip Loader - CAT 450	Diesel	127	1	36	8	2.34	0.35	0.18	0.00	2.11	1.89	0.28	0.14	0.00	1.70	5	0.00	0.00	0.00	0.00	0.00
Industrial Air Compressor	Diesel	61	1	48	6	2.51	0.90	0.22	0.00	2.87	0.97	0.35	0.09	0.00	1.11	6	0.00	0.00	0.00	0.00	0.00
Welding Machine	Diesel	25	1	45	6	2.74	0.22	0.08	0.01	0.83	0.41	0.03	0.01	0.00	0.12	10	0.00	0.00	0.00	0.00	0.00
Concrete Pump - Cummins	Diesel	220	1	74	8	2.30	0.77	0.19	0.00	2.51	6.61	2.22	0.56	0.01	7.19	7	0.02	0.01	0.00	0.00	0.03
											16.3	**3.8**	**1.2**	**0.0**	**13.6**		**0.05**	**0.01**	**0.00**	**0.00**	**0.04**

ON-ROAD SOURCES

			Emission Factors, Input [3]																
			NO_x	ROG	PM10	SO_x	CO	Peak Pounds/Day						Tons					
On Road Sources	Miles/Trip[4]	Trips/Day[4]	g/mile	g/mile	g/mile	g/mile	g/mile	NO_x	ROG	PM10	SO_x	CO	Days[4]	NO_x	ROG	PM10	SO_x	CO
Transfer Dump	100	2	8.082	0.54	0.318	0.016	3.25	3.56	0.24	0.14	0.01	1.43	7	0.01	0.00	0.00	0.00	0.01
Cement Truck	20	5	8.082	0.54	0.318	0.016	3.25	1.78	0.12	0.07	0.00	0.72	2	0.00	0.00	0.00	0.00	0.00
								5.35	**0.36**	**0.21**	**0.01**	**2.15**		**0.01**	**0.00**	**0.00**	**0.00**	**0.01**

Light-Duty Trucks **Running Exhaust Emissions**

				Emission Factor, Grams/Mile[5]					Pounds/Day						Tons				
Commute Trips[6]	Source	Miles/Trip[4]	Trips/Day[4]	NO_x	ROG	PM10	SO_2	CO	NO_x	ROG	PM10	SO_2	CO	Days[6]	NO_x	ROG	PM10	SO_2	CO
	Light-Duty Trucks	100	12	0.220	0.065	0.004	0.004	2.610	0.58	0.17	0.01	0.01	6.90	35	0.01	0.00	0.00	0.00	0.12
									0.58	**0.17**	**0.01**	**0.01**	**6.90**		**0.01**	**0.00**	**0.00**	**0.00**	**0.12**

Notes:

[1] Load Factors derived from CalEEMod, February 2011 Appendix D - Default Data Tables, Table 3.3 OFFROAD Default Horsepower and Load Factors

[2] Emission factors from the URBEMIS 2007 Users' Guide, Version 9.2, Appendix I- Construction Equipment Emission Factors, with the base year of 2015.

[3] Emission Factors derived from Emfac2007 V2.3, using 2015 as base year and summer season, heavy duty diesel

[4] Days and truck trips estimated from Project Description and Table 2.12-6 from the Project Execution Plan (worst case scenario per day) - Cemex Plant located in Antioch appox. 20 miles roundtrip from north landing

[5] Emission Factors derived from Emfac2007 V2.3, using 2015 as base year and summer season, light duty truck

[6] Commute trips assuming each worker travels to and from project site average of 100 miles roundtrip per day

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: North Landing
Criteria Pollutants

OFF-ROAD SOURCES

						Emission Factors: In-Use g/BHP-hr [2]					Peak Pounds/Day						Tons				
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	NO_x	ROG	PM10	SOx	CO	NO_x	ROG	PM10	SOx	CO	Days[4]	NO_x	ROG	PM10	SOx	CO
Concrete Pump - Cummins	Diesel	220	1	74	8	2.74	0.22	0.08	0.01	0.83	7.85	0.64	0.22	0.01	2.39	7	0.03	0.00	0.00	0.00	0.01
Welding Machine	Diesel	33	1	45	8	2.30	0.77	0.19	0.00	2.51	0.60	0.20	0.05	0.00	0.66	3	0.00	0.00	0.00	0.00	0.00
											8.5	**0.8**	**0.3**	**0.0**	**3.0**		**0.03**	**0.00**	**0.00**	**0.00**	**0.01**

