Appendix E

Greenhouse Gases, Air Quality, and Noise Supplemental Information

ESA

BVDSP Construction 2020

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Apartments Mid Rise	991	Dwelling Unit
Strip Mall	601.9	1000sqft
General Office Building	179.4	1000sqft
Medical Office Building	358.9	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - This run is construction only for interim year 2020. Operational emissions are a separate model run. CO2 factor adjusted to reflect year 2015 PG&E estimate.

Land Use -

Construction Phase - Adjusted building construction phase to reflect construction complete by 2020

Off-road Equipment - Adjust load factor downward 33% per CARB Recommendation.

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Off-road Equipment - Adjust load factor downward 33% per CARB Recommendation.

Demolition -

Architectural Coating - Adjust VOC content to match upper limit of Green Building Code.

Construction Off-road Equipment Mitigation -

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					
2015	1.00	7.11	5.72	0.01	2.40	0.32	2.73	0.44	0.32	0.77	0.00	1,098.27	1,098.27	0.08	0.00	1,099.92
2016	1.62	7.97	13.07	0.03	1.97	0.35	2.32	0.11	0.35	0.45	0.00	2,604.11	2,604.11	0.12	0.00	2,606.66
2017	1.49	7.26	12.10	0.03	1.96	0.32	2.28	0.11	0.32	0.42	0.00	2,565.45	2,565.45	0.11	0.00	2,567.79
2018	1.39	6.68	11.33	0.03	1.97	0.29	2.26	0.04	0.27	0.31	0.00	2,548.50	2,548.50	0.10	0.00	2,550.67
2019	17.49	1.29	1.99	0.00	0.30	0.08	0.38	0.01	0.08	0.08	0.00	402.24	402.24	0.02	0.00	402.69
Total	**22.99**	**30.31**	**44.21**	**0.10**	**8.60**	**1.36**	**9.97**	**0.71**	**1.34**	**2.03**	**0.00**	**9,218.57**	**9,218.57**	**0.43**	**0.00**	**9,227.73**

2.1 Overall Construction

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					
2015	0.79	4.75	6.03	0.01	2.40	0.29	2.69	0.44	0.29	0.73	0.00	1,098.27	1,098.27	0.08	0.00	1,099.92
2016	1.58	7.45	13.26	0.03	1.97	0.37	2.34	0.11	0.37	0.47	0.00	2,604.11	2,604.11	0.12	0.00	2,606.66
2017	1.48	6.95	12.30	0.03	1.96	0.35	2.32	0.11	0.35	0.46	0.00	2,565.45	2,565.45	0.11	0.00	2,567.79
2018	1.41	6.57	11.54	0.03	1.97	0.34	2.31	0.04	0.33	0.36	0.00	2,548.50	2,548.50	0.10	0.00	2,550.67
2019	17.46	1.09	1.99	0.00	0.30	0.08	0.38	0.01	0.08	0.08	0.00	402.24	402.24	0.02	0.00	402.69
Total	**22.72**	**26.81**	**45.12**	**0.10**	**8.60**	**1.43**	**10.04**	**0.71**	**1.42**	**2.10**	**0.00**	**9,218.57**	**9,218.57**	**0.43**	**0.00**	**9,227.73**

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	17.42	0.18	15.67	0.01		0.00	1.22		0.00	1.22	117.75	89.45	207.20	0.20	0.01	213.96
Energy	0.13	1.16	0.78	0.01		0.00	0.09		0.00	0.09	0.00	4,481.98	4,481.98	0.26	0.11	4,522.60
Mobile	22.36	55.85	181.78	0.40	36.15	2.04	38.19	0.64	1.87	2.51	0.00	31,171.88	31,171.88	1.17	0.00	31,196.48
Waste						0.00	0.00		0.00	0.00	1,041.51	0.00	1,041.51	61.55	0.00	2,334.09
Water						0.00	0.00		0.00	0.00	0.00	240.34	240.34	5.70	0.15	405.73
Total	**39.91**	**57.19**	**198.23**	**0.42**	**36.15**	**2.04**	**39.50**	**0.64**	**1.87**	**3.82**	**1,159.26**	**35,983.65**	**37,142.91**	**68.88**	**0.27**	**38,672.86**

2.2 Overall Operational

Mitigated 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	17.42	0.18	15.67	0.01		0.00	1.22		0.00	1.22	117.75	89.45	207.20	0.20	0.01	213.96
Energy	0.13	1.16	0.78	0.01		0.00	0.09		0.00	0.09	0.00	4,481.98	4,481.98	0.26	0.11	4,522.60
Mobile	22.36	55.85	181.78	0.40	36.15	2.04	38.19	0.64	1.87	2.51	0.00	31,171.88	31,171.88	1.17	0.00	31,196.48
Waste						0.00	0.00		0.00	0.00	1,041.51	0.00	1,041.51	61.55	0.00	2,334.09
Water						0.00	0.00		0.00	0.00	0.00	240.34	240.34	5.70	0.15	405.73
Total	**39.91**	**57.19**	**198.23**	**0.42**	**36.15**	**2.04**	**39.50**	**0.64**	**1.87**	**3.82**	**1,159.26**	**35,983.65**	**37,142.91**	**68.88**	**0.27**	**38,672.86**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

BVDSP Construction 2035

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Apartments Mid Rise	800	Dwelling Unit
Strip Mall	512.1	1000sqft
General Office Building	156.6	1000sqft
Hotel	181	Room

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - This run is construction only for 2020 to 2035. Operational emissions are a separate model run. CO2 factor adjusted to reflect year latest (2020) PG&E estimate.

Land Use - Land uses sizes are year 2035 assumptions less year 2020 assumptions

Construction Phase -

Off-road Equipment - Adjust load factor downward 33% per CARB Recommendation.

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Off-road Equipment - Adjust load factor downward 33% per CARB Recommendation.

Demolition -

Architectural Coating - Adjust VOC content to match upper limit of Green Building Code.

