APPENDIX H.1

Construction Emissions

Appendix H1. Construction Emissions

List of Tables

Proposed Project Unmitigated Emissions

Proposed Project Mitigated Emissions

Proposed Project Emission Factors

Table H.1.PP.Un.Const-1.
Proposed Project Construction Activities Summary of Peak Daily Unmitigated Emissions (Phase I).

Construction Activity	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Pier 400 Marine Terminal and Wharf Construction	1,403	424	100.0	42	39	1
Pipeline Construction	2,319	970	147	152	125	2
Tank Farm Site 1	1,149	433	69	102	62	1
Tank Farm Site 2	2,094	828	127	141	108	2
Personal Owned Vehicles	401	622	45	21	17	1
TOTAL	**7,366**	**3,277**	**488**	**459**	**351**	**8**

Table H.1.PP.Un.Const-1a.
Proposed Project Construction Activities Summary of Peak Daily Unmitigated Emissions (Phase 2).

Construction Activity	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Tank Farm Site 2	630	262	38	66	39	1
Personal Owned Vehicles	367	584	41	20	16	1
TOTAL	**997**	**846**	**80**	**86**	**55**	**2**

Table H.1.PP.Un.Const-2.
Proposed Project Construction Activities Summary of Average Daily Unmitigated POV Emissions (Phase 1).
Time Slice 4/13/2009 - 6/5/2009

	ROG (lb/day)	NO_x (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Total	**67.73**	**547.21**	**703.26**	**0.97**	**583.43**	**141.03**
Building 01/19/2009-8/25/2010						
Building Off Road Diesel	4.02	18.66	12.06	0	1.33	1.23
Building 2/2/2009-8/27/2010						
Building Off Road Diesel	4.02	18.66	12.06	0	1.33	1.23
Building 4/13/2009-7/9/2010						
Building Off Road Diesel	4.02	18.66	12.06	0	1.33	1.23
Mass Grading 2/2/2009-6/5/2009						
Mass Grading Dust	0	0	0	0	276.6	57.77
Mass Grading Off Road Diesel	4.42	35.65	18.16	0	1.92	1.77
Mass Grading 2/16/2009-6/16/2009						
Mass Grading Dust	0	0	0	0	276.6	57.77
Mass Grading Off Road Diesel	4.42	35.65	18.16	0	1.92	1.77
Trenching 3/30/2009-6/11/2010						
Trenching Off Road Diesel	2.18	18.9	8.32	0	0.93	0.86
Off Road Total	23.08	146.18	80.82	0	561.96	123.63
Vendor and Worker Trips	**44.65**	**401.03**	**622.44**	**0.97**	**21.47**	**17.4**

Table H.1.PP.Un.Const-3.
Proposed Project Construction Activities Summary of Average Daily Unmitigated POV Emissions (Phase 2).
Time Slice 4/13/2009 - 6/5/2009

	ROG (lb/day)	NO_x (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Total	**449.74**	**455.39**	**635.27**	**0.97**	**25.29**	**20.94**
Building 01/19/2009-08/25/2010						
Building Off Road Diesel	3.79	17.78	11.73	0	1.25	1.15
Building 02/02/2009-08/27/2010						
Building Off Road Diesel	3.79	17.78	11.73	0	1.25	1.15
Building 08/25/2010-05/27/2011						
Building Off Road Diesel	3.79	17.78	11.73	0	1.25	1.15
Coating 03/31/2010-08/25/2010						
Architectural Coating	243.54	0	0	0	0	0
Coating 08/25/2010-04/22/2011						
Architectural Coating	149.22	0	0	0	0	0
Trenching 06/29/2009-08/25/2010						
Trenching Off Road Diesel	2.06	17.69	8.22	0	0.88	0.81
Trenching 08/25/2010-04/29/2011						
Trenching Off Road Diesel	2.06	17.69	8.22	0	0.88	0.81
Off Road Total	408.25	88.72	51.63	0	5.51	5.07
Vendor and Worker Trips	**41.49**	**366.67**	**583.64**	**0.97**	**19.78**	**15.87**

Table H.1.PP.Un.Const-4. Proposed Project Wharf Construction Activities Maximum Daily Unmitigated Emissions.

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
MOBILIZATION												57453	8	1	592	197	0.5000	21	20	47
MOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Heavy-Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
MOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,357.75	0.48	0.03	29	9	0.0303	1	1	2
Generator	1	23	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	230.53	0.04	0.00	2	2	0.0018	0	0	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Total Maximum Daily - Barges												22,050.93	3.24	0.23	233.84	70.66	0.1866	7.01	6.45	16.66
Total Maximum Daily - Workboat/Crewboat												9,622.22	1.38	0.10	84.25	26.80	0.0867	3.13	2.88	5.86
DEMOBILIZATION												57453	8	1	592	197	0.5000	21	20	47
DEMOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Heavy-Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
DEMOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,357.75	0.48	0.03	29	9	0.0303	1	1	2
Generator	1	23	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	230.53	0.04	0.00	2	2	0.0018	0	0	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Total Maximum Daily - Barges												22,050.93	3.24	0.23	233.84	70.66	0.1866	7.01	6.45	16.66
Total Maximum Daily - Workboat/Crewboat												9,622.22	1.38	0.10	84.25	26.80	0.0867	3.13	2.88	5.86
UNLOADING PLATFORM (2 EA. 40' x 40')												132306	19	1	1403	424	1.1196	42	39	100
DELIVER STEEL JACKET, DECK FRAME AND PILES																				
Tugboat	1	4,400	24	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	132,305.56	19.46	1.39	1403	424	1.1196	42	39	100
DELIVER LOADING ARMS																				
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
STAB & DRIVE CENTER JACKET PILE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	2	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	27	15	0.0240	3	3	4

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
GROUT MAIN PLATFORM LEGS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Truck (Highway)	1	210	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	611	0.03	0.02	4	1	0.0066	0	0	0
Grout Mixer/Pump	1	35	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	350.81	0.07	0.00	4	3	0.0027	0	0	1
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
SET STEEL DECK FRAMING STRUCTURES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
															0	0	0.0000	0	0	0
															0	0	0.0000	0	0	0
WELD STEEL DECK FRAMING STRUCTURES															0	0	0.0000	0	0	0
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	4	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	20	19	0.0149	2	2	6
PAINT SPLICES																				
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
SET LOADING ARMS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL GANGWAY TOWER & CRANE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Total Maximum Daily - Barges												14,032.41	2.06	0.15	148.81	44.96	0.1187	4.46	4.11	10.60
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	42.12	13.40	0.0434	1.56	1.44	2.93
BREASTING DOLPHIN PLATFORMS (2 EA. @ 40' x 40'; 2 EA. @ 30' x 30')												132306	19	1	1403	424	1.1196	42	39	100
DELIVER STEEL JACKETS, DECK FRAMES AND PILES																				
Tugboat	1	4,400	24	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	132,305.56	19.46	1.39	1403	424	1.1196	42	39	100
DELIVER CATWALKS																				
Truck (Highway)	4	400	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,009.26	0.58	0.04	140	45	0.1446	5	5	10
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,658.45	0.53	0.04	32	10	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14,032.41	2.06	0.15	149	45	0.1187	4	4	11
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
PAINT SPLICES																				
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
SET CATWALK SECTIONS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Total Maximum Daily - Barges												14,032.41	2.06	0.15	148.81	44.96	0.1187	4.46	4.11	10.60
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	42.12	13.40	0.0434	1.56	1.44	2.93
MOORING DOLPHIN PLATFORMS												132306	19	1	1403	424	1.1196	42	39	100
DELIVER STEEL DECK FRAMING STRUCTURES AND PILES																				
Tugboat	1	4,400	24	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	132,305.56	19.46	1.39	1403	424	1.1196	42	39	100
SET TEMPLATE FOR PILE INSTALLATION																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
WELD STEEL DECK FRAMING STRUCTURE																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	4	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	20	19	0.0149	2	2	6
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
PAINT SPLICES																				
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
DELIVER CATWALK SECTIONS																				
Truck (Highway)	6	400	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	3666	0.20	0.10	25	6	0.0397	1	1	2
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,658.45	0.53	0.04	32	10	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
DRIVE STEEL CATWALK PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
SET & WELD STEEL CAP STRUCTURE																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
SET CATWALK SECTIONS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Crewboat	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	2	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	14	7	0.0120	1	1	2
Welding Machine																				
Total Maximum Daily - Barges												8,018.52	1.18	0.08	85.03	25.69	0.0679	2.55	2.35	6.06
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	42.12	13.40	0.0434	1.56	1.44	2.93
TRESTLE ABUTMENTS												7876	1	0.13	70	29	0.0768	4	4	8
DELIVER STEEL PILES																				
Truck (Highway)	3	400	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,357.75	0.48	0.03	29	9	0.0303	1	1	2
EXCAVATE ROCK/GRADE AT TOP OF SLOPE																				
Excavator	1	168	8	568.3	0.094	0.0067	6.22	3.03	0.006	0.38	0.63	1,683.89	0.28	0.02	18	9	0.0183	1	1	2
Loader	1	233	8	568.3	0.094	0.0067	6.00	1.41	0.006	0.22	0.42	2,335.39	0.38	0.03	25	6	0.0258	1	1	2
DRIVE PILES																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,357.75	0.48	0.03	29	9	0.0303	1	1	2
Generator	1	23	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	230.53	0.04	0.00	2	2	0.0018	0	0	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
FORM & POUR ABUTMENT SECTION/APPROACH SLAB																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,357.75	0.48	0.03	29	9	0.0303	1	1	2
Truck (Highway)	1	210	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	611	0	0	4	1	0.0066	0	0	0
Generator	1	23	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	230.53	0.04	0.00	2	2	0.0018	0	0	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.1	0.05	12	3	0.0198	0	0	1
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	10	9	0.0075	1	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Total Maximum Daily - Barges												0	0	0	0	0	0.0000	0	0	0
Total Maximum Daily - Workboat/Crewboat												0	0	0	0	0	0.0000	0	0	0
MAIN TRESTLE												34130	4	1	306	86	0.3211	10	9	21
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	21	400	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	12831	1	0.3	87	20	0.1389	3	3	6
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,658.45	0.53	0.04	32	10	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.1	0.05	12	3	0.0198	0	0	1
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1847.569	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
INSTALL GUARDRAIL																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
INSTALL PIPING SUPPORTS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Total Maximum Daily - Barges												8,018.52	1.18	0.08	85.03	25.69	0.0679	2.55	2.35	6.06
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	42.12	13.40	0.0434	1.56	1.44	2.93
SINGLE LANE TRESTLE TO BREASTING DOLPHIN												31686	4	0.5	289	83	0.2947	9	9	20
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	17	400	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	10387	1	0.3	70	16	0.1124	3	2	5
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,658.45	0.53	0.04	32	10	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
INSTALL GUARDRAIL																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
UTILITY BOAT FLOATING DOCK & GANGWAY																				
DELIVER PC/PS PILES, FLOATS AND GANGWAY																				
Truck (Highway)	10	400	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	6110	0.3	0.2	41	9	0.0661	2	1	3
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,658.45	0.53	0.04	32	10	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
DRIVE PC/PS CONCRETE PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
INSTALL CONCRETE FLOATS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
INSTALL GANGWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
WAVE SCREEN																				
DELIVER STEEL PILES AND PC/PS CONCRETE PANELS																				
Truck (Highway)	11	400	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	6721	0.4	0.2	46	10	0.0728	2	2	3
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,658.45	0.53	0.04	32	10	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	11,025.46	1.62	0.12	117	35	0.0933	4	3	8
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
INSTALL PC/PS CONCRETE PANELS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Total Maximum Daily - Barges												8,018.52	1.18	0.08	85.03	25.69	0.0679	2.55	2.35	6.06
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	42.12	13.40	0.0434	1.56	1.44	2.93
EMERGENCY SPILL BOOM PLATFORMS												24965	3	0.3	244	72	0.2219	8	7	17
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	6	400	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	3666	0.20	0.10	25	6	0.0397	1	1	2
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	3,658.45	0.53	0.04	32	10	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17,640.74	2.59	0.19	187	57	0.1493	6	5	13
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Work Tug	1	850	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,519.68	1.25	0.09	90	27	0.0721	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	112	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1,122.59	0.19	0.01	14	7	0.0120	1	1	2
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Welding Machine	1	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	481.11	0.09	0.01	5	5	0.0037	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	801.85	0.14	0.01	10	5	0.0086	1	1	1
Concrete Trucks	3	285	8	1,848	0.100	0.0500	12.51	2.83	0.020	0.46	0.85	1833	0.10	0.05	12	3	0.0198	0	0	1
INSTALL GUARDRAIL																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8,018.52	1.18	0.08	85	26	0.0679	3	2	6
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4,811.11	0.69	0.05	42	13	0.0434	2	1	3
Air Compressor	1	56	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	561.30	0.10	0.01	7	4	0.0060	1	1	1
Total Maximum Daily - Barges												8019	1	0	85	26	0.0679	3	2	6
Total Maximum Daily - Workboat/Crewboat												4811	1	0	42	13	0.0434	2	1	3
UNMITIGATED DAILY MAXIMUM EMISSIONS												**132306**	**19**	**1.4**	**1403**	**424**	**1.1196**	**42**	**39**	**100**

Notes:
1) Offroad equipment emission factors are obtained from ARB OFFROAD 2007 emissions model.
2) Heavy duty diesel truck emission factors developed from EMFAC2007. Units in grams/mile for project year 2007.

Table H.1.PP.Un.Const-5. Proposed Project Wharf Construction Activities Average Daily Unmitigated Emissions.

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
MOBILIZATION			**15**																	
MOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	60.14	8.84E-03	6.32E-04	0.6	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	36.08	5.18E-03	3.70E-04	0.3	0.1	0.0003	0.01	0.02
Welding Machine	2	48	15	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	7.22	1.36E-03	9.75E-05	0.1	0.1	0.0001	0.01	0.02
Heavy-Lift Derrick Barge	1	1,400	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	105.24	1.55E-02	1.11E-03	1.1	0.3	0.0009	0.03	0.08
Work Tug	1	850	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	63.90	9.40E-03	6.71E-04	0.7	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	36.08	5.18E-03	3.70E-04	0.3	0.1	0.0003	0.01	0.02
Piledriving Hammer	1	1,100	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	82.69	1.22E-02	8.69E-04	0.9	0.3	0.0007	0.03	0.06
Air Compressor	1	112	15	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	8.42	1.44E-03	1.03E-04	0.1	0.1	0.0001	0.01	0.01
MOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	7	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	11.75	1.69E-03	1.20E-04	0.1	0.0	0.0001	0.00	0.01
Generator	1	23	7	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	0.81	1.50E-04	1.07E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	7	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.96	3.37E-04	2.41E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	7	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.68	3.18E-04	2.27E-05	0.0	0.0	0.0000	0.00	0.01
DEMOBILIZATION			**15**																	
DEMOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	60.14	8.84E-03	6.32E-04	0.6	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	36.08	5.18E-03	3.70E-04	0.3	0.1	0.0003	0.01	0.02
Welding Machine	2	48	15	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	7.22	1.36E-03	9.75E-05	0.1	0.1	0.0001	0.01	0.02
Heavy-Lift Derrick Barge	1	1,400	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	105.24	1.55E-02	1.11E-03	1.1	0.3	0.0009	0.03	0.08
Work Tug	1	850	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	63.90	9.40E-03	6.71E-04	0.7	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	36.08	5.18E-03	3.70E-04	0.3	0.1	0.0003	0.01	0.02
Piledriving Hammer	1	1,100	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	82.69	1.22E-02	8.69E-04	0.9	0.3	0.0007	0.03	0.06
Air Compressor	1	112	15	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	8.42	1.44E-03	1.03E-04	0.1	0.1	0.0001	0.01	0.01
DEMOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	5	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	8.39	1.20E-03	8.61E-05	0.1	0.0	0.0001	0.00	0.01
Generator	1	23	5	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	0.58	1.07E-04	7.64E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	5	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.40	2.41E-04	1.72E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	5	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.20	2.27E-04	1.62E-05	0.0	0.0	0.0000	0.00	0.00
UNLOADING PLATFORM (2 EA. 40' x 40')			**60**																	
DELIVER STEEL JACKET, DECK FRAME AND PILES																				
Tugboat	1	4,400	1	24	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	66.15	9.73E-03	6.95E-04	0.7	0.2	0.0006	0.02	0.05
DELIVER LOADING ARMS																				
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14.03	2.06E-03	1.47E-04	0.1	0.0	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.01
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
STAB & DRIVE CENTER JACKET PILE																				
Heavy Lift Derrick Barge	1	1,400	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	7.02	1.03E-03	7.37E-05	0.1	0.0	0.0001	0.00	0.01
Work Tug	1	850	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Piledriving Hammer	1	1,100	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	5.51	8.11E-04	5.79E-05	0.1	0.0	0.0000	0.00	0.00
Air Compressor	1	112	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14.03	2.06E-03	1.47E-04	0.1	0.0	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.01
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	8	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	56.13	8.25E-03	5.90E-04	0.6	0.2	0.0005	0.02	0.04
Work Tug	1	850	8	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	34.08	5.01E-03	3.58E-04	0.4	0.1	0.0003	0.01	0.03
Workboat/Crewboat	1	480	8	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	19.24	2.76E-03	1.97E-04	0.2	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	8	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	44.10	6.49E-03	4.63E-04	0.5	0.1	0.0004	0.01	0.03
Air Compressor	2	112	8	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	8.98	1.54E-03	1.10E-04	0.1	0.1	0.0001	0.01	0.02

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	3	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	21.05	3.10E-03	2.21E-04	0.2	0.1	0.0002	0.01	0.02
Work Tug	1	850	3	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	12.78	1.88E-03	1.34E-04	0.1	0.0	0.0001	0.00	0.01
Workboat/Crewboat	1	480	3	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	7.22	1.04E-03	7.40E-05	0.1	0.0	0.0001	0.00	0.00
Welding Machine	2	48	3	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
GROUT MAIN PLATFORM LEGS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	24.06	3.54E-03	2.53E-04	0.3	0.1	0.0002	0.01	0.02
Truck (Highway)	1	210	6	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	1.83	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
Grout Mixer/Pump	1	35	6	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.05	1.99E-04	1.42E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	14.43	2.07E-03	1.48E-04	0.1	0.0	0.0001	0.00	0.01
SET STEEL DECK FRAMING STRUCTURES																				
Heavy Lift Derrick Barge	1	1,400	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	7.02	1.03E-03	7.37E-05	0.1	0.0	0.0001	0.00	0.01
Work Tug	1	850	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
WELD STEEL DECK FRAMING STRUCTURES																				
Derrick Barge	1	800	3	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	12.03	1.77E-03	1.26E-04	0.1	0.0	0.0001	0.00	0.01
Workboat/Crewboat	1	480	3	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	7.22	1.04E-03	7.40E-05	0.1	0.0	0.0001	0.00	0.00
Welding Machine	4	48	3	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	2.89	5.46E-04	3.90E-05	0.0	0.0	0.0000	0.00	0.01
PAINT SPLICES																				
Air Compressor	1	56	3	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.84	1.44E-04	1.03E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	11	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	44.10	6.49E-03	4.63E-04	0.5	0.1	0.0004	0.01	0.03
Workboat/Crewboat	1	480	11	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	26.46	3.80E-03	2.71E-04	0.2	0.1	0.0002	0.01	0.02
Welding Machine	1	48	11	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	2.65	5.00E-04	3.57E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	11	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	3.09	5.30E-04	3.78E-05	0.0	0.0	0.0000	0.00	0.01
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	0.92	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
INSTALL HANDRAIL																				
Welding Machine	2	48	6	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	2.89	5.46E-04	3.90E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	6	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
SET LOADING ARMS																				
Derrick Barge	1	800	31	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	124.29	1.83E-02	1.31E-03	1.3	0.4	0.0011	0.04	0.09
Workboat/Crewboat	1	480	31	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	74.57	1.07E-02	7.65E-04	0.7	0.2	0.0007	0.02	0.05
Air Compressor	1	56	31	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	8.70	1.49E-03	1.07E-04	0.1	0.1	0.0001	0.01	0.02
INSTALL GANGWAY TOWER & CRANE																				
Heavy Lift Derrick Barge	1	1,400	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	14.03	2.06E-03	1.47E-04	0.1	0.0	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.01
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	2	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.48	9.10E-05	6.50E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	2	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	1	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.24	4.55E-05	3.25E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	24.06	3.54E-03	2.53E-04	0.3	0.1	0.0002	0.01	0.02
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	14.43	2.07E-03	1.48E-04	0.1	0.0	0.0001	0.00	0.01
Welding Machine	1	48	6	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	6	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
BREASTING DOLPHIN PLATFORMS (2 EA. @ 40' x 40'; 2 EA. @ 30' x 30')			**120**																	
DELIVER STEEL JACKETS, DECK FRAMES AND PILES																				
Tugboat	1	4,400	1	24	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	66.15	9.73E-03	6.95E-04	0.7	0.2	0.0006	0.02	0.05
DELIVER CATWALKS																				
Truck (Highway)	4	400	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	8.02	1.15E-03	8.22E-05	0.1	0.0	0.0001	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	25	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	175.40	2.58E-02	1.84E-03	1.9	0.6	0.0015	0.06	0.13
Work Tug	1	850	25	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	106.50	1.57E-02	1.12E-03	1.1	0.3	0.0009	0.03	0.08
Workboat/Crewboat	1	480	25	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	60.14	8.63E-03	6.17E-04	0.5	0.2	0.0005	0.02	0.04
Welding Machine	2	48	25	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	12.03	2.27E-03	1.62E-04	0.1	0.1	0.0001	0.01	0.04
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	4	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	28.06	4.13E-03	2.95E-04	0.3	0.1	0.0002	0.01	0.02
Work Tug	1	850	4	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17.04	2.51E-03	1.79E-04	0.2	0.1	0.0001	0.01	0.01
Workboat/Crewboat	1	480	4	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	9.62	1.38E-03	9.87E-05	0.1	0.0	0.0001	0.00	0.01
Welding Machine	2	48	4	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.92	3.64E-04	2.60E-05	0.0	0.0	0.0000	0.00	0.01
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	30	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	210.49	3.10E-02	2.21E-03	2.2	0.7	0.0018	0.07	0.16
Work Tug	1	850	30	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	127.79	1.88E-02	1.34E-03	1.4	0.4	0.0011	0.04	0.10
Workboat/Crewboat	1	480	30	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	72.17	1.04E-02	7.40E-04	0.6	0.2	0.0007	0.02	0.04
Piledriving Hammer	1	1,100	30	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	165.38	2.43E-02	1.74E-03	1.8	0.5	0.0014	0.05	0.12
Air Compressor	1	112	30	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	16.84	2.89E-03	2.06E-04	0.2	0.1	0.0002	0.02	0.03
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	8	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	56.13	8.25E-03	5.90E-04	0.6	0.2	0.0005	0.02	0.04
Work Tug	1	850	8	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	34.08	5.01E-03	3.58E-04	0.4	0.1	0.0003	0.01	0.03
Workboat/Crewboat	1	480	8	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	19.24	2.76E-03	1.97E-04	0.2	0.1	0.0002	0.01	0.01
Welding Machine	1	48	8	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.92	3.64E-04	2.60E-05	0.0	0.0	0.0000	0.00	0.01
PAINT SPLICES																				
Air Compressor	1	56	6	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	60.14	8.84E-03	6.32E-04	0.6	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	36.08	5.18E-03	3.70E-04	0.3	0.1	0.0003	0.01	0.02
Welding Machine	1	48	15	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	3.61	6.82E-04	4.87E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	15	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	4.21	7.22E-04	5.16E-05	0.1	0.0	0.0000	0.01	0.01
Concrete Pump	1	80	2	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.80	1.38E-04	9.83E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	2	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	1.83	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
INSTALL HANDRAIL																				
Welding Machine	2	48	5	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	2.41	4.55E-04	3.25E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	5	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.40	2.41E-04	1.72E-05	0.0	0.0	0.0000	0.00	0.00
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	4	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	16.04	2.36E-03	1.68E-04	0.2	0.1	0.0001	0.01	0.01
Work Tug	1	850	4	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	17.04	2.51E-03	1.79E-04	0.2	0.1	0.0001	0.01	0.01
Workboat/Crewboat	1	480	4	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	9.62	1.38E-03	9.87E-05	0.1	0.0	0.0001	0.00	0.01
Welding Machine	1	48	4	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	4	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.12	1.93E-04	1.38E-05	0.0	0.0	0.0000	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	1	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.24	4.55E-05	3.25E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	24.06	3.54E-03	2.53E-04	0.3	0.1	0.0002	0.01	0.02
Work Tug	1	850	6	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	25.56	3.76E-03	2.68E-04	0.3	0.1	0.0002	0.01	0.02
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	14.43	2.07E-03	1.48E-04	0.1	0.0	0.0001	0.00	0.01
Welding Machine	1	48	6	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	6	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
SET CATWALK SECTIONS																				
Derrick Barge	1	800	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.02	1.18E-03	8.42E-05	0.1	0.0	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.01
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	2	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.48	9.10E-05	6.50E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	2	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
MOORING DOLPHIN PLATFORMS			**90**																	
DELIVER STEEL DECK FRAMING STRUCTURES AND PILES																				
Tugboat	1	4,400	1	24	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	66.15	9.73E-03	6.95E-04	0.7	0.2	0.0006	0.02	0.05
SET TEMPLATE FOR PILE INSTALLATION																				
Derrick Barge	1	800	13	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	52.12	7.66E-03	5.47E-04	0.6	0.2	0.0004	0.02	0.04
Workboat/Crewboat	1	480	13	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	31.27	4.49E-03	3.21E-04	0.3	0.1	0.0003	0.01	0.02
Welding Machine	2	48	13	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	6.25	1.18E-03	8.45E-05	0.1	0.1	0.0000	0.01	0.02
Air Compressor	1	56	13	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	3.65	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.01
DRIVE STEEL PILES																				
Derrick Barge	1	800	50	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	200.46	2.95E-02	2.11E-03	2.1	0.6	0.0017	0.06	0.15
Work Tug	1	850	50	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	212.99	3.13E-02	2.24E-03	2.3	0.7	0.0018	0.07	0.16
Workboat/Crewboat	1	480	50	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	120.28	1.73E-02	1.23E-03	1.1	0.3	0.0011	0.04	0.07
Piledriving Hammer	1	1,100	50	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	275.64	4.05E-02	2.90E-03	2.9	0.9	0.0023	0.09	0.21
Air Compressor	1	112	50	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	28.06	4.81E-03	3.44E-04	0.3	0.2	0.0003	0.03	0.05
WELD STEEL DECK FRAMING STRUCTURE																				
Derrick Barge	1	800	19	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	76.18	1.12E-02	8.00E-04	0.8	0.2	0.0006	0.02	0.06
Work Tug	1	850	19	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	80.94	1.19E-02	8.50E-04	0.9	0.3	0.0007	0.03	0.06
Workboat/Crewboat	1	480	19	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	45.71	6.56E-03	4.69E-04	0.4	0.1	0.0004	0.01	0.03
Welding Machine	4	48	19	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	18.28	3.46E-03	2.47E-04	0.2	0.2	0.0001	0.02	0.06
Air Compressor	1	56	19	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	5.33	9.15E-04	6.53E-05	0.1	0.0	0.0001	0.01	0.01
PAINT SPLICES																				
Air Compressor	1	56	7	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.96	3.37E-04	2.41E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	94	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	376.87	5.54E-02	3.96E-03	4.0	1.2	0.0032	0.12	0.28
Workboat/Crewboat	1	480	94	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	226.12	3.25E-02	2.32E-03	2.0	0.6	0.0020	0.07	0.14
Welding Machine	1	48	94	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	22.61	4.28E-03	3.05E-04	0.2	0.2	0.0002	0.03	0.07
Air Compressor	1	56	94	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	26.38	4.53E-03	3.23E-04	0.3	0.2	0.0003	0.03	0.05
Concrete Pump	1	80	6	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	2.41	4.13E-04	2.95E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	6	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	5.50	0.00	0.00	0.04	0.01	0.0001	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
INSTALL HANDRAIL																				
Welding Machine	2	48	8	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	3.85	7.28E-04	5.20E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	8	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	2.25	3.85E-04	2.75E-05	0.0	0.0	0.0000	0.00	0.00
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	24.06	3.54E-03	2.53E-04	0.3	0.1	0.0002	0.01	0.02
Work Tug	1	850	6	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	25.56	3.76E-03	2.68E-04	0.3	0.1	0.0002	0.01	0.02
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	14.43	2.07E-03	1.48E-04	0.1	0.0	0.0001	0.00	0.01
Welding Machine	1	48	6	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	6	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	1	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.24	4.55E-05	3.25E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
DELIVER CATWALK SECTIONS																				
Truck (Highway)	6	400	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	12.03	1.73E-03	1.23E-04	0.1	0.0	0.0001	0.00	0.01
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
DRIVE STEEL CATWALK PILES																				
Derrick Barge	1	800	7	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	28.06	4.13E-03	2.95E-04	0.3	0.1	0.0002	0.01	0.02
Work Tug	1	850	7	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	29.82	4.38E-03	3.13E-04	0.3	0.1	0.0003	0.01	0.02
Workboat/Crewboat	1	480	7	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	16.84	2.42E-03	1.73E-04	0.1	0.0	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	7	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	38.59	5.67E-03	4.05E-04	0.4	0.1	0.0003	0.01	0.03
Air Compressor	1	112	7	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	3.93	6.74E-04	4.81E-05	0.0	0.0	0.0000	0.00	0.01
SET & WELD STEEL CAP STRUCTURE																				
Derrick Barge	1	800	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.02	1.18E-03	8.42E-05	0.1	0.0	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.01
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	112	2	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.12	1.93E-04	1.38E-05	0.0	0.0	0.0000	0.00	0.00
SET CATWALK SECTIONS																				
Derrick Barge	1	800	5	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	20.05	2.95E-03	2.11E-04	0.2	0.1	0.0002	0.01	0.02
Work Tug	1	850	5	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	21.30	3.13E-03	2.24E-04	0.2	0.1	0.0002	0.01	0.02
Workboat	1	480	5	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	12.03	1.73E-03	1.23E-04	0.1	0.0	0.0001	0.00	0.01
Crewboat	1	48	5	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.20	2.27E-04	1.62E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	2	56	5	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	2.81	4.81E-04	3.44E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine																				

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
TRESTLE ABUTMENTS			**29**																	
DELIVER STEEL PILES																				
Truck (Highway)	3	400	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	0.92	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
Crawler Crane	1	335	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.68	2.41E-04	1.72E-05	0.0	0.0	0.0000	0.00	0.00
EXCAVATE ROCK/GRADE AT TOP OF SLOPE																				
Excavator	1	168	2	8	568.3	0.094	0.0067	6.22	3.03	0.006	0.38	0.63	1.68	2.77E-04	1.98E-05	0.0	0.0	0.0000	0.00	0.00
Loader	1	233	2	8	568.3	0.094	0.0067	6.00	1.41	0.006	0.22	0.42	2.34	3.84E-04	2.74E-05	0.0	0.0	0.0000	0.00	0.00
DRIVE PILES																				
Crawler Crane	1	335	9	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	15.11	2.17E-03	1.55E-04	0.1	0.0	0.0001	0.00	0.01
Generator	1	23	9	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	1.04	1.92E-04	1.37E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	9	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	2.53	4.33E-04	3.10E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	9	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	2.16	4.09E-04	2.92E-05	0.0	0.0	0.0000	0.00	0.01
FORM & POUR ABUTMENT SECTION/APPROACH SLAB																				
Crawler Crane	1	335	7	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	11.75	1.69E-03	1.20E-04	0.1	0.0	0.0001	0.00	0.01
Truck (Highway)	1	210	15	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	4.58	0.00	0.00	0.03	0.01	0.0000	0.00	0.00
Generator	1	23	15	8	568.3	0.105	0.0075	5.79	5.58	0.004	0.65	1.75	1.73	3.21E-04	2.29E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	15	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	4.21	7.22E-04	5.16E-05	0.1	0.0	0.0000	0.01	0.01
Welding Machine	1	48	15	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	3.61	6.82E-04	4.87E-05	0.0	0.0	0.0000	0.00	0.01
Concrete Pump	1	80	2	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.80	1.38E-04	9.83E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	2	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	1.83	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
INSTALL HANDRAIL																				
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	2	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
MAIN TRESTLE			**30**																	
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	21	400	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	6.42	0.00	0.00	0.04	0.01	0.0001	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
DRIVE STEEL PILES																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	36.08	5.31E-03	3.79E-04	0.4	0.1	0.0003	0.01	0.03
Work Tug	1	850	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	38.34	5.64E-03	4.03E-04	0.4	0.1	0.0003	0.01	0.03
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	49.61	7.30E-03	5.21E-04	0.5	0.2	0.0004	0.02	0.04
Air Compressor	1	112	9	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	5.05	8.67E-04	6.19E-05	0.1	0.0	0.0001	0.01	0.01