ON-ROAD SOURCES

			Emission Factors, Input [3]					Peak Pounds/Day						Tons				
			NO_x	ROG	PM10	SO_x	CO											
On Road Sources	Miles/Trip[4]	Trips/Day[4]	g/mile	g/mile	g/mile	g/mile	g/mile	NO_x	ROG	PM10	SO_x	CO	Days[4]	NO_x	ROG	PM10	SO_x	CO
Cement Truck	2	2	8.082	0.54	0.318	0.016	3.25	0.07	0.00	0.00	0.00	0.03	7	0.00	0.00	0.00	0.00	0.00
								0.07	**0.00**	**0.00**	**0.00**	**0.03**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Light-Duty Trucks

Commute Trips[6]

Running Exhaust Emissions			Emission Factor, Grams/Mile[5]					Pounds/Day						Tons				
Source	Miles/Trip[4]	Trips/Day[4]	NO_x	ROG	PM10	SO_2	CO	NO_x	ROG	PM10	SO_2	CO	Days[6]	NO_x	ROG	PM10	SO_2	CO
Light-Duty Trucks	100	8	0.220	0.065	0.004	0.004	2.610	0.39	0.11	0.01	0.01	4.60	13	0.00	0.00	0.00	0.00	0.03
								0.39	**0.11**	**0.01**	**0.01**	**4.60**		**0.00**	**0.00**	**0.00**	**0.00**	**0.03**

Notes:

[1] Load Factors derived from CalEEMod, February 2011 Appendix D - Default Data Tables, Table 3.3 OFFROAD Default Horsepower and Load Factors

[2] Emission factors from the URBEMIS 2007 Users' Guide, Version 9.2, Appendix I- Construction Equipment Emission Factors, with the base year of 2015.

[3] Emission Factors derived from Emfac2007 V2.3, using 2015 as base year and summer season, heavy duty diesel

[4] Days and truck trips estimated from Project Description and Table 2.12-6 from the Project Execution Plan (worst case scenario per day) - Cemex Plant located in Antioch appox. 2 miles roundtrip from south landing

[5] Emission Factors derived from Emfac2007 V2.3, using 2015 as base year and summer season, light duty truck

[6] Commute trips assuming each worker travels to and from project site average of 100 miles roundtrip per day

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: River Crossing Decommissioning Work
Criteria Pollutants

