

**Parenthetical CALEEMOD Assumptions
For: USS Iowa EIR
Date: January 2012**

LAND USES

Amount	Land Use Type	Unit Type	Trip Rate
PHASE 1			
0.48	Prefabricated Ticket Booth/Office	1,000 square feet	N/A
0.48	Prefabricated Restroom Facility	1,000 square feet	N/A
PHASE 2			
33.80	Visitor Center (input in CalEEMod as Regional Shopping Center)	1,000 square feet	41.66 (weekends)

2012

Demolition

Equipment (CALEEMOD Default):

Quantity	Type	Hours of Daily Operation
1	Concrete/Industrial Saw	8
2	Tractor/Loader/Backhoe	6
1	Rubber Tire Dozers	1

Grading

Equipment (CALEEMOD Default):

Quantity	Type	Hours of Daily Operation
1	Grader	8
1	Rubber Tired Dozer	1
2	Tractor/Loaders/Backhoe	6
1	Off-Highway Truck (water truck)	8

Building

Equipment (CALEEMOD Default):

Quantity	Type	Hours of Daily Operation
1	Crane	4
2	Forklift	6
2	Tractor/Loader/Backhoe	8

Architectural Coating

Equipment (CALEEMOD Default):

Quantity	Type	Hours of Daily Operation
1	Air Compressor	6

**USS Iowa-Construction
South Coast Air Basin, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Library	33.8	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company
Climate Zone	11	Precipitation Freq (Days)	2.2	
			31	

1.3 User Entered Comments

- Project Characteristics -
- Land Use -
- Construction Phase - worst case construction schedule
- Off-road Equipment - fine grading equipment
- Demolition -
- Grading - 1 acre maximum disturbed
- Vehicle Trips -
- Construction Off-road Equipment Mitigation -

Off-road Equipment - construction equipment

Off-road Equipment - coating equipment

Off-road Equipment - demo equipment

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.69	2.17	1.42	0.00	0.04	0.14	0.19	0.00	0.14	0.14	0.00	234.43	234.43	0.02	0.00	234.93
Total	0.69	2.17	1.42	0.00	0.04	0.14	0.19	0.00	0.14	0.14	0.00	234.43	234.43	0.02	0.00	234.93

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.59	1.23	1.53	0.00	0.03	0.10	0.13	0.00	0.10	0.10	0.00	234.43	234.43	0.02	0.00	234.93
Total	0.59	1.23	1.53	0.00	0.03	0.10	0.13	0.00	0.10	0.10	0.00	234.43	234.43	0.02	0.00	234.93

3.0 Construction Detail

3.1 Mitigation Measures Construction

- Use Cleaner Engines for Construction Equipment
- Replace Ground Cover
- Water Exposed Area
- Water Unpaved Roads
- Reduce Vehicle Speed on Unpaved Roads
- Clean Paved Roads

3.2 Demolition - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.07	0.05	0.00		0.01	0.01		0.01	0.01	0.00	6.69	6.69	0.00	0.00	6.71
Total	0.01	0.07	0.05	0.00	0.01	0.01	0.02	0.00	0.01	0.01	0.00	6.69	6.69	0.00	0.00	6.71

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.04	3.04	0.00	0.00	3.04
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.47	0.00	0.00	0.47
Total	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	3.51	3.51	0.00	0.00	3.51

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.04	0.05	0.00		0.00	0.00		0.00	0.00	0.00	6.69	6.69	0.00	0.00	6.71
Total	0.01	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.69	6.69	0.00	0.00	6.71

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.04	3.04	0.00	0.00	3.04
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.47	0.00	0.00	0.47
Total	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	3.51	3.51	0.00	0.00	3.51

3.3 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.15	0.08	0.00		0.01	0.01		0.01	0.01	0.00	16.56	16.56	0.00	0.00	16.59
Total	0.02	0.15	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	16.56	16.56	0.00	0.00	16.59

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	0.00	0.00	0.61
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	0.00	0.00	0.61

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.10	0.00		0.01	0.01		0.01	0.01	0.00	16.56	16.56	0.00	0.00	16.59
Total	0.01	0.09	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	16.56	16.56	0.00	0.00	16.59

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	0.00	0.00	0.61
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	0.00	0.00	0.61

3.4 Building Construction - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.24	1.77	1.09	0.00		0.12	0.12		0.12	0.12	0.00	176.44	176.44	0.02	0.00	176.84
Total	0.24	1.77	1.09	0.00		0.12	0.12		0.12	0.12	0.00	176.44	176.44	0.02	0.00	176.84

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.01	0.11	0.07	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	14.70	14.70	0.00	0.00	14.71
Worker	0.01	0.01	0.09	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	13.10	13.10	0.00	0.00	13.11
Total	0.02	0.12	0.16	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.00	27.80	27.80	0.00	0.00	27.82

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.15	0.95	1.18	0.00		0.08	0.08		0.08	0.08	0.00	176.44	176.44	0.02	0.00	176.84
Total	0.15	0.95	1.18	0.00		0.08	0.08		0.08	0.08	0.00	176.44	176.44	0.02	0.00	176.84

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.11	0.07	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	14.70	14.70	0.00	0.00	14.71
Worker	0.01	0.01	0.09	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	13.10	13.10	0.00	0.00	13.11
Total	0.02	0.12	0.16	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	27.80	27.80	0.00	0.00	27.82

3.5 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.39					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	0.40	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.00	0.00	0.28
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.00	0.00	0.28

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.39					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	0.39	0.01	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.00	0.00	0.28
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.00	0.00	0.28

USS Iowa-Construction
South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Library	33.8	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company
Climate Zone	11		2.2	
		Precipitation Freq (Days)		

1.3 User Entered Comments

31

- Project Characteristics -
- Land Use -
- Construction Phase - worst case construction schedule
- Off-road Equipment - fine grading equipment
- Demolition -
- Grading - 1 acre maximum disturbed
- Vehicle Trips -
- Construction Off-road Equipment Mitigation -