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	60.14	8.84E-03	6.32E-04	0.6	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	36.08	5.18E-03	3.70E-04	0.3	0.1	0.0003	0.01	0.02
Welding Machine	1	48	15	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	3.61	6.82E-04	4.87E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	15	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	4.21	7.22E-04	5.16E-05	0.1	0.0	0.0000	0.01	0.01
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	0.92	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	34	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	136.31	2.00E-02	1.43E-03	1.4	0.4	0.0012	0.04	0.10
Workboat/Crewboat	1	480	34	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	81.79	1.17E-02	8.39E-04	0.7	0.2	0.0007	0.03	0.05
Welding Machine	1	48	34	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	8.18	1.55E-03	1.10E-04	0.1	0.1	0.0001	0.01	0.03
Air Compressor	1	56	34	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	9.54	1.64E-03	1.17E-04	0.1	0.1	0.0001	0.01	0.02
Concrete Pump	1	80	3	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.20	2.06E-04	1.47E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	3	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	2.75	0.00	0.00	0.02	0.00	0.0000	0.00	0.00
INSTALL GUARDRAIL																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL PIPING SUPPORTS																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	36.08	5.31E-03	3.79E-04	0.4	0.1	0.0003	0.01	0.03
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Air Compressor	1	56	9	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	2.53	4.33E-04	3.10E-05	0.0	0.0	0.0000	0.00	0.00
SINGLE LANE TRESTLE TO BREASTING DOLPHIN			**100**																	
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	17	400	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	5.19	0.00	0.00	0.04	0.01	0.0001	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
DRIVE STEEL PILES																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	36.08	5.31E-03	3.79E-04	0.4	0.1	0.0003	0.01	0.03
Work Tug	1	850	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	38.34	5.64E-03	4.03E-04	0.4	0.1	0.0003	0.01	0.03
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	49.61	7.30E-03	5.21E-04	0.5	0.2	0.0004	0.02	0.04
Air Compressor	1	112	9	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	5.05	8.67E-04	6.19E-05	0.1	0.0	0.0001	0.01	0.01
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	32.07	4.72E-03	3.37E-04	0.3	0.1	0.0003	0.01	0.02
Workboat/Crewboat	1	480	8	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	19.24	2.76E-03	1.97E-04	0.2	0.1	0.0002	0.01	0.01
Welding Machine	1	48	8	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	1.92	3.64E-04	2.60E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	8	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	2.25	3.85E-04	2.75E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	0.92	0.00	0.00	0.01	0.00	0.0000	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	34	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	136.31	2.00E-02	1.43E-03	1.4	0.4	0.0012	0.04	0.10
Workboat/Crewboat	1	480	34	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	81.79	1.17E-02	8.39E-04	0.7	0.2	0.0007	0.03	0.05
Welding Machine	1	48	34	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	8.18	1.55E-03	1.10E-04	0.1	0.1	0.0001	0.01	0.03
Air Compressor	1	56	34	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	9.54	1.64E-03	1.17E-04	0.1	0.1	0.0001	0.01	0.02
Concrete Pump	1	80	3	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	1.20	2.06E-04	1.47E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	3	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	2.75	0.00	0.00	0.02	0.00	0.0000	0.00	0.00
INSTALL GUARDRAIL																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
UTILITY BOAT FLOATING DOCK & GANGWAY																				
DELIVER PC/PS PILES, FLOATS AND GANGWAY																				
Truck (Highway)	10	400	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	3.05	0.00	0.00	0.02	0.00	0.0000	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
DRIVE PC/PS CONCRETE PILES																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	36.08	5.31E-03	3.79E-04	0.4	0.1	0.0003	0.01	0.03
Work Tug	1	850	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	38.34	5.64E-03	4.03E-04	0.4	0.1	0.0003	0.01	0.03
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	9	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	49.61	7.30E-03	5.21E-04	0.5	0.2	0.0004	0.02	0.04
Air Compressor	1	112	9	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	5.05	8.67E-04	6.19E-05	0.1	0.0	0.0001	0.01	0.01
INSTALL CONCRETE FLOATS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	112	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL GANGWAY																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	112	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
WAVE SCREEN																				
DELIVER STEEL PILES AND PC/PS CONCRETE PANELS																				
Truck (Highway)	11	400	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	3.36	0.00	0.00	0.02	0.01	0.0000	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
DRIVE STEEL PILES																				
Derrick Barge	1	800	19	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	76.18	1.12E-02	8.00E-04	0.8	0.2	0.0006	0.02	0.06
Work Tug	1	850	19	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	80.94	1.19E-02	8.50E-04	0.9	0.3	0.0007	0.03	0.06
Workboat/Crewboat	1	480	19	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	45.71	6.56E-03	4.69E-04	0.4	0.1	0.0004	0.01	0.03
Piledriving Hammer	1	1,100	19	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	104.74	1.54E-02	1.10E-03	1.1	0.3	0.0009	0.03	0.08
Air Compressor	1	112	19	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	10.66	1.83E-03	1.31E-04	0.1	0.1	0.0001	0.01	0.02
INSTALL PC/PS CONCRETE PANELS																				
Derrick Barge	1	800	14	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	56.13	8.25E-03	5.90E-04	0.6	0.2	0.0005	0.02	0.04
Work Tug	1	850	14	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	59.64	8.77E-03	6.26E-04	0.6	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	14	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	33.68	4.83E-03	3.45E-04	0.3	0.1	0.0003	0.01	0.02
Welding Machine	1	48	14	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	3.37	6.37E-04	4.55E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	14	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	3.93	6.74E-04	4.81E-05	0.0	0.0	0.0000	0.00	0.01
EMERGENCY SPILL BOOM PLATFORMS			77																	
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	6	400	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	1.83	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.01
DRIVE STEEL PILES																				
Derrick Barge	1	800	10	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	40.09	5.90E-03	4.21E-04	0.4	0.1	0.0003	0.01	0.03
Work Tug	1	850	10	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	42.60	6.26E-03	4.47E-04	0.5	0.1	0.0004	0.01	0.03
Workboat/Crewboat	1	480	10	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	24.06	3.45E-03	2.47E-04	0.2	0.1	0.0002	0.01	0.01
Air Compressor	1	112	10	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	5.61	9.63E-04	6.88E-05	0.1	0.0	0.0001	0.01	0.01
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	48	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	192.44	2.83E-02	2.02E-03	2.0	0.6	0.0016	0.06	0.15
Workboat/Crewboat	1	480	48	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	115.47	1.66E-02	1.18E-03	1.0	0.3	0.0010	0.04	0.07
Welding Machine	1	48	48	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	11.55	2.18E-03	1.56E-04	0.1	0.1	0.0001	0.01	0.04
Air Compressor	1	56	48	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	13.47	2.31E-03	1.65E-04	0.2	0.1	0.0001	0.02	0.02
Concrete Pump	1	80	2	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.80	1.38E-04	9.83E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	2	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	1.83	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	16	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	64.15	9.43E-03	6.74E-04	0.7	0.2	0.0005	0.02	0.05
Workboat/Crewboat	1	480	16	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	38.49	5.52E-03	3.95E-04	0.3	0.1	0.0003	0.01	0.02
Welding Machine	1	48	16	8	568.3	0.107	0.0077	5.79	5.58	0.004	0.65	1.75	3.85	7.28E-04	5.20E-05	0.0	0.0	0.0000	0.00	0.01
Air Compressor	1	56	16	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	4.49	7.70E-04	5.50E-05	0.1	0.0	0.0000	0.01	0.01
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	12.51	2.83	0.020	0.46	0.85	0.92	0.00	0.00	0.01	0.00	0.0000	0.00	0.00
INSTALL GUARDRAIL																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	6.03	1.82	0.005	0.18	0.43	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.98	1.58	0.005	0.18	0.35	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	6.90	3.70	0.006	0.70	0.99	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
TOTAL UNMITIGATED ANNUAL EMISSIONS													7,658	1.13	0.08	78	26	0.0663	3	6

Notes:
1) Offroad equipment emission factors are obtained from ARB OFFROAD 2007 emissions model.
2) Heavy duty diesel truck emission factors are developed from EMFAC2007. Units in grams/mile for project year 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Un.Const-6. Proposed Project Pipeline Construction Activities Average Daily Unmitigated Emissions.

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
42" - 36" - Terminal Island																	
1 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
2 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Semi Truck with Trailer	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Water Truck	Delivery Trucks On-Road	175	(2)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Dump Truck	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Vacuum Truck	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Air Comressor 175	Other Construction Equipment	112	(1)	35.00	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Air Comressor 475	Other Construction Equipment	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Air Comressor 1200	Other Construction Equipment	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Backhoe Crawler	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Bending Machine	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
All Terrain Crane	Cranes	365	(1)	1.58	4.98	0.185	0.005	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -
Truck Crane	Cranes	365	(1)	1.58	4.98	0.185	0.005	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -
Sideboom	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Loader	Rubber Tired Loaders	215	(2)	1.41	6.00	0.215	0.006	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Reed Screen	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Asphalt Rollers	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Forklift	Forklifts	105	(2)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Generator	Other Construction Equipment	45	(2)	5.58	5.79	0.646	0.004	0.560	- - -	- - -	- - -	- - -	- - -	568.3	0.107	0.0077	- - -
Concrete Saw	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Weld Rig	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Fill Pump	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Hydro Test Pump	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Auger Bore Machine	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
36" -HDD/Open Cut / Assist HDD - Wilimington																	
1 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
2 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Semi Truck with Trailer	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Water Truck	Delivery Trucks On-Road	175	(2)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Dump Truck	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Vacuum Truck	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Air Comressor	Other Construction Equip.	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Air Comressor	Other Construction Equip.	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Air Comressor	Other Construction Equip.	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Backhoe Crawler	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Bending Machine	Other Construction Equip.	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
All Terrain Crane	Cranes	365	(1)	1.58	4.98	0.185	0.005	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -
Truck Crane	Cranes	365	(1)	1.58	4.98	0.185	0.005	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -
Sideboom	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Loader	Rubber Tired Loaders	215	(2)	1.41	6.00	0.215	0.006	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Reed Screen	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Asphalt Rollers	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Forklift	Forklifts	105	(2)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -
Generator	Other Construction Equipment	45	(2)	5.58	5.79	0.646	0.004	0.560	- - -	- - -	- - -	- - -	- - -	568.3	0.107	0.0077	- - -
Concrete Saw	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Weld Rig	Welders	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Fill Pump	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Hydro Test Pump	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Auger Bore Machine	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Drill Rig	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Central Unit	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Mud Recycling System	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Mixing Tank	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Pumps	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Cleaning System	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Survey System	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Frac Tanks	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Light Towers	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -
Dumpster	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
24" - Valero																	
1 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.510	0.458	2.83	0.02	0.85	- - -	- - -	- - -	1,848
2 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.510	0.458	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Semi Truck with Trailer	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.510	0.458	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Water Truck	Delivery Trucks On-Road	175	(2)	- - -	- - -	- - -	- - -	- - -	12.510	0.458	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Dump Truck	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.510	0.458	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Vacuum Truck	Delivery Trucks On-Road	479	(5)	- - -	- - -	- - -	- - -	- - -	12.510	0.458	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Air Comressor 175	Other Construction Equip.	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	
Air Comressor 475	Other Construction Equip.	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	
Air Comressor 1200	Other Construction Equip.	112	(1)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	
Bending Machine	Other Construction Equipment	160	(2)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	
All Terrain Crane	Cranes	365	(1)	1.58	4.98	0.185	0.005	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	
Truck Crane	Cranes	365	(1)	1.58	4.98	0.185	0.005	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	
Sideboom	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	
Loader	Rubber Tired Loaders	215	(2)	1.41	6.00	0.215	0.006	0.240	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	
Asphalt Rollers	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	
Forklift	Forklifts	105	(2)	3.70	6.90	0.703	0.006	0.580	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	
Generator	Other Construction Equipment	45	(2)	5.58	5.79	0.646	0.004	0.560	- - -	- - -	- - -	- - -	- - -	568.3	0.107	0.0077	
Weld Rig	Welders	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	
Fill Pump	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	
Hydro Test Pump	Other Construction Equipment	160	(3)	3.03	6.22	0.377	0.006	0.420	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	

NOTES:

(1) Horsepower is obtained from the wharf construction equipment data.
(2) Horsepower is obtained from the POLA Trapac construction equipment data.
(3) Horsepower is obtained from the POLA Trapac construction equipment data using a similar construction equipment category.
(4) PM2.5 emissions were calculated by multiplying the PM2.5 fraction by the PM10 emissions for each source category. The PM2.5 fraction were obtained from the "SCAQMD Final - Methodology to Calculate Particulate Matter (PM)2.5 and PM 2.5 Significance Thresholds, Appendix A (October 2006)".
(5) Horsepower is not available for Onroad Trucks from URBEMIS 2007. Therefore, the horsepower is obtained for Offroad Trucks from URBEMIS 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

						Total Emissions								
CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use/Day hr / day	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
0.10	0.05	5	30	150	6	0.17	0.74	0.03	0.03	0.0011	0.05	109.98	0.006	0.003
0.10	0.05	5	30	150	6	0.42	1.86	0.07	0.06	0.0027	0.13	274.94	0.015	0.007
0.10	0.05	5	30	150	6	0.08	0.35	0.01	0.01	0.0005	0.02	51.32	0.003	0.001
0.10	0.05	5	30	150	6	0.22	0.97	0.04	0.03	0.0014	0.07	142.97	0.008	0.004
0.10	0.05	5	30	150	6	0.67	2.98	0.11	0.10	0.0043	0.20	439.91	0.024	0.012
0.10	0.05	5	30	150	6	0.00	0.01	0.00	0.00	0.0000	0.00	1.83	0.000	0.000
- - -	- - -	5			6	10.11	1.99	0.20	0.19	0.0018	0.17	164.18	0.03	0.0020
- - -	- - -	5			6	0.99	1.84	0.19	0.17	0.0016	0.15	151.55	0.03	0.0019
- - -	- - -	5			6	0.01	0.03	0.00	0.00	0.0000	0.00	2.10	0.00	0.0000
- - -	- - -	10			6	2.50	5.13	0.31	0.29	0.0051	0.35	469.08	0.08	0.0055
- - -	- - -	10			6	2.31	4.74	0.29	0.26	0.0047	0.32	433.00	0.07	0.0051
- - -	- - -	5			6	0.42	0.86	0.05	0.05	0.0008	0.06	78.18	0.01	0.0009
- - -	- - -	10			6	1.07	3.36	0.12	0.11	0.0035	0.16	384.14	0.06	0.0039
- - -	- - -	10			6	1.99	6.25	0.23	0.21	0.0064	0.30	713.40	0.10	0.0073
- - -	- - -	5			6	1.54	3.16	0.19	0.18	0.0031	0.21	288.67	0.05	0.0034
- - -	- - -	10			6	1.56	6.65	0.24	0.22	0.0070	0.27	630.33	0.10	0.0074
- - -	- - -	5			6	0.10	0.20	0.01	0.01	0.0002	0.01	18.04	0.00	0.0002
- - -	- - -	5			6	0.83	1.71	0.10	0.10	0.0017	0.12	156.36	0.03	0.0018
- - -	- - -	10			6	0.77	1.44	0.15	0.13	0.0013	0.12	118.40	0.02	0.0015
- - -	- - -	5			6	0.22	0.22	0.03	0.02	0.0002	0.02	21.99	0.00	0.0003
- - -	- - -	5			6	0.39	0.79	0.05	0.04	0.0008	0.05	72.17	0.01	0.0008
- - -	- - -	5			6	3.08	6.31	0.38	0.35	0.0063	0.43	577.33	0.10	0.0068
- - -	- - -	5			6	0.06	0.13	0.01	0.01	0.0001	0.01	12.03	0.00	0.0001
- - -	- - -	5			6	0.03	0.07	0.00	0.00	0.0001	0.00	6.01	0.00	0.0001
- - -	- - -	5			6	0.13	0.26	0.02	0.01	0.0003	0.02	24.06	0.00	0.0003
					TOTAL	**29.67**	**52.04**	**2.83**	**2.60**	**0.0547**	**3.24**	**5,341.97**	**0.75**	**0.08**
					Fugitive Dust - Unmitigated			**0.92**	**0.19**					
					UNMITIGATED GRAND TOTAL	**29.67**	**52.04**	**3.75**	**2.80**	**0.0547**	**3.24**	**5,341.97**	**0.75**	**0.08**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

						Total Emissions								
CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use/Day hr / day	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
0.10	0.05	5	30	150	6	0.12	0.55	0.02	0.02	0.0008	0.04	80.65	0.00	0.00
0.10	0.05	5	30	150	6	0.98	4.32	0.16	0.15	0.0062	0.29	637.87	0.03	0.02
0.10	0.05	5	30	150	6	0.06	0.27	0.01	0.01	0.0004	0.02	40.32	0.00	0.00
0.10	0.05	5	30	150	6	0.17	0.74	0.03	0.03	0.0011	0.05	109.98	0.01	0.00
0.10	0.05	5	30	150	6	0.04	0.20	0.01	0.01	0.0003	0.01	29.33	0.00	0.00
0.10	0.05	5	30	150	6	0.00	0.01	0.00	0.00	0.0000	0.00	1.83	0.00	0.00
- - -	- - -	5			6	0.82	1.53	0.16	0.14	0.0014	0.13	126.29	0.02	0.0015
- - -	- - -	5			6	0.66	1.23	0.12	0.11	0.0011	0.10	101.03	0.02	0.0012
- - -	- - -	5			6	0.03	0.05	0.01	0.00	0.0000	0.00	4.21	0.00	0.0001
- - -	- - -	10			6	4.36	8.95	0.54	0.50	0.0089	0.60	817.89	0.13	0.0096
- - -	- - -	10			6	4.36	8.95	0.54	0.50	0.0089	0.60	817.89	0.13	0.0096
- - -	- - -	5			6	0.06	0.13	0.01	0.01	0.0001	0.01	12.03	0.00	0.0001
- - -	- - -	10			6	3.82	12.01	0.45	0.41	0.0124	0.58	1,371.92	0.20	0.0141
- - -	- - -	10			6	1.83	5.77	0.21	0.20	0.0059	0.28	658.52	0.09	0.0068
- - -	- - -	5			6	1.03	2.10	0.13	0.12	0.0021	0.14	192.44	0.03	0.0023
- - -	- - -	10			6	0.32	1.36	0.05	0.05	0.0014	0.05	129.30	0.02	0.0015
- - -	- - -	5			6	0.10	0.20	0.01	0.01	0.0002	0.01	18.04	0.00	0.0002
- - -	- - -	5			6	0.10	0.20	0.01	0.01	0.0002	0.01	18.04	0.00	0.0002
- - -	- - -	10			6	2.98	5.56	0.57	0.52	0.0049	0.47	457.81	0.08	0.0056
- - -	- - -	5			6	2.79	2.90	0.32	0.30	0.0022	0.28	284.16	0.05	0.0038
- - -	- - -	5			6	0.06	0.13	0.01	0.01	0.0001	0.01	12.03	0.00	0.0001
- - -	- - -	10			6	4.11	8.42	0.51	0.47	0.0084	0.57	769.78	0.13	0.0090
- - -	- - -	5			6	0.03	0.07	0.00	0.00	0.0001	0.00	6.01	0.00	0.0001
- - -	- - -	5			6	0.02	0.03	0.00	0.00	0.0000	0.00	3.01	0.00	0.0000
- - -	- - -	5			6	0.06	0.13	0.01	0.01	0.0001	0.01	12.03	0.00	0.0001
- - -	- - -	5			6	0.48	0.99	0.06	0.06	0.0010	0.07	90.21	0.01	0.0011
- - -	- - -	5			6	0.48	0.99	0.06	0.06	0.0010	0.07	90.21	0.01	0.0011
- - -	- - -	5			6	0.48	0.99	0.06	0.06	0.0010	0.07	90.21	0.01	0.0011
- - -	- - -	5			6	0.48	0.99	0.06	0.06	0.0010	0.07	90.21	0.01	0.0011
- - -	- - -	5			6	0.96	1.97	0.12	0.11	0.0020	0.13	180.42	0.03	0.0021
- - -	- - -	5			6	0.48	0.99	0.06	0.06	0.0010	0.07	90.21	0.01	0.0011
- - -	- - -	5			6	0.48	0.99	0.06	0.06	0.0010	0.07	90.21	0.01	0.0011
- - -	- - -	5			6	1.93	3.95	0.24	0.22	0.0039	0.27	360.83	0.06	0.0042
- - -	- - -	5			6	1.93	3.95	0.24	0.22	0.0039	0.27	360.83	0.06	0.0042
- - -	- - -	5			6	0.48	0.99	0.06	0.06	0.0010	0.07	90.21	0.01	0.0011
					TOTAL	**37.11**	**82.58**	**4.90**	**4.51**	**0.0838**	**5.42**	**8,245.94**	**1.23**	**0.11**
					Fugitive Dust - Unmitigated			**0.615**	**0.128**					
					UNMITIGATED GRAND TOTAL	**37.11**	**82.58**	**5.52**	**4.64**	**0.0838**	**5.42**	**8,245.94**	**1.23**	**0.11**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

						Total Emissions								
CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use/Day hr / day	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
0.10	0.05	5	30	150	6	0.04	0.20	0.01	0.01	0.0003	0.01	29.33	0.0016	0.0008
0.10	0.05	5	30	150	6	0.11	0.50	0.02	0.02	0.0007	0.03	73.32	0.0040	0.0020
0.10	0.05	5	30	150	6	0.02	0.10	0.00	0.00	0.0001	0.01	14.66	0.0008	0.0004
0.10	0.05	5	30	150	6	0.02	0.10	0.00	0.00	0.0001	0.01	14.66	0.0008	0.0004
0.10	0.05	5	30	150	6	0.04	0.20	0.01	0.01	0.0003	0.01	29.33	0.0016	0.0008
0.10	0.05	5	30	150	6	0.00	0.01	0.00	0.00	0.0000	0.00	1.83	0.0001	0.0000
		5			6	0.33	0.61	0.06	0.06	0.0005	0.05	50.52	0.01	0.001
		5			6	0.04	0.08	0.01	0.01	0.0001	0.01	6.31	0.00	0.000
		5			6	0.03	0.05	0.01	0.00	0.0000	0.00	4.21	0.00	0.000
		10			6	0.77	1.58	0.10	0.09	0.0016	0.11	144.33	0.02	0.002
		5			6	0.10	0.20	0.01	0.01	0.0002	0.01	18.04	0.00	0.000
		10			6	0.31	0.96	0.04	0.03	0.0010	0.05	109.75	0.02	0.001
		10			6	0.46	1.44	0.05	0.05	0.0015	0.07	164.63	0.02	0.002
		5			6	0.19	0.39	0.02	0.02	0.0004	0.03	36.08	0.01	0.000
		10			6	0.36	1.53	0.06	0.05	0.0016	0.06	145.46	0.02	0.002
		5			6	0.13	0.26	0.02	0.01	0.0003	0.02	24.06	0.00	0.000
		10			6	0.26	0.48	0.05	0.04	0.0004	0.04	39.47	0.01	0.000
		5			6	0.05	0.05	0.01	0.01	0.0000	0.01	5.07	0.00	0.000
		10			6	1.03	2.10	0.13	0.12	0.0021	0.14	192.44	0.03	0.002
		5			6	0.03	0.07	0.00	0.00	0.0001	0.00	6.01	0.00	0.000
		5			6	0.02	0.03	0.00	0.00	0.0000	0.00	3.01	0.00	0.000
					TOTAL	**4.34**	**10.95**	**0.60**	**0.55**	**0.0114**	**0.67**	**1,112.54**	**0.16**	**0.02**
					Fugitive Dust - Unmitigated			0.123	0.0255					
					UNMITIGATED GRAND TOTAL	4.34	10.95	0.72	0.57	0.0114	0.67	1,112.54	0.16	0.02
					UNMITIGATED GRAND TOTAL - All Pipelines	**71**	**146**	**10**	**8**	**0.1499**	**9**	**14,700**	**2**	**0.20**

Maximum Daily Emissions									Maximum Hourly Emissions								
CO Emissions (lb/day)	NO_x Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_x Emissions (lb/day)	VOC Emissions (lb/day)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (lb/hr)
1.87	8.27	0.30	0.28	0.01	0.56	1,221.96	0.07	0.03	0.08	0.34	0.01	0.01	0.00	0.02	50.92	0.00	0.00
4.68	20.69	0.76	0.70	0.03	1.41	3,054.91	0.17	0.08	0.20	0.86	0.03	0.03	0.00	0.06	127.29	0.01	0.00
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
2.81	12.41	0.45	0.42	0.02	0.84	1,832.95	0.10	0.05	0.12	0.52	0.02	0.02	0.00	0.04	76.37	0.00	0.00
9.37	41.37	1.51	1.39	0.06	2.81	6,109.82	0.33	0.17	0.39	1.72	0.06	0.06	0.00	0.12	254.58	0.01	0.01
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
129.63	25.55	2.60	2.40	0.02	2.15	2,104.86	0.36	0.03	25.93	5.11	0.52	0.48	0.00	0.43	420.97	0.07	0.01
13.71	25.55	2.60	2.40	0.02	2.15	2,104.86	0.36	0.03	2.74	5.11	0.52	0.48	0.00	0.43	420.97	0.07	0.01
4.57	8.52	0.87	0.80	0.01	0.72	701.62	0.12	0.01	0.91	1.70	0.17	0.16	0.00	0.14	140.32	0.02	0.00
32.09	65.78	3.99	3.67	0.07	4.44	6,013.89	0.99	0.07	3.21	6.58	0.40	0.37	0.01	0.44	601.39	0.10	0.01
32.09	65.78	3.99	3.67	0.07	4.44	6,013.89	0.99	0.07	3.21	6.58	0.40	0.37	0.01	0.44	601.39	0.10	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
12.74	40.04	1.49	1.37	0.04	1.93	4,573.06	0.66	0.05	1.27	4.00	0.15	0.14	0.00	0.19	457.31	0.07	0.00
25.47	80.08	2.97	2.74	0.08	3.86	9,146.12	1.31	0.09	2.55	8.01	0.30	0.27	0.01	0.39	914.61	0.13	0.01
21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66	0.05	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
20.01	85.26	3.06	2.81	0.09	3.41	8,081.16	1.33	0.09	2.00	8.53	0.31	0.28	0.01	0.34	808.12	0.13	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33	0.02	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
8.57	15.97	1.63	1.50	0.01	1.34	1,315.54	0.23	0.02	0.86	1.60	0.16	0.15	0.00	0.13	131.55	0.02	0.00
2.77	2.87	0.32	0.29	0.00	0.28	281.90	0.05	0.00	0.55	0.57	0.06	0.06	0.00	0.06	56.38	0.01	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
42.78	87.70	5.32	4.90	0.09	5.93	8,018.52	1.32	0.09	8.56	17.54	1.06	0.98	0.02	1.19	1,603.70	0.26	0.02
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
409.19	**725.67**	**40.17**	**36.95**	**0.76**	**45.73**	**73,824.81**	**10.43**	**1.06**	**65.48**	**95.43**	**5.79**	**5.33**	**0.10**	**6.22**	**9,122.34**	**1.42**	**0.11**
		9.72	**2.02**								**0.41**	**0.08**					
409.19	**725.67**	**49.89**	**38.97**	**0.76**	**45.73**	**73,824.81**	**10.43**	**1.06**	**65.48**	**95.43**	**6.20**	**5.41**	**0.10**	**6.22**	**9,122.34**	**1.42**	**0.11**

Maximum Daily Emissions									Maximum Hourly Emissions								
CO Emissions (lb/day)	NO_x Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_x Emissions (lb/day)	VOC Emissions (lb/day)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (lb/hr)
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
6.56	28.96	1.06	0.97	0.04	1.97	4,276.87	0.23	0.12	0.27	1.21	0.04	0.04	0.00	0.08	178.20	0.01	0.00
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
2.81	12.41	0.45	0.42	0.02	0.84	1,832.95	0.10	0.05	0.12	0.52	0.02	0.02	0.00	0.04	76.37	0.00	0.00
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
9.14	17.03	1.74	1.60	0.02	1.43	1,403.24	0.24	0.02	1.83	3.41	0.35	0.32	0.00	0.29	280.65	0.05	0.00
13.71	25.55	2.60	2.40	0.02	2.15	2,104.86	0.36	0.03	2.74	5.11	0.52	0.48	0.00	0.43	420.97	0.07	0.01
9.14	17.03	1.74	1.60	0.02	1.43	1,403.24	0.24	0.02	1.83	3.41	0.35	0.32	0.00	0.29	280.65	0.05	0.00
42.78	87.70	5.32	4.90	0.09	5.93	8,018.52	1.32	0.09	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
42.78	87.70	5.32	4.90	0.09	5.93	8,018.52	1.32	0.09	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
25.47	80.08	2.97	2.74	0.08	3.86	9,146.12	1.31	0.09	2.55	8.01	0.30	0.27	0.01	0.39	914.61	0.13	0.01
50.94	160.16	5.95	5.47	0.16	7.73	18,292.25	2.63	0.19	5.09	16.02	0.59	0.55	0.02	0.77	1,829.22	0.26	0.02
21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66	0.05	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
6.67	28.42	1.02	0.94	0.03	1.14	2,693.72	0.44	0.03	0.67	2.84	0.10	0.09	0.00	0.11	269.37	0.04	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
25.70	47.90	4.88	4.49	0.04	4.03	3,946.61	0.68	0.05	2.57	4.79	0.49	0.45	0.00	0.40	394.66	0.07	0.00
22.14	22.99	2.56	2.36	0.02	2.22	2,255.21	0.43	0.03	4.43	4.60	0.51	0.47	0.00	0.44	451.04	0.09	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
42.78	87.70	5.32	4.90	0.09	5.93	8,018.52	1.32	0.09	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33	0.02	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66	0.05	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66	0.05	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
454.09	**1,027.16**	**60.18**	**55.37**	**1.04**	**66.44**	**101,919.38**	**15.37**	**1.30**	**65.03**	**138.29**	**8.62**	**7.93**	**0.14**	**9.21**	**13,216.11**	**2.10**	**0.16**
		8.205	**1.71**								**0.34**	**0.07**					
454.09	**1,027.16**	**68.39**	**57.08**	**1.04**	**66.44**	**101,919.38**	**15.37**	**1.30**	**65.03**	**138.29**	**8.96**	**8.00**	**0.14**	**9.21**	**13,216.11**	**2.10**	**0.16**

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Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Maximum Daily Emissions									Maximum Hourly Emissions								
CO Emissions (lb/day)	NO_x Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_x Emissions (lb/day)	VOC Emissions (lb/day)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (lb/hr)
1.87	8.27	0.30	0.28	0.01	0.56	1,221.96	0.07	0.03	0.08	0.34	0.01	0.01	0.00	0.02	50.92	0.00	0.00
4.68	20.69	0.76	0.70	0.03	1.41	3,054.91	0.17	0.08	0.20	0.86	0.03	0.03	0.00	0.06	127.29	0.01	0.00
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
3.75	16.55	0.61	0.56	0.02	1.12	2,443.93	0.13	0.07	0.16	0.69	0.03	0.02	0.00	0.05	101.83	0.01	0.00
0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
13.71	25.55	2.60	2.40	0.02	2.15	2,104.86	0.36	0.03	2.74	5.11	0.52	0.48	0.00	0.43	420.97	0.07	0.01
4.57	8.52	0.87	0.80	0.01	0.72	701.62	0.12	0.01	0.91	1.70	0.17	0.16	0.00	0.14	140.32	0.02	0.00
4.57	8.52	0.87	0.80	0.01	0.72	701.62	0.12	0.01	0.91	1.70	0.17	0.16	0.00	0.14	140.32	0.02	0.00
42.78	87.70	5.32	4.90	0.09	5.93	8,018.52	1.32	0.09	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
12.74	40.04	1.49	1.37	0.04	1.93	4,573.06	0.66	0.05	1.27	4.00	0.15	0.14	0.00	0.19	457.31	0.07	0.00
25.47	80.08	2.97	2.74	0.08	3.86	9,146.12	1.31	0.09	2.55	8.01	0.30	0.27	0.01	0.39	914.61	0.13	0.01
10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33	0.02	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
20.01	85.26	3.06	2.81	0.09	3.41	8,081.16	1.33	0.09	2.00	8.53	0.31	0.28	0.01	0.34	808.12	0.13	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
8.57	15.97	1.63	1.50	0.01	1.34	1,315.54	0.23	0.02	0.86	1.60	0.16	0.15	0.00	0.13	131.55	0.02	0.00
2.77	2.87	0.32	0.29	0.00	0.28	281.90	0.05	0.00	0.55	0.57	0.06	0.06	0.00	0.06	56.38	0.01	0.00
42.78	87.70	5.32	4.90	0.09	5.93	8,018.52	1.32	0.09	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
223.15	**565.91**	**30.56**	**28.12**	**0.59**	**34.64**	**57,510.57**	**8.27**	**0.79**	**27.32**	**64.33**	**3.80**	**3.49**	**0.06**	**4.06**	**6,232.48**	**0.96**	**0.08**
		3.13	0.65								0.130	0.027					
223.15	565.91	33.69	28.77	0.59	34.64	57,510.57	8.27	0.79	27.32	64.33	3.93	3.52	0.06	4.06	6,232.48	0.96	0.08
1,086	**2,319**	**152**	**125**	**2**	**147**	**233,255**	**34**	**3**	**158**	**298**	**19**	**17**	**0**	**19**	**28,571**	**4**	**0**

Table H.1.PP.Un.Const-7. Proposed Project Site Construction Activities Average Daily Unmitigated Emissions (Phase I).