Construction Off-road Equipment Mitigation -

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					
2020	0.81	4.72	5.67	0.02	2.21	0.20	2.41	0.32	0.19	0.52	0.00	1,370.84	1,370.84	0.06	0.00	1,372.15
2021	0.98	4.57	8.18	0.02	1.64	0.19	1.83	0.03	0.18	0.21	0.00	2,102.16	2,102.16	0.07	0.00	2,103.68
2022	0.93	4.24	7.74	0.02	1.63	0.18	1.81	0.03	0.17	0.20	0.00	2,077.89	2,077.89	0.07	0.00	2,079.31
2023	14.43	2.11	3.78	0.01	0.77	0.10	0.87	0.01	0.09	0.11	0.00	996.02	996.02	0.03	0.00	996.74
Total	**17.15**	**15.64**	**25.37**	**0.07**	**6.25**	**0.67**	**6.92**	**0.39**	**0.63**	**1.04**	**0.00**	**6,546.91**	**6,546.91**	**0.23**	**0.00**	**6,551.88**

2.1 Overall Construction

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					
2020	0.83	4.55	6.29	0.02	2.21	0.28	2.49	0.32	0.27	0.60	0.00	1,370.84	1,370.84	0.06	0.00	1,372.15
2021	1.07	4.95	8.43	0.02	1.64	0.29	1.93	0.03	0.28	0.31	0.00	2,102.16	2,102.16	0.07	0.00	2,103.68
2022	1.03	4.76	7.99	0.02	1.63	0.28	1.91	0.03	0.27	0.30	0.00	2,077.89	2,077.89	0.07	0.00	2,079.31
2023	14.48	2.34	3.88	0.01	0.77	0.15	0.93	0.01	0.15	0.16	0.00	996.02	996.02	0.03	0.00	996.74
Total	**17.41**	**16.60**	**26.59**	**0.07**	**6.25**	**1.00**	**7.26**	**0.39**	**0.97**	**1.37**	**0.00**	**6,546.91**	**6,546.91**	**0.23**	**0.00**	**6,551.88**

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	14.11	0.15	12.65	0.01		0.00	0.98		0.00	0.98	95.06	72.21	167.27	0.16	0.01	172.73
Energy	0.13	1.16	0.81	0.01		0.00	0.09		0.00	0.09	0.00	3,041.21	3,041.21	0.20	0.09	3,073.34
Mobile	14.98	37.37	121.53	0.26	23.92	1.35	25.28	0.43	1.24	1.67	0.00	20,659.07	20,659.07	0.78	0.00	20,675.45
Waste						0.00	0.00		0.00	0.00	233.53	0.00	233.53	13.80	0.00	523.36
Water						0.00	0.00		0.00	0.00	0.00	122.47	122.47	3.75	0.10	231.41
Total	**29.22**	**38.68**	**134.99**	**0.28**	**23.92**	**1.35**	**26.35**	**0.43**	**1.24**	**2.74**	**328.59**	**23,894.96**	**24,223.55**	**18.69**	**0.20**	**24,676.29**

2.2 Overall Operational

Mitigated 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	14.11	0.15	12.65	0.01		0.00	0.98		0.00	0.98	95.06	72.21	167.27	0.16	0.01	172.73
Energy	0.13	1.16	0.81	0.01		0.00	0.09		0.00	0.09	0.00	3,041.21	3,041.21	0.20	0.09	3,073.34
Mobile	14.98	37.37	121.53	0.26	23.92	1.35	25.28	0.43	1.24	1.67	0.00	20,659.07	20,659.07	0.78	0.00	20,675.45
Waste						0.00	0.00		0.00	0.00	233.53	0.00	233.53	13.80	0.00	523.36
Water						0.00	0.00		0.00	0.00	0.00	122.47	122.47	3.75	0.10	231.41
Total	**29.22**	**38.68**	**134.99**	**0.28**	**23.92**	**1.35**	**26.35**	**0.43**	**1.24**	**2.74**	**328.59**	**23,894.96**	**24,223.55**	**18.69**	**0.20**	**24,676.29**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Construction Emissions - Broadway Valdez Specific Plan

Construction Emissions in Tons/year (from CalEEMod)

Year	ROG	NOx	PM10	PM2.5
2015	1	7.11	0.32	0.32
2016	1.62	7.97	0.35	0.35
2017	1.49	7.26	0.32	0.32
2018	1.39	6.68	0.29	0.29
2019	17.49	1.29	0.08	0.08
2020	0.81	4.72	0.2	0.19
2021	0.98	4.57	0.19	0.18
2022	0.93	4.24	0.18	0.17
2023	14.43	2.11	0.1	0.09

Mitigated Construction Emissions in Tons/year (from CalEEMod)

Year	ROG	NOx	PM10	PM2.5
2015	0.79	4.75	0.29	0.29
2016	1.58	7.45	0.37	0.37
2017	1.48	6.95	0.35	0.35
2018	1.41	6.57	0.34	0.33
2019	17.46	1.09	0.08	0.08
2020	0.83	4.55	0.28	0.27
2021	1.07	4.95	0.29	0.28
2022	1.03	4.76	0.28	0.27
2023	14.48	2.34	0.15	0.15

Construction days/year = 292 (6 days/week less 20 holidays)

Daily average construction emissions (pounds/day)

Year	ROG	NOx	PM10	PM2.5
2015	6.85	48.70	2.19	2.19
2016	11.10	54.59	2.40	2.40
2017	10.21	49.73	2.19	2.19
2018	9.52	45.75	1.99	1.99
2019	**119.79**	8.84	0.55	0.55
2020	5.55	32.33	1.37	1.30
2021	6.71	31.30	1.30	1.23
2022	6.37	29.04	1.23	1.16
2023	**98.84**	14.45	0.68	0.62

Mitigated Daily average construction emissions (pounds/day)

Year	ROG	NOx	PM10	PM2.5
2015	5.41	32.53	1.99	1.99
2016	10.82	51.03	2.53	2.53
2017	10.14	47.60	2.40	2.40
2018	9.66	45.00	2.33	2.26
2019	**119.59**	7.47	0.55	0.55
2020	5.68	31.16	1.92	1.85
2021	7.33	33.90	1.99	1.92
2022	7.05	32.60	1.92	1.85
2023	**99.18**	16.03	1.03	1.03

Broadway Valdez Specific Plan

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	336	1000sqft
Medical Office Building	358.9	1000sqft
Hotel	181	Room
Apartments Mid Rise	1796	Dwelling Unit
Strip Mall	1114	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - Adjusedt CO2 factor to match PG&E's future projection

Land Use -

Construction Phase -

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

Demolition -

Architectural Coating - Adjust VOC content to match upper end of green building code.