Off-road Equipment - construction equipment

Off-road Equipment - coating equipment

Off-road Equipment - demo equipment

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	39.68	30.87	16.24	0.04	3.80	1.79	5.16	0.42	1.79	2.21	0.00	3,793.18	0.00	0.38	0.00	3,801.09
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	39.40	17.63	19.96	0.04	2.27	1.29	3.19	0.18	1.29	1.47	0.00	3,793.18	0.00	0.38	0.00	3,801.09
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

3.0 Construction Detail

3.1 Mitigation Measures Construction

- Use Cleaner Engines for Construction Equipment
- Replace Ground Cover
- Water Exposed Area
- Water Unpaved Roads
- Reduce Vehicle Speed on Unpaved Roads
- Clean Paved Roads

3.2 Demolition - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.76	0.00	1.76	0.00	0.00	0.00						0.00
Off-Road	2.17	14.85	9.68	0.02		1.15	1.15		1.15	1.15		1,476.12		0.19		1,480.19
Total	2.17	14.85	9.68	0.02	1.76	1.15	2.91	0.00	1.15	1.15		1,476.12		0.19		1,480.19

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.47	4.83	2.64	0.01	1.91	0.21	2.12	0.01	0.19	0.20		671.43		0.02		671.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

Worker	0.06	0.06	0.70	0.00	0.13	0.00	0.13	0.00	0.00	0.01		109.49		0.01		109.63
Total	0.53	4.89	3.34	0.01	2.04	0.21	2.25	0.01	0.19	0.21		780.92		0.03		781.55

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.75	0.00	0.75	0.00	0.00	0.00						0.00
Off-Road	1.25	7.61	9.10	0.02		0.71	0.71		0.71	0.71	0.00	1,476.12		0.19		1,480.19
Total	1.25	7.61	9.10	0.02	0.75	0.71	1.46	0.00	0.71	0.71	0.00	1,476.12		0.19		1,480.19

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.47	4.83	2.64	0.01	1.42	0.21	1.63	0.01	0.19	0.20		671.43		0.02		671.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.06	0.70	0.00	0.10	0.00	0.10	0.00	0.00	0.01		109.49		0.01		109.63
Total	0.53	4.89	3.34	0.01	1.52	0.21	1.73	0.01	0.19	0.21		780.92		0.03		781.55

3.3 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.86	0.00	0.86	0.41	0.00	0.41						0.00
Off-Road	4.12	30.79	15.32	0.03		1.78	1.78		1.78	1.78		3,650.84		0.37		3,658.57
Total	4.12	30.79	15.32	0.03	0.86	1.78	2.64	0.41	1.78	2.19		3,650.84		0.37		3,658.57

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.91	0.00	0.17	0.01	0.18	0.00	0.01	0.01		142.34		0.01		142.52
Total	0.08	0.08	0.91	0.00	0.17	0.01	0.18	0.00	0.01	0.01		142.34		0.01		142.52

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.37	0.00	0.37	0.18	0.00	0.18						0.00
Off-Road	2.78	17.56	19.05	0.03		1.28	1.28		1.28	1.28	0.00	3,650.84		0.37		3,658.57
Total	2.78	17.56	19.05	0.03	0.37	1.28	1.65	0.18	1.28	1.46	0.00	3,650.84		0.37		3,658.57

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.08	0.91	0.00	0.13	0.01	0.13	0.00	0.01	0.01		142.34		0.01		142.52
Total	0.08	0.08	0.91	0.00	0.13	0.01	0.13	0.00	0.01	0.01		142.34		0.01		142.52

3.4 Building Construction - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.39	17.66	10.87	0.02		1.17	1.17		1.17	1.17		1,945.40		0.21		1,949.90
Total	2.39	17.66	10.87	0.02		1.17	1.17		1.17	1.17		1,945.40		0.21		1,949.90

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

Vendor	0.10	1.08	0.66	0.00	0.06	0.04	0.09	0.00	0.03	0.04		162.57		0.00		162.67
Worker	0.08	0.09	0.98	0.00	0.18	0.01	0.19	0.00	0.01	0.01		153.29		0.01		153.48
Total	0.18	1.17	1.64	0.00	0.24	0.05	0.28	0.00	0.04	0.05		315.86		0.01		316.15

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.51	9.48	11.80	0.02		0.81	0.81		0.81	0.81	0.00	1,945.40		0.21		1,949.90
Total	1.51	9.48	11.80	0.02		0.81	0.81		0.81	0.81	0.00	1,945.40		0.21		1,949.90

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.10	1.08	0.66	0.00	0.04	0.04	0.08	0.00	0.03	0.04		162.57		0.00		162.67
Worker	0.08	0.09	0.98	0.00	0.14	0.01	0.14	0.00	0.01	0.01		153.29		0.01		153.48
Total	0.18	1.17	1.64	0.00	0.18	0.05	0.22	0.00	0.04	0.05		315.86		0.01		316.15

3.5 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	39.13					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29		281.19		0.05		282.18
Total	39.65	3.16	1.96	0.00		0.29	0.29		0.29	0.29		281.19		0.05		282.18

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.21	0.00	0.04	0.00	0.04	0.00	0.00	0.00		32.85		0.00		32.89
Total	0.02	0.02	0.21	0.00	0.04	0.00	0.04	0.00	0.00	0.00		32.85		0.00		32.89

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	39.13					0.00	0.00		0.00	0.00						0.00
Off-Road	0.25	1.48	1.83	0.00		0.15	0.15		0.15	0.15	0.00	281.19		0.05		282.18
Total	39.38	1.48	1.83	0.00		0.15	0.15		0.15	0.15	0.00	281.19		0.05		282.18

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.21	0.00	0.03	0.00	0.03	0.00	0.00	0.00		32.85		0.00		32.89
Total	0.02	0.02	0.21	0.00	0.03	0.00	0.03	0.00	0.00	0.00		32.85		0.00		32.89