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)
Site 1																			
Soil Stabilization																			
Crane	Cranes	365	(1)	1.58	4.98	0.18	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -
Boring Machine	Bore/Drill Rigs	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Dump Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05
														568.3	0.129	0.0092	- - -	- - -	- - -
Construction																			
Dozer	Rubber Tired Dozers	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Loader	Rubber Tired Loaders	215	(2)	1.41	6.00	0.22	0.006	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Backhoe	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Crane	Cranes	365	(1)	1.58	4.98	0.18	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -
Boom-Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05
Water Truck	Off-Highway Trucks	175	(2)	- - -	- - -	- - -	0.006	0.42	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05
Man-Lift	Other Construction Equip.	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Compactor	Plate Compactor	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Fork Lift	Forklifts	105	(2)	3.70	6.90	0.70	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -
Welding Rigs	Welders	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Air Compressor	Other Construction Equip.	112	(1)	3.70	6.90	0.70	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -
Tanks (2-250,000 Bbl, 1-50,000 Bbl, 1-15,000Bbl)																			
Diesel Generator (200 KW)	Other Construction Equip.	45	(2)	5.58	5.79	0.65	0.004	0.56	- - -	- - -	- - -	- - -	- - -	568.3	0.107	0.0077	- - -	- - -	- - -
Crane	Cranes	365	(1)	1.58	4.98	0.18	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -
Forklift	Forklifts	105	(2)	3.70	6.90	0.70	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -
Manlift	Other Construction Equip.	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Site 2 (New)																			
Soil Stabilization														568.3	0.129	0.0092	- - -	- - -	- - -
Crane	Cranes	365	(1)	1.58	4.98	0.18	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -
Boring Machine	Bore/Drill Rigs	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Dump Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Scraper	Other Construction Equip.	195	(2)	1.41	6.00	0.22	0.006	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Dozer	Rubber Tired Dozers	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Compactor	Plate Compactor	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Construction																			
Dozer	Rubber Tired Dozers	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Loader	Rubber Tired Loaders	215	(2)	1.41	6.00	0.22	0.006	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Backhoe	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Crane	Cranes	365	(1)	1.58	4.98	0.18	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -
Boom-Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05
Water Truck	Off-Highway Trucks	175	(2)	- - -	- - -	- - -	0.006	0.42	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05
Man-Lift	Other Construction Equip.	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Compactor	Plate Compactor	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Fork Lift	Forklifts	105	(2)	3.70	6.90	0.70	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -
Welding Rigs	Welders	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -
Air Compressor	Other Construction Equip.	112	(1)	3.70	6.90	0.70	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -
Tanks (14-250,000 bbl)																			
Diesel Generator (200 KW)	Other Construction Equip.	45	(2)	5.58	5.79	0.65	0.004	0.56	- - -	- - -	- - -	- - -	- - -	568.3	0.107	0.0077	- - -	- - -	- - -
Crane	Cranes	365	(1)	1.58	4.98	0.18	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -
Forklift	Forklifts	105	(2)	3.70	6.90	0.70	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -
Manlift	Other Construction Equip.	160	(3)	3.03	6.22	0.38	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -

NOTES:

(1) Horsepower is obtained from the wharf construction equipment data.
(2) Horsepower is obtained from the POLA Trapac construction equipment data.
(3) Horsepower is obtained from the POLA Trapac construction equipment data using a similar construction equipment category.
(4) PM2.5 emissions were calculated by multiplying the PM2.5 fraction by the PM10 emissions for each source category. The PM2.5 fraction were obtained from the "SCAQMD Final - Methodology to Calculate Particulate Matter (PM)2.5 and PM 2.5 Significance Thresholds, Appendix A (October 2006)".
(5) Emission calculations assume 2 pick-up trucks.
(6) Horsepower is not available for Onroad Trucks from URBEMIS 2007. Therefore, the horsepower is obtained for Offroad Trucks from URBEMIS 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Un.Const-7. Proposed Project Site Construction Activities Average Daily Unmitigated Emissions (Phase I).

					Project Total Emissions									Maximum Daily Emissions						Maximum Daily Emis	
Equipment	Use/Day hr / day	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)	CO Emissions (lb/day)	NO_x Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_x Emissions (lb/day)	VOC Emissions (lb/day)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)
Site 1																					
Soil Stabilization																					
Crane	10			6	5.50	17.30	0.64	0.59	0.02	0.83	1,975.56	0.28	0.02	76.41	240.24	8.92	8.21	0.25	11.59	27,438.37	3.94
Boring Machine	10			6	4.62	9.47	0.57	0.53	0.01	0.64	866.00	0.14	0.01	64.17	131.56	7.99	7.35	0.13	8.89	12,027.78	1.98
Dump Truck	10	30	300	6	2.70	11.91	0.44	0.40	0.02	0.81	1,759.63	0.10	0.05	37.43	165.48	6.08	5.60	0.26	11.24	24,439.28	1.32
Construction																					
Dozer	10			6	0.29	0.59	0.04	0.03	0.00	0.04	54.13	0.01	0.00	10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33
Loader	10			6	0.90	3.84	0.14	0.13	0.00	0.15	363.65	0.06	0.00	13.34	56.84	2.04	1.88	0.06	2.28	5,387.44	0.89
Backhoe	10			6	2.76	5.66	0.34	0.32	0.01	0.38	517.19	0.09	0.01	21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66
Trackhoe	10			6	1.32	2.70	0.16	0.15	0.00	0.18	246.57	0.04	0.00	10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33
Crane	10			6	1.49	4.68	0.17	0.16	0.00	0.23	535.05	0.08	0.01	25.47	80.08	2.97	2.74	0.08	3.86	9,146.12	1.31
Boom-Truck	5	30	150	6	0.09	0.41	0.02	0.01	0.00	0.03	60.49	0.00	0.00	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03
Water Truck	10		150	6	0.24	1.04	0.04	0.04	0.00	0.07	153.97	0.01	0.00	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03
Man-Lift	5			6	0.47	0.95	0.06	0.05	0.00	0.06	87.20	0.01	0.00	5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16
Compactor	10			6	0.26	0.53	0.03	0.03	0.00	0.04	48.11	0.01	0.00	10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33
Fork Lift	10			6	1.77	3.30	0.34	0.31	0.00	0.28	272.32	0.05	0.00	17.13	31.93	3.25	2.99	0.03	2.69	2,631.08	0.45
Welding Rigs	10			6	6.29	12.89	0.78	0.72	0.01	0.87	1,178.72	0.19	0.01	53.48	109.63	6.65	6.12	0.11	7.41	10,023.15	1.65
Air Compressor	5			6	0.78	1.46	0.15	0.14	0.00	0.12	119.98	0.02	0.00	4.57	8.52	0.87	0.80	0.01	0.72	701.62	0.12
											-	-	-								
Tanks (2-250,000 Bbl, 1-50,000 Bbl, 1-15,000Bl											-	-	-								
Diesel Generator (200 KW)	5			6	0.71	0.73	0.08	0.08	0.00	0.07	71.88	0.01	0.00	5.54	5.75	0.64	0.59	0.00	0.56	563.80	0.11
Crane	10			6	4.55	14.29	0.53	0.49	0.01	0.69	1,632.58	0.23	0.02	38.21	120.12	4.46	4.10	0.12	5.79	13,719.18	1.97
Forklift	10			6	1.18	2.20	0.22	0.21	0.00	0.19	181.54	0.03	0.00	25.70	47.90	4.88	4.49	0.04	4.03	3,946.61	0.68
Manlift	5			6	0.24	0.49	0.03	0.03	0.00	0.03	45.10	0.01	0.00	10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33
			Fugitive Dust - Unmitigated				**10.39**	**2.16**								**44.50**	**9.26**				
				TOTAL	**36.14**	**94.46**	**15.18**	**6.57**	**0.10**	**5.72**	**10,169.68**	**1.37**	**0.14**	**432.83**	**1,148.84**	**102.22**	**62.36**	**1.25**	**69.24**	**124,276.50**	**16.62**
Site 2 (New)																					
Soil Stabilization																					
Crane	10			6	4.20	13.21	0.49	0.45	0.01	0.64	1,509.11	0.22	0.02	76.41	240.24	8.92	8.21	0.25	11.59	27,438.37	3.94
Boring Machine	10			6	3.53	7.24	0.44	0.40	0.01	0.49	661.53	0.11	0.01	64.17	131.56	7.99	7.35	0.13	8.89	12,027.78	1.98
Dump Truck	10	30	300	6	2.09	9.26	0.34	0.31	0.01	0.63	1,367.38	0.07	0.04	37.43	165.48	6.08	5.60	0.26	11.24	24,439.28	1.32
Trackhoe	10			6	1.44	2.96	0.18	0.17	0.00	0.20	270.63	0.04	0.00	32.09	65.78	3.99	3.67	0.07	4.44	6,013.89	0.99
Scraper	5			6	0.38	1.62	0.06	0.05	0.00	0.07	153.92	0.03	0.00	9.07	38.67	1.39	1.28	0.04	1.55	3,664.71	0.60
Dozer	10			6	1.57	3.22	0.20	0.18	0.00	0.22	294.68	0.05	0.00	32.09	65.78	3.99	3.67	0.07	4.44	6,013.89	0.99
Compactor	10			6	1.25	2.57	0.16	0.14	0.00	0.17	234.54	0.04	0.00	32.09	65.78	3.99	3.67	0.07	4.44	6,013.89	0.99
Construction																					
Dozer	10			6	0.22	0.46	0.03	0.03	0.00	0.03	42.10	0.01	0.00	21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66
Loader	10			6	1.28	5.46	0.20	0.18	0.01	0.22	517.19	0.09	0.01	26.68	113.68	4.08	3.75	0.12	4.55	10,774.88	1.77
Backhoe	10			6	5.13	10.52	0.64	0.59	0.01	0.71	962.22	0.16	0.01	42.78	87.70	5.32	4.90	0.09	5.93	8,018.52	1.32
Trackhoe	10			6	2.18	4.47	0.27	0.25	0.00	0.30	408.94	0.07	0.00	21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66
Crane	10			6	4.39	13.81	0.51	0.47	0.01	0.67	1,577.71	0.23	0.02	50.94	160.16	5.95	5.47	0.16	7.73	18,292.25	2.63
Boom-Truck	5	30	150	6	0.25	1.09	0.04	0.04	0.00	0.07	161.30	0.01	0.00	1.87	8.27	0.30	0.28	0.01	0.56	1,221.96	0.07
Water Truck	10		150	6	0.24	1.04	0.04	0.04	0.00	0.07	153.97	0.01	0.00	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03
Man-Lift	5			6	0.93	1.91	0.12	0.11	0.00	0.13	174.40	0.03	0.00	10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33
Compactor	10			6	0.51	1.05	0.06	0.06	0.00	0.07	96.22	0.02	0.00	21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66
Fork Lift	10			6	3.60	6.71	0.68	0.63	0.01	0.56	552.53	0.09	0.01	25.70	47.90	4.88	4.49	0.04	4.03	3,946.61	0.68
Welding Rigs	10			6	15.27	31.31	1.90	1.75	0.03	2.12	2,862.61	0.47	0.03	128.34	263.11	15.97	14.69	0.26	17.78	24,055.56	3.96
Air Compressor	5			6	1.75	3.27	0.33	0.31	0.00	0.27	269.42	0.05	0.00	9.14	17.03	1.74	1.60	0.02	1.43	1,403.24	0.24
Tanks (14-250,000 bbl)																					
Diesel Generator (200 KW)	5			6	1.85	1.92	0.21	0.20	0.00	0.19	188.59	0.04	0.00	11.07	11.50	1.28	1.18	0.01	1.11	1,127.60	0.21
Crane	10			6	14.98	47.09	1.75	1.61	0.05	2.27	5,377.92	0.77	0.06	101.88	320.32	11.89	10.94	0.33	15.45	36,584.49	5.25
Forklift	10			6	5.17	9.63	0.98	0.90	0.01	0.81	793.27	0.14	0.01	59.96	111.76	11.39	10.48	0.10	9.40	9,208.77	1.58
Manlift	5			6	0.64	1.32	0.08	0.07	0.00	0.09	120.28	0.02	0.00	10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33
			Fugitive Dust - Unmitigated				**4.77**	**0.99**								**31.00**	**6.45**				
				TOTAL	**72.88**	**181.14**	**14.47**	**9.92**	**0.19**	**11.00**	**18,750.46**	**2.74**	**0.23**	**828.21**	**2,094.27**	**140.96**	**107.61**	**2.20**	**126.70**	**216,893.72**	**31.19**
				UNMITIGATED TOTAL EMISSIONS	**109.02**	**275.60**	**29.65**	**16.49**	**0.29**	**16.71**	**28,920.14**	**4.11**	**0.38**	**1,261.04**	**3,243.11**	**243.18**	**169.97**	**3.45**	**195.93**	**341,170.22**	**47.81**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Un.Const-7. Proposed Project Site Construction Activities Average Daily Unmitigated Emissions (Phase I).

	ssions	Maximum Hourly Emissions								
Equipment	N_2O Emissions (lb/day)	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (lb/hr)
Site 1										
Soil Stabilization										
Crane	0.28	7.64	24.02	0.89	0.82	0.02	1.16	2,743.84	0.39	0.03
Boring Machine	0.14	6.42	13.16	0.80	0.73	0.01	0.89	1,202.78	0.20	0.01
Dump Truck	0.66	1.56	6.89	0.25	0.23	0.01	0.47	1,018.30	0.06	0.03
Construction										
Dozer	0.02	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
Loader	0.06	1.33	5.68	0.20	0.19	0.01	0.23	538.74	0.09	0.01
Backhoe	0.05	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
Trackhoe	0.02	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
Crane	0.09	2.55	8.01	0.30	0.27	0.01	0.39	914.61	0.13	0.01
Boom-Truck	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Water Truck	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Man-Lift	0.01	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
Compactor	0.02	1.07	2.19	0.13	0.12	0.00	0.15	200.46	0.03	0.00
Fork Lift	0.03	1.71	3.19	0.33	0.30	0.00	0.27	263.11	0.05	0.00
Welding Rigs	0.12	5.35	10.96	0.67	0.61	0.01	0.74	1,002.31	0.16	0.01
Air Compressor	0.01	0.91	1.70	0.17	0.16	0.00	0.14	140.32	0.02	0.00
Tanks (2-250,000 Bbl, 1-50,000 Bbl, 1-15,000Bl										
Diesel Generator (200 KW)	0.01	1.11	1.15	0.13	0.12	0.00	0.11	112.76	0.02	0.00
Crane	0.14	3.82	12.01	0.45	0.41	0.01	0.58	1,371.92	0.20	0.01
Forklift	0.05	2.57	4.79	0.49	0.45	0.00	0.40	394.66	0.07	0.00
Manlift	0.02	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
				1.85	**0.39**					
	1.78	**43.60**	**109.46**	**7.60**	**5.68**	**0.11**	**6.58**	**11,357.98**	**1.65**	**0.14**
Site 2 (New)										
Soil Stabilization										
Crane	0.28	7.64	24.02	0.89	0.82	0.02	1.16	2,743.84	0.39	0.03
Boring Machine	0.14	6.42	13.16	0.80	0.73	0.01	0.89	1,202.78	0.20	0.01
Dump Truck	0.66	1.56	6.89	0.25	0.23	0.01	0.47	1,018.30	0.06	0.03
Trackhoe	0.07	3.21	6.58	0.40	0.37	0.01	0.44	601.39	0.10	0.01
Scraper	0.04	1.81	7.73	0.28	0.26	0.01	0.31	732.94	0.12	0.01
Dozer	0.07	3.21	6.58	0.40	0.37	0.01	0.44	601.39	0.10	0.01
Compactor	0.07	3.21	6.58	0.40	0.37	0.01	0.44	601.39	0.10	0.01
Construction										
Dozer	0.05	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
Loader	0.13	2.67	11.37	0.41	0.38	0.01	0.46	1,077.49	0.18	0.01
Backhoe	0.09	4.28	8.77	0.53	0.49	0.01	0.59	801.85	0.13	0.01
Trackhoe	0.05	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
Crane	0.19	5.09	16.02	0.59	0.55	0.02	0.77	1,829.22	0.26	0.02
Boom-Truck	0.03	0.08	0.34	0.01	0.01	0.00	0.02	50.92	0.00	0.00
Water Truck	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Man-Lift	0.02	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
Compactor	0.05	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
Fork Lift	0.05	2.57	4.79	0.49	0.45	0.00	0.40	394.66	0.07	0.00
Welding Rigs	0.28	12.83	26.31	1.60	1.47	0.03	1.78	2,405.56	0.40	0.03
Air Compressor	0.02	1.83	3.41	0.35	0.32	0.00	0.29	280.65	0.05	0.00
Tanks (14-250,000 bbl)										
Diesel Generator (200 KW)	0.02	2.21	2.30	0.26	0.24	0.00	0.22	225.52	0.04	0.00
Crane	0.38	10.19	32.03	1.19	1.09	0.03	1.55	3,658.45	0.53	0.04
Forklift	0.11	6.00	11.18	1.14	1.05	0.01	0.94	920.88	0.16	0.01
Manlift	0.02	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
				1.29	**0.27**					
	2.84	**85.54**	**210.15**	**12.61**	**10.68**	**0.21**	**12.67**	**21,177.31**	**3.21**	**0.25**
	4.62	**129.15**	**319.62**	**20.22**	**16.36**	**0.33**	**19.25**	**32,535.29**	**4.86**	**0.40**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Un.Const-8. Proposed Project Site Construction Activities Average Daily Unmitigated Emissions (Phase 2).

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
Site 2 (New)																	
Construction																	
Dozer	Rubber Tired Dozers	160	(3)	3.03	6.22	0.377	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Loader	Rubber Tired Loaders	215	(2)	1.41	6.00	0.215	0.0063	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Backhoe	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.377	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.03	6.22	0.377	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Crane	Cranes	365	(1)	1.58	4.98	0.185	0.0051	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.0816	0.0058	- - -
Boom-Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	568.3	0.0816	0.0058	1,848
Water Truck	Off-Highway Trucks	175	(2)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	568.3	0.0935	0.0067	1,848
Man-Lift	Other Construction Equip.	160	(3)	3.03	6.22	0.377	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Compactor	Plate Compactor	160	(3)	3.03	6.22	0.377	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Fork Lift	Forklifts	105	(2)	3.70	6.90	0.703	0.0061	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.0975	0.0070	- - -
Welding Rigs	Welders	160	(3)	3.03	6.22	0.377	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Air Compressor	Other Construction Equip.	112	(1)	3.70	6.90	0.703	0.0061	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.0975	0.0070	- - -
Tanks (3-250,000 bbl)																	
Diesel Generator (200 KW)	Other Construction Equip.	45	(2)	5.58	5.79	0.646	0.0044	0.56	- - -	- - -	- - -	- - -	- - -	568.3	0.1074	0.0077	- - -
Crane	Cranes	365	(1)	1.58	4.98	0.185	0.0051	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.0816	0.0058	- - -
Forklift	Forklifts	105	(2)	3.70	6.90	0.703	0.0061	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.0975	0.0070	- - -
Manlift	Other Construction Equip.	160	(3)	3.03	6.22	0.377	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -

NOTES:

(1) Horsepower is obtained from the wharf construction equipment data.
(2) Horsepower is obtained from the POLA Trapac construction equipment data.
(3) Horsepower is obtained from the POLA Trapac construction equipment data using a similar construction equipment category.
(4) PM2.5 emissions were calculated by multiplying the PM2.5 fraction by the PM10 emissions for each source category. The PM2.5 fraction were obtained from the "SCAQMD Final - Methodology to Calculate Particulate Matter (PM)2.5 and PM 2.5 Significance Thresholds, Appendix A (October 2006)".
(5) Emission calculations assume 2 pick-up trucks.
(6) Horsepower is not available for Onroad Trucks from URBEMIS 2007. Therefore, the horsepower is obtained for Offroad Trucks from URBEMIS 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Un.Const-8. Proposed Project Site Construction Activities Average Daily Unmitigated Emissions (Phase 2).

								Project Total Emissions								
Equipment	Equipment Category	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use / Day hr / day	mph	Mile / day / vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
Site 2 (New)																
Construction																
Dozer	Rubber Tired Dozers	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Loader	Rubber Tired Loaders	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Backhoe	Tractors/Loaders/Backhoes	- - -	- - -	10			6	2.70	5.53	0.34	0.31	0.01	0.37	505.17	0.08	0.01
Trackhoe	Tractors/Loaders/Backhoes	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Crane	Cranes	- - -	- - -	10			6	1.53	4.80	0.18	0.16	0.00	0.23	548.77	0.08	0.01
Boom-Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	-	-	-	-	-	-	-	-	-
Water Truck	Off-Highway Trucks	0.10	0.05	10		150	6	0.12	0.52	0.02	0.02	0.00	0.04	276.26	0.05	0.00
Man-Lift	Other Construction Equip.	- - -	- - -	5			6	-	-	-	-	-	-	-	-	-
Compactor	Plate Compactor	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Fork Lift	Forklifts	- - -	- - -	10			6	2.13	3.98	0.41	0.37	0.00	0.33	327.57	0.06	0.00
Welding Rigs	Welders	- - -	- - -	10			6	6.10	12.50	0.76	0.70	0.01	0.84	1,142.64	0.19	0.01
Air Compressor	Other Construction Equip.	- - -	- - -	5			6	1.12	2.09	0.21	0.20	0.00	0.18	172.60	0.03	0.00
Tanks (3-250,000 bbl)																
Diesel Generator (200 KW)	Other Construction Equip.	- - -	- - -	5			6	0.80	0.83	0.09	0.08	0.00	0.08	81.19	0.02	0.00
Crane	Cranes	- - -	- - -	10			6	6.42	20.18	0.75	0.69	0.02	0.97	2,304.82	0.33	0.02
Forklift	Forklifts	- - -	- - -	10			6	0.23	0.43	0.04	0.04	0.00	0.04	35.52	0.01	0.00
Manlift	Other Construction Equip.	- - -	- - -	5			6	0.26	0.53	0.03	0.03	0.00	0.04	48.11	0.01	0.00
							Fugitive Dust - Unmitigated			**4.77**	**0.99**					
							TOTAL	**21.40**	**51.39**	**7.59**	**3.59**	**0.05**	**3.12**	**5,442.64**	**0.84**	**0.06**
							Total Emissions	**21.40**	**51.39**	**7.59**	**3.59**	**0.05**	**3.12**	**5,442.64**	**0.84**	**0.06**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Un.Const-8. Proposed Project Site Construction Activities Average Daily Unmitigated Emissions (Phase 2).

		Maximum Daily Emissions								
Equipment	**Equipment Category**	**CO Emissions (lb/day)**	**NO_x Emissions (lb/day)**	**PM_{10} Emissions (lb/day)**	**$PM_{2.5}$ Emissions (lb/day)**	**SO_x Emissions (lb/day)**	**VOC Emissions (lb/day)**	**CO_2 Emissions (lb/day)**	**CH_4 Emissions (lb/day)**	**N_2O Emissions (il/day)**
Site 2 (New)										
Construction										
Dozer	Rubber Tired Dozers	-	-	-	-	-	-	-	-	-
Loader	Rubber Tired Loaders	-	-	-	-	-	-	-	-	-
Backhoe	Tractors/Loaders/Backhoes	21.39	43.85	2.66	2.45	0.04	2.96	4,009.26	0.66	0.05
Trackhoe	Tractors/Loaders/Backhoes	-	-	-	-	-	-	-	-	-
Crane	Cranes	12.74	40.04	1.49	1.37	0.04	1.93	4,573.06	0.66	0.05
Boom-Truck	Delivery Trucks On-Road	-	-	-	-	-	-	-	-	-
Water Truck	Off-Highway Trucks	0.94	4.14	0.15	0.14	0.01	0.28	2,192.56	0.36	0.03
Man-Lift	Other Construction Equip.	-	-	-	-	-	-	-	-	-
Compactor	Plate Compactor	-	-	-	-	-	-	-	-	-
Fork Lift	Forklifts	17.13	31.93	3.25	2.99	0.03	2.69	2,631.08	0.45	0.03
Welding Rigs	Welders	64.17	131.56	7.99	7.35	0.13	8.89	12,027.78	1.98	0.14
Air Compressor	Other Construction Equip.	9.14	17.03	1.74	1.60	0.02	1.43	1,403.24	0.24	0.02
Tanks (3-250,000 bbl)										
Diesel Generator (200 KW)	Other Construction Equip.	11.07	11.50	1.28	1.18	0.01	1.11	1,127.60	0.21	0.02
Crane	Cranes	89.15	280.28	10.41	9.57	0.29	13.52	32,011.43	4.60	0.33
Forklift	Forklifts	25.70	47.90	4.88	4.49	0.04	4.03	3,946.61	0.68	0.05
Manlift	Other Construction Equip.	10.70	21.93	1.33	1.22	0.02	1.48	2,004.63	0.33	0.02
				31.00	**6.45**					
		262.11	**630.15**	**66.18**	**38.81**	**0.63**	**38.32**	**65,927.26**	**10.16**	**0.73**
		262.11	**630.15**	**66.18**	**38.81**	**0.63**	**38.32**	**65,927.26**	**10.16**	**0.73**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Un.Const-8. Proposed Project Site Construction Activities Average Daily Unmitigated Emissions (Phase 2).

		Maximum Hourly Emissions								
Equipment	Equipment Category	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (il/hr)
Site 2 (New)										
Construction										
Dozer	Rubber Tired Dozers	-	-	-	-	-	-	-	-	-
Loader	Rubber Tired Loaders	-	-	-	-	-	-	-	-	-
Backhoe	Tractors/Loaders/Backhoes	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
Trackhoe	Tractors/Loaders/Backhoes	-	-	-	-	-	-	-	-	-
Crane	Cranes	1.27	4.00	0.15	0.14	0.00	0.19	457.31	0.07	0.00
Boom-Truck	Delivery Trucks On-Road	-	-	-	-	-	-	-	-	-
Water Truck	Off-Highway Trucks	0.04	0.17	0.01	0.01	0.00	0.01	91.36	0.02	0.00
Man-Lift	Other Construction Equip.	-	-	-	-	-	-	-	-	-
Compactor	Plate Compactor	-	-	-	-	-	-	-	-	-
Fork Lift	Forklifts	1.71	3.19	0.33	0.30	0.00	0.27	263.11	0.05	0.00
Welding Rigs	Welders	6.42	13.16	0.80	0.73	0.01	0.89	1,202.78	0.20	0.01
Air Compressor	Other Construction Equip.	1.83	3.41	0.35	0.32	0.00	0.29	280.65	0.05	0.00
Tanks (3-250,000 bbl)										
Diesel Generator (200 KW)	Other Construction Equip.	2.21	2.30	0.26	0.24	0.00	0.22	225.52	0.04	0.00
Crane	Cranes	8.91	28.03	1.04	0.96	0.03	1.35	3,201.14	0.46	0.03
Forklift	Forklifts	2.57	4.79	0.49	0.45	0.00	0.40	394.66	0.07	0.00
Manlift	Other Construction Equip.	2.14	4.39	0.27	0.24	0.00	0.30	400.93	0.07	0.00
				1.29	**0.27**					
		29.25	**67.82**	**5.24**	**3.90**	**0.07**	**4.22**	**6,918.37**	**1.07**	**0.08**
		29.25	**67.82**	**5.24**	**3.90**	**0.07**	**4.22**	**6,918.37**	**1.07**	**0.08**

Table H.1.PP.Un.Const-9. Proposed Project Main Engines Average Daily Unmitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Distance (nautical miles)	Ship speed (knots)	Activity (hours)	Maximum Speed (knots)	Load Factor	MCR (kW)	Energy (kW-hr)	Fuel Type	Shipcalls (vessels/ yr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising - CW to VSR	23	14.7	1.56	15.8	0.805	10,300	12,979	Dist at 0.2%S	4.0	2,430	200	86	41	41	38	111
		Cruising - VSR to PZ	11	12	0.92	15.8	0.438	10,300	4,136	Dist at 0.2%S	4.0	774	64	27	13	13	12	35
		Cruising - PZ to Pilot	4.7	7	0.67	15.8	0.087	10,300	601	Dist at 0.2%S	4.0	113	9	4	2	2	2	5
		Maneuvering - Pilot to Berth		3	1.00	15.8	0.007	10,300	71	Dist at 0.2%S	4.0	13	1	0	0	0	0	1
	South Out	Maneuvering - Berth to Pilot		5	1.00	15.8	0.032	10,300	326	Dist at 0.2%S	4.0	61	5	2	1	1	1	3
		Cruising - Pilot to PZ	3.5	7	0.50	15.8	0.087	10,300	448	Dist at 0.2%S	4.0	84	7	3	1	1	1	4
		Cruising - PZ to VSR	12.5	12	1.04	15.8	0.438	10,300	4,700	Dist at 0.2%S	4.0	880	72	31	15	15	14	40
		Cruising - VSR to CW	24.5	14.7	1.67	15.8	0.805	10,300	13,825	Dist at 0.2%S	4.0	2,588	213	91	44	44	41	118
											TOTAL	**6,944**	**572**	**245**	**118**	**118**	**109**	**318**

Table H.1.PP.Un.Const-10. Proposed Project Auxiliary Generator Average Daily Unmitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Activity (hours)	MCR (kW)	Load Factor	Energy (kW-hr)	Fuel Type	Shipcalls (vessels/ yr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising	3.15	3,600	0.278	3,155	Dist at 0.2%S	4	483	38	14	10	9	7	32
		Maneuvering	2.00	3,600	0.278	2,002	Dist at 0.2%S	4	306	24	9	6	6	5	20
	South Out	Maneuvering	1.5	3,600	0.278	1,501	Dist at 0.2%S	4	230	18	7	5	4	4	15
		Cruising	3.21	3,600	0.278	3,211	Dist at 0.2%S	4	492	39	14	10	9	8	32
								TOTAL	**1,511**	**120**	**43**	**30**	**29**	**23**	**99**

Table H.1.PP.Un.Const-11. Proposed Project Berth Operations Average Daily Unmitigated Emissions from Stone Delivery.

Auxiliary Generator Pre-Pumping

Shipcalls (vessels/yr)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
4.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	2.5	383	30	11	8	7	6	25
					TOTAL		**383**	**30**	**11**	**8**	**7**	**6**	**25**

Auxiliary Generator Pumping

Shipcalls (vessels/yr)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
4.0	Panamax	Dist at 0.2%S	0.20	3,600	55.6%	11.0	3,371	267	97	68	65	52	221
					TOTAL		**3,371**	**267**	**97**	**68**	**65**	**52**	**221**

Auxiliary Generator Post-Pumping

Shipcalls (vessels/yr)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
4.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	1.0	153	12	4	3	3	2	10
					TOTAL		**153**	**12**	**4**	**3**	**3**	**2**	**10**

Table H.1.PP.Un.Const-12. Proposed Project Summary of Average Daily Unmitigated Vessel Emissions from Stone Delivery.

Mode	Equipment	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
Cruising	Main Engines	6,869	566	242	117	117	108	314
Cruising	Aux Generator	975	77	28	20	19	15	64
Maneuvering	Main Engines	74	6	3	1	1	1	3
Maneuvering	Aux Generator	536	42	15	11	10	8	35
Berth Operations	Aux Generator	3,907	309	112	78	75	60	256
Propulsion	TOTAL	8,454	691	289	149	148	132	417
Non-Propulsion	TOTAL	3,907	309	112	78	75	60	256
Total Emissions		**12,361**	**1,001**	**401**	**227**	**223**	**192**	**673**

Mode	Equipment	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Cruising	Main Engines	18.8	1.5	0.7	0.3	0.3	0.3	0.9
Cruising	Aux Generator	2.7	0.2	0.1	0.1	0.1	0.0	0.2
Maneuvering	Main Engines	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Maneuvering	Aux Generator	1.5	0.1	0.0	0.0	0.0	0.0	0.1
Berth Operations	Aux Generator	10.7	0.8	0.3	0.2	0.2	0.2	0.7
Propulsion	TOTAL	23.2	1.9	0.8	0.4	0.4	0.4	1.1
Non-Propulsion	TOTAL	10.7	0.8	0.3	0.2	0.2	0.2	0.7
Total Emissions		**34**	**3**	**1**	**1**	**1**	**1**	**2**

Table H.1.PP.Un.Const-13. Proposed Project Main Engines Maximum Daily Unmitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Distance (nautical miles)	Ship speed (knots)	Activity (hours)	Maximum Speed (knots)	Load Factor	MCR (kW)	Energy (kW-hr)	Fuel Type	Maximum Daily Shipcalls (vessels/day)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising - CW to VSR	23	14.7	1.56	15.8	0.805	10,300	12,979	Dist at 0.2%S	1.0	607	50	21	10	10	10	28
		Cruising - VSR to PZ	11	12	0.92	15.8	0.438	10,300	4,136	Dist at 0.2%S	1.0	194	16	7	3	3	3	9
		Cruising - PZ to Pilot	4.7	7	0.67	15.8	0.087	10,300	601	Dist at 0.2%S	1.0	28	2	1	0	0	0	1
		Maneuvering - Pilot to Berth		3	1.00	15.8	0.007	10,300	71	Dist at 0.2%S	1.0	3	0	0	0	0	0	0
	South Out	Maneuvering - Berth to Pilot		5	1.00	15.8	0.032	10,300	326	Dist at 0.2%S	1.0	15	1	1	0	0	0	1
		Cruising - Pilot to PZ	3.5	7	0.50	15.8	0.087	10,300	448	Dist at 0.2%S	1.0	21	2	1	0	0	0	1
		Cruising - PZ to VSR	12.5	12	1.04	15.8	0.438	10,300	4,700	Dist at 0.2%S	1.0	220	18	8	4	4	3	10
		Cruising - VSR to CW	24.5	14.7	1.67	15.8	0.805	10,300	13,825	Dist at 0.2%S	1.0	647	53	23	11	11	10	30
											TOTAL	**1,736**	**143**	**61**	**30**	**30**	**27**	**79**

Table H.1.PP.Un.Const-14. Proposed Project Auxiliary Generator Maximum Daily Unmitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Activity (hours)	MCR (kW)	Load Factor	Energy (kW-hr)	Fuel Type	Maximum Daily Shipcalls (vessels/day)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising	3.15	3,600	0.278	3,155	Dist at 0.2%S	1.0	121	10	3	2	2	2	8
		Maneuvering	2.00	3,600	0.278	2,002	Dist at 0.2%S	1.0	77	6	2	2	1	1	5
	South Out	Maneuvering	1.5	3,600	0.278	1,501	Dist at 0.2%S	1.0	57	5	2	1	1	1	4
		Cruising	3.21	3,600	0.278	3,211	Dist at 0.2%S	1.0	123	10	4	2	2	2	8
								TOTAL	**378**	**30**	**11**	**8**	**7**	**6**	**25**

Table H.1.PP.Un.Const-15. Proposed Project Berth Operations Maximum Daily Unmitigated Emissions from Stone Delivery.