Vehicle Trips - Adjust trip rates to match Transportation analysis.

Woodstoves - Assume no woodstoves in new development. Assume all new fireplaces are gas.

Area Coating - Adjust VOC content to match upper end of GBC

Energy Use -

Construction Off-road Equipment Mitigation -

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					
2014	7.67	60.90	36.56	0.08	83.71	2.81	86.42	9.94	2.81	12.39	0.00	7,925.56	0.00	0.69	0.00	7,939.96
2015	23.81	107.32	187.36	0.38	34.60	4.33	38.93	3.32	4.33	5.88	0.00	37,788.49	0.00	1.80	0.00	37,826.26
2016	22.18	98.22	174.50	0.39	34.60	4.02	38.61	1.49	4.02	5.50	0.00	37,660.54	0.00	1.68	0.00	37,695.88
2017	20.56	89.78	161.39	0.39	34.60	3.69	38.28	1.49	3.69	5.17	0.00	37,217.57	0.00	1.55	0.00	37,250.16
2018	19.11	82.33	149.77	0.39	34.60	3.39	37.99	0.53	3.19	3.72	0.00	36,804.79	0.00	1.44	0.00	36,834.96
2019	17.87	75.87	139.75	0.39	34.60	3.13	37.73	0.53	2.94	3.47	0.00	36,426.56	0.00	1.34	0.00	36,454.63
2020	16.82	70.27	131.18	0.39	34.60	2.90	37.50	0.53	2.72	3.25	0.00	36,077.40	0.00	1.25	0.00	36,103.55
2021	569.96	65.37	123.64	0.39	34.60	2.70	37.30	0.53	2.53	3.06	0.00	35,752.94	0.00	1.16	0.00	35,777.37
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.1 Overall Construction (Maximum Daily Emission)

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					
2014	5.37	39.71	39.33	0.08	79.80	2.30	82.01	4.48	2.30	6.21	0.00	7,925.56	0.00	0.69	0.00	7,939.96
2015	23.27	101.52	188.67	0.38	34.60	4.33	38.92	1.50	4.33	5.81	0.00	37,788.49	0.00	1.80	0.00	37,826.26
2016	21.88	94.18	175.94	0.39	34.60	4.16	38.75	1.49	4.16	5.64	0.00	37,660.54	0.00	1.68	0.00	37,695.88
2017	20.49	87.38	162.93	0.39	34.60	3.96	38.56	1.49	3.96	5.45	0.00	37,217.57	0.00	1.55	0.00	37,250.16
2018	19.25	81.48	151.41	0.39	34.60	3.79	38.38	0.53	3.59	4.12	0.00	36,804.79	0.00	1.44	0.00	36,834.96
2019	18.21	76.40	141.49	0.39	34.60	3.64	38.24	0.53	3.45	3.98	0.00	36,426.56	0.00	1.34	0.00	36,454.63
2020	17.32	72.04	133.00	0.39	34.60	3.52	38.11	0.53	3.34	3.86	0.00	36,077.40	0.00	1.25	0.00	36,103.55
2021	569.97	68.34	125.55	0.39	34.60	3.41	38.00	0.53	3.24	3.76	0.00	35,752.94	0.00	1.16	0.00	35,777.37
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

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	105.53	1.72	149.43	0.01		0.00	1.64		0.00	1.63	0.00	13,137.86		0.50	0.24	13,221.56
Energy	1.44	12.74	8.70	0.08		0.00	0.99		0.00	0.99		15,656.90		0.30	0.29	15,752.19
Mobile	73.72	182.06	540.85	2.08	241.24	9.46	250.69	3.42	8.28	11.70		162,554.04		4.66		162,651.98
Total	**180.69**	**196.52**	**698.98**	**2.17**	**241.24**	**9.46**	**253.32**	**3.42**	**8.28**	**14.32**	**0.00**	**191,348.80**		**5.46**	**0.53**	**191,625.73**

Mitigated 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	105.53	1.72	149.43	0.01		0.00	1.64		0.00	1.63	0.00	13,137.86		0.50	0.24	13,221.56
Energy	1.44	12.74	8.70	0.08		0.00	0.99		0.00	0.99		15,656.90		0.30	0.29	15,752.19
Mobile	73.72	182.06	540.85	2.08	241.24	9.46	250.69	3.42	8.28	11.70		162,554.04		4.66		162,651.98
Total	**180.69**	**196.52**	**698.98**	**2.17**	**241.24**	**9.46**	**253.32**	**3.42**	**8.28**	**14.32**	**0.00**	**191,348.80**		**5.46**	**0.53**	**191,625.73**

3.0 Construction Detail

Broadway Valdez Specific Plan

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	336	1000sqft
Medical Office Building	358.9	1000sqft
Hotel	181	Room
Apartments Mid Rise	1796	Dwelling Unit
Strip Mall	1114	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - Adjusedt CO2 factor to match PG&E's future projection

Land Use -

Construction Phase -

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

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Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

Demolition -

Architectural Coating - Adjust VOC content to match upper end of green building code.

Vehicle Trips - Adjust trip rates to match Transportation analysis.

Woodstoves - Assume no woodstoves in new development. Assume all new fireplaces are gas.