USS Iowa-Construction
South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Library	33.8	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company
Climate Zone	11		2.2	
		Precipitation Freq (Days)		
			31	

1.3 User Entered Comments

- Project Characteristics -
- Land Use -
- Construction Phase - worst case construction schedule
- Off-road Equipment - fine grading equipment
- Demolition -
- Grading - 1 acre maximum disturbed
- Vehicle Trips -

Construction Off-road Equipment Mitigation -
 Off-road Equipment - construction equipment
 Off-road Equipment - coating equipment
 Off-road Equipment - demo equipment

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	39.68	30.88	16.18	0.04	3.80	1.79	5.16	0.42	1.79	2.21	0.00	3,781.29	0.00	0.38	0.00	3,789.20
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	39.40	17.65	19.90	0.04	2.27	1.29	3.19	0.18	1.29	1.47	0.00	3,781.29	0.00	0.38	0.00	3,789.20
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

3.0 Construction Detail

3.1 Mitigation Measures Construction

- Use Cleaner Engines for Construction Equipment
- Replace Ground Cover
- Water Exposed Area
- Water Unpaved Roads
- Reduce Vehicle Speed on Unpaved Roads
- Clean Paved Roads

3.2 Demolition - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					1.76	0.00	1.76	0.00	0.00	0.00							0.00
Off-Road	2.17	14.85	9.68	0.02		1.15	1.15		1.15	1.15		1,476.12		0.19			1,480.19
Total	2.17	14.85	9.68	0.02	1.76	1.15	2.91	0.00	1.15	1.15		1,476.12		0.19			1,480.19

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.48	5.10	2.81	0.01	1.91	0.21	2.12	0.01	0.20	0.20		668.28		0.02		668.78

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.06	0.07	0.66	0.00	0.13	0.00	0.13	0.00	0.00	0.01		100.35		0.01		100.48
Total	0.54	5.17	3.47	0.01	2.04	0.21	2.25	0.01	0.20	0.21		768.63		0.03		769.26

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.75	0.00	0.75	0.00	0.00	0.00						0.00
Off-Road	1.25	7.61	9.10	0.02		0.71	0.71		0.71	0.71	0.00	1,476.12		0.19		1,480.19
Total	1.25	7.61	9.10	0.02	0.75	0.71	1.46	0.00	0.71	0.71	0.00	1,476.12		0.19		1,480.19

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.48	5.10	2.81	0.01	1.42	0.21	1.63	0.01	0.20	0.20		668.28		0.02		668.78
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.06	0.07	0.66	0.00	0.10	0.00	0.10	0.00	0.00	0.01		100.35		0.01		100.48
Total	0.54	5.17	3.47	0.01	1.52	0.21	1.73	0.01	0.20	0.21		768.63		0.03		769.26

3.3 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.86	0.00	0.86	0.41	0.00	0.41						0.00
Off-Road	4.12	30.79	15.32	0.03		1.78	1.78		1.78	1.78		3,650.84		0.37		3,658.57
Total	4.12	30.79	15.32	0.03	0.86	1.78	2.64	0.41	1.78	2.19		3,650.84		0.37		3,658.57

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.09	0.86	0.00	0.17	0.01	0.18	0.00	0.01	0.01		130.45		0.01		130.63
Total	0.08	0.09	0.86	0.00	0.17	0.01	0.18	0.00	0.01	0.01		130.45		0.01		130.63

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.37	0.00	0.37	0.18	0.00	0.18						0.00
Off-Road	2.78	17.56	19.05	0.03		1.28	1.28		1.28	1.28	0.00	3,650.84		0.37		3,658.57
Total	2.78	17.56	19.05	0.03	0.37	1.28	1.65	0.18	1.28	1.46	0.00	3,650.84		0.37		3,658.57

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.09	0.86	0.00	0.13	0.01	0.13	0.00	0.01	0.01		130.45		0.01		130.63
Total	0.08	0.09	0.86	0.00	0.13	0.01	0.13	0.00	0.01	0.01		130.45		0.01		130.63

3.4 Building Construction - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.39	17.66	10.87	0.02		1.17	1.17		1.17	1.17		1,945.40		0.21		1,949.90
Total	2.39	17.66	10.87	0.02		1.17	1.17		1.17	1.17		1,945.40		0.21		1,949.90

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00

Vendor	0.10	1.13	0.74	0.00	0.06	0.04	0.09	0.00	0.04	0.04		161.40		0.01		161.51
Worker	0.09	0.10	0.92	0.00	0.18	0.01	0.19	0.00	0.01	0.01		140.49		0.01		140.67
Total	0.19	1.23	1.66	0.00	0.24	0.05	0.28	0.00	0.05	0.05		301.89		0.02		302.18

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.51	9.48	11.80	0.02		0.81	0.81		0.81	0.81	0.00	1,945.40		0.21		1,949.90
Total	1.51	9.48	11.80	0.02		0.81	0.81		0.81	0.81	0.00	1,945.40		0.21		1,949.90

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.10	1.13	0.74	0.00	0.04	0.04	0.08	0.00	0.04	0.04		161.40		0.01		161.51
Worker	0.09	0.10	0.92	0.00	0.14	0.01	0.14	0.00	0.01	0.01		140.49		0.01		140.67
Total	0.19	1.23	1.66	0.00	0.18	0.05	0.22	0.00	0.05	0.05		301.89		0.02		302.18

3.5 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	39.13					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96	0.00		0.29	0.29		0.29	0.29		281.19		0.05		282.18
Total	39.65	3.16	1.96	0.00		0.29	0.29		0.29	0.29		281.19		0.05		282.18

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.20	0.00	0.04	0.00	0.04	0.00	0.00	0.00		30.10		0.00		30.14
Total	0.02	0.02	0.20	0.00	0.04	0.00	0.04	0.00	0.00	0.00		30.10		0.00		30.14