Auxiliary Generator Pre-Pumping

Maximum Daily Shipcalls (vessels/day)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
1.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	2.5	96	8	3	2	2	1	6
					TOTAL		**96**	**8**	**3**	**2**	**2**	**1**	**6**

Auxiliary Generator Pumping

Maximum Daily Shipcalls (vessels/day)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
1.0	Panamax	Dist at 0.2%S	0.20	3,600	55.6%	11.0	843	67	24	17	16	13	55
					TOTAL		**843**	**67**	**24**	**17**	**16**	**13**	**55**

Auxiliary Generator Post-Pumping

Maximum Daily Shipcalls (vessels/day)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
1.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	1.0	38	3	1	1	1	1	3
					TOTAL		**38**	**3**	**1**	**1**	**1**	**1**	**3**

Table H.1.PP.Un.Const-16. Proposed Project Summary of Maximum Daily Unmitigated Vessel Emissions from Stone Delivery.

Mode	Equipment	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Cruising	Main Engines	1,717	141	61	29	29	27	79
Cruising	Aux Generator	244	19	7	5	5	4	16
Maneuvering	Main Engines	19	2	1	0	0	0	1
Maneuvering	Aux Generator	134	11	4	3	3	2	9
Berth Operations	Aux Generator	977	77	28	20	19	15	64
Propulsion	TOTAL	2,114	173	72	37	37	33	104
Non-Propulsion	TOTAL	977	77	28	20	19	15	64
Total Emissions		**3,090**	**250**	**100**	**57**	**56**	**48**	**168**

Table H.1.PP.Un.Const-17. Proposed Project Unmitigated Truck Emissions from Stone Delivery.

	Pounds Per Day						
Construction Activity/Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*	*PM2.5*
Haul Truck - Base (1)	4.4	12.4	40.4	0.06	1.5	1.5	1.3

Notes: (1) Within construction site area, assuming 1 mile of transport @ 5mph and 5 minutes of idling mode for each truck round trip.

Table H.1.PP.Mit.Const-1.
Proposed Project Construction Activities Summary of Peak Daily Mitigated Emissions (Phase I).

Construction Activity	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Pier 400 Marine Terminal and Wharf Construction	1,006	605	56.0	35	32	1
Pipeline Construction	1,774	1,226	147	87	74	2
Tank Farm Site 1	932	574	69	100	48	1
Tank Farm Site 2	1,645	1,095	127	112	72	2
Personal Owned Vehicles	401	622	45	21	17	1
TOTAL	**5,758**	**4,122**	**444**	**356**	**244**	**8**

Table H.1.PP.Mit.Const-1a.
Proposed Project Construction Activities Summary of Peak Daily Mitigated Emissions (Phase 2).

Construction Activity	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Tank Farm Site 2	494	346	36	64	28	1
Personal Owned Vehicles	244	387	28	13	11	0.65
TOTAL	**739**	**733**	**64**	**77**	**39**	**1**

Table H.1.PP.Mit.Const-2.
Proposed Project Construction Activities Summary of Average Daily Mitigated POV Emissions (Phase 1).
Time Slice 4/13/2009 - 6/5/2009

	ROG (lb/day)	NO_x (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Total	**67.73**	**547.21**	**703.26**	**0.97**	**153.21**	**49.43**
Building 01/19/2009-8/25/2010						
Building Off Road Diesel	4.02	18.66	12.06	0	0.67	0.61
Building 2/2/2009-8/27/2010						
Building Off Road Diesel	4.02	18.66	12.06	0	0.67	0.61
Building 4/13/2009-7/9/2010						
Building Off Road Diesel	4.02	18.66	12.06	0	0.67	0.61
Mass Grading 2/2/2009-6/5/2009						
Mass Grading Dust	0	0	0	0	62.72	13.1
Mass Grading Off Road Diesel	4.42	35.65	18.16	0	1.92	1.77
Mass Grading 2/16/2009-6/16/2009						
Mass Grading Dust	0	0	0	0	62.72	13.1
Mass Grading Off Road Diesel	4.42	35.65	18.16	0	1.92	1.77
Trenching 3/30/2009-6/11/2010						
Trenching Off Road Diesel	2.18	18.9	8.32	0	0.47	0.43
Off Road Total	23.08	146.18	80.82	0	131.76	32
Vendor and Worker Trips	**44.65**	**401.03**	**622.44**	**0.97**	**21.45**	**17.43**

Table H.1.PP.Mit.Const-3.
Proposed Project Construction Activities Summary of Average Daily Mitigated POV Emissions (Phase 2).
Time Slice 8/26/2010 - 8/27/2010

	ROG (lb/day)	NO_x (lb/day)	CO (lb/day)	SO_2 (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Total	**109.44**	**297.59**	**418.98**	**0.65**	**14.87**	**12.13**
Building 02/02/2009-08/27/2010						
Building Off Road Diesel	3.79	17.78	11.73	0	0.62	0.57
Building 08/25/2010-5/27/2011						
Building Off Road Diesel	3.79	17.78	11.73	0	0.62	0.57
Coating 08/25/2010-4/22/2011						
Architectural Coating	72.2	0	0	0	0	0
Trenching 08/25/2010-04/29/2011						
Trenching Off Road Diesel	2.06	17.69	8.22	0	0.44	0.4
Off Road Total	81.84	53.25	31.68	0	1.68	1.54
Vendor and Worker Trips	**27.6**	**244.34**	**387.3**	**0.65**	**13.19**	**10.59**

Table H.1.PP.Mit.Const-4. Proposed Project Wharf Construction Activities Maximum Daily Mitigated Emissions.

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
MOBILIZATION												57934	9	1	443	273	0.5000	17	15	26
MOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Heavy-Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
MOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,357.75	0.48	0.03	26	15	0.0303	1	1	1
Generator	1	23	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	230.53	0.04	0.00	2	2	0.0018	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Total Maximum Daily - Barges												22,050.93	3.24	0.23	167.62	100.88	0.1866	5.82	5.35	9.31
Total Maximum Daily - Workboat/Crewboat												9,622.22	1.38	0.10	73.14	44.02	0.0867	2.54	2.34	4.06
DEMOBILIZATION												57934	9	1	443	273	0.5000	17	15	26
DEMOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Heavy-Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
DEMOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,357.75	0.48	0.03	26	15	0.0303	1	1	1
Generator	1	23	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	230.53	0.04	0.00	2	2	0.0018	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Total Maximum Daily - Barges												22,050.93	3.24	0.23	167.62	100.88	0.1866	5.82	5.35	9.31
Total Maximum Daily - Workboat/Crewboat												9,622.22	1.38	0.10	73.14	44.02	0.0867	2.54	2.34	4.06
UNLOADING PLATFORM (2 EA. 40' x 40')												132306	19	1	1006	605	1.1196	35	32	56
DELIVER STEEL JACKET, DECK FRAME AND PILES																				
Tugboat	1	4,400	24	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	132,305.56	19.46	1.39	1006	605	1.1196	35	32	56
DELIVER LOADING ARMS																				
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
STAB & DRIVE CENTER JACKET PILE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	2	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	2,245.19	0.39	0.03	17	15	0.0240	1	1	2

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
GROUT MAIN PLATFORM LEGS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Truck (Highway)	1	210	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	611	0.03	0.02	1	1	0.0066	0	0	0
Grout Mixer/Pump	1	35	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	350.81	0.07	0.00	3	3	0.0027	0	0	0
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
SET STEEL DECK FRAMING STRUCTURES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
															0	0	0.0000	0	0	0
															0	0	0.0000	0	0	0
WELD STEEL DECK FRAMING STRUCTURES															0	0	0.0000	0	0	0
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	4	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1,924.44	0.36	0.03	17	14	0.0149	2	1	2
PAINT SPLICES																				
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
SET LOADING ARMS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL GANGWAY TOWER & CRANE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Total Maximum Daily - Barges												14,032.41	2.06	0.15	106.67	64.20	0.1187	3.70	3.41	5.93
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	36.57	22.01	0.0434	1.27	1.17	2.03
BREASTING DOLPHIN PLATFORMS (2 EA. @ 40' x 40'; 2 EA. @ 30' x 30')												132306	19	1	1006	605	1.1196	35	32	56
DELIVER STEEL JACKETS, DECK FRAMES AND PILES																				
Tugboat	1	4,400	24	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	132,305.56	19.46	1.39	1006	605	1.1196	35	32	56
DELIVER CATWALKS																				
Truck (Highway)	4	400	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	16,037.04	2.30	0.16	122	73	0.1446	4	4	7
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,658.45	0.53	0.04	28	17	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14,032.41	2.06	0.15	107	64	0.1187	4	3	6
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
PAINT SPLICES																				
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
SET CATWALK SECTIONS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Total Maximum Daily - Barges												14,032.41	2.06	0.15	106.67	64.20	0.1187	3.70	3.41	5.93
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	36.57	22.01	0.0434	1.27	1.17	2.03

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
MOORING DOLPHIN PLATFORMS												132306	19	1	1006	605	1.1196	35	32	56
DELIVER STEEL DECK FRAMING STRUCTURES AND PILES																				
Tugboat	1	4,400	24	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	132,305.56	19.46	1.39	1006	605	1.1196	35	32	56
SET TEMPLATE FOR PILE INSTALLATION																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
WELD STEEL DECK FRAMING STRUCTURE																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	4	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1,924.44	0.36	0.03	17	14	0.0149	2	1	2
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
PAINT SPLICES																				
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
DELIVER CATWALK SECTIONS																				
Truck (Highway)	6	400	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	3666	0.20	0.10	4	6	0.0397	0	0	2
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,658.45	0.53	0.04	28	17	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7
DRIVE STEEL CATWALK PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
SET & WELD STEEL CAP STRUCTURE																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
SET CATWALK SECTIONS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Crewboat	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	2	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1,122.59	0.19	0.01	10	7	0.0120	1	1	1
Welding Machine																				
Total Maximum Daily - Barges												8,018.52	1.18	0.08	60.95	36.69	0.0679	2.12	1.95	3.39
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	36.57	22.01	0.0434	1.27	1.17	2.03
TRESTLE ABUTMENTS												7876	1	0	47	33	0.0768	2	2	17
DELIVER STEEL PILES																				
Truck (Highway)	3	400	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,357.75	0.48	0.03	26	15	0.0303	1	1	1
EXCAVATE ROCK/GRADE AT TOP OF SLOPE																				
Excavator	1	168	8	568.3	0.094	0.0067	4.41	3.70	0.006	0.22	0.42	1,683.89	0.28	0.02	13	11	0.0183	1	1	1
Loader	1	233	8	568.3	0.094	0.0067	4.41	2.60	0.006	0.15	0.24	2,335.39	0.38	0.03	18	11	0.0258	1	1	1
DRIVE PILES																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,357.75	0.48	0.03	26	15	0.0303	1	1	1
Generator	1	23	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	230.53	0.04	0.00	2	2	0.0018	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
FORM & POUR ABUTMENT SECTION/APPROACH SLAB																				
Crawler Crane	1	335	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,357.75	0.48	0.03	26	15	0.0303	1	1	1
Truck (Highway)	1	210	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	611	0.03	0.02	1	1	0.0066	0	0	0
Generator	1	23	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	230.53	0.04	0.00	2	2	0.0018	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	13
INSTALL HANDRAIL																				
Welding Machine	2	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	962.22	0.18	0.01	9	7	0.0075	1	1	1
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Total Maximum Daily - Barges												0	0	0	0	0	0.0000	0	0	0
Total Maximum Daily - Workboat/Crewboat												0	0	0	0	0	0.0000	0	0	0
MAIN TRESTLE												34130	4	1	176	117	0.3211	6	6	15
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	21	400	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	12831	1	0.35	14	20	0.1389	1	1	6
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,658.45	0.53	0.04	28	17	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
INSTALL GUARDRAIL																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
INSTALL PIPING SUPPORTS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Total Maximum Daily - Barges												8,018.52	1.18	0.08	60.95	36.69	0.0679	2.12	1.95	3.39
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	36.57	22.01	0.0434	1.27	1.17	2.03
SINGLE LANE TRESTLE TO BREASTING DOLPHIN												31686	4	1	173	113	0.2947	6	6	14
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	17	400	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	10387	0.6	0.3	11	16	0.1124	1	1	5
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,658.45	0.53	0.04	28	17	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
INSTALL GUARDRAIL																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
UTILITY BOAT FLOATING DOCK & GANGWAY																				
DELIVER PC/PS PILES, FLOATS AND GANGWAY																				
Truck (Highway)	10	400	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	6109.82	0.33	0.17	7	9	0.0661	0	0	3
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,658.45	0.53	0.04	28	17	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7
DRIVE PC/PS CONCRETE PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
INSTALL CONCRETE FLOATS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Hrs/Day	CO_2 (g/hp-hr or g/mile)	CH_4 (g/hp-hr or g/mile)	N_2O (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	NO_x Emissions (lb/day)	CO Emissions (lb/day)	SO_2 Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	TOC Emissions (lb/day)
INSTALL GANGWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
WAVE SCREEN																				
DELIVER STEEL PILES AND PC/PS CONCRETE PANELS																				
Truck (Highway)	11	400	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	6721	0.4	0.2	7	10	0.0728	0	0	3
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,658.45	0.53	0.04	28	17	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Piledriving Hammer	1	1,100	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	11,025.46	1.62	0.12	84	50	0.0933	3	3	5
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
INSTALL PC/PS CONCRETE PANELS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Total Maximum Daily - Barges												8,018.52	1.18	0.08	60.95	36.69	0.0679	2.12	1.95	3.39
Total Maximum Daily - Workboat/Crewboat												4,811.11	0.69	0.05	36.57	22.01	0.0434	1.27	1.17	2.03
EMERGENCY SPILL BOOM PLATFORMS												24965	3	0.3	166	103	0.2219	6	5	11
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	6	400	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	3666	0.2	0.1	4	6	0.0397	0	0	2
Hydraulic Crane	1	365	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	3,658.45	0.53	0.04	28	17	0.0330	1	1	2
Tugboat	1	1,760	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17,640.74	2.59	0.19	134	81	0.1493	5	4	7
DRIVE STEEL PILES																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Work Tug	1	850	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,519.68	1.25	0.09	65	39	0.0721	2	2	4
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	112	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1,122.59	0.19	0.01	9	7	0.0120	0	0	1
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Welding Machine	1	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	481.11	0.09	0.01	4	3	0.0037	0	0	0
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Concrete Pump	1	80	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	801.85	0.14	0.01	7	5	0.0086	0	0	1
Concrete Trucks	3	285	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1833	0.10	0.05	2	3	0.0198	0	0	1
INSTALL GUARDRAIL																				
Derrick Barge	1	800	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8,018.52	1.18	0.08	61	37	0.0679	2	2	3
Workboat/Crewboat	1	480	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4,811.11	0.69	0.05	37	22	0.0434	1	1	2
Air Compressor	1	56	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	561.30	0.10	0.01	5	4	0.0060	0	0	1
Total Maximum Daily - Barges												8018.5	1.2	0.1	61.0	36.7	0.0679	2.1	1.9	3.4
Total Maximum Daily - Workboat/Crewboat												4811.1	0.7	0.0	36.6	22.0	0.0434	1.3	1.2	2.0
MITIGATED DAILY MAXIMUM EMISSIONS												**132306**	**19**	**1.4**	**1006**	**605**	**1.1196**	**35**	**32**	**56**

Notes:
1) Offroad equipment emission factors are obtained from ARB OFFROAD 2007 emissions model.
2) Heavy duty diesel truck emission factors are developed from EMFAC2007. Units in grams/mile for project year 2007.

Table H.1.PP.Mit.Const-5. Proposed Project Wharf Construction Activities Average Daily Mitigated Emissions.

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
MOBILIZATION			**15**																	
MOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	60.14	8.84E-03	6.32E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	36.08	5.18E-03	3.70E-04	0.3	0.2	0.0003	0.01	0.02
Welding Machine	2	48	15	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	7.22	1.36E-03	9.75E-05	0.1	0.1	0.0001	0.01	0.01
Heavy-Lift Derrick Barge	1	1,400	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	105.24	1.55E-02	1.11E-03	0.8	0.5	0.0009	0.03	0.04
Work Tug	1	850	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	63.90	9.40E-03	6.71E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	36.08	5.18E-03	3.70E-04	0.3	0.2	0.0003	0.01	0.02
Piledriving Hammer	1	1,100	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	82.69	1.22E-02	8.69E-04	0.6	0.4	0.0007	0.02	0.03
Air Compressor	1	112	15	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	8.42	1.44E-03	1.03E-04	0.1	0.1	0.0001	0.00	0.01
MOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	7	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	11.75	1.69E-03	1.20E-04	0.1	0.1	0.0001	0.00	0.00
Generator	1	23	7	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	0.81	1.50E-04	1.07E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	7	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.96	3.37E-04	2.41E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	7	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.68	3.18E-04	2.27E-05	0.0	0.0	0.0000	0.00	0.00
DEMOBILIZATION			**15**																	
DEMOBILIZATION OF MARINE EQUIPMENT																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	60.14	8.84E-03	6.32E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	36.08	5.18E-03	3.70E-04	0.3	0.2	0.0003	0.01	0.02
Welding Machine	2	48	15	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	7.22	1.36E-03	9.75E-05	0.1	0.1	0.0001	0.01	0.01
Heavy-Lift Derrick Barge	1	1,400	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	105.24	1.55E-02	1.11E-03	0.8	0.5	0.0009	0.03	0.04
Work Tug	1	850	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	63.90	9.40E-03	6.71E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	36.08	5.18E-03	3.70E-04	0.3	0.2	0.0003	0.01	0.02
Piledriving Hammer	1	1,100	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	82.69	1.22E-02	8.69E-04	0.6	0.4	0.0007	0.02	0.03
Air Compressor	1	112	15	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	8.42	1.44E-03	1.03E-04	0.1	0.1	0.0001	0.00	0.01
DEMOBILIZATION OF LANDSIDE EQUIPMENT																				
Crawler Crane	1	335	5	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	8.39	1.21E-03	8.61E-05	0.1	0.0	0.0001	0.00	0.00
Generator	1	23	5	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	0.58	1.07E-04	7.64E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	5	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.40	2.41E-04	1.72E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	5	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.20	2.27E-04	1.62E-05	0.0	0.0	0.0000	0.00	0.00
UNLOADING PLATFORM (2 EA. 40' x 40')			**60**																	
DELIVER STEEL JACKET, DECK FRAME AND PILES																				
Tugboat	1	4,400	1	24	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	66.15	9.73E-03	6.95E-04	0.5	0.3	0.0006	0.02	0.03
DELIVER LOADING ARMS																				
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14.03	2.06E-03	1.47E-04	0.1	0.1	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.00
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
STAB & DRIVE CENTER JACKET PILE																				
Heavy Lift Derrick Barge	1	1,400	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	7.02	1.03E-03	7.37E-05	0.1	0.0	0.0001	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Piledriving Hammer	1	1,100	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	5.51	8.11E-04	5.79E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	112	1	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14.03	2.06E-03	1.47E-04	0.1	0.1	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.00
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	8	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	56.13	8.25E-03	5.90E-04	0.4	0.3	0.0005	0.01	0.02
Work Tug	1	850	8	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	34.08	5.01E-03	3.58E-04	0.3	0.2	0.0003	0.01	0.01
Workboat/Crewboat	1	480	8	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	19.24	2.76E-03	1.97E-04	0.1	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	8	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	44.10	6.49E-03	4.63E-04	0.3	0.2	0.0004	0.01	0.02
Air Compressor	2	112	8	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	8.98	1.54E-03	1.10E-04	0.1	0.1	0.0001	0.00	0.01
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	3	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	21.05	3.10E-03	2.21E-04	0.2	0.1	0.0002	0.01	0.01
Work Tug	1	850	3	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	12.78	1.88E-03	1.34E-04	0.1	0.1	0.0001	0.00	0.01
Workboat/Crewboat	1	480	3	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	7.22	1.04E-03	7.40E-05	0.1	0.0	0.0001	0.00	0.00
Welding Machine	2	48	3	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
GROUT MAIN PLATFORM LEGS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	24.06	3.54E-03	2.53E-04	0.2	0.1	0.0002	0.01	0.01
Truck (Highway)	1	210	6	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1.83	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
Grout Mixer/Pump	1	35	6	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.05	1.99E-04	1.42E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	14.43	2.07E-03	1.48E-04	0.1	0.1	0.0001	0.00	0.01
SET STEEL DECK FRAMING STRUCTURES																				
Heavy Lift Derrick Barge	1	1,400	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	7.02	1.03E-03	7.37E-05	0.1	0.0	0.0001	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
WELD STEEL DECK FRAMING STRUCTURES																				
Derrick Barge	1	800	3	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	12.03	1.77E-03	1.26E-04	0.1	0.1	0.0001	0.00	0.01

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
Workboat/Crewboat	1	480	3	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	7.22	1.04E-03	7.40E-05	0.1	0.0	0.0001	0.00	0.00
Welding Machine	4	48	3	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	2.89	5.46E-04	3.90E-05	0.0	0.0	0.0000	0.00	0.00
PAINT SPLICES																				
Air Compressor	1	56	3	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.84	1.44E-04	1.03E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	11	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	44.10	6.49E-03	4.63E-04	0.3	0.2	0.0004	0.01	0.02
Workboat/Crewboat	1	480	11	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	26.46	3.80E-03	2.71E-04	0.2	0.1	0.0002	0.01	0.01
Welding Machine	1	48	11	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	2.65	5.00E-04	3.57E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	11	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	3.09	5.30E-04	3.78E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	0.92	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
INSTALL HANDRAIL																				
Welding Machine	2	48	6	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	2.89	5.46E-04	3.90E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	6	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
SET LOADING ARMS																				
Derrick Barge	1	800	31	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	124.29	1.83E-02	1.31E-03	0.9	0.6	0.0011	0.03	0.05
Workboat/Crewboat	1	480	31	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	74.57	1.07E-02	7.65E-04	0.6	0.3	0.0007	0.02	0.03
Air Compressor	1	56	31	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	8.70	1.49E-03	1.07E-04	0.1	0.1	0.0001	0.00	0.01
INSTALL GANGWAY TOWER & CRANE																				
Heavy Lift Derrick Barge	1	1,400	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	14.03	2.06E-03	1.47E-04	0.1	0.1	0.0001	0.00	0.01
Work Tug	1	850	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.00
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	2	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.48	9.10E-05	6.50E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	2	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	1	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.24	4.55E-05	3.25E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	24.06	3.54E-03	2.53E-04	0.2	0.1	0.0002	0.01	0.01
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	14.43	2.07E-03	1.48E-04	0.1	0.1	0.0001	0.00	0.01
Welding Machine	1	48	6	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	6	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
BREASTING DOLPHIN PLATFORMS (2 EA. @ 40' x 40'; 2 EA. @ 30' x 30')			**120**																	
DELIVER STEEL JACKETS, DECK FRAMES AND PILES																				
Tugboat	1	4,400	1	24	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	66.15	9.73E-03	6.95E-04	0.5	0.3	0.0006	0.02	0.03
DELIVER CATWALKS																				
Truck (Highway)	4	400	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	8.02	1.15E-03	8.22E-05	0.1	0.0	0.0001	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
SET TEMPLATE FOR PILE INSTALLATION																				
Heavy Lift Derrick Barge	1	1,400	25	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	175.40	2.58E-02	1.84E-03	1.3	0.8	0.0015	0.05	0.07
Work Tug	1	850	25	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	106.50	1.57E-02	1.12E-03	0.8	0.5	0.0009	0.03	0.04
Workboat/Crewboat	1	480	25	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	60.14	8.63E-03	6.17E-04	0.5	0.3	0.0005	0.02	0.03
Welding Machine	2	48	25	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	12.03	2.27E-03	1.62E-04	0.1	0.1	0.0001	0.01	0.01
SET STEEL JACKET ASSEMBLIES ONTO CENTER PILE																				
Heavy Lift Derrick Barge	1	1,400	4	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	28.06	4.13E-03	2.95E-04	0.2	0.1	0.0002	0.01	0.01
Work Tug	1	850	4	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17.04	2.51E-03	1.79E-04	0.1	0.1	0.0001	0.00	0.01
Workboat/Crewboat	1	480	4	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	9.62	1.38E-03	9.87E-05	0.1	0.0	0.0001	0.00	0.00
Welding Machine	2	48	4	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.92	3.64E-04	2.60E-05	0.0	0.0	0.0000	0.00	0.00
DRIVE STEEL PILES																				
Heavy Lift Derrick Barge	1	1,400	30	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	210.49	3.10E-02	2.21E-03	1.6	1.0	0.0018	0.06	0.09
Work Tug	1	850	30	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	127.79	1.88E-02	1.34E-03	1.0	0.6	0.0011	0.03	0.05
Workboat/Crewboat	1	480	30	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	72.17	1.04E-02	7.40E-04	0.5	0.3	0.0007	0.02	0.03
Piledriving Hammer	1	1,100	30	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	165.38	2.43E-02	1.74E-03	1.3	0.8	0.0014	0.04	0.07
Air Compressor	1	112	30	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	16.84	2.89E-03	2.06E-04	0.1	0.1	0.0002	0.01	0.02
WELD STEEL JACKET TO PILES																				
Heavy Lift Derrick Barge	1	1,400	8	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	56.13	8.25E-03	5.90E-04	0.4	0.3	0.0005	0.01	0.02
Work Tug	1	850	8	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	34.08	5.01E-03	3.58E-04	0.3	0.2	0.0003	0.01	0.01
Workboat/Crewboat	1	480	8	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	19.24	2.76E-03	1.97E-04	0.1	0.1	0.0002	0.01	0.01
Welding Machine	1	48	8	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.92	3.64E-04	2.60E-05	0.0	0.0	0.0000	0.00	0.00
PAINT SPLICES																				
Air Compressor	1	56	6	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE PADS																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	60.14	8.84E-03	6.32E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	36.08	5.18E-03	3.70E-04	0.3	0.2	0.0003	0.01	0.02
Welding Machine	1	48	15	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	3.61	6.82E-04	4.87E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	15	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	4.21	7.22E-04	5.16E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Pump	1	80	2	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.80	1.38E-04	9.83E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	2	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1.83	0.00	0.00	0.00	0.00	0.0000	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
INSTALL HANDRAIL																				
Welding Machine	2	48	5	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	2.41	4.55E-04	3.25E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	5	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.40	2.41E-04	1.72E-05	0.0	0.0	0.0000	0.00	0.00
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	4	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	16.04	2.36E-03	1.68E-04	0.1	0.1	0.0001	0.00	0.01
Work Tug	1	850	4	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	17.04	2.51E-03	1.79E-04	0.1	0.1	0.0001	0.00	0.01
Workboat/Crewboat	1	480	4	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	9.62	1.38E-03	9.87E-05	0.1	0.0	0.0001	0.00	0.00
Welding Machine	1	48	4	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	4	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.12	1.93E-04	1.38E-05	0.0	0.0	0.0000	0.00	0.00
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	1	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.24	4.55E-05	3.25E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL MARINE FENDERS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	24.06	3.54E-03	2.53E-04	0.2	0.1	0.0002	0.01	0.01
Work Tug	1	850	6	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	25.56	3.76E-03	2.68E-04	0.2	0.1	0.0002	0.01	0.01
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	14.43	2.07E-03	1.48E-04	0.1	0.1	0.0001	0.00	0.01
Welding Machine	1	48	6	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	6	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
SET CATWALK SECTIONS																				
Derrick Barge	1	800	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.02	1.18E-03	8.42E-05	0.1	0.0	0.0001	0.00	0.00
Work Tug	1	850	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.00
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	2	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.48	9.10E-05	6.50E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	2	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
MOORING DOLPHIN PLATFORMS			**90**																	
DELIVER STEEL DECK FRAMING STRUCTURES AND PILES																				
Tugboat	1	4,400	1	24	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	66.15	9.73E-03	6.95E-04	0.5	0.3	0.0006	0.02	0.03
SET TEMPLATE FOR PILE INSTALLATION																				
Derrick Barge	1	800	13	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	52.12	7.66E-03	5.47E-04	0.4	0.2	0.0004	0.01	0.02
Workboat/Crewboat	1	480	13	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	31.27	4.49E-03	3.21E-04	0.2	0.1	0.0003	0.01	0.01
Welding Machine	2	48	13	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	6.25	1.18E-03	8.45E-05	0.1	0.0	0.0000	0.00	0.01
Air Compressor	1	56	13	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	3.65	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
DRIVE STEEL PILES																				
Derrick Barge	1	800	50	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	200.46	2.95E-02	2.11E-03	1.5	0.9	0.0017	0.05	0.08
Work Tug	1	850	50	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	212.99	3.13E-02	2.24E-03	1.6	1.0	0.0018	0.06	0.09
Workboat/Crewboat	1	480	50	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	120.28	1.73E-02	1.23E-03	0.9	0.6	0.0011	0.03	0.05
Piledriving Hammer	1	1,100	50	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	275.64	4.05E-02	2.90E-03	2.1	1.3	0.0023	0.07	0.12
Air Compressor	1	112	50	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	28.06	4.81E-03	3.44E-04	0.2	0.2	0.0003	0.01	0.03
WELD STEEL DECK FRAMING STRUCTURE																				
Derrick Barge	1	800	19	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	76.18	1.12E-02	8.00E-04	0.6	0.3	0.0006	0.02	0.03
Work Tug	1	850	19	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	80.94	1.19E-02	8.50E-04	0.6	0.4	0.0007	0.02	0.03
Workboat/Crewboat	1	480	19	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	45.71	6.56E-03	4.69E-04	0.3	0.2	0.0004	0.01	0.02
Welding Machine	4	48	19	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	18.28	3.46E-03	2.47E-04	0.2	0.1	0.0001	0.01	0.02
Air Compressor	1	56	19	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	5.33	9.15E-04	6.53E-05	0.0	0.0	0.0001	0.00	0.01
PAINT SPLICES																				
Air Compressor	1	56	7	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.96	3.37E-04	2.41E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	94	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	376.87	5.54E-02	3.96E-03	2.9	1.7	0.0032	0.10	0.16
Workboat/Crewboat	1	480	94	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	226.12	3.25E-02	2.32E-03	1.7	1.0	0.0020	0.06	0.10
Welding Machine	1	48	94	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	22.61	4.28E-03	3.05E-04	0.2	0.2	0.0002	0.02	0.02
Air Compressor	1	56	94	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	26.38	4.53E-03	3.23E-04	0.2	0.2	0.0003	0.01	0.03
Concrete Pump	1	80	6	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	2.41	4.13E-04	2.95E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	6	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	5.50	0.00	0.00	0.01	0.01	0.0001	0.00	0.00
INSTALL HANDRAIL																				
Welding Machine	2	48	8	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	3.85	7.28E-04	5.20E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	8	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	2.25	3.85E-04	2.75E-05	0.0	0.0	0.0000	0.00	0.00
INSTALL 175-TON QUICK RELEASE MOORING HOOKS																				
Derrick Barge	1	800	6	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	24.06	3.54E-03	2.53E-04	0.2	0.1	0.0002	0.01	0.01
Work Tug	1	850	6	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	25.56	3.76E-03	2.68E-04	0.2	0.1	0.0002	0.01	0.01
Workboat/Crewboat	1	480	6	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	14.43	2.07E-03	1.48E-04	0.1	0.1	0.0001	0.00	0.01
Welding Machine	1	48	6	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.44	2.73E-04	1.95E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	6	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.68	2.89E-04	2.06E-05	0.0	0.0	0.0000	0.00	0.00
INSTALL CATHODIC PROTECTION SYSTEM																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	1	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.24	4.55E-05	3.25E-06	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
DELIVER CATWALK SECTIONS																				
Truck (Highway)	6	400	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	12.03	1.73E-03	1.23E-04	0.1	0.1	0.0001	0.00	0.01
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
DRIVE STEEL CATWALK PILES																				
Derrick Barge	1	800	7	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	28.06	4.13E-03	2.95E-04	0.2	0.1	0.0002	0.01	0.01
Work Tug	1	850	7	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	29.82	4.38E-03	3.13E-04	0.2	0.1	0.0003	0.01	0.01
Workboat/Crewboat	1	480	7	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	16.84	2.42E-03	1.73E-04	0.1	0.1	0.0002	0.00	0.01
Piledriving Hammer	1	1,100	7	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	38.59	5.67E-03	4.05E-04	0.3	0.2	0.0003	0.01	0.02
Air Compressor	1	112	7	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	3.93	6.74E-04	4.81E-05	0.0	0.0	0.0000	0.00	0.00
SET & WELD STEEL CAP STRUCTURE																				
Derrick Barge	1	800	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.02	1.18E-03	8.42E-05	0.1	0.0	0.0001	0.00	0.00
Work Tug	1	850	2	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.52	1.25E-03	8.95E-05	0.1	0.0	0.0001	0.00	0.00
Workboat/Crewboat	1	480	2	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	4.81	6.91E-04	4.93E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	112	2	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	1.12	1.93E-04	1.38E-05	0.0	0.0	0.0000	0.00	0.00
SET CATWALK SECTIONS																				
Derrick Barge	1	800	5	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	20.05	2.95E-03	2.11E-04	0.2	0.1	0.0002	0.01	0.01
Work Tug	1	850	5	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	21.30	3.13E-03	2.24E-04	0.2	0.1	0.0002	0.01	0.01
Workboat	1	480	5	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	12.03	1.73E-03	1.23E-04	0.1	0.1	0.0001	0.00	0.01
Crewboat	1	48	5	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.20	2.27E-04	1.62E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	2	56	5	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	2.81	4.81E-04	3.44E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine																				
TRESTLE ABUTMENTS			**29**																	
DELIVER STEEL PILES																				
Truck (Highway)	3	400	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	0.92	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
Crawler Crane	1	335	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.68	2.41E-04	1.72E-05	0.0	0.0	0.0000	0.00	0.00
EXCAVATE ROCK/GRADE AT TOP OF SLOPE																				
Excavator	1	168	2	8	568.3	0.094	0.0067	4.41	3.70	0.006	0.22	0.42	1.68	2.77E-04	1.98E-05	0.0	0.0	0.0000	0.00	0.00
Loader	1	233	2	8	568.3	0.094	0.0067	4.41	2.60	0.006	0.15	0.24	2.34	3.84E-04	2.74E-05	0.0	0.0	0.0000	0.00	0.00
DRIVE PILES																				
Crawler Crane	1	335	9	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	15.11	2.17E-03	1.55E-04	0.1	0.1	0.0001	0.00	0.01
Generator	1	23	9	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	1.04	1.92E-04	1.37E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	9	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	2.53	4.33E-04	3.10E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	9	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	2.16	4.09E-04	2.92E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR ABUTMENT SECTION/APPROACH SLAB																				
Crawler Crane	1	335	7	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	11.75	1.69E-03	1.20E-04	0.1	0.1	0.0001	0.00	0.00
Truck (Highway)	1	210	15	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	4.58	0.00	0.00	0.00	0.01	0.0000	0.00	0.00
Generator	1	23	15	8	568.3	0.105	0.0075	5.04	4.90	0.004	0.60	0.56	1.73	3.21E-04	2.29E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	15	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	4.21	7.22E-04	5.16E-05	0.0	0.0	0.0000	0.00	0.00
Welding Machine	1	48	15	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	3.61	6.82E-04	4.87E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Pump	1	80	2	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.80	1.38E-04	9.83E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	2	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1.83	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
INSTALL HANDRAIL																				
Welding Machine	2	48	2	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	0.96	1.82E-04	1.30E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	2	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
MAIN TRESTLE			**30**																	
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	21	400	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	6.42	0.00	0.00	0.01	0.01	0.0001	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
DRIVE STEEL PILES																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	36.08	5.31E-03	3.79E-04	0.3	0.2	0.0003	0.01	0.02
Work Tug	1	850	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	38.34	5.64E-03	4.03E-04	0.3	0.2	0.0003	0.01	0.02
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	49.61	7.30E-03	5.21E-04	0.4	0.2	0.0004	0.01	0.02
Air Compressor	1	112	9	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	5.05	8.67E-04	6.19E-05	0.0	0.0	0.0001	0.00	0.01
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	15	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	60.14	8.84E-03	6.32E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	15	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	36.08	5.18E-03	3.70E-04	0.3	0.2	0.0003	0.01	0.02
Welding Machine	1	48	15	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	3.61	6.82E-04	4.87E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	15	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	4.21	7.22E-04	5.16E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	0.92	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	34	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	136.31	2.00E-02	1.43E-03	1.0	0.6	0.0012	0.04	0.06
Workboat/Crewboat	1	480	34	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	81.79	1.17E-02	8.39E-04	0.6	0.4	0.0007	0.02	0.03
Welding Machine	1	48	34	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	8.18	1.55E-03	1.10E-04	0.1	0.1	0.0001	0.01	0.01
Air Compressor	1	56	34	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	9.54	1.64E-03	1.17E-04	0.1	0.1	0.0001	0.01	0.01
Concrete Pump	1	80	3	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.20	2.06E-04	1.47E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	3	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	2.75	0.00	0.00	0.00	0.00	0.0000	0.00	0.00