Area Coating - Adjust VOC content to match upper end of GBC

Energy Use -

Construction Off-road Equipment Mitigation -

Energy Mitigation -

Water Mitigation -

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					
2014	0.93	7.60	4.49	0.01	4.63	0.35	4.97	0.64	0.35	0.99	0.00	851.98	851.98	0.07	0.00	853.52
2015	2.47	12.39	19.83	0.04	3.54	0.51	4.05	0.43	0.51	0.95	0.00	3,748.07	3,748.07	0.18	0.00	3,751.93
2016	2.68	12.60	22.29	0.05	3.62	0.52	4.14	0.19	0.52	0.71	0.00	4,497.02	4,497.02	0.20	0.00	4,501.20
2017	2.47	11.49	20.53	0.05	3.61	0.48	4.08	0.19	0.48	0.67	0.00	4,427.04	4,427.04	0.18	0.00	4,430.88
2018	2.30	10.59	19.11	0.05	3.62	0.44	4.06	0.07	0.41	0.48	0.00	4,394.74	4,394.74	0.17	0.00	4,398.31
2019	2.15	9.78	17.82	0.05	3.62	0.41	4.03	0.07	0.38	0.45	0.00	4,349.57	4,349.57	0.16	0.00	4,352.88
2020	2.03	9.10	16.78	0.05	3.63	0.38	4.01	0.07	0.35	0.42	0.00	4,324.37	4,324.37	0.15	0.00	4,327.48
2021	31.75	2.16	4.00	0.01	0.81	0.12	0.93	0.01	0.12	0.13	0.00	939.98	939.98	0.04	0.00	940.81
Total	**46.78**	**75.71**	**124.85**	**0.31**	**27.08**	**3.21**	**30.27**	**1.67**	**3.12**	**4.80**	**0.00**	**27,532.77**	**27,532.77**	**1.15**	**0.00**	**27,557.01**

2.1 Overall Construction

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					
2014	0.65	4.43	4.61	0.01	3.76	0.28	4.04	0.29	0.28	0.57	0.00	851.98	851.98	0.07	0.00	853.52
2015	2.36	11.19	20.11	0.04	3.17	0.51	3.67	0.28	0.51	0.78	0.00	3,748.07	3,748.07	0.18	0.00	3,751.93
2016	2.64	12.08	22.48	0.05	3.62	0.54	4.16	0.19	0.54	0.73	0.00	4,497.02	4,497.02	0.20	0.00	4,501.20
2017	2.46	11.18	20.73	0.05	3.61	0.51	4.12	0.19	0.51	0.71	0.00	4,427.04	4,427.04	0.18	0.00	4,430.88
2018	2.32	10.48	19.33	0.05	3.62	0.49	4.11	0.07	0.47	0.53	0.00	4,394.74	4,394.74	0.17	0.00	4,398.31
2019	2.19	9.85	18.05	0.05	3.62	0.47	4.09	0.07	0.45	0.52	0.00	4,349.57	4,349.57	0.16	0.00	4,352.88
2020	2.09	9.34	17.02	0.05	3.63	0.46	4.09	0.07	0.44	0.50	0.00	4,324.37	4,324.37	0.15	0.00	4,327.48
2021	31.73	2.03	4.01	0.01	0.81	0.14	0.95	0.01	0.14	0.15	0.00	939.98	939.98	0.04	0.00	940.81
Total	**46.44**	**70.58**	**126.34**	**0.31**	**25.84**	**3.40**	**29.23**	**1.17**	**3.34**	**4.49**	**0.00**	**27,532.77**	**27,532.77**	**1.15**	**0.00**	**27,557.01**

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	18.66	0.15	13.43	0.00		0.00	0.10		0.00	0.10	0.00	360.56	360.56	0.03	0.01	363.06
Energy	0.26	2.32	1.59	0.01		0.00	0.18		0.00	0.18	0.00	6,706.47	6,706.47	0.46	0.20	6,779.27
Mobile	12.43	33.42	94.53	0.38	35.13	1.72	36.85	0.62	1.50	2.12	0.00	27,129.46	27,129.46	0.77	0.00	27,145.63
Waste						0.00	0.00		0.00	0.00	1,275.51	0.00	1,275.51	75.38	0.00	2,858.49
Water						0.00	0.00		0.00	0.00	0.00	301.60	301.60	9.46	0.25	576.21
Total	**31.35**	**35.89**	**109.55**	**0.39**	**35.13**	**1.72**	**37.13**	**0.62**	**1.50**	**2.40**	**1,275.51**	**34,498.09**	**35,773.60**	**86.10**	**0.46**	**37,722.66**

2.2 Overall Operational

Mitigated 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	18.66	0.15	13.43	0.00		0.00	0.10		0.00	0.10	0.00	360.56	360.56	0.03	0.01	363.06
Energy	0.24	2.13	1.45	0.01		0.00	0.17		0.00	0.17	0.00	6,353.89	6,353.89	0.44	0.19	6,423.53
Mobile	12.43	33.42	94.53	0.38	35.13	1.72	36.85	0.62	1.50	2.12	0.00	27,129.46	27,129.46	0.77	0.00	27,145.63
Waste						0.00	0.00		0.00	0.00	1,275.51	0.00	1,275.51	75.38	0.00	2,858.49
Water						0.00	0.00		0.00	0.00	0.00	256.94	256.94	7.57	0.20	476.84
Total	**31.33**	**35.70**	**109.41**	**0.39**	**35.13**	**1.72**	**37.12**	**0.62**	**1.50**	**2.39**	**1,275.51**	**34,100.85**	**35,376.36**	**84.19**	**0.40**	**37,267.55**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Broadway Valdez Specific Plan
CONSTRUCTION EMISSIONS

	EMISSIONS in tons	
Total Construction Emissions as eCO2 on Metric tons =	15779	(from CalEEMod)
Amortized over 40 years =	394.48	
MT of eCO2/yr		

Broadway Valdez Specific Plan BAU Scenario

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	336	1000sqft
Medical Office Building	358.9	1000sqft
Hotel	181	Room
Apartments Mid Rise	1796	Dwelling Unit
Strip Mall	1114	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	63		

1.3 User Entered Comments

Project Characteristics - Adjusedt CO2 factor to match PG&E's future projection

Land Use -

Construction Phase -

Off-road Equipment - Adjust load factors downward 33% to match CARB recommendations.

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Demolition -

Architectural Coating - Adjust VOC content to match upper end of green building code.

Vehicle Trips - Adjust trip rates to match Transportation analysis.

Woodstoves - Assume no woodstoves in new development. Assume all new fireplaces are gas.