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	39.13					0.00	0.00		0.00	0.00						0.00
Off-Road	0.25	1.48	1.83	0.00		0.15	0.15		0.15	0.15	0.00	281.19		0.05		282.18
Total	39.38	1.48	1.83	0.00		0.15	0.15		0.15	0.15	0.00	281.19		0.05		282.18

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.20	0.00	0.03	0.00	0.03	0.00	0.00	0.00		30.10		0.00		30.14
Total	0.02	0.02	0.20	0.00	0.03	0.00	0.03	0.00	0.00	0.00		30.10		0.00		30.14

**USS Iowa-Operations
South Coast Air Basin, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Regional Shopping Center	33.8	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Los Angeles Department of Water & Power
Climate Zone	11		2.2		
		Precipitation Freq (Days)			
			31		

1.3 User Entered Comments

- Project Characteristics -
- Land Use - 33,800 sf visitor center
- Construction Phase - no construction-operation run only
- Demolition -
- Grading - 1 acre maximum disturbed
- Vehicle Trips - max of approximately 1,196 weekday trips & 1,408 daily wknd trips
- Construction Off-road Equipment Mitigation -
- Mobile Land Use Mitigation -

Water Mitigation -

Mobile Commute Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.16	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	291.12	291.12	0.01	0.00	292.07
Mobile	0.97	2.19	9.49	0.01	1.20	0.08	1.27	0.02	0.07	0.09	0.00	1,083.71	1,083.71	0.07	0.00	1,085.13
Waste						0.00	0.00		0.00	0.00	7.20	0.00	7.20	0.43	0.00	16.14
Water						0.00	0.00		0.00	0.00	0.00	27.92	27.92	0.08	0.00	30.20
Total	1.13	2.19	9.49	0.01	1.20	0.08	1.27	0.02	0.07	0.09	7.20	1,402.75	1,409.95	0.59	0.00	1,423.54

4.0 Mobile Detail

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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Category	tons/yr										MT/yr					
Unmitigated	0.97	2.19	9.49	0.01	1.20	0.08	1.27	0.02	0.07	0.09	0.00	1,083.71	1,083.71	0.07	0.00	1,085.13

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated
	Weekday	Saturday	Sunday	Annual VMT
Regional Shopping Center	1,195.84	1,408.11	1,408.11	2,203,011
Total	1,195.84	1,408.11	1,408.11	2,203,011

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00

5.0 Energy Detail

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	288.05	288.05	0.01	0.00	288.99
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	3.07	3.07	0.00	0.00	3.08
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Regional Shopping Center	57460	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	3.07	3.07	0.00	0.00	3.08
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	3.07	3.07	0.00	0.00	3.08

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Regional Shopping Center	512746					288.05	0.01	0.00	288.99
Total						288.05	0.01	0.00	288.99

6.0 Area Detail

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	0.16	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.12					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.16	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

7.0 Water Detail

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Unmitigated					27.92	0.08	0.00	30.20

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr			MT/yr				

Regional Shopping Center	2.50365 / 1.5345					27.92	0.08	0.00	30.20
Total						27.92	0.08	0.00	30.20

8.0 Waste Detail

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Unmitigated					7.20	0.43	0.00	16.14

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Regional Shopping Center	35.49					7.20	0.43	0.00	16.14
Total						7.20	0.43	0.00	16.14

9.0 Vegetation

**USS Iowa-Operations
South Coast Air Basin, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Regional Shopping Center	33.8	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Los Angeles Department of Water & Power
Climate Zone	11		2.2		
		Precipitation Freq (Days)			
			31		

1.3 User Entered Comments

- Project Characteristics -
- Land Use - 33,800 sf visitor center
- Construction Phase - no construction-operation run only
- Demolition -
- Grading - 1 acre maximum disturbed
- Vehicle Trips - max of approximately 1,196 weekday trips & 1,408 daily wknd trips
- Construction Off-road Equipment Mitigation -
- Mobile Land Use Mitigation -

Water Mitigation -

Mobile Commute Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.88	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00		18.52		0.00	0.00	18.63
Mobile	6.18	13.24	57.35	0.08	8.17	0.48	8.65	0.11	0.46	0.57		7,728.95		0.45		7,738.39
Total	7.06	13.26	57.36	0.08	8.17	0.48	8.65	0.11	0.46	0.57		7,747.47		0.45	0.00	7,757.02

4.0 Mobile Detail

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	6.18	13.24	57.35	0.08	8.17	0.48	8.65	0.11	0.46	0.57		7,728.95		0.45		7,738.39

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated
	Weekday	Saturday	Sunday	Annual VMT
Regional Shopping Center	1,195.84	1,408.11	1,408.11	2,203,011
Total	1,195.84	1,408.11	1,408.11	2,203,011

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00

5.0 Energy Detail

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Unmitigated	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00		18.52		0.00	0.00	18.63

5.2 Energy by Land Use - NaturalGas

Unmitigated

NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
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Land Use	kBTU	lb/day										lb/day				
Regional Shopping Center	157.425	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.52	0.00	0.00	18.63
Total		0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.52	0.00	0.00	18.63

6.0 Area Detail

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	0.88	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.21					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.67					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.88	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

7.0 Water Detail

8.0 Waste Detail

9.0 Vegetation

USS Iowa-Operations
South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Regional Shopping Center	33.8	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Los Angeles Department of Water & Power
Climate Zone	11		2.2		
		Precipitation Freq (Days)			
			31		

1.3 User Entered Comments

Project Characteristics -
 Land Use - 33,800 sf visitor center
 Construction Phase - no construction-operation run only
 Demolition -
 Grading - 1 acre maximum disturbed
 Vehicle Trips - max of approximately 1,196 weekday trips & 1,408 daily wknd trips
 Construction Off-road Equipment Mitigation -
 Mobile Land Use Mitigation -