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
INSTALL GUARDRAIL																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL PIPING SUPPORTS																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	36.08	5.31E-03	3.79E-04	0.3	0.2	0.0003	0.01	0.02
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Air Compressor	1	56	9	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	2.53	4.33E-04	3.10E-05	0.0	0.0	0.0000	0.00	0.00
SINGLE LANE TRESTLE TO BREASTING DOLPHIN			**100**																	
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	17	400	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	5.19	0.00	0.00	0.01	0.01	0.0001	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
DRIVE STEEL PILES																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	36.08	5.31E-03	3.79E-04	0.3	0.2	0.0003	0.01	0.02
Work Tug	1	850	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	38.34	5.64E-03	4.03E-04	0.3	0.2	0.0003	0.01	0.02
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	49.61	7.30E-03	5.21E-04	0.4	0.2	0.0004	0.01	0.02
Air Compressor	1	112	9	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	5.05	8.67E-04	6.19E-05	0.0	0.0	0.0001	0.00	0.01
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	8	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	32.07	4.72E-03	3.37E-04	0.2	0.1	0.0003	0.01	0.01
Workboat/Crewboat	1	480	8	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	19.24	2.76E-03	1.97E-04	0.1	0.1	0.0002	0.01	0.01
Welding Machine	1	48	8	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	1.92	3.64E-04	2.60E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	8	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	2.25	3.85E-04	2.75E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	0.92	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	34	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	136.31	2.00E-02	1.43E-03	1.0	0.6	0.0012	0.04	0.06
Workboat/Crewboat	1	480	34	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	81.79	1.17E-02	8.39E-04	0.6	0.4	0.0007	0.02	0.03
Welding Machine	1	48	34	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	8.18	1.55E-03	1.10E-04	0.1	0.1	0.0001	0.01	0.01
Air Compressor	1	56	34	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	9.54	1.64E-03	1.17E-04	0.1	0.1	0.0001	0.01	0.01
Concrete Pump	1	80	3	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	1.20	2.06E-04	1.47E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	3	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	2.75	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
INSTALL GUARDRAIL																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
UTILITY BOAT FLOATING DOCK & GANGWAY																				
DELIVER PC/PS PILES, FLOATS AND GANGWAY																				
Truck (Highway)	10	400	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	3.05	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
DRIVE PC/PS CONCRETE PILES																				
Derrick Barge	1	800	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	36.08	5.31E-03	3.79E-04	0.3	0.2	0.0003	0.01	0.02
Work Tug	1	850	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	38.34	5.64E-03	4.03E-04	0.3	0.2	0.0003	0.01	0.02
Workboat/Crewboat	1	480	9	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	21.65	3.11E-03	2.22E-04	0.2	0.1	0.0002	0.01	0.01
Piledriving Hammer	1	1,100	9	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	49.61	7.30E-03	5.21E-04	0.4	0.2	0.0004	0.01	0.02
Air Compressor	1	112	9	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	5.05	8.67E-04	6.19E-05	0.0	0.0	0.0001	0.00	0.01
INSTALL CONCRETE FLOATS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	112	1	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
INSTALL GANGWAY																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Work Tug	1	850	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.26	6.26E-04	4.47E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	112	1	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	0.56	9.63E-05	6.88E-06	0.0	0.0	0.0000	0.00	0.00
WAVE SCREEN																				
DELIVER STEEL PILES AND PC/PS CONCRETE PANELS																				
Truck (Highway)	11	400	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	3.36	0.00	0.00	0.00	0.01	0.0000	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
DRIVE STEEL PILES																				
Derrick Barge	1	800	19	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	76.18	1.12E-02	8.00E-04	0.6	0.3	0.0006	0.02	0.03
Work Tug	1	850	19	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	80.94	1.19E-02	8.50E-04	0.6	0.4	0.0007	0.02	0.03
Workboat/Crewboat	1	480	19	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	45.71	6.56E-03	4.69E-04	0.3	0.2	0.0004	0.01	0.02
Piledriving Hammer	1	1,100	19	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	104.74	1.54E-02	1.10E-03	0.8	0.5	0.0009	0.03	0.04
Air Compressor	1	112	19	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	10.66	1.83E-03	1.31E-04	0.1	0.1	0.0001	0.00	0.01

CONSTRUCTION DETAIL	# of Equipment Needed	hp	Duration (days)	Hrs/Day	CO_2 Emission Factor (g/hp-hr or g/mile)	CH_4 Emission Factor (g/hp-hr or g/mile)	N_2O Emission Factor (g/hp-hr or g/mile)	NO_x Emission Factor (g/hp-hr or g/mile)	CO Emission Factor (g/hp-hr or g/mile)	SO_2 Emission Factor (g/hp-hr or g/mile)	PM_{10} Emission Factor (g/hp-hr or g/mile)	TOC Emission Factor (g/hp-hr or g/mile)	CO_2 Emissions (ton/yr)	CH_4 Emissions (ton/yr)	N_2O Emissions (ton/yr)	NO_x Emissions (ton/yr)	CO Emissions (ton/yr)	SO_2 Emissions (ton/yr)	PM_{10} Emissions (ton/yr)	TOC Emissions (ton/yr)
INSTALL PC/PS CONCRETE PANELS																				
Derrick Barge	1	800	14	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	56.13	8.25E-03	5.90E-04	0.4	0.3	0.0005	0.01	0.02
Work Tug	1	850	14	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	59.64	8.77E-03	6.26E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	14	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	33.68	4.83E-03	3.45E-04	0.3	0.2	0.0003	0.01	0.01
Welding Machine	1	48	14	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	3.37	6.37E-04	4.55E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	14	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	3.93	6.74E-04	4.81E-05	0.0	0.0	0.0000	0.00	0.00
EMERGENCY SPILL BOOM PLATFORMS			77																	
DELIVER STEEL PILES AND BULB-TEE SECTIONS																				
Truck (Highway)	6	400	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1.83	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
Hydraulic Crane	1	365	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	1.83	2.63E-04	1.88E-05	0.0	0.0	0.0000	0.00	0.00
Tugboat	1	1,760	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	8.82	1.30E-03	9.26E-05	0.1	0.0	0.0001	0.00	0.00
DRIVE STEEL PILES																				
Derrick Barge	1	800	10	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	40.09	5.90E-03	4.21E-04	0.3	0.2	0.0003	0.01	0.02
Work Tug	1	850	10	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	42.60	6.26E-03	4.47E-04	0.3	0.2	0.0004	0.01	0.02
Workboat/Crewboat	1	480	10	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	24.06	3.45E-03	2.47E-04	0.2	0.1	0.0002	0.01	0.01
Air Compressor	1	112	10	8	568.3	0.097	0.0070	4.41	3.70	0.006	0.22	0.58	5.61	9.63E-04	6.88E-05	0.0	0.0	0.0001	0.00	0.01
FORM & POUR CONCRETE CAPS																				
Derrick Barge	1	800	48	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	192.44	2.83E-02	2.02E-03	1.5	0.9	0.0016	0.05	0.08
Workboat/Crewboat	1	480	48	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	115.47	1.66E-02	1.18E-03	0.9	0.5	0.0010	0.03	0.05
Welding Machine	1	48	48	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	11.55	2.18E-03	1.56E-04	0.1	0.1	0.0001	0.01	0.01
Air Compressor	1	56	48	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	13.47	2.31E-03	1.65E-04	0.1	0.1	0.0001	0.01	0.01
Concrete Pump	1	80	2	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.80	1.38E-04	9.83E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	2	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	1.83	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
SET BULB-TEE GIRDERS																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
FORM & POUR CONCRETE ROADWAY																				
Derrick Barge	1	800	16	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	64.15	9.43E-03	6.74E-04	0.5	0.3	0.0005	0.02	0.03
Workboat/Crewboat	1	480	16	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	38.49	5.52E-03	3.95E-04	0.3	0.2	0.0003	0.01	0.02
Welding Machine	1	48	16	8	568.3	0.107	0.0077	5.04	4.10	0.004	0.45	0.56	3.85	7.28E-04	5.20E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	16	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	4.49	7.70E-04	5.50E-05	0.0	0.0	0.0000	0.00	0.00
Concrete Pump	1	80	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.40	6.88E-05	4.91E-06	0.0	0.0	0.0000	0.00	0.00
Concrete Trucks	3	285	1	8	1,848	0.10	0.05	2.00	2.83	0.020	0.10	0.85	0.92	0.00	0.00	0.00	0.00	0.0000	0.00	0.00
INSTALL GUARDRAIL																				
Derrick Barge	1	800	1	8	568.3	0.084	0.0060	4.32	2.60	0.005	0.15	0.24	4.01	5.90E-04	4.21E-05	0.0	0.0	0.0000	0.00	0.00
Workboat/Crewboat	1	480	1	8	568.3	0.082	0.0058	4.32	2.60	0.005	0.15	0.24	2.41	3.45E-04	2.47E-05	0.0	0.0	0.0000	0.00	0.00
Air Compressor	1	56	1	8	568.3	0.097	0.0070	5.04	3.70	0.006	0.30	0.58	0.28	4.81E-05	3.44E-06	0.0	0.0	0.0000	0.00	0.00
TOTAL MITIGATED ANNUAL EMISSIONS													**7,658**	**1.13**	**0.08**	**58**	**36**	**0.0663**	**2**	**3**

Notes:
1) Offroad equipment emission factors are obtained from ARB OFFROAD 2007 emissions model.
2) Heavy duty diesel truck emission factors are developed from EMFAC2007. Units in grams/mile for project year 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Construction Activities Average Daily Mitigated Emissions.

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
42" - 36" - Terminal Island																	
1 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
2 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Semi Truck with Trailer	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Water Truck	Delivery Trucks On-Road	175	(2)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Dump Truck	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Vacuum Truck	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Air Comressor 175	Other Construction Equipment	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Air Comressor 475	Other Construction Equipment	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Air Comressor 1200	Other Construction Equipment	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Backhoe Crawler	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Bending Machine	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
All Terrain Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24			- - -			568.3	0.082	0.0058	- - -
Truck Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24			- - -			568.3	0.082	0.0058	- - -
Sideboom	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Loader	Rubber Tired Loaders	215	(2)	2.6	4.41	0.15	0.006	0.24			- - -			568.3	0.094	0.0067	- - -
Reed Screen	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Asphalt Rollers	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Forklift	Forklifts	105	(2)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Generator	Other Construction Equipment	45	(2)	4.1	5.04	0.45	0.004	0.56			- - -			568.3	0.107	0.0077	- - -
Concrete Saw	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Weld Rig	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Fill Pump	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Hydro Test Pump	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Auger Bore Machine	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Construction Activities Average Daily Mitigated Emissions.

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
36" -HDD/Open Cut / Assist HDD - Wilimington																	
1 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
2 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Semi Truck with Trailer	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Water Truck	Delivery Trucks On-Road	175	(2)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Dump Truck	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Vacuum Truck	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Air Comressor	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Air Comressor	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Air Comressor	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Backhoe Crawler	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Bending Machine	Other Construction Equip.	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
All Terrain Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24			- - -			568.3	0.082	0.0058	- - -
Truck Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24			- - -			568.3	0.082	0.0058	- - -
Sideboom	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Loader	Rubber Tired Loaders	215	(2)	2.6	4.41	0.15	0.006	0.24			- - -			568.3	0.094	0.0067	- - -
Reed Screen	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Asphalt Rollers	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Forklift	Forklifts	105	(2)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	- - -
Generator	Other Construction Equipment	45	(2)	4.1	5.04	0.45	0.004	0.56			- - -			568.3	0.107	0.0077	- - -
Concrete Saw	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Weld Rig	Welders	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Fill Pump	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Hydro Test Pump	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Auger Bore Machine	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Drill Rig	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Central Unit	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Mud Recycling System	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Mixing Tank	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Pumps	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Cleaning System	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Survey System	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Frac Tanks	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Light Towers	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -
Dumpster	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	- - -

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Construction Activities Average Daily Mitigated Emissions.

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
24" - Valero																	
1 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
2 Ton Flatbed	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Semi Truck with Trailer	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Water Truck	Delivery Trucks On-Road	175	(2)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Dump Truck	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Vacuum Truck	Delivery Trucks On-Road	479	(5)	- - -	2.0	0.1	- - -	- - -	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848
Air Comressor 175	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	
Air Comressor 475	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	
Air Comressor 1200	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	
Bending Machine	Other Construction Equipment	160	(2)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	
All Terrain Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24			- - -			568.3	0.082	0.0058	
Truck Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24			- - -			568.3	0.082	0.0058	
Sideboom	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	
Loader	Rubber Tired Loaders	215	(2)	2.6	4.41	0.15	0.006	0.24			- - -			568.3	0.094	0.0067	
Asphalt Rollers	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	
Forklift	Forklifts	105	(2)	3.7	4.41	0.22	0.006	0.58			- - -			568.3	0.097	0.0070	
Generator	Other Construction Equipment	45	(2)	4.1	5.04	0.45	0.004	0.56			- - -			568.3	0.107	0.0077	
Weld Rig	Welders	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	
Fill Pump	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	
Hydro Test Pump	Other Construction Equipment	160	(3)	3.7	4.41	0.22	0.006	0.42			- - -			568.3	0.094	0.0067	

NOTES:
(1) Horsepower is obtained from the wharf construction equipment data.
(2) Horsepower is obtained from the POLA Trapac construction equipment data.
(3) Horsepower is obtained from the POLA Trapac construction equipment data using a similar construction equipment category.
(4) PM2.5 emissions were calculated by multiplying the PM2.5 fraction by the PM10 emissions for each source category. The PM2.5 fraction were obtained from the "SCAQMD Final - Methodology to Calculate Particulate Matter (PM)2.5 and PM 2.5 Significance Thresholds, Appendix A (October 2006)".
(5) Horsepower is not available for Onroad Trucks from URBEMIS 2007. Therefore, the horsepower is obtained for Offroad Trucks from URBEMIS 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Co

								Total Emissions								
Equipment	Equipment Category	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use/Day hr / day	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
42" - 36" - Terminal Island																
1 Ton Flatbed	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.17	0.74	0.03	0.03	0.0012	0.05	109.98	0.006	0.003
2 Ton Flatbed	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.42	1.86	0.07	0.06	0.0030	0.13	274.94	0.015	0.007
Semi Truck with Trailer	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.08	0.35	0.01	0.01	0.0006	0.02	51.32	0.003	0.001
Water Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.22	0.97	0.04	0.03	0.0015	0.07	142.97	0.008	0.004
Dump Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.67	2.98	0.11	0.10	0.0048	0.20	439.91	0.024	0.012
Vacuum Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.00	0.01	0.00	0.00	0.0000	0.00	1.83	0.000	0.000
Air Comressor 175	Other Construction Equipment	- - -	- - -	5			6	1.07	1.27	0.06	0.06	0.0018	0.17	164.18	0.03	0.0020
Air Comressor 475	Other Construction Equipment	- - -	- - -	5			6	0.99	1.18	0.06	0.05	0.0016	0.15	151.55	0.03	0.0019
Air Comressor 1200	Other Construction Equipment	- - -	- - -	5			6	0.01	0.02	0.00	0.00	0.0000	0.00	2.10	0.00	0.0000
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	- - -	- - -	10			6	3.05	3.64	0.18	0.17	0.0051	0.35	469.08	0.08	0.0055
Backhoe Crawler	Tractors/Loaders/Backhoes	- - -	- - -	10			6	2.82	3.36	0.17	0.15	0.0047	0.32	433.00	0.07	0.0051
Bending Machine	Other Construction Equipment	- - -	- - -	5			6	0.51	0.61	0.03	0.03	0.0008	0.06	78.18	0.01	0.0009
All Terrain Crane	Cranes	- - -	- - -	10			6	1.76	2.92	0.10	0.09	0.0035	0.16	384.14	0.06	0.0039
Truck Crane	Cranes	- - -	- - -	10			6	3.26	5.42	0.19	0.17	0.0064	0.30	713.40	0.10	0.0073
Sideboom	Other Construction Equipment	- - -	- - -	5			6	1.88	2.24	0.11	0.10	0.0031	0.21	288.67	0.05	0.0034
Loader	Rubber Tired Loaders	- - -	- - -	10			6	2.88	4.89	0.17	0.15	0.0070	0.27	630.33	0.10	0.0074
Reed Screen	Other Construction Equipment	- - -	- - -	5			6	0.12	0.14	0.01	0.01	0.0002	0.01	18.04	0.00	0.0002
Asphalt Rollers	Other Construction Equipment	- - -	- - -	5			6	1.02	1.21	0.06	0.06	0.0017	0.12	156.36	0.03	0.0018
Forklift	Forklifts	- - -	- - -	10			6	0.77	0.92	0.05	0.04	0.0013	0.12	118.40	0.02	0.0015
Generator	Other Construction Equipment	- - -	- - -	5			6	0.16	0.20	0.02	0.02	0.0002	0.02	21.99	0.00	0.0003
Concrete Saw	Other Construction Equipment	- - -	- - -	5			6	0.47	0.56	0.03	0.03	0.0008	0.05	72.17	0.01	0.0008
Weld Rig	Other Construction Equipment	- - -	- - -	5			6	3.76	4.48	0.22	0.21	0.0063	0.43	577.33	0.10	0.0068
Fill Pump	Other Construction Equipment	- - -	- - -	5			6	0.08	0.09	0.00	0.00	0.0001	0.01	12.03	0.00	0.0001
Hydro Test Pump	Other Construction Equipment	- - -	- - -	5			6	0.04	0.05	0.00	0.00	0.0001	0.00	6.01	0.00	0.0001
Auger Bore Machine	Other Construction Equipment	- - -	- - -	5			6	0.16	0.19	0.01	0.01	0.0003	0.02	24.06	0.00	0.0003
							TOTAL	**26.37**	**40.29**	**1.72**	**1.58**	**0.0559**	**3.24**	**5,341.97**	**0.75**	**0.08**
							Fugitive Dust - Unmitigated			**0.92**	**0.19**					
							Fugitive Dust - Mitigated			**0.37**	**0.08**					
							MITIGATED GRAND TOTAL	**26.37**	**40.29**	**2.09**	**1.66**	**0.0559**	**3.24**	**5,341.97**	**0.75**	**0.08**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Co

								Total Emissions								
Equipment	Equipment Category	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use/Day hr / day	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
36" -HDD/Open Cut / Assist HDD - Wilimington																
1 Ton Flatbed	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.12	0.55	0.02	0.02	0.0009	0.04	80.65	0.00	0.00
2 Ton Flatbed	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.98	4.32	0.16	0.15	0.0069	0.29	637.87	0.03	0.02
Semi Truck with Trailer	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.06	0.27	0.01	0.01	0.0004	0.02	40.32	0.00	0.00
Water Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.17	0.74	0.03	0.03	0.0012	0.05	109.98	0.01	0.00
Dump Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.04	0.20	0.01	0.01	0.0003	0.01	29.33	0.00	0.00
Vacuum Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.00	0.01	0.00	0.00	0.0000	0.00	1.83	0.00	0.00
Air Comressor	Other Construction Equip.	- - -	- - -	5			6	0.82	0.98	0.05	0.04	0.0014	0.13	126.29	0.02	0.0015
Air Comressor	Other Construction Equip.	- - -	- - -	5			6	0.66	0.78	0.04	0.04	0.0011	0.10	101.03	0.02	0.0012
Air Comressor	Other Construction Equip.	- - -	- - -	5			6	0.03	0.03	0.00	0.00	0.0000	0.00	4.21	0.00	0.0001
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	- - -	- - -	10			6	5.32	6.35	0.32	0.29	0.0089	0.60	817.89	0.13	0.0096
Backhoe Crawler	Tractors/Loaders/Backhoes	- - -	- - -	10			6	5.32	6.35	0.32	0.29	0.0089	0.60	817.89	0.13	0.0096
Bending Machine	Other Construction Equip.	- - -	- - -	5			6	0.08	0.09	0.00	0.00	0.0001	0.01	12.03	0.00	0.0001
All Terrain Crane	Cranes	- - -	- - -	10			6	6.28	10.43	0.36	0.33	0.0124	0.58	1,371.92	0.20	0.0141
Truck Crane	Cranes	- - -	- - -	10			6	3.01	5.01	0.17	0.16	0.0059	0.28	658.52	0.09	0.0068
Sideboom	Other Construction Equipment	- - -	- - -	5			6	1.25	1.49	0.07	0.07	0.0021	0.14	192.44	0.03	0.0023
Loader	Rubber Tired Loaders	- - -	- - -	10			6	0.59	1.00	0.03	0.03	0.0014	0.05	129.30	0.02	0.0015
Reed Screen	Other Construction Equipment	- - -	- - -	5			6	0.12	0.14	0.01	0.01	0.0002	0.01	18.04	0.00	0.0002
Asphalt Rollers	Other Construction Equipment	- - -	- - -	5			6	0.12	0.14	0.01	0.01	0.0002	0.01	18.04	0.00	0.0002
Forklift	Forklifts	- - -	- - -	10			6	2.98	3.55	0.18	0.16	0.0049	0.47	457.81	0.08	0.0056
Generator	Other Construction Equipment	- - -	- - -	5			6	2.05	2.52	0.23	0.21	0.0022	0.28	284.16	0.05	0.0038
Concrete Saw	Other Construction Equipment	- - -	- - -	5			6	0.08	0.09	0.00	0.00	0.0001	0.01	12.03	0.00	0.0001
Weld Rig	Welders	- - -	- - -	10			6	5.01	5.97	0.30	0.27	0.0084	0.57	769.78	0.13	0.0090
Fill Pump	Other Construction Equipment	- - -	- - -	5			6	0.04	0.05	0.00	0.00	0.0001	0.00	6.01	0.00	0.0001
Hydro Test Pump	Other Construction Equipment	- - -	- - -	5			6	0.02	0.02	0.00	0.00	0.0000	0.00	3.01	0.00	0.0000
Auger Bore Machine	Other Construction Equipment	- - -	- - -	5			6	0.08	0.09	0.00	0.00	0.0001	0.01	12.03	0.00	0.0001
Drill Rig	Other Construction Equipment	- - -	- - -	5			6	0.59	0.70	0.03	0.03	0.0010	0.07	90.21	0.01	0.0011
Central Unit	Other Construction Equipment	- - -	- - -	5			6	0.59	0.70	0.03	0.03	0.0010	0.07	90.21	0.01	0.0011
Mud Recycling System	Other Construction Equipment	- - -	- - -	5			6	0.59	0.70	0.03	0.03	0.0010	0.07	90.21	0.01	0.0011
Mixing Tank	Other Construction Equipment	- - -	- - -	5			6	0.59	0.70	0.03	0.03	0.0010	0.07	90.21	0.01	0.0011
Pumps	Other Construction Equipment	- - -	- - -	5			6	1.17	1.40	0.07	0.06	0.0020	0.13	180.42	0.03	0.0021
Cleaning System	Other Construction Equipment	- - -	- - -	5			6	0.59	0.70	0.03	0.03	0.0010	0.07	90.21	0.01	0.0011
Survey System	Other Construction Equipment	- - -	- - -	5			6	0.59	0.70	0.03	0.03	0.0010	0.07	90.21	0.01	0.0011
Frac Tanks	Other Construction Equipment	- - -	- - -	5			6	2.35	2.80	0.14	0.13	0.0039	0.27	360.83	0.06	0.0042
Light Towers	Other Construction Equipment	- - -	- - -	5			6	2.35	2.80	0.14	0.13	0.0039	0.27	360.83	0.06	0.0042
Dumpster	Other Construction Equipment	- - -	- - -	5			6	0.59	0.70	0.03	0.03	0.0010	0.07	90.21	0.01	0.0011
							TOTAL	**45.23**	**63.09**	**2.92**	**2.68**	**0.0848**	**5.42**	**8,245.94**	**1.23**	**0.11**
							Fugitive Dust - Unmitigated			**2.46**	**0.51168**					
							Fugitive Dust - Mitigated			**0.984**	**0.205**					
							MITIGATED GRAND TOTAL	**45.23**	**63.09**	**3.90**	**2.89**	**0.0848**	**5.42**	**8,245.94**	**1.23**	**0.11**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Co

								Total Emissions								
Equipment	Equipment Category	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use/Day hr / day	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
24" - Valero																
1 Ton Flatbed	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.04	0.20	0.01	0.01	0.0003	0.01	29.33	0.0016	0.0008
2 Ton Flatbed	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.11	0.50	0.02	0.02	0.0008	0.03	73.32	0.0040	0.0020
Semi Truck with Trailer	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.02	0.10	0.00	0.00	0.0002	0.01	14.66	0.0008	0.0004
Water Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.02	0.10	0.00	0.00	0.0002	0.01	14.66	0.0008	0.0004
Dump Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.04	0.20	0.01	0.01	0.0003	0.01	29.33	0.0016	0.0008
Vacuum Truck	Delivery Trucks On-Road	0.10	0.05	5	30	150	6	0.00	0.01	0.00	0.00	0.0000	0.00	1.83	0.0001	0.0000
Air Comressor 175	Other Construction Equip.			5			6	0.33	0.39	0.02	0.02	0.0005	0.05	50.52	0.01	0.001
Air Comressor 475	Other Construction Equip.			5			6	0.04	0.05	0.00	0.00	0.0001	0.01	6.31	0.00	0.000
Air Comressor 1200	Other Construction Equip.			5			6	0.03	0.03	0.00	0.00	0.0000	0.00	4.21	0.00	0.000
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes			10			6	0.94	1.12	0.06	0.05	0.0016	0.11	144.33	0.02	0.002
Bending Machine	Other Construction Equipment			5			6	0.12	0.14	0.01	0.01	0.0002	0.01	18.04	0.00	0.000
All Terrain Crane	Cranes			10			6	0.50	0.83	0.03	0.03	0.0010	0.05	109.75	0.02	0.001
Truck Crane	Cranes			10			6	0.75	1.25	0.04	0.04	0.0015	0.07	164.63	0.02	0.002
Sideboom	Other Construction Equipment			5			6	0.23	0.28	0.01	0.01	0.0004	0.03	36.08	0.01	0.000
Loader	Rubber Tired Loaders			10			6	0.67	1.13	0.04	0.04	0.0016	0.06	145.46	0.02	0.002
Asphalt Rollers	Other Construction Equipment			5			6	0.16	0.19	0.01	0.01	0.0003	0.02	24.06	0.00	0.000
Forklift	Forklifts			10			6	0.26	0.31	0.02	0.01	0.0004	0.04	39.47	0.01	0.000
Generator	Other Construction Equipment			5			6	0.04	0.05	0.00	0.00	0.0000	0.01	5.07	0.00	0.000
Weld Rig	Welders			10			6	1.25	1.49	0.07	0.07	0.0021	0.14	192.44	0.03	0.002
Fill Pump	Other Construction Equipment			5			6	0.04	0.05	0.00	0.00	0.0001	0.00	6.01	0.00	0.000
Hydro Test Pump	Other Construction Equipment			5			6	0.02	0.02	0.00	0.00	0.0000	0.00	3.01	0.00	0.000
							TOTAL	**5.62**	**8.43**	**0.36**	**0.33**	**0.0116**	**0.67**	**1,112.54**	**0.16**	**0.02**
							Fugitive Dust - Unmitigated			**0.49**	**0.10192**					
							Fugitive Dust - Mitigated			**0.196**	**0.0408**					
							MITIGATED GRAND TOTAL	**5.62**	**8.43**	**0.55**	**0.37**	**0.0116**	**0.67**	**1,112.54**	**0.16**	**0.02**
							MITIGATED GRAND TOTAL - All Pipelines	**77**	**112**	**7**	**5**	**0.1523**	**9**	**14,700**	**2**	**0**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Co