OFF-ROAD SOURCES

						Emission Factors: In-Use g/BHP-hr [2]					Peak Pounds/Day						Tons				
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	NO_x	ROG	PM10	SOx	CO	NO_x	ROG	PM10	SOx	CO	Days[4]	NO_x	ROG	PM10	SOx	CO
Derrick Barge - generator	Diesel	100	1	74	24	3.53	0.48	0.26	0.01	2.59	13.83	1.89	1.01	0.02	10.15	42	0.29	0.04	0.02	0.00	0.21
Derrick Barge - crane	Diesel	150	1	29	9	2.35	0.39	0.20	0.00	1.74	2.03	0.34	0.17	0.00	1.50	30	0.03	0.01	0.00	0.00	0.02
Derrick Barge - anchor winch	Diesel	238	2	74	2	2.69	0.21	0.07	0.15	0.82	4.18	0.33	0.11	0.23	1.27	30	0.06	0.00	0.00	0.00	0.02
Derrick Barge - deck winch	Diesel	238	1	74	4	2.69	0.21	0.07	0.15	0.82	4.18	0.33	0.11	0.23	1.27	30	0.06	0.00	0.00	0.00	0.02
Tugboat - main engine	Diesel	250	2	31	6	5.06	0.20	0.22	0.11	3.73	10.37	0.41	0.45	0.23	7.65	30	0.16	0.01	0.01	0.00	0.11
Tugboat - generator	Diesel	75	1	43	24	5.06	0.20	0.22	0.11	3.73	8.63	0.34	0.38	0.19	6.36	42	0.18	0.01	0.01	0.00	0.13
Welding machine	Diesel	25	1	45	2	2.30	0.77	0.19	0.00	2.51	0.11	0.04	0.01	0.00	0.12	6	0.00	0.00	0.00	0.00	0.00
Jet Pump	Diesel	250	1	74	8	2.74	0.22	0.08	0.01	0.83	8.92	0.73	0.25	0.02	2.71	30	0.13	0.01	0.00	0.00	0.04
Diesel Driven Generator (Toyo Pump)	Diesel	463	1	74	8	2.39	0.19	0.07	0.00	0.83	14.47	1.16	0.42	0.00	4.99	30	0.22	0.02	0.01	0.00	0.07
Diver's Air Compressor	Diesel	47	1	48	8	2.51	0.90	0.22	0.00	2.87	1.00	0.36	0.09	0.00	1.14	20	0.01	0.00	0.00	0.00	0.01
Work Skiff - outboard engine	Diesel	250	2	38	2	5.06	0.20	0.22	0.11	3.73	4.24	0.17	0.18	0.09	3.12	30	0.06	0.00	0.00	0.00	0.05
											71.96	**6.08**	**3.18**	**1.01**	**40.30**		**1.21**	**0.10**	**0.06**	**0.02**	**0.70**

ON-ROAD SOURCES

			Emission Factors, Input [3]					Peak Pounds/Day						Tons				
			NO_x	ROG	PM10	SO_x	CO											
On Road Sources	Miles/Trip	Trips/Day [4]	g/mile	g/mile	g/mile	g/mile	g/mile	NO_x	ROG	PM10	SO_x	CO	Days [4]	NO_x	ROG	PM10	SO_x	CO
Semi Trailer End Dump Truck	100	6	8.082	0.54	0.318	0.016	3.25	10.69	0.71	0.42	0.02	4.30	5	0.03	0.00	0.00	0.00	0.01
								10.69	**0.71**	**0.42**	**0.02**	**4.30**		**0.03**	**0.00**	**0.00**	**0.00**	**0.01**

Light-Duty Trucks

Commute Trips [6]

Running Exhaust Emissions			Emission Factor, Grams/Mile [5]					Pounds/Day						Tons				
Source	Miles/Trip[4]	Trips/Day[4]	NO_x	ROG	PM10	SO_2	CO	NO_x	ROG	PM10	SO_2	CO	Days [6]	NO_x	ROG	PM10	SO_2	CO
Light-Duty Trucks	100	17	0.220	0.065	0.004	0.004	2.610	0.83	0.24	0.01	0.01	9.78	30	0.01	0.00	0.00	0.00	0.15
								0.83	**0.24**	**0.01**	**0.01**	**9.78**		**0.01**	**0.00**	**0.00**	**0.00**	**0.15**

Notes:

[1] Load Factors derived from CalEEMod, February 2011 Appendix D - Default Data Tables, Table 3.3 OFFROAD Default Horsepower and Load Factors

[2] Emission factors from Port of Long Beach 2005 Air Emissions Inventory, assuming Tier 2 engines, Table 3.7, Page 106. The units g/kW-hr was converted to lb/bhp-hr using the multiplier (conversion) of 0.001644 (knowns: 1 gram = 0.0022046 lb & 1 kw = 1.341 bhp)

[3] Emission Factors derived from Emfac2007 V2.3, using 2015 as base year and summer season, heavy duty diesel

[4] Days and truck trips estimated from Project Description and Table 2.12-6 from the Project Execution Plan (worst case scenario per day)

[5] Emission Factors derived from Emfac2007 V2.3, using 2015 as base year and summer season, light duty truck

[6] Commute trips assuming each worker travels to and from project site average of 100 miles roundtrip per day