Water Mitigation -

Mobile Commute Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.88	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00		18.52		0.00	0.00	18.63
Mobile	6.37	14.32	57.92	0.07	8.17	0.49	8.66	0.11	0.46	0.58		7,191.10		0.43		7,200.04
Total	7.25	14.34	57.93	0.07	8.17	0.49	8.66	0.11	0.46	0.58		7,209.62		0.43	0.00	7,218.67

4.0 Mobile Detail

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	6.37	14.32	57.92	0.07	8.17	0.49	8.66	0.11	0.46	0.58		7,191.10		0.43		7,200.04

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated
	Weekday	Saturday	Sunday	Annual VMT
Regional Shopping Center	1,195.84	1,408.11	1408.11	2,203,011
Total	1,195.84	1,408.11	1,408.11	2,203,011

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00

5.0 Energy Detail

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
NaturalGas Unmitigated	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00		18.52		0.00	0.00	18.63

5.2 Energy by Land Use - NaturalGas

Unmitigated

Land Use	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	kBTU	lb/day										lb/day					
Regional Shopping Center	157.425	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00		18.52		0.00	0.00	18.63

Total		0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00		18.52		0.00	0.00	18.63
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6.0 Area Detail

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	0.88	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.21					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.67					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.88	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

7.0 Water Detail

8.0 Waste Detail

9.0 Vegetation

OCEAN TUG CALCULATIONS

EPA Emission Factors (EF): Personal Communication with EPA

EFs (g/kW-hr)

Episodic fuel sulfur level (ppm): 15

Emission Tier	Last Model Year	Range of Cylinder Displacement (l/cyl)	Power Bin (low to high, kW)	HC	CO	NOx	PM10	CARB's CO2 EF	Episodic fuel sulfur level (ppm)
1	2006	5 15	0 100000	0.134	2.48	10.55	0.32	731.7 V	3300

Emissions Calculated (short tons)

Nautical Miles (Note the final 10 involve assist tugs only, see below)	Hours	Total Installed Power (hp)	Load Factor (multiplier)	Number of Tugs	Work Performed (kW-hr)	HC (tons)	CO (tons)	NOx (tons)	PM (tons)	Fuel (g)	CO2 (tons)
388	77.6	7200	0.69	1	287,485	0	1	3.343212244	0.1014055	210,352,455	736.63

reference From PBC Tow Plan Knots
 Calculated Website EPA
 5.00

Speed of 5 knots taken from The USS NewJersey tow from Bremerton to Philadelphia.

http://www.usnewjersey.com/voy_news.htm

Ocean tugs typically use larger engines, and this estimate used the EPA load factor for Category 2 propulsion engines. Load Factor was taken from latest EPA RIA for marine regulations for Category 2 engines.

Table 3.2-7 Calculations

					(Total pounds)			
Day	Air District	Miles	Percent	Day %	ROG	NOx	CO	PM
1	BAAQMD	47	12.1%	39%	10.29	809.95	190.40	24.57
1	MBUAPCD	98	25.3%	82%	21.45	1,688.84	397.00	51.23
2	SLOAPCD	63	16.2%	53%	13.79	1,085.68	255.21	32.93
2	SBAPCD	42	10.8%	35%	9.19	723.79	170.14	21.95
3	VCAPCD	82	21.1%	68%	17.95	1,413.11	332.18	42.86
3	SCAQMD	56	14.4%	47%	12.26	965.05	226.86	29.27
		388	100%		84.93	6,686.42	1,571.79	202.81
Mitigated Emissions								
Day	Air District	Miles	Percent		ROG	NOx	CO	PM
3	SCAQMD	56	100%		12.26	965.05	226.86	29.27
	Mitigated				12.26	545.25	226.86	11.42
		56	100%					

*Notes:

CAAP Control Measure HC1 reduces NOx emissions by 25-62%; thus, the mean of 43.5% reduction has been taken

CAAP Control Measure HC1 reduces PM emissions by 44-78%; thus, the mean of 61% reduction has been taken

CAAP Control Measure HC1 does not specify reductions for ROG or CO

ASSIST TUG CALCULATIONS

EPA Emission Factors (EF): Personal Communication with EPA

EFs (g/kW-hr)

Episodic fuel sulfur level (ppm):

Emission Tier	Last Model Year	Range of Cylinder Displacement (l/cyl)	Power Bin (low to high, kW)	HC	CO	NOx	PM10	CARB's CO2 EF	Episodic fuel sulfur level (ppm): Cert Fuel S
1	2006	5 15	0 100000	0.134	2.48	10.55	0.32	731.7 V	3300

Emissions Calculated (short tons)

Nautical Miles	Hours	Total Installed Power (hp)	Load Factor (multiplier)	Number of Tugs	Work Performed (kW-hr)	HC (tons)	CO (tons)	NOx (tons)	PM (tons)	Fuel (g)	CO2 (tons)
10	2	4732	0.69	2	9,739	0	0	0.113259453	0.0034354	7,126,201	24.96

reference From PBC Tow Plan Calculated Website EPA Calculated Calculated Calculated Calculated Calculated Calculated Calculated

Crowley

5.00

Speed of 5 knots taken from

The USS NewJersey tow from Bremerton to Philadelphia.

http://www.ussnewjersey.com/voy_news.htm

Ocean tugs typically use larger engines, and this estimate used the EPA load factor for Category 2 propulsion engines.

Load Factor was taken from latest EPA RIA for marine regulations for Category 2 engines.