		Maximum Daily Emissions									Maximum Hourly Emissions								
Equipment	**Equipment Category**	**CO Emissions (lb/day)**	**NO_x Emissions (lb/day)**	**PM_{10} Emissions (lb/day)**	**$PM_{2.5}$ Emissions (lb/day)**	**SO_x Emissions (lb/day)**	**VOC Emissions (lb/day)**	**CO_2 Emissions (lb/day)**	**CH_4 Emissions (lb/day)**	**N_2O Emissions (lb/day)**	**CO Emissions (lb/hr)**	**NO_x Emissions (lb/hr)**	**PM_{10} Emissions (lb/hr)**	**$PM_{2.5}$ Emissions (lb/hr)**	**SO_x Emissions (lb/hr)**	**VOC Emissions (lb/hr)**	**CO_2 Emissions (lb/hr)**	**CH_4 Emissions (lb/hr)**	**N_2O Emissions (lb/hr)**
42" - 36" - Terminal Island																			
1 Ton Flatbed	Delivery Trucks On-Road	1.87	8.27	0.30	0.28	0.01	0.56	1,221.96	0.07	0.03	0.08	0.34	0.01	0.01	0.00	0.02	50.92	0.00	0.00
2 Ton Flatbed	Delivery Trucks On-Road	4.68	20.69	0.76	0.70	0.03	1.41	3,054.91	0.17	0.08	0.19	0.86	0.03	0.03	0.00	0.06	127.29	0.01	0.00
Semi Truck with Trailer	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Water Truck	Delivery Trucks On-Road	2.81	12.41	0.45	0.42	0.02	0.84	1,832.95	0.10	0.05	0.12	0.52	0.02	0.02	0.00	0.04	76.37	0.00	0.00
Dump Truck	Delivery Trucks On-Road	9.36	41.37	1.51	1.39	0.07	2.81	6,109.82	0.33	0.17	0.39	1.72	0.06	0.06	0.00	0.12	254.58	0.01	0.01
Vacuum Truck	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Air Comressor 175	Other Construction Equipment	13.70	16.33	0.81	0.75	0.02	2.15	2,104.86	0.36	0.03	2.74	3.27	0.16	0.15	0.00	0.43	420.97	0.07	0.01
Air Comressor 475	Other Construction Equipment	13.70	16.33	0.81	0.75	0.02	2.15	2,104.86	0.36	0.03	2.74	3.27	0.16	0.15	0.00	0.43	420.97	0.07	0.01
Air Comressor 1200	Other Construction Equipment	4.57	5.44	0.27	0.25	0.01	0.72	701.62	0.12	0.01	0.91	1.09	0.05	0.05	0.00	0.14	140.32	0.02	0.00
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	39.15	46.67	2.33	2.14	0.07	4.44	6,013.89	0.99	0.07	3.92	4.67	0.23	0.21	0.01	0.44	601.39	0.10	0.01
Backhoe Crawler	Tractors/Loaders/Backhoes	39.15	46.67	2.33	2.14	0.07	4.44	6,013.89	0.99	0.07	3.92	4.67	0.23	0.21	0.01	0.44	601.39	0.10	0.01
Bending Machine	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
All Terrain Crane	Cranes	20.92	34.76	1.21	1.11	0.04	1.93	4,573.06	0.66	0.05	2.09	3.48	0.12	0.11	0.00	0.19	457.31	0.07	0.00
Truck Crane	Cranes	41.84	69.53	2.41	2.22	0.08	3.86	9,146.12	1.31	0.09	4.18	6.95	0.24	0.22	0.01	0.39	914.61	0.13	0.01
Sideboom	Other Construction Equipment	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26	0.66	0.05	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Loader	Rubber Tired Loaders	36.97	62.71	2.13	1.96	0.09	3.41	8,081.16	1.33	0.09	3.70	6.27	0.21	0.20	0.01	0.34	808.12	0.13	0.01
Reed Screen	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Asphalt Rollers	Other Construction Equipment	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63	0.33	0.02	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Forklift	Forklifts	8.57	10.21	0.51	0.47	0.01	1.34	1,315.54	0.23	0.02	0.86	1.02	0.05	0.05	0.00	0.13	131.55	0.02	0.00
Generator	Other Construction Equipment	2.03	2.50	0.22	0.21	0.00	0.28	281.90	0.05	0.00	0.41	0.50	0.04	0.04	0.00	0.06	56.38	0.01	0.00
Concrete Saw	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Weld Rig	Other Construction Equipment	52.21	62.22	3.10	2.86	0.09	5.93	8,018.52	1.32	0.09	10.44	12.44	0.62	0.57	0.02	1.19	1,603.70	0.26	0.02
Fill Pump	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Hydro Test Pump	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Auger Bore Machine	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
		371.72	**557.73**	**24.13**	**22.20**	**0.78**	**45.73**	**73,824.81**	**10.43**	**1.06**	**52.42**	**70.08**	**3.21**	**2.95**	**0.10**	**6.22**	**9,122.34**	**1.42**	**0.11**
				9.72	**2.02**								**0.41**	**0.08**					
				3.89	**0.81**								**0.16**	**0.03**					
		371.72	**557.73**	**28.02**	**23.01**	**0.78**	**45.73**	**73,824.81**	**10.43**	**1.06**	**52.42**	**70.08**	**3.37**	**2.98**	**0.10**	**6.22**	**9,122.34**	**1.42**	**0.11**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Co

		Maximum Daily Emissions									Maximum Hourly Emissions								
Equipment	**Equipment Category**	**CO Emissions (lb/day)**	**NO_x Emissions (lb/day)**	**PM_{10} Emissions (lb/day)**	**$PM_{2.5}$ Emissions (lb/day)**	**SO_x Emissions (lb/day)**	**VOC Emissions (lb/day)**	**CO_2 Emissions (lb/day)**	**CH_4 Emissions (lb/day)**	**N_2O Emissions (lb/day)**	**CO Emissions (lb/hr)**	**NO_x Emissions (lb/hr)**	**PM_{10} Emissions (lb/hr)**	**$PM_{2.5}$ Emissions (lb/hr)**	**SO_x Emissions (lb/hr)**	**VOC Emissions (lb/hr)**	**CO_2 Emissions (lb/hr)**	**CH_4 Emissions (lb/hr)**	**N_2O Emissions (lb/hr)**
36" -HDD/Open Cut / Assist HDD - Wilimington																			
1 Ton Flatbed	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
2 Ton Flatbed	Delivery Trucks On-Road	6.55	28.96	1.06	0.97	0.05	1.97	4,276.87	0.23	0.12	0.27	1.21	0.04	0.04	0.00	0.08	178.20	0.01	0.00
Semi Truck with Trailer	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Water Truck	Delivery Trucks On-Road	2.81	12.41	0.45	0.42	0.02	0.84	1,832.95	0.10	0.05	0.12	0.52	0.02	0.02	0.00	0.04	76.37	0.00	0.00
Dump Truck	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Vacuum Truck	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Air Comressor	Other Construction Equip.	9.14	10.89	0.54	0.50	0.02	1.43	1,403.24	0.24	0.02	1.83	2.18	0.11	0.10	0.00	0.29	280.65	0.05	0.00
Air Comressor	Other Construction Equip.	13.70	16.33	0.81	0.75	0.02	2.15	2,104.86	0.36	0.03	2.74	3.27	0.16	0.15	0.00	0.43	420.97	0.07	0.01
Air Comressor	Other Construction Equip.	9.14	10.89	0.54	0.50	0.02	1.43	1,403.24	0.24	0.02	1.83	2.18	0.11	0.10	0.00	0.29	280.65	0.05	0.00
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	52.21	62.22	3.10	2.86	0.09	5.93	8,018.52	1.32	0.09	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Backhoe Crawler	Tractors/Loaders/Backhoes	52.21	62.22	3.10	2.86	0.09	5.93	8,018.52	1.32	0.09	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Bending Machine	Other Construction Equip.	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
All Terrain Crane	Cranes	41.84	69.53	2.41	2.22	0.08	3.86	9,146.12	1.31	0.09	4.18	6.95	0.24	0.22	0.01	0.39	914.61	0.13	0.01
Truck Crane	Cranes	83.69	139.05	4.83	4.44	0.16	7.73	18,292.25	2.63	0.19	8.37	13.91	0.48	0.44	0.02	0.77	1,829.22	0.26	0.02
Sideboom	Other Construction Equipment	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26	0.66	0.05	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Loader	Rubber Tired Loaders	12.32	20.90	0.71	0.65	0.03	1.14	2,693.72	0.44	0.03	1.23	2.09	0.07	0.07	0.00	0.11	269.37	0.04	0.00
Reed Screen	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Asphalt Rollers	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Forklift	Forklifts	25.70	30.63	1.53	1.41	0.04	4.03	3,946.61	0.68	0.05	2.57	3.06	0.15	0.14	0.00	0.40	394.66	0.07	0.00
Generator	Other Construction Equipment	16.27	20.00	1.79	1.64	0.02	2.22	2,255.21	0.43	0.03	3.25	4.00	0.36	0.33	0.00	0.44	451.04	0.09	0.01
Concrete Saw	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Weld Rig	Welders	52.21	62.22	3.10	2.86	0.09	5.93	8,018.52	1.32	0.09	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Fill Pump	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Hydro Test Pump	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Auger Bore Machine	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Drill Rig	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Central Unit	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Mud Recycling System	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Mixing Tank	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Pumps	Other Construction Equipment	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63	0.33	0.02	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Cleaning System	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Survey System	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Frac Tanks	Other Construction Equipment	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26	0.66	0.05	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Light Towers	Other Construction Equipment	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26	0.66	0.05	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Dumpster	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
		564.24	**780.59**	**35.46**	**32.62**	**1.05**	**66.44**	**101,919.38**	**15.37**	**1.30**	**78.76**	**102.27**	**4.88**	**4.49**	**0.14**	**9.21**	**13,216.11**	**2.10**	**0.16**
				8.205	**1.71**								**0.34**	**0.07**					
				3.28	**0.68**								**0.137**	**0.028**					
		564.24	**780.59**	**38.74**	**33.31**	**1.05**	**66.44**	**101,919.38**	**15.37**	**1.30**	**78.76**	**102.27**	**5.01**	**4.52**	**0.14**	**9.21**	**13,216.11**	**2.10**	**0.16**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR
Table H.1.PP.Mit.Const-6. Proposed Project Pipeline Co

		Maximum Daily Emissions									Maximum Hourly Emissions								
Equipment	Equipment Category	CO Emissions (lb/day)	NO_x Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_x Emissions (lb/day)	VOC Emissions (lb/day)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (lb/hr)
24" - Valero																			
1 Ton Flatbed	Delivery Trucks On-Road	1.87	8.27	0.30	0.28	0.01	0.56	1,221.96	0.07	0.03	0.08	0.34	0.01	0.01	0.00	0.02	50.92	0.00	0.00
2 Ton Flatbed	Delivery Trucks On-Road	4.68	20.69	0.76	0.70	0.03	1.41	3,054.91	0.17	0.08	0.19	0.86	0.03	0.03	0.00	0.06	127.29	0.01	0.00
Semi Truck with Trailer	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Water Truck	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Dump Truck	Delivery Trucks On-Road	3.74	16.55	0.60	0.56	0.03	1.12	2,443.93	0.13	0.07	0.16	0.69	0.03	0.02	0.00	0.05	101.83	0.01	0.00
Vacuum Truck	Delivery Trucks On-Road	0.94	4.14	0.15	0.14	0.01	0.28	610.98	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Air Comressor 175	Other Construction Equip.	13.70	16.33	0.81	0.75	0.02	2.15	2,104.86	0.36	0.03	2.74	3.27	0.16	0.15	0.00	0.43	420.97	0.07	0.01
Air Comressor 475	Other Construction Equip.	4.57	5.44	0.27	0.25	0.01	0.72	701.62	0.12	0.01	0.91	1.09	0.05	0.05	0.00	0.14	140.32	0.02	0.00
Air Comressor 1200	Other Construction Equip.	4.57	5.44	0.27	0.25	0.01	0.72	701.62	0.12	0.01	0.91	1.09	0.05	0.05	0.00	0.14	140.32	0.02	0.00
Backhoe (Rubber Tired)	Tractors/Loaders/Backhoes	52.21	62.22	3.10	2.86	0.09	5.93	8,018.52	1.32	0.09	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Bending Machine	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
All Terrain Crane	Cranes	20.92	34.76	1.21	1.11	0.04	1.93	4,573.06	0.66	0.05	2.09	3.48	0.12	0.11	0.00	0.19	457.31	0.07	0.00
Truck Crane	Cranes	41.84	69.53	2.41	2.22	0.08	3.86	9,146.12	1.31	0.09	4.18	6.95	0.24	0.22	0.01	0.39	914.61	0.13	0.01
Sideboom	Other Construction Equipment	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63	0.33	0.02	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Loader	Rubber Tired Loaders	36.97	62.71	2.13	1.96	0.09	3.41	8,081.16	1.33	0.09	3.70	6.27	0.21	0.20	0.01	0.34	808.12	0.13	0.01
Asphalt Rollers	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Forklift	Forklifts	8.57	10.21	0.51	0.47	0.01	1.34	1,315.54	0.23	0.02	0.86	1.02	0.05	0.05	0.00	0.13	131.55	0.02	0.00
Generator	Other Construction Equipment	2.03	2.50	0.22	0.21	0.00	0.28	281.90	0.05	0.00	0.41	0.50	0.04	0.04	0.00	0.06	56.38	0.01	0.00
Weld Rig	Welders	52.21	62.22	3.10	2.86	0.09	5.93	8,018.52	1.32	0.09	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Fill Pump	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Hydro Test Pump	Other Construction Equipment	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
		289.84	**435.96**	**18.50**	**17.02**	**0.60**	**34.64**	**57,510.57**	**8.27**	**0.79**	**34.62**	**47.86**	**2.12**	**1.95**	**0.06**	**4.06**	**6,232.48**	**0.96**	**0.08**
				3.13	**0.65**								**0.130**	**0.027**					
				1.25	**0.26**								**0.0522**	**0.0109**					
		289.84	**435.96**	**19.75**	**17.28**	**0.60**	**34.64**	**57,510.57**	**8.27**	**0.79**	**34.62**	**47.86**	**2.17**	**1.96**	**0.06**	**4.06**	**6,232.48**	**0.96**	**0.08**
		1,226	**1,774**	**87**	**74**	**2**	**147**	**233,255**	**34**	**3**	**166**	**220**	**11**	**9**	**0**	**19**	**28,571**	**4**	**0.3**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Mit.Const-7. Proposed Project Site Construction Activities Average Daily Mitigated Emissions (Phase I).

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use/Day hr / day
Site 1																				
Soil Stabilization																				
Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -	10
Boring Machine	Bore/Drill Rigs	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Dump Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05	10
														568.3	0.129	0.0092	- - -	- - -	- - -	
Construction																				
Dozer	Rubber Tired Dozers	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Loader	Rubber Tired Loaders	215	(2)	2.6	4.41	0.15	0.006	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Backhoe	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -	10
Boom-Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05	5
Water Truck	Off-Highway Trucks	175	(2)	- - -	- - -	- - -	0.006	0.42	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05	10
Man-Lift	Other Construction Equip.	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	5
Compactor	Plate Compactor	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Fork Lift	Forklifts	105	(2)	3.7	4.41	0.22	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -	10
Welding Rigs	Welders	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Air Compressor	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -	5
Tanks (2-250,000 Bbl, 1-50,000 Bbl, 1-15,000Bbl)																				
Diesel Generator (200 KW)	Other Construction Equip.	45	(2)	4.1	5.04	0.45	0.004	0.56	- - -	- - -	- - -	- - -	- - -	568.3	0.107	0.0077	- - -	- - -	- - -	5
Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -	10
Forklift	Forklifts	105	(2)	3.7	4.41	0.22	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -	10
Manlift	Other Construction Equip	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	5

Site 2 (New)																				
Soil Stabilization														568.3	0.129	0.0092	- - -	- - -	- - -	
Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -	10
Boring Machine	Bore/Drill Rigs	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Dump Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05	10
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Scraper	Other Construction Equip.	195	(2)	2.6	4.41	0.15	0.006	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	5
Dozer	Rubber Tired Dozers	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Compactor	Plate Compactor	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Construction																				
Dozer	Rubber Tired Dozers	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Loader	Rubber Tired Loaders	215	(2)	2.6	4.41	0.15	0.006	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Backhoe	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -	10
Boom-Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	0.005	0.24	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05	5
Water Truck	Off-Highway Trucks	175	(2)	- - -	- - -	- - -	0.006	0.42	12.51	0.46	2.83	0.02	0.85	- - -	- - -	- - -	1,848	0.10	0.05	10
Man-Lift	Other Construction Equip.	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	5
Compactor	Plate Compactor	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Fork Lift	Forklifts	105	(2)	3.7	4.41	0.22	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -	10
Welding Rigs	Welders	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	10
Air Compressor	Other Construction Equip.	112	(1)	3.7	4.41	0.22	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -	5
Tanks (14-250,000 bbl)																				
Diesel Generator (200 KW)	Other Construction Equip.	45	(2)	4.1	5.04	0.45	0.004	0.56	- - -	- - -	- - -	- - -	- - -	568.3	0.107	0.0077	- - -	- - -	- - -	5
Crane	Cranes	365	(1)	2.6	4.32	0.15	0.005	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.082	0.0058	- - -	- - -	- - -	10
Forklift	Forklifts	105	(2)	3.7	4.41	0.22	0.006	0.58	- - -	- - -	- - -	- - -	- - -	568.3	0.097	0.0070	- - -	- - -	- - -	10
Manlift	Other Construction Equip	160	(3)	3.7	4.41	0.22	0.006	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.094	0.0067	- - -	- - -	- - -	5

NOTES:

(1) Horsepower is obtained from the wharf construction equipment data.
(2) Horsepower is obtained from the POLA Trapac construction equipment data.
(3) Horsepower is obtained from the POLA Trapac construction equipment data using a similar construction equipment category.
(4) PM2.5 emissions were calculated by multiplying the PM2.5 fraction by the PM10 emissions for each source category. The PM2.5 fraction were obtained from the "SCAQMD Final - Methodology to Calculate Particulate Matter (PM)2.5 and PM 2.5 Significance Thresholds, Appendix A (October 2006)".
(5) Emission calculations assume 2 pick-up trucks.
(6) Horsepower is not available for Onroad Trucks from URBEMIS 2007. Therefore, the horsepower is obtained for Offroad Trucks from URBEMIS 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Mit.Const-7. Proposed Project Site Construction Activities Average Daily Mitigated Emissions (Phase I).

					Project Total Emissions									Maximum Daily Emissions						
Equipment	Equipment Category	mph	Mile/day/vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)	CO Emissions (lb/day)	NO_x Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_x Emissions (lb/day)	VOC Emissions (lb/day)	CO_2 Emissions (lb/day)
Site 1																				
Soil Stabilization																				
Crane	Cranes			6	9.04	15.02	0.52	0.48	0.02	0.83	1,975.56	0.28	0.02	125.53	208.58	7.24	6.66	0.25	11.59	27,438.37
Boring Machine	Bore/Drill Rigs			6	5.64	6.72	0.34	0.31	0.01	0.64	866.00	0.14	0.01	78.31	93.34	4.66	4.28	0.13	8.89	12,027.78
Dump Truck	Delivery Trucks On-Road	30	300	6	2.70	11.91	0.44	0.40	0.02	0.81	1,759.63	0.10	0.05	37.43	165.48	6.08	5.60	0.26	11.24	24,439.28
Construction																				
Dozer	Rubber Tired Dozers			6	0.35	0.42	0.02	0.02	0.00	0.04	54.13	0.01	0.00	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63
Loader	Rubber Tired Loaders			6	1.66	2.82	0.10	0.09	0.00	0.15	363.65	0.06	0.00	24.65	41.81	1.42	1.31	0.06	2.28	5,387.44
Backhoe	Tractors/Loaders/Backhoes			6	3.37	4.01	0.20	0.18	0.01	0.38	517.19	0.09	0.01	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26
Trackhoe	Tractors/Loaders/Backhoes			6	1.61	1.91	0.10	0.09	0.00	0.18	246.57	0.04	0.00	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63
Crane	Cranes			6	2.45	4.07	0.14	0.13	0.00	0.23	535.05	0.08	0.01	41.84	69.53	2.41	2.22	0.08	3.86	9,146.12
Boom-Truck	Delivery Trucks On-Road	30	150	6	0.09	0.41	0.02	0.01	0.00	0.03	60.49	0.00	0.00	0.94	4.14	0.15	0.14	0.01	0.28	610.98
Water Truck	Off-Highway Trucks		150	6	0.24	1.04	0.04	0.04	0.00	0.07	153.97	0.01	0.00	0.94	4.14	0.15	0.14	0.01	0.28	610.98
Man-Lift	Other Construction Equip.			6	0.57	0.68	0.03	0.03	0.00	0.06	87.20	0.01	0.00	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31
Compactor	Plate Compactor			6	0.31	0.37	0.02	0.02	0.00	0.04	48.11	0.01	0.00	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63
Fork Lift	Forklifts			6	1.77	2.11	0.11	0.10	0.00	0.28	272.32	0.05	0.00	17.13	20.42	1.02	0.94	0.03	2.69	2,631.08
Welding Rigs	Welders			6	7.67	9.15	0.46	0.42	0.01	0.87	1,178.72	0.19	0.01	65.26	77.78	3.88	3.57	0.11	7.41	10,023.15
Air Compressor	Other Construction Equip.			6	0.78	0.93	0.05	0.04	0.00	0.12	119.98	0.02	0.00	4.57	5.44	0.27	0.25	0.01	0.72	701.62
											-	-	-							
Tanks (2-250,000 Bbl, 1-50,000 Bbl, 1-15,000Bbl)											-	-	-							
Diesel Generator (200 KW)	Other Construction Equip.			6	0.52	0.64	0.06	0.05	0.00	0.07	71.88	0.01	0.00	4.07	5.00	0.45	0.41	0.00	0.56	563.80
Crane	Cranes			6	7.47	12.41	0.43	0.40	0.01	0.69	1,632.58	0.23	0.02	62.77	104.29	3.62	3.33	0.12	5.79	13,719.18
Forklift	Forklifts			6	1.18	1.41	0.07	0.06	0.00	0.19	181.54	0.03	0.00	25.70	30.63	1.53	1.41	0.04	4.03	3,946.61
Manlift	Other Construction Equip			6	0.29	0.35	0.02	0.02	0.00	0.03	45.10	0.01	0.00	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63
				Fugitive Dust - Unmitigated			**10.39**	**2.16**								**44.50**	**9.26**			
				TOTAL	**47.71**	**76.39**	**13.53**	**5.05**	**0.10**	**5.72**	**10,169.68**	**1.37**	**0.14**	**573.96**	**931.67**	**82.43**	**44.15**	**1.25**	**69.24**	**124,276.50**
				Fugitive Dust - Mitigated			**4.16**	**0.86**								**17.80**	**3.70**			
				Mitigated Site Total	**47.71**	**76.39**	**17.69**	**5.91**	**0.10**	**5.72**	**10,169.68**	**1.37**	**0.14**	**573.96**	**931.67**	**100.23**	**47.86**	**1.25**	**69.24**	**124,276.50**
Site 2 (New)																				
Soil Stabilization																				
Crane	Cranes			6	6.90	11.47	0.40	0.37	0.01	0.64	1,509.11	0.22	0.02	125.53	208.58	7.24	6.66	0.25	11.59	27,438.37
Boring Machine	Bore/Drill Rigs			6	4.31	5.13	0.26	0.24	0.01	0.49	661.53	0.11	0.01	78.31	93.34	4.66	4.28	0.13	8.89	12,027.78
Dump Truck	Delivery Trucks On-Road	30	300	6	2.09	9.26	0.34	0.31	0.01	0.63	1,367.38	0.07	0.04	37.43	165.48	6.08	5.60	0.26	11.24	24,439.28
Trackhoe	Tractors/Loaders/Backhoes			6	1.76	2.10	0.10	0.10	0.00	0.20	270.63	0.04	0.00	39.15	46.67	2.33	2.14	0.07	4.44	6,013.89
Scraper	Other Construction Equip.			6	0.70	1.19	0.04	0.04	0.00	0.07	153.92	0.03	0.00	16.77	28.44	0.97	0.89	0.04	1.55	3,664.71
Dozer	Rubber Tired Dozers			6	1.92	2.29	0.11	0.10	0.00	0.22	294.68	0.05	0.00	39.15	46.67	2.33	2.14	0.07	4.44	6,013.89
Compactor	Plate Compactor			6	1.53	1.82	0.09	0.08	0.00	0.17	234.54	0.04	0.00	39.15	46.67	2.33	2.14	0.07	4.44	6,013.89
Construction																				
Dozer	Rubber Tired Dozers			6	0.27	0.33	0.02	0.01	0.00	0.03	42.10	0.01	0.00	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26
Loader	Rubber Tired Loaders			6	2.37	4.01	0.14	0.13	0.01	0.22	517.19	0.09	0.01	49.30	83.61	2.84	2.62	0.12	4.55	10,774.88
Backhoe	Tractors/Loaders/Backhoes			6	6.26	7.47	0.37	0.34	0.01	0.71	962.22	0.16	0.01	52.21	62.22	3.10	2.86	0.09	5.93	8,018.52
Trackhoe	Tractors/Loaders/Backhoes			6	2.66	3.17	0.16	0.15	0.00	0.30	408.94	0.07	0.00	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26
Crane	Cranes			6	7.22	11.99	0.42	0.38	0.01	0.67	1,577.71	0.23	0.02	83.69	139.05	4.83	4.44	0.16	7.73	18,292.25
Boom-Truck	Delivery Trucks On-Road	30	150	6	0.25	1.09	0.04	0.04	0.00	0.07	161.30	0.01	0.00	1.87	8.27	0.30	0.28	0.01	0.56	1,221.96
Water Truck	Off-Highway Trucks		150	6	0.24	1.04	0.04	0.04	0.00	0.07	153.97	0.01	0.00	0.94	4.14	0.15	0.14	0.01	0.28	610.98
Man-Lift	Other Construction Equip.			6	1.14	1.35	0.07	0.06	0.00	0.13	174.40	0.03	0.00	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63
Compactor	Plate Compactor			6	0.63	0.75	0.04	0.03	0.00	0.07	96.22	0.02	0.00	26.10	31.11	1.55	1.43	0.04	2.96	4,009.26
Fork Lift	Forklifts			6	3.60	4.29	0.21	0.20	0.01	0.56	552.53	0.09	0.01	25.70	30.63	1.53	1.41	0.04	4.03	3,946.61
Welding Rigs	Welders			6	18.64	22.21	1.11	1.02	0.03	2.12	2,862.61	0.47	0.03	156.62	186.67	9.31	8.57	0.26	17.78	24,055.56
Air Compressor	Other Construction Equip.			6	1.75	2.09	0.10	0.10	0.00	0.27	269.42	0.05	0.00	9.14	10.89	0.54	0.50	0.02	1.43	1,403.24
Tanks (14-250,000 bbl)																				
Diesel Generator (200 KW)	Other Construction Equip.			6	1.36	1.67	0.15	0.14	0.00	0.19	188.59	0.04	0.00	8.14	10.00	0.89	0.82	0.01	1.11	1,127.60
Crane	Cranes			6	24.60	40.88	1.42	1.31	0.05	2.27	5,377.92	0.77	0.06	167.38	278.10	9.66	8.88	0.33	15.45	36,584.49
Forklift	Forklifts			6	5.16	6.16	0.31	0.28	0.01	0.81	793.27	0.14	0.01	59.96	71.46	3.56	3.28	0.10	9.40	9,208.77
Manlift	Other Construction Equip			6	0.78	0.93	0.05	0.04	0.00	0.09	120.28	0.02	0.00	13.05	15.56	0.78	0.71	0.02	1.48	2,004.63
				Fugitive Dust - Unmitigated			**4.77**	**0.99**								**31.00**	**6.45**			
				TOTAL	**96.15**	**142.71**	**10.74**	**6.49**	**0.19**	**11.00**	**18,750.46**	**2.74**	**0.23**	**1,094.83**	**1,645.32**	**99.87**	**69.81**	**2.20**	**126.70**	**216,893.72**
				Fugitive Dust - Mitigated			**1.91**	**0.40**								**12.40**	**2.58**			
				Mitigated Site Total	**96.15**	**142.71**	**12.65**	**6.89**	**0.19**	**11.00**	**18,750.46**	**2.74**	**0.23**	**1,094.83**	**1,645.32**	**112.27**	**72.39**	**2.20**	**126.70**	**216,893.72**
				MITIGATED TOTAL EMISSIONS	**143.86**	**219.10**	**30.34**	**12.80**	**0.29**	**16.71**	**28,920.14**	**4.11**	**0.38**	**1,668.78**	**2,576.99**	**212.51**	**120.25**	**3.45**	**195.93**	**341,170.22**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Mit.Const-7. Proposed Project Site Construction Activities Average Daily Mitigated Emissions (Phase I).

		Maximum Daily Emissions		Maximum Hourly Emissions								
Equipment	Equipment Category	CH_4 Emissions (lb/day)	N_2O Emissions (lb/day)	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (lb/hr)
Site 1												
Soil Stabilization												
Crane	Cranes	3.94	0.28	12.55	20.86	0.72	0.67	0.02	1.16	2,743.84	0.39	0.03
Boring Machine	Bore/Drill Rigs	1.98	0.14	7.83	9.33	0.47	0.43	0.01	0.89	1,202.78	0.20	0.01
Dump Truck	Delivery Trucks On-Road	1.32	0.66	1.56	6.89	0.25	0.23	0.01	0.47	1,018.30	0.06	0.03
Construction												
Dozer	Rubber Tired Dozers	0.33	0.02	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Loader	Rubber Tired Loaders	0.89	0.06	2.46	4.18	0.14	0.13	0.01	0.23	538.74	0.09	0.01
Backhoe	Tractors/Loaders/Backhoes	0.66	0.05	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Trackhoe	Tractors/Loaders/Backhoes	0.33	0.02	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Crane	Cranes	1.31	0.09	4.18	6.95	0.24	0.22	0.01	0.39	914.61	0.13	0.01
Boom-Truck	Delivery Trucks On-Road	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Water Truck	Off-Highway Trucks	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Man-Lift	Other Construction Equip.	0.16	0.01	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Compactor	Plate Compactor	0.33	0.02	1.31	1.56	0.08	0.07	0.00	0.15	200.46	0.03	0.00
Fork Lift	Forklifts	0.45	0.03	1.71	2.04	0.10	0.09	0.00	0.27	263.11	0.05	0.00
Welding Rigs	Welders	1.65	0.12	6.53	7.78	0.39	0.36	0.01	0.74	1,002.31	0.16	0.01
Air Compressor	Other Construction Equip.	0.12	0.01	0.91	1.09	0.05	0.05	0.00	0.14	140.32	0.02	0.00
Tanks (2-250,000 Bbl, 1-50,000 Bbl, 1-15,000Bbl)												
Diesel Generator (200 KW)	Other Construction Equip.	0.11	0.01	0.81	1.00	0.09	0.08	0.00	0.11	112.76	0.02	0.00
Crane	Cranes	1.97	0.14	6.28	10.43	0.36	0.33	0.01	0.58	1,371.92	0.20	0.01
Forklift	Forklifts	0.68	0.05	2.57	3.06	0.15	0.14	0.00	0.40	394.66	0.07	0.00
Manlift	Other Construction Equip	0.33	0.02	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
						1.85	**0.39**					
		16.62	**1.78**	**57.92**	**86.41**	**5.46**	**3.71**	**0.11**	**6.58**	**11,357.98**	**1.65**	**0.14**
						0.74	**0.15**					
		16.62	**1.78**	**57.92**	**86.41**	**6.20**	**3.86**	**0.11**	**6.58**	**11,357.98**	**1.65**	**0.14**
Site 2 (New)												
Soil Stabilization												
Crane	Cranes	3.94	0.28	12.55	20.86	0.72	0.67	0.02	1.16	2,743.84	0.39	0.03
Boring Machine	Bore/Drill Rigs	1.98	0.14	7.83	9.33	0.47	0.43	0.01	0.89	1,202.78	0.20	0.01
Dump Truck	Delivery Trucks On-Road	1.32	0.66	1.56	6.89	0.25	0.23	0.01	0.47	1,018.30	0.06	0.03
Trackhoe	Tractors/Loaders/Backhoes	0.99	0.07	3.92	4.67	0.23	0.21	0.01	0.44	601.39	0.10	0.01
Scraper	Other Construction Equip.	0.60	0.04	3.35	5.69	0.19	0.18	0.01	0.31	732.94	0.12	0.01
Dozer	Rubber Tired Dozers	0.99	0.07	3.92	4.67	0.23	0.21	0.01	0.44	601.39	0.10	0.01
Compactor	Plate Compactor	0.99	0.07	3.92	4.67	0.23	0.21	0.01	0.44	601.39	0.10	0.01
Construction												
Dozer	Rubber Tired Dozers	0.66	0.05	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Loader	Rubber Tired Loaders	1.77	0.13	4.93	8.36	0.28	0.26	0.01	0.46	1,077.49	0.18	0.01
Backhoe	Tractors/Loaders/Backhoes	1.32	0.09	5.22	6.22	0.31	0.29	0.01	0.59	801.85	0.13	0.01
Trackhoe	Tractors/Loaders/Backhoes	0.66	0.05	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Crane	Cranes	2.63	0.19	8.37	13.91	0.48	0.44	0.02	0.77	1,829.22	0.26	0.02
Boom-Truck	Delivery Trucks On-Road	0.07	0.03	0.08	0.34	0.01	0.01	0.00	0.02	50.92	0.00	0.00
Water Truck	Off-Highway Trucks	0.03	0.02	0.04	0.17	0.01	0.01	0.00	0.01	25.46	0.00	0.00
Man-Lift	Other Construction Equip.	0.33	0.02	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Compactor	Plate Compactor	0.66	0.05	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
Fork Lift	Forklifts	0.68	0.05	2.57	3.06	0.15	0.14	0.00	0.40	394.66	0.07	0.00
Welding Rigs	Welders	3.96	0.28	15.66	18.67	0.93	0.86	0.03	1.78	2,405.56	0.40	0.03
Air Compressor	Other Construction Equip.	0.24	0.02	1.83	2.18	0.11	0.10	0.00	0.29	280.65	0.05	0.00
Tanks (14-250,000 bbl)												
Diesel Generator (200 KW)	Other Construction Equip.	0.21	0.02	1.63	2.00	0.18	0.16	0.00	0.22	225.52	0.04	0.00
Crane	Cranes	5.25	0.38	16.74	27.81	0.97	0.89	0.03	1.55	3,658.45	0.53	0.04
Forklift	Forklifts	1.58	0.11	6.00	7.15	0.36	0.33	0.01	0.94	920.88	0.16	0.01
Manlift	Other Construction Equip	0.33	0.02	2.61	3.11	0.16	0.14	0.00	0.30	400.93	0.07	0.00
						1.29	**0.27**					
		31.19	**2.84**	**113.15**	**162.20**	**8.19**	**6.62**	**0.21**	**12.67**	**21,177.31**	**3.21**	**0.25**
						0.52	**0.11**					
		31.19	**2.84**	**113.15**	**162.20**	**8.71**	**6.73**	**0.21**	**12.67**	**21,177.31**	**3.21**	**0.25**
		47.81	**4.62**	**171.07**	**248.61**	**14.91**	**10.59**	**0.33**	**19.25**	**32,535.29**	**4.86**	**0.40**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Mit.Const-8. Proposed Project Site Construction Activities Average Daily Mitigated Emissions (Phase 2).