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: Post-Decommissioning Debris Survey
Criteria Pollutants

						Emission Factors: In-Use g/BHP-hr [2]					Peak Pounds/Day						Tons				
Source	Fuel	BHP	Number	Load Factor [1]	Hours per Day	NO_x	ROG	PM10	SOx	CO	NO_x	ROG	PM10	SOx	CO	Days	NO_x	ROG	PM10	SOx	CO
Survey boat - main engine	Diesel	298	1	38	10	5.06	0.20	0.22	0.11	3.73	12.63	0.50	0.55	0.27	9.31	1	0.006	0.000	0.000	0.000	0.005
											12.6	0.5	0.5	0.27	9.3		0.01	0.00	0.00	0.000	0.00

Notes:
[1] Load Factors for Survey boat derived from Port of Long Beach 2010 Air Emissions Inventory, assuming Work boat as listed within Table 3.3, page 72 "Harbor Craft Engine Load Factors"
[2] Emission Factors derived from Port of Long Beach 2005 Air Emissions Inventory, assuming Tier 2 engines, Table 3.7, Page 106. The units g/kW-hr was converted to lb/bhp-hr using the multiplier (conversion) of 0.001644 (knowns: 1 gram = 0.0022046 lb & 1 kw = 1.341 bhp)

PG&E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project AIR EMISSIONS SUMMARY		NO_X	ROG	PM10	$PM2.5^2$	SOx	CO
Pre-Survey	Pounds/Day	12.63	0.50	0.55	0.52	0.27	9.31
	Total Pounds/Phase	12.63	0.50	0.55	0.52	0.27	9.31
	Tons	0.01	0.00	0.00	0.00	0.00	0.00
North Landing	Pounds/Day	22.26	4.31	1.38	1.31	0.05	22.67
	Total Pounds/Phase	146.79	31.76	8.49	8.07	0.58	337.32
	Tons	0.07	0.02	0.00	0.00	0.00	0.17
South Landing	Pounds/Day	8.92	0.96	0.28	0.27	0.02	7.68
	Total Pounds/Phase	62.33	6.63	1.80	1.71	0.20	78.73
	Tons	0.03	0.00	0.00	0.00	0.00	0.04
River Crossing Decommissioning	Pounds/Day	83.48	7.04	3.61	3.43	1.05	54.38
	Total Pounds/Phase	2,494.00	215.58	107.71	102.33	33.44	1,707.60
	Tons	1.25	0.11	0.06	0.05	0.02	0.85
Post-Survey	Pounds/Day	12.63	0.50	0.55	0.52	0.27	9.31
	Total Pounds/Phase	12.63	0.50	0.55	0.52	0.27	9.31
	Tons	0.01	0.00	0.00	0.00	0.00	0.00

TOTAL - PROJECT AIR EMISSIONS	NO_X	ROG	PM10	PM2.5	SOx	CO
Maximum Pounds/Day [1]	83.48	7.04	3.61	3.43	1.05	54.38
Total Pounds/(Project) All Phases	2,728.38	254.98	119.11	113.15	34.76	2,142.27
Total Construction Related Emissions/ Tons	1.36	0.13	0.06	0.06	0.02	1.07
Average Daily Construction Emissions [3]	45.47	4.25	1.99	1.89	0.58	35.70

Notes:

[1] Maximum Pounds/Day for NOx, ROG, PM10, SOx and CO are expected from the River Crossing Phase

[2] PM2.5 calculated utilizing Particle size fraction data for source categories from California Air Resources Board (CARB) "Speciation Profiles Used in ARB Modeling"- conservative estimate of 95% total of PM10 applied for PM2.5 total

[3] Average Daily Construction Emissions calculated with Total Pounds (All Phases of Project) divided by estimated 60 day project length as referenced within Project Schedule.