Area Coating - Adjust VOC content to match upper end of GBC

Energy Use -

Construction Off-road Equipment Mitigation -

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					
2014	0.93	7.60	4.49	0.01	4.63	0.35	4.97	0.64	0.35	0.99	0.00	851.98	851.98	0.07	0.00	853.52
2015	2.47	12.39	19.83	0.04	3.54	0.51	4.05	0.43	0.51	0.95	0.00	3,748.07	3,748.07	0.18	0.00	3,751.93
2016	2.68	12.60	22.29	0.05	3.62	0.52	4.14	0.19	0.52	0.71	0.00	4,497.02	4,497.02	0.20	0.00	4,501.20
2017	2.47	11.49	20.53	0.05	3.61	0.48	4.08	0.19	0.48	0.67	0.00	4,427.04	4,427.04	0.18	0.00	4,430.88
2018	2.30	10.59	19.11	0.05	3.62	0.44	4.06	0.07	0.41	0.48	0.00	4,394.74	4,394.74	0.17	0.00	4,398.31
2019	2.15	9.78	17.82	0.05	3.62	0.41	4.03	0.07	0.38	0.45	0.00	4,349.57	4,349.57	0.16	0.00	4,352.88
2020	2.03	9.10	16.78	0.05	3.63	0.38	4.01	0.07	0.35	0.42	0.00	4,324.37	4,324.37	0.15	0.00	4,327.48
2021	31.75	2.16	4.00	0.01	0.81	0.12	0.93	0.01	0.12	0.13	0.00	939.98	939.98	0.04	0.00	940.81
Total	**46.78**	**75.71**	**124.85**	**0.31**	**27.08**	**3.21**	**30.27**	**1.67**	**3.12**	**4.80**	**0.00**	**27,532.77**	**27,532.77**	**1.15**	**0.00**	**27,557.01**

2.1 Overall Construction

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					
2014	0.65	4.43	4.61	0.01	3.76	0.28	4.04	0.29	0.28	0.57	0.00	851.98	851.98	0.07	0.00	853.52
2015	2.36	11.19	20.11	0.04	3.17	0.51	3.67	0.28	0.51	0.78	0.00	3,748.07	3,748.07	0.18	0.00	3,751.93
2016	2.64	12.08	22.48	0.05	3.62	0.54	4.16	0.19	0.54	0.73	0.00	4,497.02	4,497.02	0.20	0.00	4,501.20
2017	2.46	11.18	20.73	0.05	3.61	0.51	4.12	0.19	0.51	0.71	0.00	4,427.04	4,427.04	0.18	0.00	4,430.88
2018	2.32	10.48	19.33	0.05	3.62	0.49	4.11	0.07	0.47	0.53	0.00	4,394.74	4,394.74	0.17	0.00	4,398.31
2019	2.19	9.85	18.05	0.05	3.62	0.47	4.09	0.07	0.45	0.52	0.00	4,349.57	4,349.57	0.16	0.00	4,352.88
2020	2.09	9.34	17.02	0.05	3.63	0.46	4.09	0.07	0.44	0.50	0.00	4,324.37	4,324.37	0.15	0.00	4,327.48
2021	31.73	2.03	4.01	0.01	0.81	0.14	0.95	0.01	0.14	0.15	0.00	939.98	939.98	0.04	0.00	940.81
Total	**46.44**	**70.58**	**126.34**	**0.31**	**25.84**	**3.40**	**29.23**	**1.17**	**3.34**	**4.49**	**0.00**	**27,532.77**	**27,532.77**	**1.15**	**0.00**	**27,557.01**

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	18.94	0.21	15.65	0.00		0.00	0.09		0.00	0.09	0.00	360.56	360.56	0.04	0.01	363.36
Energy	0.26	2.32	1.59	0.01		0.00	0.18		0.00	0.18	0.00	11,691.15	11,691.15	0.46	0.20	11,763.95
Mobile	64.57	154.90	610.61	1.15	35.15	4.28	39.43	1.54	4.28	5.82	0.00	39,249.34	39,249.34	3.99	0.00	39,333.19
Waste						0.00	0.00		0.00	0.00	1,275.51	0.00	1,275.51	75.38	0.00	2,858.49
Water						0.00	0.00		0.00	0.00	0.00	662.81	662.81	9.46	0.25	937.42
Total	**83.77**	**157.43**	**627.85**	**1.16**	**35.15**	**4.28**	**39.70**	**1.54**	**4.28**	**6.09**	**1,275.51**	**51,963.86**	**53,239.37**	**89.33**	**0.46**	**55,256.41**

2.2 Overall Operational

Mitigated 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	18.94	0.21	15.65	0.00		0.00	0.09		0.00	0.09	0.00	360.56	360.56	0.04	0.01	363.36
Energy	0.26	2.32	1.59	0.01		0.00	0.18		0.00	0.18	0.00	11,691.15	11,691.15	0.46	0.20	11,763.95
Mobile	64.57	154.90	610.61	1.15	35.15	4.28	39.43	1.54	4.28	5.82	0.00	39,249.34	39,249.34	3.99	0.00	39,333.19
Waste						0.00	0.00		0.00	0.00	1,275.51	0.00	1,275.51	75.38	0.00	2,858.49
Water						0.00	0.00		0.00	0.00	0.00	662.81	662.81	9.46	0.25	937.42
Total	**83.77**	**157.43**	**627.85**	**1.16**	**35.15**	**4.28**	**39.70**	**1.54**	**4.28**	**6.09**	**1,275.51**	**51,963.86**	**53,239.37**	**89.33**	**0.46**	**55,256.41**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Traffic Noise Level Estimates rev 05/16/13