Equipment	Equipment Category	hp	Note	CO Emission Factor (g/hp-hr)	NO_x Emission Factor (g/hp-hr)	PM Emission Factor (g/hp-hr)	SO_x Emission Factor (g/hp-hr)	VOC Emission Factor (g/hp-hr)	NO_x Emissions Factor (g/mile)	PM Emissions Factor (g/mile)	CO Emissions Factor (g/mile)	SO_x Emissions Factor (g/mile)	VOC Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	CO_2 Emissions Factor (g/mile)
Site 2 (New)																	
Construction																	
Dozer	Rubber Tired Dozers	160	(3)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Loader	Rubber Tired Loaders	215	(2)	2.60	4.41	0.150	0.0063	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Backhoe	Tractors/Loaders/Backhoes	160	(2)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Trackhoe	Tractors/Loaders/Backhoes	160	(2)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Crane	Cranes	365	(1)	2.60	4.32	0.150	0.0051	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.0816	0.0058	- - -
Boom-Truck	Delivery Trucks On-Road	479	(6)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	568.3	0.0816	0.0058	1,848
Water Truck	Off-Highway Trucks	175	(2)	- - -	- - -	- - -	- - -	- - -	12.51	0.46	2.83	0.02	0.85	568.3	0.0935	0.0067	1,848
Man-Lift	Other Construction Equip.	160	(3)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Compactor	Plate Compactor	160	(3)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Fork Lift	Forklifts	105	(2)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0975	0.0070	- - -
Welding Rigs	Welders	160	(3)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -
Air Compressor	Other Construction Equip.	112	(1)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0975	0.0070	- - -
Tanks (3-250,000 bbl)																	
Diesel Generator (200 KW)	Other Construction Equip.	45	(2)	4.10	5.04	0.450	0.0044	0.56	- - -	- - -	- - -	- - -	- - -	568.3	0.1074	0.0077	- - -
Crane	Cranes	365	(1)	2.60	4.32	0.150	0.0051	0.24	- - -	- - -	- - -	- - -	- - -	568.3	0.0816	0.0058	- - -
Forklift	Forklifts	105	(2)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0975	0.0070	- - -
Manlift	Other Construction Equip.	160	(3)	3.70	4.41	0.220	0.0062	0.42	- - -	- - -	- - -	- - -	- - -	568.3	0.0935	0.0067	- - -

NOTES:

(1) Horsepower is obtained from the wharf construction equipment data.

(2) Horsepower is obtained from the POLA Trapac construction equipment data.

(3) Horsepower is obtained from the POLA Trapac construction equipment data using a similar construction equipment category.

(4) PM2.5 emissions were calculated by multiplying the PM2.5 fraction by the PM10 emissions for each source category. The PM2.5 fraction were obtained from the "SCAQMD Final - Methodology to Calculate Particulate Matter (PM)2.5 and PM 2.5 Significance Thresholds, Appendix A (October 2006)".

(6) Horsepower is not available for Onroad Trucks from URBEMIS 2007. Therefore, the horsepower is obtained for Offroad Trucks from URBEMIS 2007.

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Mit.Const-8. Proposed Project Site Construction Activities Average Daily Mitigated Emissions (Phase 2).

							Project Total Emissions								
Equipment	CH_4 Emissions Factor (g/mile)	N_2O Emissions Factor (g/mile)	Use / Day hr / day	mph	Mile / day / vehicle	Days / Week	CO Emissions (tons)	NO_x Emissions (tons)	PM_{10} Emissions (tons)	$PM_{2.5}$ Emissions (tons)	SO_x Emissions (tons)	VOC Emissions (tons)	CO_2 Emissions (tons)	CH_4 Emissions (tons)	N_2O Emissions (tons)
Site 2 (New)															
Construction															
Dozer	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Loader	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Backhoe	- - -	- - -	10			6	3.29	3.92	0.20	0.18	0.01	0.37	678.82	0.11	0.01
Trackhoe	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Crane	- - -	- - -	10			6	2.51	4.17	0.14	0.13	0.00	0.23	240.56	0.04	0.00
Boom-Truck	0.10	0.05	5	30	150	6	-	-	-	-	-	-	-	-	-
Water Truck	0.10	0.05	10		150	6	0.12	0.52	0.02	0.02	0.00	0.04	378.09	0.05	0.00
Man-Lift	- - -	- - -	5			6	-	-	-	-	-	-	-	-	-
Compactor	- - -	- - -	10			6	-	-	-	-	-	-	-	-	-
Fork Lift	- - -	- - -	10			6	2.13	2.54	0.13	0.12	0.00	0.24	499.15	0.08	0.01
Welding Rigs	- - -	- - -	10			6	7.44	8.87	0.44	0.41	0.01	0.84	749.86	0.13	0.01
Air Compressor	- - -	- - -	5			6	1.12	1.34	0.07	0.06	0.00	0.13	493.14	0.08	0.01
										-					
Tanks (3-250,000 bbl)										-					
Diesel Generator (200 KW)	- - -	- - -	5			6	0.59	0.72	0.06	0.06	0.00	0.08	-	-	-
Crane	- - -	- - -	10			6	10.54	17.52	0.61	0.56	0.02	0.97	142.08	0.03	0.00
Forklift	- - -	- - -	10			6	0.23	0.28	0.01	0.01	0.00	0.03	123.47	0.02	0.00
Manlift	- - -	- - -	5			6	0.31	0.37	0.02	0.02	0.00	0.04	63.15	0.01	0.00
						Fugitive Dust - Unmitigated			**4.77**	**0.99**					
						TOTAL	**28.29**	**40.25**	**6.47**	**2.56**	**0.05**	**2.97**	**3,368.30**	**0.55**	**0.04**
						Fugitive Dust - Mitigated			**1.91**	**0.40**					
						Mitigated Site Total Emissions	**28.29**	**40.25**	**8.37**	**2.95**	**0.05**	**2.97**	**3,368.30**	**0.55**	**0.04**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Mit.Const-8. Proposed Project Site Construction Activities Average Daily Mitigated Emissions (Phase 2).

	Maximum Daily Emissions								
Equipment	CO Emissions (lb/day)	NO_x Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_x Emissions (lb/day)	VOC Emissions (lb/day)	CO_2 Emissions (lb/day)	CH_4 Emissions (lb/day)	N_2O Emissions (ll/day)
Site 2 (New)									
Construction									
Dozer	-	-	-	-	-	-	-	-	-
Loader	-	-	-	-	-	-	-	-	-
Backhoe	26.10	31.11	1.55	1.43	0.04	2.96	5,387.44	0.89	0.06
Trackhoe	-	-	-	-	-	-	-	-	-
Crane	20.92	34.76	1.21	1.11	0.04	1.93	2,004.63	0.33	0.02
Boom-Truck	-	-	-	-	-	-	-	-	-
Water Truck	0.94	4.14	0.15	0.14	0.01	0.28	3,000.68	0.43	0.03
Man-Lift	-	-	-	-	-	-	-	-	-
Compactor	-	-	-	-	-	-	-	-	-
Fork Lift	17.13	20.42	1.02	0.94	0.03	1.94	4,009.26	0.66	0.05
Welding Rigs	78.31	93.34	4.66	4.28	0.13	8.89	7,893.23	1.35	0.10
Air Compressor	9.14	10.89	0.54	0.50	0.02	1.04	4,009.26	0.66	0.05
	-	-	-	-	-	-	-	-	-
Tanks (3-250,000 bbl)	-	-	-	-	-	-	-	-	-
Diesel Generator (200 KW)	8.14	10.00	0.89	0.82	0.01	1.11	-	-	-
Crane	146.45	243.34	8.45	7.77	0.29	13.52	1,973.31	0.37	0.03
Forklift	25.70	30.63	1.53	1.41	0.04	2.92	13,719.18	1.97	0.14
Manlift	13.05	15.56	0.78	0.71	0.02	1.48	2,631.08	0.45	0.03
			31.00	**6.45**					
	345.87	**494.17**	**51.78**	**25.56**	**0.63**	**36.07**	**44,628.07**	**7.11**	**0.51**
			12.40	**2.58**					
	345.87	**494.17**	**64.18**	**28.14**	**0.63**	**36.07**	**44,628.07**	**7.11**	**0.51**

Pacific L.A. Marine Terminal LLC Crude Oil Terminal Draft SEIS/SEIR

Table H.1.PP.Mit.Const-8. Proposed Project Site Construction Activities Average Daily Mitigated Emissions (Phase 2).

	Maximum Hourly Emissions								
Equipment	CO Emissions (lb/hr)	NO_x Emissions (lb/hr)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (lb/hr)	SO_x Emissions (lb/hr)	VOC Emissions (lb/hr)	CO_2 Emissions (lb/hr)	CH_4 Emissions (lb/hr)	N_2O Emissions (il/hr)
Site 2 (New)									
Construction									
Dozer	-	-	-	-	-	-	-	-	-
Loader	-	-	-	-	-	-	-	-	-
Backhoe	2.61	3.11	0.16	0.14	0.00	0.30	538.74	0.09	0.01
Trackhoe	-	-	-	-	-	-	-	-	-
Crane	2.09	3.48	0.12	0.11	0.00	0.19	200.46	0.03	0.00
Boom-Truck	-	-	-	-	-	-	-	-	-
Water Truck	0.04	0.17	0.01	0.01	0.00	0.01	125.03	0.02	0.00
Man-Lift	-	-	-	-	-	-	-	-	-
Compactor	-	-	-	-	-	-	-	-	-
Fork Lift	1.71	2.04	0.10	0.09	0.00	0.19	400.93	0.07	0.00
Welding Rigs	7.83	9.33	0.47	0.43	0.01	0.89	789.32	0.14	0.01
Air Compressor	1.83	2.18	0.11	0.10	0.00	0.21	801.85	0.13	0.01
Tanks (3-250,000 bbl)									
Diesel Generator (200 KW)	1.63	2.00	0.18	0.16	0.00	0.22	-	-	-
Crane	14.65	24.33	0.84	0.78	0.03	1.35	197.33	0.04	0.00
Forklift	2.57	3.06	0.15	0.14	0.00	0.29	1,371.92	0.20	0.01
Manlift	2.61	3.11	0.16	0.14	0.00	0.30	526.22	0.09	0.01
			1.29	**0.27**					
	37.56	**52.82**	**3.58**	**2.38**	**0.07**	**3.95**	**4,951.80**	**0.80**	**0.06**
			0.52	**0.11**					
	37.56	**52.82**	**4.10**	**2.48**	**0.07**	**3.95**	**4,951.80**	**0.80**	**0.06**

Table H.1.PP.Mit.Const-9. Proposed Project Main Engines Average Daily Mitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Distance (nautical miles)	Ship speed (knots)	Activity (hours)	Maximum Speed (knots)	Load Factor	MCR (kW)	Energy (kW-hr)	Fuel Type	Shipcalls (vessels/ yr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising - CW to VSR	23	12	1.92	15.8	0.438	10,300	8,649	Dist at 0.2%S	4.0	1,619	133	57	28	28	25	74
		Cruising - VSR to PZ	11	12	0.92	15.8	0.438	10,300	4,136	Dist at 0.2%S	4.0	774	64	27	13	13	12	35
		Cruising - PZ to Pilot	4.7	7	0.67	15.8	0.087	10,300	601	Dist at 0.2%S	4.0	113	9	4	2	2	2	5
		Maneuvering - Pilot to Berth		3	1.00	15.8	0.007	10,300	71	Dist at 0.2%S	4.0	13	1	0	0	0	0	1
	South Out	Maneuvering - Berth to Pilot		5	1.00	15.8	0.032	10,300	326	Dist at 0.2%S	4.0	61	5	2	1	1	1	3
		Cruising - Pilot to PZ	3.5	7	0.50	15.8	0.087	10,300	448	Dist at 0.2%S	4.0	84	7	3	1	1	1	4
		Cruising - PZ to VSR	12.5	12	1.04	15.8	0.438	10,300	4,700	Dist at 0.2%S	4.0	880	72	31	15	15	14	40
		Cruising - VSR to CW	24.5	12	2.04	15.8	0.438	10,300	9,213	Dist at 0.2%S	4.0	1,725	142	61	29	29	27	79
											TOTAL	**5,269**	**434**	**186**	**90**	**90**	**83**	**241**

Table H.1.PP.Mit.Const-10. Proposed Project Auxiliary Generator Average Daily Mitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Activity (hours)	MCR (kW)	Load Factor	Energy (kW-hr)	Fuel Type	Shipcalls (vessels/yr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising	3.50	3,600	0.278	3,508	Dist at 0.2%S	4	537	42	15	11	10	8	35
		Maneuvering	2.00	3,600	0.278	2,002	Dist at 0.2%S	4	306	24	9	6	6	5	20
	South Out	Maneuvering	1.5	3,600	0.278	1,501	Dist at 0.2%S	4	230	18	7	5	4	4	15
		Cruising	3.58	3,600	0.278	3,586	Dist at 0.2%S	4	549	43	16	11	11	8	36
								TOTAL	**1,622**	**128**	**47**	**33**	**31**	**25**	**106**

Table H.1.PP.Mit.Const-11. Proposed Project Berth Operations Average Daily Mitigated Emissions from Stone Delivery.

Auxiliary Generator Pre-Pumping

Shipcalls (vessels/yr)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
4.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	2.5	383	30	11	8	7	6	25
AMP Reduction		70%											
					TOTAL		**115**	**9**	**3**	**2**	**2**	**2**	**8**

Auxiliary Generator Pumping

Shipcalls (vessels/yr)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
4.0	Panamax	Dist at 0.2%S	0.20	3,600	55.6%	11.0	3,371	267	97	68	65	52	221
AMP Reduction		70%											
					TOTAL		**1,011**	**80**	**29**	**20**	**19**	**16**	**66**

Auxiliary Generator Post-Pumping

Shipcalls (vessels/yr)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
4.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	1.0	153	12	4	3	3	2	10
AMP Reduction		70%											
					TOTAL		**46**	**4**	**1**	**1**	**1**	**1**	**3**

Table H.1.PP.Mit.Const-12. Proposed Project Summary of Average Daily Mitigated Vessel Emissions from Stone Delivery.

Mode	Equipment	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
Cruising	Main Engines	5,195	428	183	89	89	82	238
Cruising	Aux Generator	1,086	86	31	22	21	17	71
Maneuvering	Main Engines	74	6	3	1	1	1	3
Maneuvering	Aux Generator	536	42	15	11	10	8	35
Berth Operations	Aux Generator	1,172	93	34	24	23	18	77
Propulsion	TOTAL	6,892	562	233	122	121	108	347
Non-Propulsion	TOTAL	1,172	93	34	24	23	18	77
Total Emissions		**8,064**	**655**	**266**	**146**	**144**	**126**	**424**

Mode	Equipment	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Cruising	Main Engines	14.2	1.2	0.5	0.2	0.2	0.2	0.7
Cruising	Aux Generator	3.0	0.2	0.1	0.1	0.1	0.0	0.2
Maneuvering	Main Engines	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Maneuvering	Aux Generator	1.5	0.1	0.0	0.0	0.0	0.0	0.1
Berth Operations	Aux Generator	3.2	0.3	0.1	0.1	0.1	0.0	0.2
Propulsion	TOTAL	18.9	1.5	0.6	0.3	0.3	0.3	1.0
Non-Propulsion	TOTAL	3.2	0.3	0.1	0.1	0.1	0.0	0.2
Total Emissions		**22**	**2**	**1**	**0**	**0**	**0**	**1**

Table H.1.PP.Mit.Const-13. Proposed Project Main Engines Maximum Daily Mitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Distance (nautical miles)	Ship speed (knots)	Activity (hours)	Maximum Speed (knots)	Load Factor	MCR (kW)	Energy (kW-hr)	Fuel Type	Maximum Daily Shipcalls (vessels/day)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising - CW to VSR	23	12	1.92	15.8	0.438	10,300	8,649	Dist at 0.2%S	1.0	405	33	14	7	7	6	19
		Cruising - VSR to PZ	11	12	0.92	15.8	0.438	10,300	4,136	Dist at 0.2%S	1.0	194	16	7	3	3	3	9
		Cruising - PZ to Pilot	4.7	7	0.67	15.8	0.087	10,300	601	Dist at 0.2%S	1.0	28	2	1	0	0	0	1
		Maneuvering - Pilot to Berth		3	1.00	15.8	0.007	10,300	71	Dist at 0.2%S	1.0	3	0	0	0	0	0	0
	South Out	Maneuvering - Berth to Pilot		5	1.00	15.8	0.032	10,300	326	Dist at 0.2%S	1.0	15	1	1	0	0	0	1
		Cruising - Pilot to PZ	3.5	7	0.50	15.8	0.087	10,300	448	Dist at 0.2%S	1.0	21	2	1	0	0	0	1
		Cruising - PZ to VSR	12.5	12	1.04	15.8	0.438	10,300	4,700	Dist at 0.2%S	1.0	220	18	8	4	4	3	10
		Cruising - VSR to CW	24.5	12	2.04	15.8	0.438	10,300	9,213	Dist at 0.2%S	1.0	431	36	15	7	7	7	20
											TOTAL	**1,317**	**108**	**46**	**22**	**22**	**21**	**60**

Table H.1.PP.Mit.Const-14. Proposed Project Auxiliary Generator Maximum Daily Mitigated Emissions from Stone Delivery.

Ship	Direction	Mode	Activity (hours)	MCR (kW)	Load Factor	Energy (kW-hr)	Fuel Type	Maximum Daily Shipcalls (vessels/day)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
PANAMAX	South In	Cruising	3.50	3,600	0.278	3,508	Dist at 0.2%S	1.0	134	11	4	3	3	2	9
		Maneuvering	2.00	3,600	0.278	2,002	Dist at 0.2%S	1.0	77	6	2	2	1	1	5
	South Out	Maneuvering	1.5	3,600	0.278	1,501	Dist at 0.2%S	1.0	57	5	2	1	1	1	4
		Cruising	3.58	3,600	0.278	3,586	Dist at 0.2%S	1.0	137	11	4	3	3	2	9
								TOTAL	**406**	**32**	**12**	**8**	**8**	**6**	**27**

Table H.1.PP.Mit.Const-15. Proposed Project Berth Operations Maximum Daily Mitigated Emissions from Stone Delivery.

Auxiliary Generator Pre-Pumping

Maximum Daily Shipcalls (vessels/day)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
1.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	2.5	96	8	3	2	2	1	6
AMP Reduction		70%											
					TOTAL		**29**	**2**	**1**	**1**	**1**	**0**	**2**

Auxiliary Generator Pumping

Maximum Daily Shipcalls (vessels/day)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
1.0	Panamax	Dist at 0.2%S	0.20	3,600	55.6%	11.0	843	67	24	17	16	13	55
AMP Reduction		70%											
					TOTAL		**253**	**20**	**7**	**5**	**5**	**4**	**17**

Auxiliary Generator Post-Pumping

Maximum Daily Shipcalls (vessels/day)	Vessel Size	Fuel Type	Sulfur Content (%)	MCR (kW)	Load Factor	Activity Time (hr)	NO_x Emissions (lb/yr)	CO Emissions (lb/yr)	ROG Emissions (lb/yr)	PM Emissions (lb/yr)	PM_{10} Emissions (lb/yr)	$PM_{2.5}$ Emissions (lb/yr)	SO_2 Emissions (lb/yr)
1.0	Panamax	Dist at 0.2%S	0.20	3,600	27.8%	1.0	38	3	1	1	1	1	3
AMP Reduction		70%											
					TOTAL		**11**	**1**	**0**	**0**	**0**	**0**	**1**

Table H.1.PP.Mit.Const-16. Proposed Project Summary of Maximum Daily Mitigated Vessel Emissions from Stone Delivery.

Mode	Equipment	NO_x Emissions (lb/day)	CO Emissions (lb/day)	ROG Emissions (lb/day)	PM Emissions (lb/day)	PM_{10} Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/day)	SO_2 Emissions (lb/day)
Cruising	Main Engines	1,299	107	46	22	22	20	59
Cruising	Aux Generator	271	21	8	5	5	4	18
Maneuvering	Main Engines	19	2	1	0	0	0	1
Maneuvering	Aux Generator	134	11	4	3	3	2	9
Berth Operations	Aux Generator	293	23	8	6	6	5	19
Propulsion	TOTAL	1,723	141	58	31	30	27	87
Non-Propulsion	TOTAL	293	23	8	6	6	5	19
		2,016	**164**	**67**	**36**	**36**	**31**	**106**

Table H.1.PP.Mit.Const-17. Proposed Project Mitigated Truck Emissions from Stone Delivery.

Construction Activity/Equipment Type	*Pounds Per Day*						
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*	*PM2.5*
Haul Truck - Base (1)	4.4	12.4	40.4	0.06	1.5	1.5	1.3

Notes: (1) Within construction site area, assuming 1 mile of transport @ 5mph and 5 minutes of idling mode for each truck round trip.

Table H.1.PP.Const.EF-1. Proposed Project Wharf Construction Activities Unmitigated Emission Factors.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)								
		ROG	CO	NO_x	SO_x	PM	PM_{10}	$PM_{2.5}$	$NMHC+NO_x$	Notes
Year 2005										
Off-Road Equipment - 25-50 Hp	D									
Off-Road Equipment - 51-120 Hp	D									
Off-Road Equipment - 121-175 Hp	D									
Off-Road Equipment - 176-250 Hp	D									
Off-Road Equipment - 251-500 Hp	D									
Off-Road Equipment - 501-750 Hp	D									
Off-Road Equipment - >750 Hp	D									
Year 2007										
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.38	0.35		(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.39	0.36		(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.24	0.22		(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.12	0.11		(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11		(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.12	0.11		(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11		(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.98	0.90		(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.48	1.32		(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.44	0.36		(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.40	0.39	0.32		(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.54	0.50		(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.46	0.42		(5)
Year 2015										
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.02	0.01		(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.02	0.01		(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.02	0.01		(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01		(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01		(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01		(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	0.02		(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	0.09		(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.16	0.10		(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.13	0.08		(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.18	0.13		(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.14	0.12		(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.17	0.16		(5)
All Years										
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.51	0.48		(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	11.00	5.38	1.12		(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	0.84	0.41	0.09		(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-1a. Proposed Project Wharf Construction Activities Unmitigated Emission Factors.

		2007						2015				
		2007 EFs (gm/hp-Hr)						2015 EFs (gm/hp-Hr)				
Imp Year		NMHC+NO$_x$	NMHC	NOx	CO	PM		NMHC+NO$_x$	NMHC	NOx	CO	PM
1999	25-50	5.6	0.56	5.04	4.1	0.45	25-50	5.6	0.56	5.04	4.1	0.022
2004	50-100	5.6	0.56	5.04	3.7	0.30	50-100	3.5	0.35	3.15	3.7	0.022
2003	100-175	4.9	0.49	4.41	3.7	0.22	100-175	- - -	0.30	0.30	3.7	0.015
2003	175-300	4.9	0.49	4.41	2.6	0.15	175-300	- - -	0.30	0.30	2.6	0.015
			0.48	4.32	2.6	0.15			0.30	0.30	2.6	0.015
2001/2	300-750	4.8	0.48	4.32	2.6	0.15	300-750	- - -	0.30	0.30	2.6	0.015
T3 only	>750	4.8	0.48	4.32	2.6	0.15	>750	- - -	0.48	2.60	2.6	0.030

Tier 2 Standards from EPA Rule, implemented between 1999-2003.

NOx/PM Tier 4 Standards from EPA Rule. CO/NMHC = Tier 2 or 3, as no Tier 4 stds for these.

Table H.1.PP.Const.EF-1b. Proposed Project Wharf Construction Activities Unmitigated Emission Factors.

Table Unmitigated EFs

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	*ROG*	*CO*	*NO_x*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	1.75	5.58	5.79	0.65
Off-Road Equipment - 51-120 Hp	0.99	3.70	6.90	0.70
Off-Road Equipment - 121-175 Hp	0.63	3.03	6.22	0.38
Off-Road Equipment - 176-250 Hp	0.42	1.41	6.00	0.22
Off-Road Equipment - 251-500 Hp	0.35	1.58	4.98	0.18
Off-Road Equipment - 501-750 Hp	0.43	1.82	6.01	0.22
Off-Road Equipment - >750 Hp	0.43	1.82	6.03	0.18
Year 2015				
Off-Road Equipment - 25-50 Hp	0.51	4.21	5.19	0.43
Off-Road Equipment - 51-120 Hp	0.51	3.42	4.25	0.43
Off-Road Equipment - 121-175 Hp	0.32	3.00	3.33	0.23
Off-Road Equipment - 176-250 Hp	0.27	1.10	3.33	0.14
Off-Road Equipment - 251-500 Hp	0.24	0.99	2.84	0.13
Off-Road Equipment - 501-750 Hp	0.30	1.14	3.39	0.15
Off-Road Equipment - >750 Hp	0.25	1.01	4.22	0.12

Table Fractional Emission Reductions from unmitigated EFs due to Implementation of Tier 2/4 standards.

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	*ROG*	*CO*	*NO_x*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	0.68	0.27	0.13	0.30
Off-Road Equipment - 51-120 Hp	0.44	0.00	0.27	0.57
Off-Road Equipment - 121-175 Hp	0.23	(0.22)	0.29	0.42
Off-Road Equipment - 176-250 Hp	(0.17)	(0.85)	0.26	0.30
Off-Road Equipment - 251-500 Hp	(0.39)	(0.64)	0.13	0.19
Off-Road Equipment - 501-750 Hp	(0.12)	(0.43)	0.28	0.33
Off-Road Equipment - >750 Hp	(0.12)	(0.43)	0.28	0.17
Year 2015				
Off-Road Equipment - 25-50 Hp	(0.09)	0.03	0.03	0.95
Off-Road Equipment - 51-120 Hp	0.31	(0.08)	0.26	0.95
Off-Road Equipment - 121-175 Hp	0.06	(0.23)	0.91	0.93
Off-Road Equipment - 176-250 Hp	(0.11)	(1.37)	0.91	0.90
Off-Road Equipment - 251-500 Hp	(0.23)	(1.62)	0.89	0.88
Off-Road Equipment - 501-750 Hp	0.00	(1.28)	0.91	0.90
Off-Road Equipment - >750 Hp	(0.91)	(1.58)	0.38	0.75

Table H.1.PP.Const.EF-2. Proposed Project Wharf Construction Activities Mitigated Emission Factors.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)						
		ROG	NMHC+NO_x	CO	NO_x	SO_x	PM	PM_{10}
Off-Road Equipment < 11 Hp	D		5.60	6.00	5.04		0.60	0.60
Off-Road Equipment 11 ≤ Hp < 25	D		5.60	4.90	5.04		0.60	0.60
Off-Road Equipment 25 ≤ Hp < 50	D		5.60	4.10	5.04		0.45	0.45
Off-Road Equipment 50 ≤ Hp < 100	D		5.60	3.70	5.04		0.30	0.30
Off-Road Equipment 100 ≤ Hp < 175	D		4.90	3.70	4.41		0.22	0.22
Off-Road Equipment 175 ≤ Hp < 300	D		4.90	2.60	4.41		0.15	0.15
Off-Road Equipment 300 ≤ Hp < 600	D		4.80	2.60	4.32		0.15	0.15
Off-Road Equipment 600 ≤ Hp ≤ 750	D		4.80	2.60	4.32		0.15	0.15
Off-Road Equipment > 750 Hp	D		4.80	2.60	4.32		0.15	0.15

Notes: (1) The NO_x emission factor is calculated by multiplying the NMHC+NO_x emission factor by 0.9.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)							
		ROG	CO	NO_x	SO_x	PM	PM_{10}	$PM_{2.5}$	Notes
Year 2007									
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.40	0.39	0.32	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.46	0.42	(5)
Year 2015									
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	0.02	(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	0.09	(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.16	0.10	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.13	0.08	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.18	0.13	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.14	0.12	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.17	0.16	(5)
All Years									
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.51	0.48	(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	---	11.00	5.38	1.12	(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	---	0.84	0.41	0.09	(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-3. Proposed Project Wharf Construction Activities GHG Emission Factors

Engine Size (hp)	BSFC (lb/bhp-hr) [a]	Fuel Density (barrels/ metric	Original Emission Factors			Converted Emission	
			CO_2 (g/hp-hr) [c]	CH_4 (kg/gal) [d]	N_2O (kg/gal) [d]	CH_4 (g/hp-hr)	N_2O (g/hp-hr)
0-15	0.65	7.46	568.3	0.0014	0.0001	0.129	0.0092
16-25	0.53	7.46	568.3	0.0014	0.0001	0.105	0.0075
26-50	0.54	7.46	568.3	0.0014	0.0001	0.107	0.0077
51-120	0.49	7.46	568.3	0.0014	0.0001	0.097	0.0070
121-175	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
176-250	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
251-500	0.41	7.46	568.3	0.0014	0.0001	0.082	0.0058
501-750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060
>750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060

[a] Source: Offroad 2007 data file "Equip.csv".

[b] Source: CCAR General Reporting Protocol v. 2.2. Appendix B.

[c] Source: Offroad 2007. Data file "Emfac.csv".

[d] Source: CCAR GRP v. 2.2 Table C.6.

[e] Formula is: Converted EF (g/hp-hr) = Original EF (kg/gal) x 1000 g/kg x 42 gal/bbl x Fuel Density (bbl/metric ton) x metric ton/10^6 g x 453.6 g/lb * BSFC (lb/hp-hr)

Table H.1.PP.Const.EF-3a. Derivation of GHG Emission Factors for Trucks (diesel).

Speed (mph)	Original Emission Factors		
	CO_2 (g/mi) [a,b]	CH_4 (g/mi) [b,c]	N_2O (g/mi) [b,c]
Idle	6,994	0.5	0.25
5	3,845	0.10	0.05
10	3,165	0.10	0.05
25	2,043	0.10	0.05
55	1,662	0.10	0.05
Composite	1,848	0.10	0.05

[a] Source: EMFAC2007. The CO2 emission factors from EMFAC2007 are identical for all project study years, for both unmitigated and mitigated fleet mixes.

[b] The idle emission factors are in units of g/hr. The idle emission factors for CH4 and N2O were derived from the 5 mph emission factor.

[c] Source: CCAR GRP v. 2.2 Table C.4. The highest emission factor from all model year categories was conservatively selected.

[c] Composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph and 5% at 5 mph.

Table H.1.PP.Const.EF-4. Proposed Project Pipeline Construction Activities Unmitigated Emission Factors.

	Fuel	Emission Factors (Grams/Horsepower-Hour)							
Project Year/Source Type	Type	ROG	CO	NO_x	SO_x	PM	PM_{10}	$PM_{2.5}$	Notes
Year 2005									
Off-Road Equipment - 25-50 Hp	D								
Off-Road Equipment - 51-120 Hp	D								
Off-Road Equipment - 121-175 Hp	D								
Off-Road Equipment - 176-250 Hp	D								
Off-Road Equipment - 251-500 Hp	D								
Off-Road Equipment - 501-750 Hp	D								
Off-Road Equipment - >750 Hp	D								
Year 2007									
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.40	0.39	0.32	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.46	0.42	(5)
Year 2015									
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	0.02	(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	0.09	(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.16	0.10	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.13	0.08	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.18	0.13	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.14	0.12	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.17	0.16	(5)
All Years									
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.51	0.48	(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	---	11.00	5.38	1.12	(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	---	0.84	0.41	0.09	(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-4a. Proposed Project Pipeline Construction Activities Unmitigated Emission Factors.

		2007						2015				
		2007 EFs (gm/hp-Hr)						2015 EFs (gm/hp-Hr)				
Imp Year		NMHC+NO:	NMHC	NOx	CO	PM		NMHC+NO:	NMHC	NOx	CO	PM
1999	25-50	5.6	0.56	5.04	4.1	0.45	25-50	5.6	0.56	5.04	4.1	0.022
2004	50-100	5.6	0.56	5.04	3.7	0.30	50-100	3.5	0.35	3.15	3.7	0.022
2003	100-175	4.9	0.49	4.41	3.7	0.22	100-175	- - -	0.30	0.30	3.7	0.015
2003	175-300	4.9	0.49	4.41	2.6	0.15	175-300	- - -	0.30	0.30	2.6	0.015
			0.48	4.32	2.6	0.15			0.30	0.30	2.6	0.015
2001/2	300-750	4.8	0.48	4.32	2.6	0.15	300-750	- - -	0.30	0.30	2.6	0.015
T3 only	>750	4.8	0.48	4.32	2.6	0.15	>750	- - -	0.48	2.60	2.6	0.030
		Tier 2 Standards from EPA Rule, implemented between 1999-2003.						NOx/PM Tier 4 Standards from EPA Rule. CO/NMHC = Tier 2 or 3, as no Tier 4 stds for these.				

Table H.1.PP.Const.EF-4b. Proposed Project Pipeline Construction Activities Unmitigated Emission Factors.

Table Unmitigated EFs

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	***ROG***	***CO***	***NOx***	***PM***
Year 2007				
Off-Road Equipment - 25-50 Hp	1.75	5.58	5.79	0.65
Off-Road Equipment - 51-120 Hp	0.99	3.70	6.90	0.70
Off-Road Equipment - 121-175 Hp	0.63	3.03	6.22	0.38
Off-Road Equipment - 176-250 Hp	0.42	1.41	6.00	0.22
Off-Road Equipment - 251-500 Hp	0.35	1.58	4.98	0.18
Off-Road Equipment - 501-750 Hp	0.43	1.82	6.01	0.22
Off-Road Equipment - >750 Hp	0.43	1.82	6.03	0.18
Year 2015				
Off-Road Equipment - 25-50 Hp	0.51	4.21	5.19	0.43
Off-Road Equipment - 51-120 Hp	0.51	3.42	4.25	0.43
Off-Road Equipment - 121-175 Hp	0.32	3.00	3.33	0.23
Off-Road Equipment - 176-250 Hp	0.27	1.10	3.33	0.14
Off-Road Equipment - 251-500 Hp	0.24	0.99	2.84	0.13
Off-Road Equipment - 501-750 Hp	0.30	1.14	3.39	0.15
Off-Road Equipment - >750 Hp	0.25	1.01	4.22	0.12

Table Fractional Emission Reductions from unmitigated EFs due to Implementation of Tier 2/4 standards.