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: Pre-Decommissioning Debris Survey
Greenhouse Gas Emissions

						Emission Factors: g/gallon [2]			Peak Pounds/Day				Tons		
Source	Fuel	BHP	Number	Load Factor [1]	Hours per Day	N2O	CH4	CO2	N2O	CH4	CO2	Days	N2O	CH4	CO2
Survey boat - main engine	Diesel	298	1	38	10	0.26	0.74	10150	0.04	0.10	1393.66	1	0.00	0.00	0.70
									0.04	**0.10**	**1393.66**		**0.00**	**0.00**	**0.70**

Notes:
[1] Load Factor for Survey boat derived from Port of Long Beach 2010 Air Emissions Inventory, assuming Work boat as listed within Table 3.3, page 72 "Harbor Craft Engine Load Factors"
[2] Emission factors from the California Climate Action Registry General Reporting Protocol (Table C.6: Ships & Boats)

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: North Landing
Greenhouse Gas Emissions

OFF ROAD SOURCES

						Emission Factors: g/gallon [2,3]			Peak Pounds/Day				Tons		
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	N2O	CH4	CO2	N2O	CH4	CO2	Days[5]	N2O	CH4	CO2
Excavator - CAT 329	Diesel	286	1	38	8	0.26	0.74	10150.00	0.03	0.08	1070.03	5	0.00	0.00	2.68
Compactor - CAT CP54	Diesel	131	1	43	8	0.26	0.74	10150.00	0.01	0.04	554.61	5	0.00	0.00	1.39
Skip Loader - CAT 450	Diesel	127	1	36	8	0.26	0.74	10150.00	0.01	0.03	450.14	5	0.00	0.00	1.13
Industrial Air Compressor	Diesel	61	1	48	6	0.26	0.74	10150.00	0.01	0.02	216.21	6	0.00	0.00	0.65
Welding Machine	Diesel	25	1	45	6	0.26	0.74	10150.00	0.00	0.01	83.07	10	0.00	0.00	0.42
Concrete Pump - Cummins	Diesel	220	1	74	8	0.26	0.74	10150.00	0.04	0.12	1602.88	7	0.00	0.00	5.61
									0.10	**0.29**	**3976.94**		**0.00**	**0.00**	**11.86**

			Emission Factors, Input [3,4]			Emission Factors, Output									
			N_2O	CH_4	CO_2	N_2O	CH_4	CO_2	Peak Pounds/Day				Tons		
On Road Sources	Trip Miles [5]	Trips/Day	g/mile	g/mile	kg/gallon	g/mile	g/mile	g/mile	N2O	CH4	CO2	Days[5]	N2O	CH4	CO2
Transfer Dump	100	2	0.0048	0.0051	10.15	0.0048	0.0051	1765	0.00	0.00	776.70	7	0.00	0.00	2.72
Cement Truck	20	5	0.0048	0.0051	10.15	0.0048	0.0051	1765	0.00	0.00	388.35	2	0.00	0.00	0.39
									0.00	**0.00**	**1165.04**		**0.00**	**0.00**	**3.11**

		Emission Factors, Input			Emission Factors, Output		
		N_2O	CH_4	CO_2	N_2O	CH_4	CO_2
On Road Sources	MPG [8]	g/mile	g/mile	kg/gallon	g/mile	g/mile	g/mile
Light Duty Trucks (gasoline) [6,7]	18	0.0132	0.0152	8.8100	0.0132	0.0152	489.44

Light-Duty Trucks
Commute Trips

Running Exhaust Emissions			Grams/Mile			Pounds/Day				Tons		
Source	Miles/Trip	Trips/Day	N_2O	CH_4	CO_2	N_2O	CH_4	CO_2	Days	N_2O	CH_4	CO_2
Light-Duty Trucks	100	12	0.013	0.015	489.444	0.03	0.04	1294.84	35	0.00	0.00	22.66
						0.03	**0.04**	**1294.84**		**0.00**	**0.00**	**22.66**