ROAD SEGMENT	TOTAL # VEHICLES	VEHICLE TYPE % Auto %	Auto	Medium Truck %	MT	Heavy Truck %	HT	VEHICLE SPEED Auto k/h	MT k/h	HT k/h	calveno factors Auto	MT	HT	(15 meters from roadway center)
Mcarthr Blvd east of Market														
Existing (2012)	1,050	95	998	3	32	2	21	30 48	30 48	30 48	62.4	58.0	63.4	66.5
Existing + Project	1,230	95	1,169	3	37	2	25	30 48	30 48	30 48	63.1	58.7	64.0	67.2
Cumulative (2035)	2,400	95	2,280	3	72	2	48	30 48	30 48	30 48	66.0	61.6	66.9	70.1
Cumulative (2035) + Project	2,580	95	2,451	3	77	2	52	30 48	30 48	30 48	66.3	61.9	67.3	70.5
MacArthur Blvd east of Telegraph														
Existing (2012)	1,057	95	1,004	3	32	2	21	30 48	30 48	30 48	62.4	58.0	63.4	66.6
Existing + Project	1,297	95	1,232	3	39	2	26	30 48	30 48	30 48	63.3	58.9	64.3	67.5
Cumulative (2035)	2,230	95	2,119	3	67	2	45	30 48	30 48	30 48	65.6	61.2	66.6	69.8
Cumulative (2035) + Project	2,470	95	2,347	3	74	2	49	30 48	30 48	30 48	66.1	61.7	67.1	70.3
Broadway south of MacArthur														
Existing (2012)	1,457	95	1,384	3	44	2	29	30 48	30 48	30 48	63.8	59.4	64.8	68.0
Existing + Project	1,807	95	1,717	3	54	2	36	30 48	30 48	30 48	64.7	60.3	65.7	68.9
Cumulative (2035)	2,440	95	2,318	3	73	2	49	30 48	30 48	30 48	66.0	61.6	67.0	70.2
Cumulative (2035) + Project	2,790	95	2,651	3	84	2	56	30 48	30 48	30 48	66.6	62.2	67.6	70.8
Santa Clara Ave east of Harrison														
Existing (2012)	1,292	95	1,227	3	39	2	26	30 48	30 48	30 48	63.3	58.9	64.3	67.4
Existing + Project	1,522	95	1,446	3	46	2	30	30 48	30 48	30 48	64.0	59.6	65.0	68.2
Cumulative (2035)	2,080	95	1,976	3	62	2	42	30 48	30 48	30 48	65.3	60.9	66.3	69.5
Cumulative (2035) + Project	2,310	95	2,195	3	69	2	46	30 48	30 48	30 48	65.8	61.4	66.8	70.0
Broadway south of Piedmont														
Existing (2012)	1,943	95	1,846	3	58	2	39	30 48	30 48	30 48	65.0	60.6	66.0	69.2
Existing + Project	2,473	95	2,349	3	74	2	49	30 48	30 48	30 48	66.1	61.7	67.1	70.3
Cumulative (2035)	2,950	95	2,803	3	89	2	59	30 48	30 48	30 48	66.9	62.5	67.8	71.0
Cumulative (2035) + Project	3,480	95	3,306	3	104	2	70	30 48	30 48	30 48	67.6	63.2	68.6	71.8
Hawthorne west of Broadway														
Existing (2012)	330	95	314	3	10	2	7	30 48	30 48	30 48	57.3	52.9	58.3	61.5
Existing + Project	810	95	770	3	24	2	16	30 48	30 48	30 48	61.2	56.8	62.2	65.4
Cumulative (2035)	360	95	342	3	11	2	7	30 48	30 48	30 48	57.7	53.3	58.7	61.9
Cumulative (2035) + Project	840	95	798	3	25	2	17	30 48	30 48	30 48	61.4	57.0	62.4	65.6
Telegrpah south of Hawthorne														
Existing (2012)	1,499	95	1,424	3	45	2	30	30 48	30 48	30 48	63.9	59.5	64.9	68.1
Existing + Project	1,809	95	1,719	3	54	2	36	30 48	30 48	30 48	64.7	60.3	65.7	68.9
Cumulative (2035)	2,620	95	2,489	3	79	2	52	30 48	30 48	30 48	66.3	61.9	67.3	70.5
Cumulative (2035) + Project	2,930	95	2,784	3	88	2	59	30 48	30 48	30 48	66.8	62.4	67.8	71.0
Broadway north of 30th														
Existing (2012)	1,687	95	1,603	3	51	2	34	30 48	30 48	30 48	64.4	60.0	65.4	68.6
Existing + Project	2,267	95	2,154	3	68	2	45	30 48	30 48	30 48	65.7	61.3	66.7	69.9
Cumulative (2035)	2,720	95	2,584	3	82	2	54	30 48	30 48	30 48	66.5	62.1	67.5	70.7
Cumulative (2035) + Project	3,300	95	3,135	3	99	2	66	30 48	30 48	30 48	67.3	62.9	68.3	71.5
27th west of Broadway														
Existing (2012)	1,139	95	1,082	3	34	2	23	30 48	30 48	30 48	62.7	58.3	63.7	66.9
Existing + Project	1,319	95	1,253	3	40	2	26	30 48	30 48	30 48	63.4	59.0	64.3	67.5
Cumulative (2035)	2,280	95	2,166	3	68	2	46	30 48	30 48	30 48	65.7	61.3	66.7	69.9
Cumulative (2035) + Project	2,460	95	2,337	3	74	2	49	30 48	30 48	30 48	66.1	61.7	67.0	70.2
26th east of Broadway														
Existing (2012)	49	95	47	3	1	2	1	30 48	30 48	30 48	49.1	44.7	50.0	53.2
Existing + Project	159	95	151	3	5	2	3	30 48	30 48	30 48	54.2	49.8	55.2	58.3