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	**ROG**	**CO**	**NOx**	**PM**
Year 2007				
Off-Road Equipment - 25-50 Hp	0.68	0.27	0.13	0.30
Off-Road Equipment - 51-120 Hp	0.44	0.00	0.27	0.57
Off-Road Equipment - 121-175 Hp	0.23	(0.22)	0.29	0.42
Off-Road Equipment - 176-250 Hp	(0.17)	(0.85)	0.26	0.30
Off-Road Equipment - 251-500 Hp	(0.39)	(0.64)	0.13	0.19
Off-Road Equipment - 501-750 Hp	(0.12)	(0.43)	0.28	0.33
Off-Road Equipment - >750 Hp	(0.12)	(0.43)	0.28	0.17
Year 2015				
Off-Road Equipment - 25-50 Hp	(0.09)	0.03	0.03	0.95
Off-Road Equipment - 51-120 Hp	0.31	(0.08)	0.26	0.95
Off-Road Equipment - 121-175 Hp	0.06	(0.23)	0.91	0.93
Off-Road Equipment - 176-250 Hp	(0.11)	(1.37)	0.91	0.90
Off-Road Equipment - 251-500 Hp	(0.23)	(1.62)	0.89	0.88
Off-Road Equipment - 501-750 Hp	0.00	(1.28)	0.91	0.90
Off-Road Equipment - >750 Hp	(0.91)	(1.58)	0.38	0.75

Table H.1.PP.Const.EF-5. Proposed Project Pipeline Construction Activities Mitigated Emission Factors.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)				
		ROG	$NMHC+NO_x$	CO	NO_x	PM
Off-Road Equipment < 11 Hp	D		5.60	6.00	5.04	0.60
Off-Road Equipment 11 ≤ Hp < 25	D		5.60	4.90	5.04	0.60
Off-Road Equipment 25 ≤ Hp < 50	D		5.60	4.10	5.04	0.45
Off-Road Equipment 50 ≤ Hp < 100	D		5.60	3.70	5.04	0.30
Off-Road Equipment 100 ≤ Hp < 175	D		4.90	3.70	4.41	0.22
Off-Road Equipment 175 ≤ Hp < 300	D		4.90	2.60	4.41	0.15
Off-Road Equipment 300 ≤ Hp < 600	D		4.80	2.60	4.32	0.15
Off-Road Equipment 600 ≤ Hp ≤ 750	D		4.80	2.60	4.32	0.15
Off-Road Equipment > 750 Hp	D		4.80	2.60	4.32	0.15

Notes: (1) The NO_x emission factor is calculated by multiplying the NMHC+NOx emission factor by 0.9.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)						Notes
		ROG	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	
Year 2007								
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.39	0.32	(3)
ge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.42	(5)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-6. Proposed Project Pipeline Construction Activities GHG Emission Factors.

Engine Size (hp)	BSFC (lb/bhp-hr) [a]	Fuel Density (barrels/	Original Emission Factors			Converted Emission	
			CO_2 (g/hp-hr) [c]	CH_4 (kg/gal) [d]	N_2O (kg/gal) [d]	CH_4 (g/hp-hr)	N_2O (g/hp-hr)
0-15	0.65	7.46	568.3	0.0014	0.0001	0.129	0.0092
16-25	0.53	7.46	568.3	0.0014	0.0001	0.105	0.0075
26-50	0.54	7.46	568.3	0.0014	0.0001	0.107	0.0077
51-120	0.49	7.46	568.3	0.0014	0.0001	0.097	0.0070
121-175	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
176-250	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
251-500	0.41	7.46	568.3	0.0014	0.0001	0.082	0.0058
501-750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060
>750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060

[a] Source: Offroad 2007 data file "Equip.csv".

[b] Source: CCAR General Reporting Protocol v. 2.2. Appendix B.

[c] Source: Offroad 2007. Data file "Emfac.csv".

[d] Source: CCAR GRP v. 2.2 Table C.6.

[e] Formula is: Converted EF (g/hp-hr) = Original EF (kg/gal) x 1000 g/kg x 42 gal/bbl x Fuel Density (bbl/metric ton) x metric ton/10^6 g x 453.6 g/lb * BSFC (lb/hp-hr)

Table H.1.PP.Const.EF-6a. Derivation of GHG Emission Factors for Trucks (diesel).

Speed (mph)	Original Emission Factors		
	CO_2 (g/mi) [a,b]	CH_4 (g/mi) [b,c]	N_2O (g/mi) [b,c]
Idle	6,994	0.5	0.25
5	3,845	0.10	0.05
10	3,165	0.10	0.05
25	2,043	0.10	0.05
55	1,662	0.10	0.05
Composite[d]	1,848	0.10	0.05

[a] Source: EMFAC2007. The CO2 emission factors from EMFAC2007 are identical for all project study years, for both unmitigated and mitigated fleet mixes.

[b] The idle emission factors are in units of g/hr. The idle emission factors for CH4 and N2O were derived from the 5 mph emission factor.

[c] Source: CCAR GRP v. 2.2 Table C.4. The highest emission factor from all model year categories was conservatively selected.

[d] Composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph and 5% at 5 mph.

Table H.1.PP.Const.EF-7. Proposed Project Site Construction Activities Unmitigated Emission Factors (Phase 1).

	Fuel	Emission Factors (Grams/Horsepower-Hour)							
Project Year/Source Type	Type	ROG	CO	NO_x	SO_x	PM	PM_{10}	$PM_{2.5}$	Notes
Year 2005									
Off-Road Equipment - 25-50 Hp	D								
Off-Road Equipment - 51-120 Hp	D								
Off-Road Equipment - 121-175 Hp	D								
Off-Road Equipment - 176-250 Hp	D								
Off-Road Equipment - 251-500 Hp	D								
Off-Road Equipment - 501-750 Hp	D								
Off-Road Equipment - >750 Hp	D								
Year 2007									
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.40	0.39	0.32	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.46	0.42	(5)
Year 2015									
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	0.02	(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	0.09	(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.16	0.10	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.13	0.08	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.18	0.13	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.14	0.12	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.17	0.16	(5)
All Years									
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.51	0.48	(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	11.00	5.38	1.12	(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	0.84	0.41	0.09	(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-7a. Proposed Project Site Construction Activities Unmitigated Emission Factors (Phase 1).

		2007						2015				
		2007 EFs (gm/hp-Hr)						2015 EFs (gm/hp-Hr)				
Imp Year		NMHC+NOx	NMHC	NOx	CO	PM		NMHC+NOx	NMHC	NOx	CO	PM
1999	25-50	5.6	0.56	5.04	4.1	0.45	25-50	5.6	0.56	5.04	4.1	0.022
2004	50-100	5.6	0.56	5.04	3.7	0.30	50-100	3.5	0.35	3.15	3.7	0.022
2003	100-175	4.9	0.49	4.41	3.7	0.22	100-175	- - -	0.30	0.30	3.7	0.015
2003	175-300	4.9	0.49	4.41	2.6	0.15	175-300	- - -	0.30	0.30	2.6	0.015
			0.48	4.32	2.6	0.15			0.30	0.30	2.6	0.015
2001/2	300-750	4.8	0.48	4.32	2.6	0.15	300-750	- - -	0.30	0.30	2.6	0.015
T3 only	>750	4.8	0.48	4.32	2.6	0.15	>750	- - -	0.48	2.60	2.6	0.030

Tier 2 Standards from EPA Rule, implemented between 1999-2003.

NOx/PM Tier 4 Standards from EPA Rule. CO/NMHC = Tier 2 or 3, as no Tier 4 stds for these.

Table H.1.PP.Const.EF-7b. Proposed Project Site Construction Activities Unmitigated Emission Factors (Phase 1).

Table Unmitigated EFs

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	*ROG*	*CO*	*NOx*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	1.75	5.58	5.79	0.65
Off-Road Equipment - 51-120 Hp	0.99	3.70	6.90	0.70
Off-Road Equipment - 121-175 Hp	0.63	3.03	6.22	0.38
Off-Road Equipment - 176-250 Hp	0.42	1.41	6.00	0.22
Off-Road Equipment - 251-500 Hp	0.35	1.58	4.98	0.18
Off-Road Equipment - 501-750 Hp	0.43	1.82	6.01	0.22
Off-Road Equipment - >750 Hp	0.43	1.82	6.03	0.18
Year 2015				
Off-Road Equipment - 25-50 Hp	0.51	4.21	5.19	0.43
Off-Road Equipment - 51-120 Hp	0.51	3.42	4.25	0.43
Off-Road Equipment - 121-175 Hp	0.32	3.00	3.33	0.23
Off-Road Equipment - 176-250 Hp	0.27	1.10	3.33	0.14
Off-Road Equipment - 251-500 Hp	0.24	0.99	2.84	0.13
Off-Road Equipment - 501-750 Hp	0.30	1.14	3.39	0.15
Off-Road Equipment - >750 Hp	0.25	1.01	4.22	0.12

Table Fractional Emission Reductions from unmitigated EFs due to Implementation of Tier 2/4 standards.

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	*ROG*	*CO*	*NOx*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	0.68	0.27	0.13	0.30
Off-Road Equipment - 51-120 Hp	0.44	0.00	0.27	0.57
Off-Road Equipment - 121-175 Hp	0.23	(0.22)	0.29	0.42
Off-Road Equipment - 176-250 Hp	(0.17)	(0.85)	0.26	0.30
Off-Road Equipment - 251-500 Hp	(0.39)	(0.64)	0.13	0.19
Off-Road Equipment - 501-750 Hp	(0.12)	(0.43)	0.28	0.33
Off-Road Equipment - >750 Hp	(0.12)	(0.43)	0.28	0.17
Year 2015				
Off-Road Equipment - 25-50 Hp	(0.09)	0.03	0.03	0.95
Off-Road Equipment - 51-120 Hp	0.31	(0.08)	0.26	0.95
Off-Road Equipment - 121-175 Hp	0.06	(0.23)	0.91	0.93
Off-Road Equipment - 176-250 Hp	(0.11)	(1.37)	0.91	0.90
Off-Road Equipment - 251-500 Hp	(0.23)	(1.62)	0.89	0.88
Off-Road Equipment - 501-750 Hp	0.00	(1.28)	0.91	0.90
Off-Road Equipment - >750 Hp	(0.91)	(1.58)	0.38	0.75

Table H.1.PP.Const.EF-8. Proposed Project Site Construction Activities Mitigated Emission Factors (Phase 1).

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour) ROG	NMHC+NO_x	CO	NO_x	PM
Off-Road Equipment < 11 Hp	D		5.60	6.00	5.04	0.60
Off-Road Equipment 11 ≤ Hp < 25	D		5.60	4.90	5.04	0.60
Off-Road Equipment 25 ≤ Hp < 50	D		5.60	4.10	5.04	0.45
Off-Road Equipment 50 ≤ Hp < 100	D		5.60	3.70	5.04	0.30
Off-Road Equipment 100 ≤ Hp < 175	D		4.90	3.70	4.41	0.22
Off-Road Equipment 175 ≤ Hp < 300	D		4.90	2.60	4.41	0.15
Off-Road Equipment 300 ≤ Hp < 600	D		4.80	2.60	4.32	0.15
Off-Road Equipment 600 ≤ Hp ≤ 750	D		4.80	2.60	4.32	0.15
Off-Road Equipment > 750 Hp	D		4.80	2.60	4.32	0.15

Notes: (1) The NOx emission factor is calculated by multiplying the NMHC+NOx emission factor by 0.9.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour) ROG	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	Notes
Year 2007								
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.39	0.32	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.42	(5)
Year 2015								
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.01	(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.01	(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.01	(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.01	(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.01	(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.01	(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.10	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.08	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.13	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.12	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.16	(5)
All Years								
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.48	(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	5.38	1.12	(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	0.41	0.09	(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-9. Proposed Project Site Construction Activities GHG Emission Factors (Phase 1)

Engine Size (hp)	BSFC (lb/bhp-hr) [a]	Fuel Density (barrels/	Original Emission Factors			Converted Emission	
			CO_2 (g/hp-hr) [c]	CH_4 (kg/gal) [d]	N_2O (kg/gal) [d]	CH_4 (g/hp-hr)	N_2O (g/hp-hr)
0-15	0.65	7.46	568.3	0.0014	0.0001	0.129	0.0092
16-25	0.53	7.46	568.3	0.0014	0.0001	0.105	0.0075
26-50	0.54	7.46	568.3	0.0014	0.0001	0.107	0.0077
51-120	0.49	7.46	568.3	0.0014	0.0001	0.097	0.0070
121-175	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
176-250	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
251-500	0.41	7.46	568.3	0.0014	0.0001	0.082	0.0058
501-750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060
>750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060

[a] Source: Offroad 2007 data file "Equip.csv".

[b] Source: CCAR General Reporting Protocol v. 2.2. Appendix B.

[c] Source: Offroad 2007. Data file "Emfac.csv".

[d] Source: CCAR GRP v. 2.2 Table C.6.

[e] Formula is: Converted EF (g/hp-hr) = Original EF (kg/gal) x 1000 g/kg x 42 gal/bbl x Fuel Density (bbl/metric ton) x metric ton/10^6 g x 453.6 g/lb * BSFC (lb/hp-hr)

Table H.1.PP.Const.EF-9a. Derivation of GHG Emission Factors for Trucks (diesel).

Speed (mph)	Original Emission Factors		
	CO_2 (g/mi) [a,b]	CH_4 (g/mi) [b,c]	N_2O (g/mi) [b,c]
Idle	6,994	0.5	0.25
5	3,845	0.10	0.05
10	3,165	0.10	0.05
25	2,043	0.10	0.05
55	1,662	0.10	0.05
Composite[d]	1,848	0.10	0.05

[a] Source: EMFAC2007. The CO2 emission factors from EMFAC2007 are identical for all project study years, for both unmitigated and mitigated fleet mixes.

[b] The idle emission factors are in units of g/hr. The idle emission factors for CH4 and N2O were derived from the 5 mph emission factor.

[c] Source: CCAR GRP v. 2.2 Table C.4. The highest emission factor from all model year categories was conservatively selected.

[d] Composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph and 5% at 5 mph.

Table H.1.PP.Const.EF-10. Proposed Project Site Construction Activities Unmitigated Emission Factors (Phase 2).

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)							Notes
		ROG	CO	NO_x	SO_x	PM	PM_{10}	$PM_{2.5}$	
Year 2005									
Off-Road Equipment - 25-50 Hp	D								
Off-Road Equipment - 51-120 Hp	D								
Off-Road Equipment - 121-175 Hp	D								
Off-Road Equipment - 176-250 Hp	D								
Off-Road Equipment - 251-500 Hp	D								
Off-Road Equipment - 501-750 Hp	D								
Off-Road Equipment - >750 Hp	D								
Year 2007									
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.40	0.39	0.32	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.46	0.42	(5)
Year 2015									
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	0.02	(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	0.09	(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.16	0.10	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.13	0.08	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.18	0.13	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.14	0.12	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.17	0.16	(5)
All Years									
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.51	0.48	(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	---	11.00	5.38	1.12	(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	---	0.84	0.41	0.09	(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-10a. Proposed Project Site Construction Activities Unmitigated Emission Factors (Phase 2).

		2007						2015				
		2007 EFs (gm/hp-Hr)						2015 EFs (gm/hp-Hr)				
Imp Year		NMHC+NOx	NMHC	NOx	CO	PM		NMHC+NOx	NMHC	NOx	CO	PM
1999	25-50	5.6	0.56	5.04	4.1	0.45	25-50	5.6	0.56	5.04	4.1	0.022
2004	50-100	5.6	0.56	5.04	3.7	0.30	50-100	3.5	0.35	3.15	3.7	0.022
2003	100-175	4.9	0.49	4.41	3.7	0.22	100-175	- - -	0.30	0.30	3.7	0.015
2003	175-300	4.9	0.49	4.41	2.6	0.15	175-300	- - -	0.30	0.30	2.6	0.015
			0.48	4.32	2.6	0.15			0.30	0.30	2.6	0.015
2001/2	300-750	4.8	0.48	4.32	2.6	0.15	300-750	- - -	0.30	0.30	2.6	0.015
T3 only	>750	4.8	0.48	4.32	2.6	0.15	>750	- - -	0.48	2.60	2.6	0.030

Tier 2 Standards from EPA Rule, implemented between 1999-2003.

NOx/PM Tier 4 Standards from EPA Rule. CO/NMHC = Tier 2 or 3, as no Tier 4 stds for these.

Table H.1.PP.Const.EF-10b. Proposed Project Site Construction Activities Unmitigated Emission Factors (Phase 2).

Table Unmitigated EFs

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	*ROG*	*CO*	*NOx*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	1.75	5.58	5.79	0.65
Off-Road Equipment - 51-120 Hp	0.99	3.70	6.90	0.70
Off-Road Equipment - 121-175 Hp	0.63	3.03	6.22	0.38
Off-Road Equipment - 176-250 Hp	0.42	1.41	6.00	0.22
Off-Road Equipment - 251-500 Hp	0.35	1.58	4.98	0.18
Off-Road Equipment - 501-750 Hp	0.43	1.82	6.01	0.22
Off-Road Equipment - >750 Hp	0.43	1.82	6.03	0.18
Year 2015				
Off-Road Equipment - 25-50 Hp	0.51	4.21	5.19	0.43
Off-Road Equipment - 51-120 Hp	0.51	3.42	4.25	0.43
Off-Road Equipment - 121-175 Hp	0.32	3.00	3.33	0.23
Off-Road Equipment - 176-250 Hp	0.27	1.10	3.33	0.14
Off-Road Equipment - 251-500 Hp	0.24	0.99	2.84	0.13
Off-Road Equipment - 501-750 Hp	0.30	1.14	3.39	0.15
Off-Road Equipment - >750 Hp	0.25	1.01	4.22	0.12

Table Fractional Emission Reductions from unmitigated EFs due to Implementation of Tier 2/4 standards.

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	*ROG*	*CO*	*NOx*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	0.68	0.27	0.13	0.30
Off-Road Equipment - 51-120 Hp	0.44	0.00	0.27	0.57
Off-Road Equipment - 121-175 Hp	0.23	(0.22)	0.29	0.42
Off-Road Equipment - 176-250 Hp	(0.17)	(0.85)	0.26	0.30
Off-Road Equipment - 251-500 Hp	(0.39)	(0.64)	0.13	0.19
Off-Road Equipment - 501-750 Hp	(0.12)	(0.43)	0.28	0.33
Off-Road Equipment - >750 Hp	(0.12)	(0.43)	0.28	0.17
Year 2015				
Off-Road Equipment - 25-50 Hp	(0.09)	0.03	0.03	0.95
Off-Road Equipment - 51-120 Hp	0.31	(0.08)	0.26	0.95
Off-Road Equipment - 121-175 Hp	0.06	(0.23)	0.91	0.93
Off-Road Equipment - 176-250 Hp	(0.11)	(1.37)	0.91	0.90
Off-Road Equipment - 251-500 Hp	(0.23)	(1.62)	0.89	0.88
Off-Road Equipment - 501-750 Hp	0.00	(1.28)	0.91	0.90
Off-Road Equipment - >750 Hp	(0.91)	(1.58)	0.38	0.75

Table H.1.PP.Const.EF-11. Proposed Project Site Construction Activities Mitigated Emission Factors (Phase 2).

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)					
		ROG	NMHC+NOx	CO	NO_x	SO_x	PM
Off-Road Equipment < 11 Hp	D		5.60	6.00	5.04		0.60
Off-Road Equipment 11 ≤ Hp < 25	D		5.60	4.90	5.04		0.60
Off-Road Equipment 25 ≤ Hp < 50	D		5.60	4.10	5.04		0.45
Off-Road Equipment 50 ≤ Hp < 100	D		5.60	3.70	5.04		0.30
Off-Road Equipment 100 ≤ Hp < 175	D		4.90	3.70	4.41		0.22
Off-Road Equipment 175 ≤ Hp < 300	D		4.90	2.60	4.41		0.15
Off-Road Equipment 300 ≤ Hp < 600	D		4.80	2.60	4.32		0.15
Off-Road Equipment 600 ≤ Hp ≤ 750	D		4.80	2.60	4.32		0.15
Off-Road Equipment > 750 Hp	D		4.80	2.60	4.32		0.15

Notes: (1) The NOx emission factor is calculated by multiplying the NMHC+NOx emission factor by 0.9.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)							Note
		ROG	CO	NO_x	SO_x	PM	PM_{10}	$PM_{2.5}$	
Year 2007									
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.40	0.39	0.32	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.85	2.83	12.51	0.02	0.46	0.46	0.42	(5)
Year 2015									
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	0.02	(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	0.09	(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.16	0.10	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.13	0.08	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.18	0.13	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.14	0.12	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.17	0.16	(5)
All Years									
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.51	0.48	(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	11.00	5.38	1.12	(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	0.84	0.41	0.09	(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph, and 5% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-12. Proposed Project Site Construction Activities GHG Emission Factors (Phase 2).

Engine Size (hp)	BSFC (lb/bhp-hr) [a]	Fuel Density (barrels/ metric ton) [b]	Original Emission Factors			Converted Emission	
			CO_2 (g/hp-hr) [c]	CH_4 (kg/gal) [d]	N_2O (kg/gal) [d]	CH_4 (g/hp-hr)	N_2O (g/hp-hr)
0-15	0.65	7.46	568.3	0.0014	0.0001	0.129	0.0092
16-25	0.53	7.46	568.3	0.0014	0.0001	0.105	0.0075
26-50	0.54	7.46	568.3	0.0014	0.0001	0.107	0.0077
51-120	0.49	7.46	568.3	0.0014	0.0001	0.097	0.0070
121-175	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
176-250	0.47	7.46	568.3	0.0014	0.0001	0.094	0.0067
251-500	0.41	7.46	568.3	0.0014	0.0001	0.082	0.0058
501-750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060
>750	0.42	7.46	568.3	0.0014	0.0001	0.084	0.0060

[a] Source: Offroad 2007 data file "Equip.csv".

[b] Source: CCAR General Reporting Protocol v. 2.2. Appendix B.

[c] Source: Offroad 2007. Data file "Emfac.csv".

[d] Source: CCAR GRP v. 2.2 Table C.6.

[e] Formula is: Converted EF (g/hp-hr) = Original EF (kg/gal) x 1000 g/kg x 42 gal/bbl x Fuel Density (bbl/metric ton) x metric ton/10^6 g x 453.6 g/lb * BSFC (lb/hp-hr)

Table H.1.PP.Const.EF-12a. Derivation of GHG Emission Factors for Trucks (diesel).

Speed (mph)	Original Emission Factors		
	CO_2 (g/mi) [a,b]	CH_4 (g/mi) [b,c]	N_2O (g/mi) [b,c]
Idle	6,994	0.5	0.25
5	3,845	0.10	0.05
10	3,165	0.10	0.05
25	2,043	0.10	0.05
55	1,662	0.10	0.05
Composite[d]	1,848	0.10	0.05

[a] Source: EMFAC2007. The CO2 emission factors from EMFAC2007 are identical for all project study years, for both unmitigated and mitigated fleet mixes.

[b] The idle emission factors are in units of g/hr. The idle emission factors for CH4 and N2O were derived from the 5 mph emission factor.

[c] Source: CCAR GRP v. 2.2 Table C.4. The highest emission factor from all model year categories was conservatively selected.

[d] Composite factor based on a round trip of 75% at 55 mph, 20% at 25 mph and 5% at 5 mph.

Table H.1.PP.Const.EF-13. Proposed Project Mitigated Emission Factors from Stone Delivery.

Project Year/Source Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)							Note
		ROG	CO	NO_x	SO_x	PM	PM_{10}	$PM_{2.5}$	
Year 2005									
Off-Road Equipment - 25-50 Hp	D								
Off-Road Equipment - 51-120 Hp	D								
Off-Road Equipment - 121-175 Hp	D								
Off-Road Equipment - 176-250 Hp	D								
Off-Road Equipment - 251-500 Hp	D								
Off-Road Equipment - 501-750 Hp	D								
Off-Road Equipment - >750 Hp	D								
Year 2007									
Off-Road Equipment - 25-50 Hp	D	0.56	2.34	4.57	0.004	0.38	0.38	0.35	(1)
Off-Road Equipment - 51-120 Hp	D	0.58	3.23	5.64	0.006	0.39	0.39	0.36	(1)
Off-Road Equipment - 121-175 Hp	D	0.42	2.70	5.26	0.006	0.24	0.24	0.22	(1)
Off-Road Equipment - 176-250 Hp	D	0.24	0.92	5.00	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - 251-500 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
Off-Road Equipment - 501-750 Hp	D	0.24	0.92	4.95	0.006	0.12	0.12	0.11	(1)
Off-Road Equipment - >750 Hp	D	0.24	0.92	4.95	0.005	0.12	0.12	0.11	(1)
On-road Truck - Idle (Gms/Hr)	D	10.09	33.28	119.15	0.07	0.98	0.98	0.90	(3)
On-road Truck - 5 mph (Gms/Mi)	D	6.78	11.20	31.35	0.04	1.48	1.48	1.32	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.80	3.68	12.84	0.02	0.44	0.44	0.36	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.47	2.05	11.17	0.02	0.40	0.39	0.32	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	1.39	4.43	14.69	0.02	0.54	0.54	0.50	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	1.69	4.81	15.61	0.02	0.59	0.59	0.51	(5)
Year 2015									
Off-Road Equipment - 25-50 Hp	D	0.13	2.72	2.90	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 51-120 Hp	D	0.09	3.05	1.40	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 121-175 Hp	D	0.06	2.70	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 176-250 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 251-500 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - 501-750 Hp	D	0.06	0.92	0.27	0.004	0.02	0.02	0.01	(2)
Off-Road Equipment - >750 Hp	D	0.06	0.92	2.36	0.004	0.02	0.02	0.02	(2)
On-road Truck - Idle (Gms/Hr)	D	7.19	30.13	127.88	0.07	0.09	0.09	0.09	(3)
On-road Truck - 5 mph (Gms/Mi)	D	3.13	6.17	12.66	0.04	0.16	0.16	0.10	(3)
On-road Truck - 25 mph (Gms/Mi)	D	0.42	1.40	5.30	0.02	0.13	0.13	0.08	(3)
On-road Truck - 55 mph (Gms/Mi)	D	0.21	1.50	3.72	0.02	0.18	0.18	0.13	(3)
Dredge Materials Haul Truck - Composite (Gms/Mi)	D	0.69	1.87	6.04	0.02	0.14	0.14	0.12	(4)
Other On-Road Trucks - Composite (Gms/Mi)	D	0.40	1.71	4.48	0.02	0.17	0.17	0.16	(5)
All Years									
Tugboat (Gm/Hp-Hr)	D	0.37	0.82	9.85	0.01	0.51	0.51	0.48	(6)
Fugitive Dust (Lbs/acre-day)	---	---	---	---	---	---	11.00	5.38	1.12	(7)
Building Demolition (Lbs/1000 cf)	---	---	---	---	---	---	0.84	0.41	0.09	(8)

Notes: (1) From ARB OFFROAD2007 emissions model (2006) for each Hp category Tier 2 implementation year. Assuming ROG = THC*1.27.

(2) From ARB OFFROAD2007 emissions model (2006) for new equipment, year 2015. Assuming ROG = THC*1.27.

(3) Heavy duty diesel truck running emission factors developed from EMFAC2007 (ARB 2006). Units in grams/mile for project years 2007 and 2015. Based on annual average conditions at 60 degrees and 50% humidity. PM emission factors include combustive and tire/brake wear contributions. Mitigated 2007 fleet assumes that 1/2 of the trucks are compliant with 2007 standards. Mitigated 2015 fleet assumes that all trucks are compliant with 2007 standards.

(4) Composite factors based on a round trip of 90% at 25 mph and 10% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(5) For on-road trucks other then dredge material haul trucks, composite factor based on a round trip of 85% at 25 mph, and 15% at 5 mph. Units in grams/mile. Although not shown in these calculations, emissions from 5 minutes of idling mode included for each truck round trip.

(6) Data obtained from Table C2-15 of this EIR/S, then divided by 1.34 to convert to units of Gm/Hp-Hr.

(7) Units in lbs/acre-day from section 11.2.3 of AP-42 (EPA 1995). Emissions reduced by 90% from uncontrolled levels.

(8) CEQA Air Quality Handbook, Table A9-9-H (SCAQMD 1993). Units in lbs/1000 cubic feet (cf) of demolished building.

Table H.1.PP.Const.EF-13a. Proposed Project Mitigated Emission Factors from Stone Delivery.

		2007					2015				
		2007 EFs (gm/hp-Hr)					2015 EFs (gm/hp-Hr)				
T2 Imp. Year		NMHC+NOx	NMHC	NOx	CO	PM		NMHC+NOx	NMHC	NOx	CO	PM
1999	25-50	5.6	0.56	5.04	4.1	0.45	25-50	5.6	0.56	5.04	4.1	0.022
2004	50-100	5.6	0.56	5.04	3.7	0.30	50-100	3.5	0.35	3.15	3.7	0.022
2003	100-175	4.9	0.49	4.41	3.7	0.22	100-175	X	0.30	0.30	3.7	0.015
2003	175-300	4.9	0.49	4.41	2.6	0.15	175-300	X	0.30	0.30	2.6	0.015
			0.48	4.32	2.6	0.15			0.30	0.30	2.6	0.015
2001/2	300-750	4.8	0.48	4.32	2.6	0.15	300-750	X	0.30	0.30	2.6	0.015
T3 only	>750	4.8	0.48	4.32	2.6	0.15	>750	X	0.48	2.60	2.6	0.030

Tier 2 Standards from EPA Rule, implemented between 1999-2003.

NOx/PM Tier 4 Standards from EPA Rule. CO/NMHC = Tier 2 or 3, as no Tier 4 stds for these.

Table H.1.PP.Const.EF-13b. Proposed Project Mitigated Emission Factors from Stone Delivery.

Construction Unmitigated EFs

	Emission Factors (Grams/Horsepower-Hour)			
Project Year/Source Type	*ROG*	*CO*	*NOx*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	1.75	5.58	5.79	0.65
Off-Road Equipment - 51-120 Hp	0.99	3.70	6.90	0.70
Off-Road Equipment - 121-175 Hp	0.63	3.03	6.22	0.38
Off-Road Equipment - 176-250 Hp	0.42	1.41	6.00	0.22
Off-Road Equipment - 251-500 Hp	0.35	1.58	4.98	0.18
Off-Road Equipment - 501-750 Hp	0.43	1.82	6.01	0.22
Off-Road Equipment - >750 Hp	0.43	1.82	6.03	0.18
Year 2015				
Off-Road Equipment - 25-50 Hp	0.51	4.21	5.19	0.43
Off-Road Equipment - 51-120 Hp	0.51	3.42	4.25	0.43
Off-Road Equipment - 121-175 Hp	0.32	3.00	3.33	0.23
Off-Road Equipment - 176-250 Hp	0.27	1.10	3.33	0.14
Off-Road Equipment - 251-500 Hp	0.24	0.99	2.84	0.13
Off-Road Equipment - 501-750 Hp	0.30	1.14	3.39	0.15
Off-Road Equipment - >750 Hp	0.25	1.01	4.22	0.12

Table Fractional Emission Reductions from unmitigated EFs due to Implementation of Tier 2/4 standards.

Emission Factors (Grams/Horsepower-Hour)				
Project Year/Source Type	*ROG*	*CO*	*NOx*	*PM*
Year 2007				
Off-Road Equipment - 25-50 Hp	0.68	0.27	0.13	0.30
Off-Road Equipment - 51-120 Hp	0.44	0.00	0.27	0.57
Off-Road Equipment - 121-175 Hp	0.23	(0.22)	0.29	0.42
Off-Road Equipment - 176-250 Hp	(0.17)	(0.85)	0.26	0.30
Off-Road Equipment - 251-500 Hp	(0.39)	(0.64)	0.13	0.19
Off-Road Equipment - 501-750 Hp	(0.12)	(0.43)	0.28	0.33
Off-Road Equipment - >750 Hp	(0.12)	(0.43)	0.28	0.17
Year 2015				
Off-Road Equipment - 25-50 Hp	(0.09)	0.03	0.03	0.95
Off-Road Equipment - 51-120 Hp	0.31	(0.08)	0.26	0.95
Off-Road Equipment - 121-175 Hp	0.06	(0.23)	0.91	0.93
Off-Road Equipment - 176-250 Hp	(0.11)	(1.37)	0.91	0.90
Off-Road Equipment - 251-500 Hp	(0.23)	(1.62)	0.89	0.88
Off-Road Equipment - 501-750 Hp	0.00	(1.28)	0.91	0.90
Off-Road Equipment - >750 Hp	(0.91)	(1.58)	0.38	0.75

Table H.1.PP.Const.EF-14. Proposed Project Emission Source Data from Stone Delivery.

Equipment Type	*Hp Rating*	*Ave. Daily Load Factor*	*Number Active*	*Hourly Hp-Hrs*	*Equip-Hrs Per Day*	*Daily Hp-Hrs*	*Work Days*	*Total Hp-Hrs*
Haul Truck - Base (1)	NA	NA	12	NA	100	1,164	120.0	139,680

Notes: (1) Haul Truck to TFS 1 and TFS 2, Number Active = miles/roundtrip, Hours/Day = daily truck trips, Daily Hp-Hrs = daily miles, and Total Hp-Hrs = total miles.

(2) Number Active is acres disturbed at one time and Total Hp-Hrs is acre-days for the entire activity.