Notes:
1 Load Factors derived from CalEEMod, February 2011 Appendix D - Default Data Tables, Table 3.3 OFFROAD Default Horsepower and Load Factors
[2] N_2O and CH_4 are input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.6 Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles (Vehicle Type: Construction, Fuel Type: Diesel Fuel)
[3] CO_2 input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.3 Carbon Dioxide Emissions for Transport Fuels (Fuel: Diesel)
[4] N2O and CH4 are input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.4 Methane and Nitrous Oxide Emission Factors for Highway Vehicles (Vehicle Type: Diesel Heavy-Duty)
[5] Trip miles estimated for roundtrip within Bay Area - 4 Days and truck trips estimated from Project Description and Table 2.12-6 from the Project Execution Plan (worst case scenario per day) - Cemex Plant located in Antioch approx. 20 miles roundtrip from north landing
[6] Average age of light duty trucks= 9.6 years (Transportation Energy Data Book: Edition 30, June 2011, Table 3.9, 2009)- acquired N_2O and CH_4 input from the California Climate Action Registry General Reporting Protocol (2009), Table C.4, Gasoline Light Trucks, Model Year 2004.
[7] CO_2 input is from the California Climate Action Registry General Reporting Protocol (2009), Table C.3, Motor Gasoline.
[8] Miles per gallon (MPG) for light-duty trucks estimated from www.fueleconomy.gov, find a car tab, searching by class, entering: 2002, pick-up trucks, combined MPG; utilizing 18 MPG as a conservative estimate.

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: South Landing Greenhouse Gas Emissions

OFF ROAD SOURCES

						Emission Factors: g/gallon [2,3]			Peak Pounds/Day				Tons		
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	N2O	CH4	CO2	N2O	CH4	CO2	Days[5]	N2O	CH4	CO2
Concrete Pump - Cummins	Diesel	220	1	74	8	0.26	0.74	10150.00	0.04	0.12	1602.88	7	0.00	0.00	5.61
Welding Machine	Diesel	33	1	45	8	0.26	0.74	10150.00	0.00	0.01	146.21	3	0.00	0.00	0.22
									0.04	**0.13**	**1749.08**		**0.00**	**0.00**	**5.83**

		Emission Factors, Input [3,4]			Emission Factors, Output							Tons		
		N_2O	CH_4	CO_2	N_2O	CH_4	CO_2	Peak Pounds/Day						
On Road Sources	Trip Miles [5]	g/mile	g/mile	kg/gallon	g/mile	g/mile	g/mile	N2O	CH4	CO2	Trips[5]	N2O	CH4	CO2
Cement Truck	2	0.0048	0.0051	10.15	0.0048	0.0051	1765	0.000	0.000	7.77	14	0.00	0.00	0.05
								0.000	**0.000**	**7.77**		**0.00**	**0.00**	**0.05**

		Emission Factors, Input			Emission Factors, Output		
		N_2O	CH_4	CO_2	N_2O	CH_4	CO_2
On Road Sources	MPG [8]	g/mile	g/mile	kg/gallon	g/mile	g/mile	g/mile
Light Duty Trucks (gasoline) [6,7]	18	0.0132	0.0152	8.8100	0.0132	0.0152	489.44

Light-Duty Trucks
Commute Trips

Running Exhaust Emissions			Grams/Mile			Pounds/Day				Tons		
Source	Miles/Trip	Trips/Day	N_2O	CH_4	CO_2	N_2O	CH_4	CO_2	Days[5]	N_2O	CH_4	CO_2
Light-Duty Trucks	100	8	0.013	0.015	489.444	0.02	0.03	863.22	13	0.000	0.000	5.61
						0.02	**0.03**	**863.22**		**0.000**	**0.000**	**5.61**