Cumulative (2035)	80	95	76	3	2	2	2	30	48	30	48	30	48	51.2	46.8	52.2	55.4
Cumulative (2035) + Project	200	95	190	3	6	2	4	30	48	30	48	30	48	55.2	50.8	56.1	59.3
25th east of Broadway																	
Existing (2012)	309	95	294	3	9	2	6	30	48	30	48	30	48	57.1	52.7	58.0	61.2
Existing + Project	497	95	472	3	15	2	10	30	48	30	48	30	48	59.1	54.7	60.1	63.3
Cumulative (2035)	390	95	371	3	12	2	8	30	48	30	48	30	48	58.1	53.7	59.0	62.2
Cumulative (2035) + Project	570	95	542	3	17	2	11	30	48	30	48	30	48	59.7	55.3	60.7	63.9
24th east of Broadway																	
Existing (2012)	126	95	120	3	4	2	3	30	48	30	48	30	48	53.2	48.8	54.1	57.3
Existing + Project	546	95	519	3	16	2	11	30	48	30	48	30	48	59.5	55.1	60.5	63.7
Cumulative (2035)	180	95	171	3	5	2	4	30	48	30	48	30	48	54.7	50.3	55.7	58.9
Cumulative (2035) + Project	610	95	580	3	18	2	12	30	48	30	48	30	48	60.0	55.6	61.0	64.2
27th west of Harrison																	
Existing (2012)	1,202	95	1,142	3	36	2	24	30	48	30	48	30	48	63.0	58.6	63.9	67.1
Existing + Project	1,602	95	1,522	3	48	2	32	30	48	30	48	30	48	64.2	59.8	65.2	68.4
Cumulative (2035)	2,510	95	2,385	3	75	2	50	30	48	30	48	30	48	66.2	61.8	67.1	70.3
Cumulative (2035) + Project	2,910	95	2,765	3	87	2	58	30	48	30	48	30	48	66.8	62.4	67.8	71.0
23rd west of Broadway																	
Existing (2012)	128	95	122	3	4	2	3	30	48	30	48	30	48	53.2	48.8	54.2	57.4
Existing + Project	308	95	293	3	9	2	6	30	48	30	48	30	48	57.0	52.6	58.0	61.2
Cumulative (2035)	140	95	133	3	4	2	3	30	48	30	48	30	48	53.6	49.2	54.6	57.8
Cumulative (2035) + Project	320	95	304	3	10	2	6	30	48	30	48	30	48	57.2	52.8	58.2	61.4
Harrison north of 23rd																	
Existing (2012)	1,802	95	1,712	3	54	2	36	30	48	30	48	30	48	64.7	60.3	65.7	68.9
Existing + Project	2,082	95	1,978	3	62	2	42	30	48	30	48	30	48	65.3	60.9	66.3	69.5
Cumulative (2035)	3,460	95	3,287	3	104	2	69	30	48	30	48	30	48	67.5	63.2	68.5	71.7
Cumulative (2035) + Project	3,740	95	3,553	3	112	2	75	30	48	30	48	30	48	67.9	63.5	68.9	72.1
Grand east of Brush																	
Existing (2012)	1,391	95	1,321	3	42	2	28	30	48	30	48	30	48	63.6	59.2	64.6	67.8
Existing + Project	1,631	95	1,549	3	49	2	33	30	48	30	48	30	48	64.3	59.9	65.3	68.5
Cumulative (2035)	2,640	95	2,508	3	79	2	53	30	48	30	48	30	48	66.4	62.0	67.4	70.6
Cumulative (2035) + Project	2,880	95	2,736	3	86	2	58	30	48	30	48	30	48	66.8	62.4	67.7	70.9
Grand east of Northgate																	
Existing (2012)	1,860	95	1,767	3	56	2	37	30	48	30	48	30	48	64.9	60.5	65.8	69.0
Existing + Project	2,270	95	2,157	3	68	2	45	30	48	30	48	30	48	65.7	61.3	66.7	69.9
Cumulative (2035)	2,460	95	2,337	3	74	2	49	30	48	30	48	30	48	66.1	61.7	67.0	70.2
Cumulative (2035) + Project	2,870	95	2,727	3	86	2	57	30	48	30	48	30	48	66.7	62.3	67.7	70.9
Valdez north of Grand																	
Existing (2012)	217	95	206	3	7	2	4	30	48	30	48	30	48	55.5	51.1	56.5	59.7
Existing + Project	397	95	377	3	12	2	8	30	48	30	48	30	48	58.1	53.7	59.1	62.3
Cumulative (2035)	280	95	266	3	8	2	6	30	48	30	48	30	48	56.6	52.2	57.6	60.8
Cumulative (2035) + Project	450	95	428	3	14	2	9	30	48	30	48	30	48	58.7	54.3	59.7	62.9
Broadway north of 20th																	
Existing (2012)	882	95	838	3	26	2	18	30	48	30	48	30	48	61.6	57.2	62.6	65.8
Existing + Project	1,182	95	1,123	3	35	2	24	30	48	30	48	30	48	62.9	58.5	63.9	67.1
Cumulative (2035)	1,600	95	1,520	3	48	2	32	30	48	30	48	30	48	64.2	59.8	65.2	68.4
Cumulative (2035) + Project	1,900	95	1,805	3	57	2	38	30	48	30	48	30	48	64.9	60.5	65.9	69.1

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memorandum

date August 7, 2013

to Elizabeth Kanner

from Tim Rimpo

subject Refined Alta Bates Health Risks

In conducting the refined health risk assessment for Alta Bates, the health risk information from the BAAQMD's Health Risk and Hazard Screening Calculator is presented in **Table 1**, below, as a starting point for this analysis. The "Combined Risk" row totals the values from Alta Bates Plants 7780 and 7781.

TABLE 1
ALTA BATES SCREENING LEVEL HEALTH RISKS

Source	(A) BAAQMD Reported (refined) Total Risk All Sources	(B) Screening Risk DPM All Sources	(C) Screening Risk non-DPM All Sources	% Risk from DPM (Screening-based) (B/[B+C])	% Risk from DPM (BAAQMD refinement-based) ([A-C]/A)
Plant 7780 (Summit Street)	168.67	268	2.35	99.1	98.6
Plant 7781 (Hawthorne Ave)	276.25	696	8.25	98.8	97.0
Combined Risk	444.92	964	10.6	97.6	97.6

The results indicate that risks at both these facilities are overwhelmingly the result of diesel particulate matter (DPM) from diesel-powered generators. Since the majority of the health risk is due to DPM emissions, only the Alta Bates DPM sources were included in the refined modeling analysis. These sources included eight emergency diesel generators at Plants 7780 and 7781. The results of the modeling analysis are shown in **Table 2** below. The modeled DPM concentrations come to an annual average of 0.00252 micrograms per cubic meter, which equates to a cancer health risk of 1.5 per million. The conversion of DPM concentrations to cancer health risk was based on guidance issued by the California Office of Environmental Health Hazard Assessment.[1,2] Combined with the screening risk for non-DPM sources of 10.6 per million estimated in the previous analysis, the total stationary source cancer risk within the Specific Plan area equals 12.1 per million, which is less than BAAQMD's cumulative threshold of 100 per million. Further, when the worst case health risk from I-580 is added to the stationary source risk, the cancer risk increases to 85.2 per million, which is still less than BAAQMD's cumulative threshold.