Table 3.2-7 Calculations (to be added to the SCAQMD emissions above)

(Total pounds)

Day	Air District	Miles	Percent	Day %	ROG	NOx	CO	PM
3	SCAQMD	10	2.7%	8%	2.88	226.52	53.25	6.87
3	SCAQMD	10	2.7%	8%	2.88	127.98	53.25	2.68

*Notes:

CAAP Control Measure HC1 reduces NOx emissions by 25-62%; thus, the mean of 43.5% reduction has been taken

CAAP Control Measure HC1 reduces PM emissions by 44-78%; thus, the mean of 61% reduction has been taken

CAAP Control Measure HC1 does not specify reductions for ROG or CO

ANNUAL SHIP TURNING - ASSIST TUG CALCULATIONS

EPA Emission Factors (EF): Personal Communication with EPA
EFs (g/kW-hr)

Emission Tier	Last Model Year	Range of Cylinder Displacement (l/cyl)	Power Bin (low to high, kW)	HC	CO	NOx	PM10	CARB's CO2 EF	Episodic fuel sulfur level (ppm): Cert Fuel S ppm
1	2006	5 15	0 100000	0.134	2.48	10.55	0.32	731.7 ✓	3300

Emissions Calculated (short tons)

Nautical Miles	Hours	Total Installed Power (hp)	Load Factor (multiplier)	Number of Tugs	Work Performed (kW-hr)	HC (tons)	CO (tons)	NOx (tons)	PM (tons)	Fuel (g)	CO2 (tons)
4	0.8	4732	0.69	2	3,896	0	0	0.0453038	0.0013741	2,850,481	9.98

reference *From PBC Tow Plan* *Calculated* *Crowley Website* *EPA* *Calculated* *Calculated* *Calculated* *Calculated* *Calculated* *Calculated* *Calculated*

Knots 5.00

Speed of 5 knots taken from

The USS NewJersey tow from Bremerton to Philadelphia.

http://www.ussnewjersey.com/voy_news.htm

Ocean tugs typically use larger engines, and this estimate used the EPA load factor for Category 2 propulsion engines.

Load Factor was taken from latest EPA RIA for marine regulations for Category 2 engines.

(Total pounds)

Day	Air District	Miles	Percent	Day %	ROG	NOx	CO	PM
Unmitigated Emissions	3	SCAQMD	10	2.7%	8%	1.15	90.61	21.30 2.75
Mitigated Emissions	3	SCAQMD	10	2.7%	8%	1.15	51.19	21.30 1.07

*Notes:

CAAP Control Measure HC1 reduces NOx emissions by 25-62%; thus, the mean of 43.5% reduction has been taken

CAAP Control Measure HC1 reduces PM emissions by 44-78%; thus, the mean of 61% reduction has been taken