Notes:
1 Load Factors derived from CalEEMod, February 2011 Appendix D - Default Data Tables, Table 3.3 OFFROAD Default Horsepower and Load Factors
[2] N_2O and CH_4 are input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.6 Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles (Vehicle Type: Construction, Fuel Type: Diesel Fuel)
[3] CO_2 input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.3 Carbon Dioxide Emissions for Transport Fuels (Fuel: Diesel)
[4] N2O and CH4 are input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.4 Methane and Nitrous Oxide Emission Factors for Highway Vehicles (Vehicle Type: Diesel Heavy-Duty)
[5] Trip miles estimated for roundtrip within Bay Area - Days and truck trips estimated from Project Description and Table 2.12-6 from the Project Execution Plan (worst case scenario per day) - Cemex Plant located in Antioch approx. 2 miles roundtrip from south landing
[6] Average age of light duty trucks= 9.6 years (Transportation Energy Data Book: Edition 30, June 2011, Table 3.9, 2009)- acquired N_2O and CH_4 input from the California Climate Action Registry General Reporting Protocol (2009), Table C.4, Gasoline Light Trucks, Model Year 2004.
[7] CO_2 input is from the California Climate Action Registry General Reporting Protocol (2009), Table C.3, Motor Gasoline.
[8] Miles per gallon (MPG) for light-duty trucks estimated from www.fueleconomy.gov, find a car tab, searching by class, entering: 2002, pick-up trucks, combined MPG; utilizing 18 MPG as a conservative estimate.

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: River Crossing Decommissioning Work
Greenhouse Gas Emissions

						Emission Factors: g/gallon [2,3]			Peak Pounds/Day				Tons		
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	N2O	CH4	CO2	N2O	CH4	CO2	Days[5]	N2O	CH4	CO2
Derrick Barge - generator	Diesel	100	1	74	24	0.26	0.74	10150.00	0.06	0.16	2185.74	42	0.00	0.00	45.90
Derrick Barge - crane	Diesel	150	1	29	9	0.26	0.74	10150.00	0.01	0.04	481.82	30	0.00	0.00	7.23
Derrick Barge - anchor winch	Diesel	238	2	74	2	0.26	0.74	10150.00	0.02	0.06	867.01	30	0.00	0.00	13.01
Derrick Barge - deck winch	Diesel	238	1	74	4	0.26	0.74	10150.00	0.02	0.06	867.01	30	0.00	0.00	13.01
Tugboat - main engine	Diesel	250	2	31	6	0.26	0.74	10150.00	0.03	0.08	1144.56	30	0.00	0.00	17.17
Tugboat - generator	Diesel	75	1	43	24	0.26	0.74	10150.00	0.02	0.07	952.57	42	0.00	0.00	20.00
Welding machine	Diesel	25	1	45	2	0.26	0.74	10150.00	0.00	0.00	27.69	6	0.00	0.00	0.08
Jet Pump	Diesel	250	1	74	8	0.26	0.74	10150.00	0.05	0.13	1821.45	30	0.00	0.00	27.32
Diesel Driven Generator (Toyo Pump)	Diesel	463	1	74	8	0.26	0.74	10150.00	0.09	0.25	3373.33	30	0.00	0.00	50.60
Diver's Air Compressor	Diesel	47	1	48	8	0.26	0.74	10150.00	0.01	0.02	222.12	20	0.00	0.00	2.22
Work Skiff - outboard engine	Diesel	250	2	38	2	0.26	0.74	10150.00	0.01	0.03	467.67	30	0.00	0.00	7.02
									0.32	**0.90**	**12410.97**		**0.01**	**0.01**	**203.55**

			Emission Factors, Input [3,4]			Emission Factors, Output									
			N_2O	CH_4	CO_2	N_2O	CH_4	CO_2	Peak Pounds/Day				Tons		
On Road Sources	Trip Miles[5]	Trips/Day	g/mile	g/mile	kg/gallon	g/mile	g/mile	g/mile	N2O	CH4	CO2	Days[5]	N2O	CH4	CO2
Semi Trailer End Dump Truck	100	6	0.0048	0.0051	10.15	0.0048	0.0051	1765	0.00	0.00	2414.82	5	0.00	0.00	6.04
									0.00	**0.00**	**2414.82**		**0.00**	**0.00**	**6.04**

		Emission Factors, Input			Emission Factors, Output		
		N_2O	CH_4	CO_2	N_2O	CH_4	CO_2
On Road Sources	MPG [8]	g/mile	g/mile	kg/gallon	g/mile	g/mile	g/mile
Light Duty Trucks (gasoline) [6,7]	18	0.0132	0.0152	8.8100	0.0132	0.0152	489.44