1 Office of Environmental Health Hazard Assessment, 2003. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. August.

2 Office of Environmental Health Hazard Assessment, 2012. *Air Toxics Hot Spots Program Risk Assessment Guidelines Technical Support Document for Exposure Assessment and Stochastic Analysis*. August. California Environmental Protection Agency. August.

TABLE 2
ALTA BATES REFINED MODELING HEALTH RISKS

Source	ESA Modeled (refined) DPM Risk All Sources	Screening Risk non-DPM All Sources	Total Risk
Plant 7780 and 7781	1.5 per million	10.6 per million	12.1 per million
I-580 – Worst Case @ 10 ft. distance and 6 ft. in height			73.1 per million
Grand Total			85.2 per million

Figure 1 below shows the location of the emergency generators (red x's) and the sensitive receptors (light blue crosses) used in the analysis. The ISCST model was used to conduct the analysis using one year's worth of meteorological data. The sensitive receptors represent all potential land uses within the Broadway Valdez District Specific Plan area that are located north of 27th Street. These land uses are those that have the potential to be most affected by emissions from the Alta Bates medical facility's emission sources.

Eight emergency diesel generators were included in the modeling analysis. Each generator was assumed to operate one hour per week for the entire year. This slightly overestimates emissions because emergency generators are typically limited to 50 hours of operation per year. All eight generators were assumed to operate concurrently.

The locations of these generators were based on addresses and locations that were identified using Google Earth. Emission rates were based on emissions data and/or fuel use data provided by BAAQMD and on information for typical emergency diesel engines. If specific emission rates were unavailable, a DPM emission rate of 0.1 grams per horsepower-hour was used along with an average horsepower of 755, which is a typical size for large standby backup diesel engines.

Stack parameters used in the modeling were based on permitted rates for each generator. These parameters included stack height, stack diameter, exhaust temperature, and stack exhaust flow rate. For three generators, the permitted information provided by BAAQMD did not include stack parameters. The stack parameters provided by BAAQMD (for the other five engines) were used as surrogates for the three engines lacking stack parameters.

The contour lines shown in Figure 1 represent areas of equal concentration. The area within the red contour area represents the highest concentrations and, consequently, includes the sensitive receptors representing the highest health risk. However, as indicated earlier in this memo, the highest cumulative health risks are less than the 100 per million threshold.

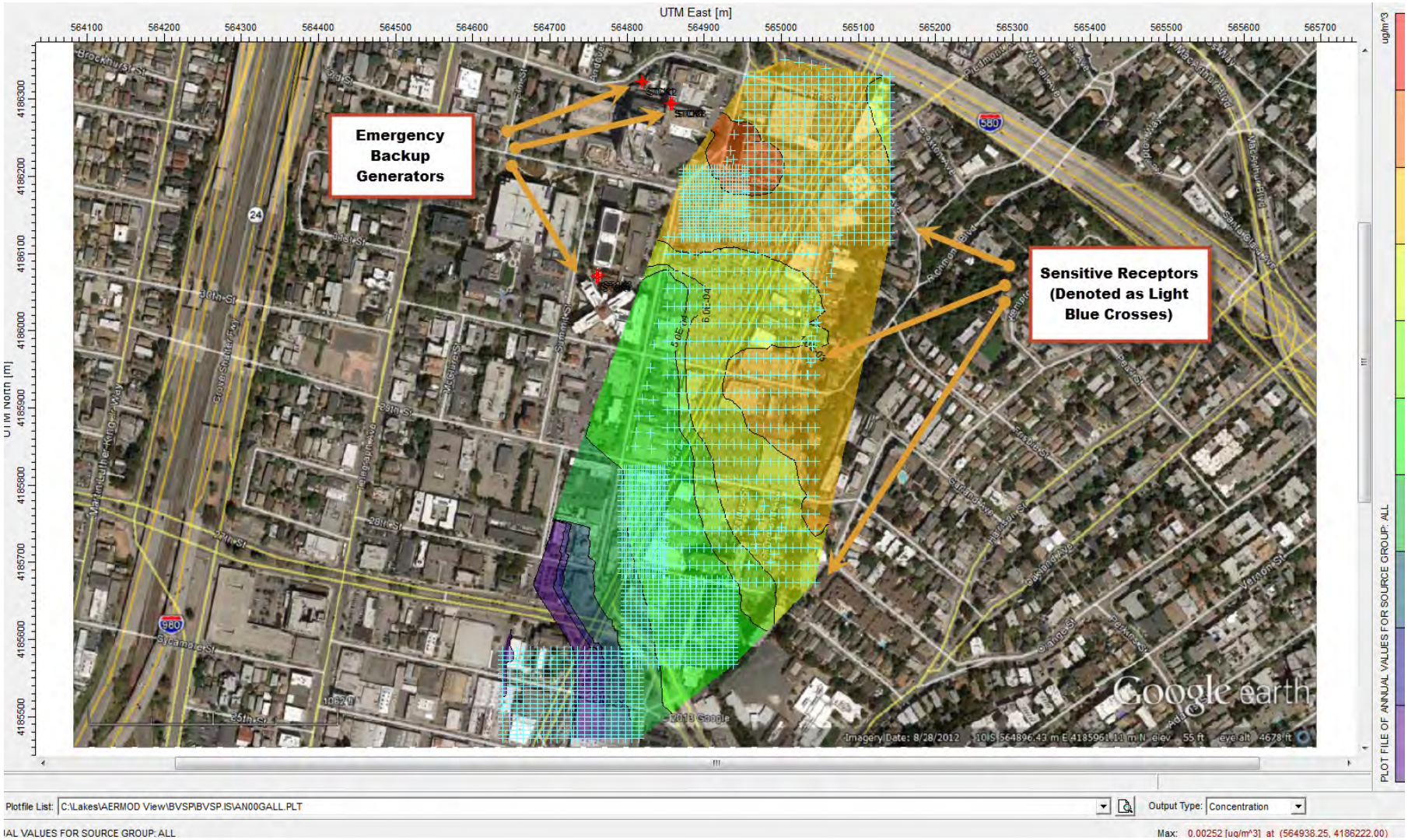

Figure 1
Modeling Scenario