CAAP Control Measure HC1 does not specify reductions for ROG or CO

Title : Los Angeles County Subarea Annual Cvr 2030 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/11/15 10:08:43
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Annual
Area : Los Angeles (SC)
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-NCAT	LDA-CAT	LDA-DSL	LDA-TOT	LDT1-NCAT	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCAT	LDT2-CAT	LDT2-DSL	LDT2-TOT	MDV-NCAT	MDV-CAT	MDV-DSL	MDV-TOT	LHDT1-NCAT	LHDT1-CAT	LHDT1-DSL	LHDT1-TOT	LHDT2-NCAT	LHDT2-CAT	LHDT2-DSL	LHDT2-TOT	MHDT-NCAT	MHDT-CAT	MHDT-DSL	MHDT-TOT
Vehicles	0	3811200	231	3811430	0	480168	1318	481485	0	1613010	150	1613160	0	716100	348	716449	0	93776	21211	114987	0	20627	14997	35624	0	14925	56906	71831
VM7/1000	0	121931	4	121935	0	16566	33	16600	0	55648	4	55652	0	24291	8	24299	0	4484	1024	5508	0	984	712	1697	0	765	3525	4291
Trips	0	23538100	1085	23539200	0	2918960	6205	2925160	0	9826330	697	9827020	0	4346320	1680	4348000	0	3100870	266809	3367680	0	682068	188638	870706	0	681592	1595660	2277250
Total Organic Gas Emissions																												
Run Exh	0	2.68	0	2.68	0	0.48	0	0.49	0	2.56	0	2.56	0	1.4	0	1.4	0	0.19	0.1	0.29	0	0.02	0.07	0.09	0	0.03	0.46	0.49
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.12	0	0.12	0	0.03	0	0.03	0	0.03	0.02	0.05
Start Ex	0	1.72	0	1.72	0	0.27	0	0.27	0	1.49	0	1.49	0	0.97	0	0.97	0	0.87	0	0.87	0	0.15	0	0.15	0	0.34	0	0.34
Total Ex	0	4.4	0	4.4	0	0.76	0	0.76	0	4.05	0	4.05	0	2.37	0	2.37	0	1.18	0.1	1.28	0	0.2	0.07	0.27	0	0.4	0.48	0.88
Diurnal	0	0.87	0	0.87	0	0.15	0	0.15	0	0.81	0	0.81	0	0.39	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0
Hot Soak	0	2.29	0	2.29	0	0.37	0	0.37	0	1.55	0	1.55	0	0.72	0	0.72	0	0.13	0	0.13	0	0.02	0	0.02	0	0.01	0	0.01
Running	0	5.47	0	5.47	0	1.39	0	1.39	0	5.83	0	5.83	0	2.64	0	2.64	0	1.39	0	1.39	0	0.22	0	0.22	0	0.21	0	0.21
Resting	0	0.89	0	0.89	0	0.16	0	0.16	0	0.89	0	0.89	0	0.43	0	0.43	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	13.91	0	13.91	0	2.84	0	2.84	0	13.14	0	13.14	0	6.56	0	6.56	0	2.7	0.1	2.8	0	0.44	0.07	0.51	0	0.63	0.48	1.11
Carbon Monoxide Emissions																												
Run Exh	0	81.74	0	81.74	0	15.42	0.02	15.44	0	73.3	0	73.3	0	39.38	0.01	39.39	0	2.97	0.87	3.83	0	0.28	0.58	0.85	0	0.5	5.39	5.9
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.72	0.02	0.74	0	0.16	0.02	0.17	0	0.18	0.16	0.34
Start Ex	0	26.3	0	26.3	0	4.41	0	4.41	0	21.73	0	21.73	0	13.5	0	13.5	0	9.97	0	9.97	0	1.74	0	1.74	0	5.11	0	5.11
Total Ex	0	108.05	0	108.05	0	19.83	0.02	19.85	0	95.02	0	95.03	0	52.89	0.01	52.89	0	13.65	0.89	14.54	0	2.18	0.59	2.77	0	5.79	5.56	11.35
Oxides of Nitrogen Emissions																												
Run Exh	0	5.96	0.01	5.96	0	1.13	0.05	1.18	0	6.5	0.01	6.5	0	3.41	0.01	3.43	0	1.04	1.72	2.75	0	0.15	1.16	1.31	0	0.2	6.21	6.41
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.06	0.07	0	0	0.04	0.04	0	0	0.46	0.46
Start Ex	0	1.34	0	1.34	0	0.23	0	0.23	0	1.47	0	1.47	0	0.89	0	0.89	0	4.82	0	4.82	0	0.97	0	0.97	0	0.74	0	0.74
Total Ex	0	7.3	0.01	7.3	0	1.36	0.05	1.42	0	7.96	0.01	7.97	0	4.3	0.01	4.32	0	5.87	1.78	7.64	0	1.13	1.2	2.33	0	0.94	6.67	7.61
Carbon Dioxide Emissions (000)																												
Run Exh	0	53.52	0	53.52	0	9.17	0.01	9.19	0	31.42	0	31.42	0	18.67	0	18.67	0	3.59	0.59	4.18	0	0.79	0.41	1.2	0	0.6	5.85	6.45
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0	0.03	0	0.01	0	0.01	0	0.01	0.03	0.03
Start Ex	0	1.81	0	1.81	0	0.28	0	0.28	0	0.97	0	0.97	0	0.59	0	0.59	0	0.15	0	0.15	0	0.03	0	0.03	0	0.03	0	0.03
Total Ex	0	55.33	0	55.33	0	9.46	0.01	9.47	0	32.4	0	32.4	0	19.25	0	19.26	0	3.77	0.59	4.36	0	0.83	0.41	1.24	0	0.63	5.87	6.51
PM10 Emissions																												
Run Exh	0	1.89	0	1.89	0	0.31	0	0.32	0	2.29	0	2.29	0	1	0	1	0	0.05	0.02	0.07	0	0.01	0.02	0.03	0	0.01	0.47	0.48
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.17	0	0.17	0	0.02	0	0.02	0	0.17	0	0.17	0	0.08	0	0.08	0	0.01	0	0.01	0	0	0	0	0	0	0	0
Total Ex	0	2.05	0	2.05	0	0.34	0	0.34	0	2.46	0	2.46	0	1.08	0	1.08	0	0.06	0.02	0.08	0	0.01	0.02	0.03	0	0.01	0.48	0.49
TireWear	0	1.08	0	1.08	0	0.15	0	0.15	0	0.49	0	0.49	0	0.21	0	0.21	0	0.06	0.01	0.07	0	0.01	0.01	0.02	0	0.01	0.05	0.06
BrakeWr	0	1.69	0	1.69	0	0.23	0	0.23	0	0.77	0	0.77	0	0.34	0	0.34	0	0.06	0.01	0.08	0	0.01	0.01	0.02	0	0.01	0.05	0.06
Total	0	4.81	0	4.81	0	0.71	0	0.72	0	3.72	0	3.72	0	1.63	0	1.63	0	0.18	0.05	0.23	0	0.04	0.04	0.07	0	0.03	0.57	0.6
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0	0.53	0	0.53	0	0.09	0	0.09	0	0.31	0	0.31	0	0.19	0	0.19	0	0.04	0.01	0.04	0	0.01	0	0.01	0	0.01	0.06	0.06
Fuel Consumption (000 gallons)																												
Gasoline	0	5683.38	0	5683.38	0	971.75	0	971.75	0	3333.04	0	3333.04	0	1980.45	0	1980.45	0	388.33	0	388.33	0	85.13	0	85.13	0	65.97	0	65.97
Diesel	0	0	0.15	0.15	0	0	1.14	1.14	0	0	0.13	0.13	0	0	0.27	0.27	0	0	53.02	53.02	0	0	36.94	36.94	0	0	528.61	528.61