Light-Duty Trucks
Commute Trips

Running Exhaust Emissions			Grams/Mile			Pounds/Day				Tons		
Source	Miles/Trip	Trips/Day	N_2O	CH_4	CO_2	N_2O	CH_4	CO_2	Days[5]	N_2O	CH_4	CO_2
Light-Duty Trucks	100	17	0.013	0.015	489.444	0.05	0.06	1834.35	30	0.001	0.001	27.52
						0.05	**0.06**	**1834.35**		**0.001**	**0.001**	**27.52**

Notes:
1 Load Factors derived from CalEEMod, February 2011 Appendix D - Default Data Tables, Table 3.3 OFFROAD Default Horsepower and Load Factors
[2] N_2O and CH_4 are input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.6 Methane and Nitrous Oxide Emission Factors for Non-Highway Vehicles (Vehicle Type: Construction, Fuel Type: Diesel Fuel)
[3] CO_2 input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.3 Carbon Dioxide Emissions for Transport Fuels (Fuel: Diesel)
[4] N2O and CH4 are input derived from the California Climate Action Registry General Reporting Protocol, 2009 Appendix C - Calculation References, Table C.4 Methane and Nitrous Oxide Emission Factors for Highway Vehicles (Vehicle Type: Diesel Heavy-Duty)
[5] Trip miles estimated for roundtrip within Bay Area - Days and truck trips estimated from Project Description and Table 2.12-6 from the Project Execution Plan (worst case scenario per day)
[6] Average age of light duty trucks= 9.6 years (Transportation Energy Data Book: Edition 30, June 2011, Table 3.9, 2009)- acquired N_2O and CH_4 input from the California Climate Action Registry General Reporting Protocol (2009), Table C.4, Gasoline Light Trucks, Model Year 2004.
[7] CO_2 input is from the California Climate Action Registry General Reporting Protocol (2009), Table C.3, Motor Gasoline.
[8] Miles per gallon (MPG) for light-duty trucks estimated from www.fueleconomy.gov, find a car tab, searching by class, entering: 2002, pick-up trucks, combined MPG; utilizing 18 MPG as a conservative estimate.

PG& E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project: Post-Decommissioning Debris Survey Greenhouse Gas Emissions

						Emission Factors: g/gallon [2]			Peak Pounds/Day				Tons		
Source	Fuel	BHP	Number	Load Factor[1]	Hours per Day	N2O	CH4	CO2	N2O	CH4	CO2	Days	N2O	CH4	CO2
Survey boat - main engine	Diesel	298	1	38	10	0.26	0.74	10150.00	0.04	0.10	1393.66	1	0.00	0.00	0.70
									0.04	**0.10**	**1393.66**		**0.00**	**0.00**	**0.70**

Notes:

[1] Load Factor for Survey boat derived from Port of Long Beach 2010 Air Emissions Inventory, assuming Work boat as listed within Table 3.3, page 72 "Harbor Craft Engine Load Factors"

[2] Emission factors from the California Climate Action Registry General Reporting Protocol (Table C.6: Ships & Boats)

PG&E Line 114, Line 114-1, and Line SP4Z San Joaquin River Submarine Pipeline Crossing Decommissioning Project Greenhouse Gas Emissions Summary		N2O	CH4	CO2	MTCO2E
Pre-Survey	Pounds/Day	0.04	0.10	1393.66	
	Tons	0.00	0.00	0.70	0.64
North Landing	Pounds/Day	0.14	0.33	6436.82	
	Tons	0.00	0.00	37.63	34.43
South Landing	Pounds/Day	0.07	0.15	2620.08	
	Tons	0.00	0.00	11.49	10.52
River Crossing Decommissioning	Pounds/Day	0.37	0.96	16660.14	
	Tons	0.01	0.02	237.10	217.07
Post-Survey	Pounds/Day	0.04	0.10	1393.66	
	Tons	0.00	0.00	0.70	0.64

	Tons			
	N2O	**CH4**	**CO2**	**MTCO2E**
Project Total	**0.01**	**0.02**	**287.62**	**263.30**