HHDT-NCA	HHDT-CAT	HHDT-DSL	HHDT-TOT	OBUS-NCA	OBUS-CAT	OBUS-DSL	OBUS-TOT	SBUS-NCATS	SBUS-CAT	SBUS-DSL	SBUS-TOT	UB-NCAT	UB-CAT	UB-DSL	UB-TOT	MH-NCAT	MH-CAT	MH-DSL	MH-TOT	MCY-NCAT	MCY-CAT	MCY-DSL	MCY-TOT	ALL-TOT	
0	883	32262	33145	0	1773	5415	7188	0	636	5705	6341	0	2133	3169	5302	0	56941	5757	62698	52986	104392	0	157378	7117010	
0	75	7175	7250	0	62	266	328	0	23	209	232	0	232	345	577	0	681	67	748	378	767	0	1146	240260	
0	40321	163264	203585	0	80959	151836	232795	0	2545	22818	25363	0	8532	12675	21207	0	5696	576	6272	105962	208763	0	314725	47959000	
0	0.09	2.53	2.62	0	0	0.03	0.03	0	0.01	0.08	0.09	0	0.12	0.21	0.33	0	0.02	0	0.02	1.78	1.97	0	3.75	14.83	
0	0	0.53	0.53	0	0	0	0.01	0	0.01	0.01	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0.76	
0	0.11	0	0.11	0	0.04	0	0.04	0	0	0	0	0	0.03	0	0.03	0	0	0	0	0.29	0.48	0	0.76	6.77	
0	0.19	3.06	3.26	0	0.05	0.03	0.08	0	0.02	0.09	0.11	0	0.15	0.21	0.36	0	0.02	0	0.02	2.07	2.45	0	4.51	22.36	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0.3	2.54	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.11	0	0.11	5.21
0	0.03	0	0.03	0	0.03	0	0.03	0	0.01	0	0.01	0	0.02	0	0.02	0	0	0	0	0	0.38	0	0.38	17.62	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.16	0	0.16	2.53
0	0.22	3.06	3.28	0	0.09	0.03	0.12	0	0.03	0.09	0.12	0	0.17	0.21	0.38	0	0.03	0	0.03	2.07	3.39	0	5.46	50.26	
0	3.19	11.3	14.49	0	0.05	0.33	0.38	0	0.15	0.66	0.8	0	1.56	1.03	2.59	0	0.21	0.04	0.25	20.35	8.37	0	28.72	267.7	
0	0	2.5	2.5	0	0.02	0.02	0.04	0	0.05	0.09	0.13	0	0	0	0	0	0	0	0	0	0	0	0	3.92	
0	1.97	0	1.97	0	0.65	0	0.65	0	0.06	0	0.06	0	0.33	0	0.33	0	0.03	0	0.03	0.89	2.72	0	3.61	89.42	
0	5.16	13.8	18.95	0	0.73	0.34	1.07	0	0.26	0.75	1	0	1.89	1.03	2.92	0	0.24	0.04	0.28	21.24	11.08	0	32.33	361.04	
0	0.46	22.7	23.16	0	0.02	0.39	0.41	0	0.03	1.47	1.5	0	0.47	4.58	5.06	0	0.13	0.16	0.29	0.54	0.85	0	1.4	59.38	
0	0	7.39	7.39	0	0	0.04	0.04	0	0	0.25	0.25	0	0	0	0	0	0	0	0	0	0	0	0	8.26	
0	0.25	0	0.25	0	0.1	0	0.1	0	0.01	0	0.01	0	0.05	0	0.05	0	0	0	0	0.04	0.07	0	0.11	10.98	
0	0.71	30.09	30.8	0	0.12	0.43	0.55	0	0.04	1.72	1.76	0	0.53	4.58	5.11	0	0.13	0.16	0.29	0.58	0.92	0	1.5	78.61	
0	0.06	14.78	14.84	0	0.05	0.44	0.49	0	0.02	0.35	0.37	0	0.19	0.95	1.14	0	0.53	0.11	0.64	0.05	0.17	0	0.22	142.32	
0	0	0.4	0.4	0	0	0	0	0	0	0.01	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0.49	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.01	0	0.01	3.89	
0	0.06	15.17	15.24	0	0.05	0.44	0.5	0	0.02	0.36	0.38	0	0.19	0.95	1.14	0	0.53	0.11	0.65	0.06	0.17	0	0.24	146.7	
0	0	1.07	1.07	0	0	0.03	0.03	0	0	0.08	0.08	0	0.01	0.09	0.09	0	0	0	0.01	0.02	0	0	0.03	7.39	
0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.46	
0	0	1.08	1.08	0	0	0.03	0.03	0	0	0.08	0.08	0	0.01	0.09	0.09	0	0	0	0.01	0.03	0	0	0.03	7.86	
0	0	0.28	0.29	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0.01	0	0.01	0	0	0	0.01	2.39	
0	0	0.22	0.23	0	0	0	0	0	0	0	0	0	0	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	3.44	
0	0	1.59	1.6	0	0	0.04	0.04	0	0	0.09	0.09	0	0.01	0.1	0.11	0	0.02	0.01	0.03	0.03	0.01	0	0.04	13.7	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0.14	0.15	0	0	0	0	0	0	0	0	0	0	0.01	0.01	0	0.01	0	0.01	0	0	0	0	1.41	
0	7.09	0	7.09	0	5.51	0	5.51	0	2.22	0	2.22	0	19.98	0	19.98	0	54.72	0	54.72	10.35	20.35	0	30.7	12628.28	
0	0	1365.73	1365.73	0	0	39.88	39.88	0	0	32.46	32.46	0	0	85.63	85.63	0	0	10	10	0	0	0	0	2153.95	

ANNUAL SHIP TURNING - ASSIST TUG CALCULATIONS

EPA Emission Factors (EF): Personal Communication with EPA
EFs (g/kW-hr)

Emission Tier	Last Model Year	Range of Cylinder Displacement (l/cyl)	Power Bin (low to high, kW)	HC	CO	NOx	PM10	CARB's CO2 EF	Episodic fuel sulfur level (ppm): Cert Fuel S
1	2006	5 15	0 100000	0.134	2.48	10.55	0.32	731.7 v	3300

Emissions Calculated (short tons)

Nautical Miles	Hours	Total Installed Power (hp)	Load Factor (multiplier)	Number of Tugs	Work Performed (kW-hr)	HC (tons)	CO (tons)	NOx (tons)	PM (tons)	Fuel (g)	CO2 (tons)
4	0.8	4732	0.69	2	3,896	0	0	0.0453038	0.0013741	2,850,481	9.98

reference

From PBC Tow Plan	Calculated	Crowley Website	EPA	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated
Knots	5.00										

Speed of 5 knots taken from

The USS NewJersey tow from Bremerton to Philadelphia.

http://www.usnewjersey.com/voy_news.htm

Ocean tugs typically use larger engines, and this estimate used the EPA load factor for Category 2 propulsion engines.

Load Factor was taken from latest EPA RIA for marine regulations for Category 2 engines.

Table 3.2-7 Calculations (to be added to the SCAQMD emissions above)

(Total pounds)

	Day	Air District	Miles	Percent	Day %	ROG	NOx	CO	PM
Unmitigated Emissions	3	SCAQMD	10	2.7%	8%	1.15	90.61	21.30	2.75
Mitigated Emissions	3	SCAQMD	10	2.7%	8%	1.15	51.19	21.30	1.07

*Notes:

CAAP Control Measure HC1 reduces NOx emissions by 25-62%; thus, the mean of 43.5% reduction has been taken

CAAP Control Measure HC1 reduces PM emissions by 44-78%; thus, the mean of 61% reduction has been taken

CAAP Control Measure HC1 does not specify reductions for ROG or CO