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I-5 Rose Quarter Improvement Project

Table C - 1
Project Summary
I-5 Rose Quarter Improvement Project

Pollutant	MOVES Pollutant ID	Emissions Estimate (tons/yr)								
		Road Type ID								
		4 (Urban Restricted)			5 (Urban Unrestricted)			Total		
		2017	2045 No Build	2045 Build	2017	2045 No Build	2045 Build	2017	2045 No Build	2045 Build
CO_2e	98	215,311	196,139	190,415	244,524	164,907	169,779	459,836	361,046	360,194
CO_2e (Metric Tons)	98	195,327	177,935	172,741	221,829	149,601	154,021	417,156	327,536	326,762
Mobile Source Air Toxics (MSAT)										
Non-methane HC	79	41.9	11.9	10.7	52.8	13.3	13.7	94.7	25.2	24.4
VOC	87	43.7	13.0	11.7	54.4	14.2	14.6	98.1	27.3	26.3
Primary PM_{10} (DPM)	100	9.35	1.78	1.67	3.51	0.61	0.63	12.9	2.39	2.30
Primary Exhaust $PM_{2.5}$	110	8.60	1.64	1.54	3.23	0.56	0.58	11.8	2.20	2.12
Elemental Carbon	112	4.95	0.16	0.15	1.74	0.056	0.058	6.69	0.22	0.21
Organic Carbon	111	4.03	0.88	0.93	2.79	0.81	0.83	6.82	1.69	1.76
Sulfate Particulate	115	1.17	2.22	2.09	0.51	0.78	0.81	1.69	3.00	2.90
Composite - NonECPM	118	9.90	3.83	3.74	5.71	2.04	2.11	15.6	5.88	5.86
H_2O - Aerosol	119	0	0	0	0	0	0	0	0	0
Acetaldehyde	26	0.76	0.27	0.24	0.64	0.11	0.12	1.39	0.38	0.36
Acrolein	27	0.100	0.037	0.033	0.063	0.015	0.015	0.16	0.052	0.049
Benzene	20	1.14	0.18	0.18	1.58	0.17	0.17	2.72	0.35	0.35
1,3-Butadiene	24	0.13	2.8E-03	2.5E-03	0.16	1.0E-03	1.0E-03	0.29	3.8E-03	3.6E-03
Ethylbenzene	41	0.62	0.18	0.16	0.91	0.23	0.23	1.53	0.41	0.40
Formaldehyde	25	1.50	0.82	0.74	1.04	0.33	0.34	2.53	1.14	1.08
Total Naphthalene	--	0.17	0.063	0.057	0.13	0.026	0.027	0.30	0.089	0.084
Polycyclic Organic Matter (POM)										
Total POM		0.083	0.011	0.011	0.062	8.2E-03	8.5E-03	0.15	0.019	0.019

Table C - 2
2017 Standard Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	1	4	1.4	446,089	40,705,598	44.9
1	1	5	1.5	548,861	50,083,565	55.2
1	5	4	5.4	33,042	3,015,112	3.32
1	5	5	5.5	28,805	2,628,479	2.90
1	6	4	6.4	11,974	1,092,612	1.20
1	6	5	6.5	19,377	1,768,170	1.95
1	20	4	20.4	11,364	1,036,937	1.14
1	20	5	20.5	15,650	1,428,021	1.57
1	23	4	23.4	2.26	206	2.3E-04
1	23	5	23.5	2.38	217	2.4E-04
1	24	4	24.4	1,281	116,920	0.13
1	24	5	24.5	1,638	149,433	0.16
1	25	4	25.4	14,880	1,357,845	1.50
1	25	5	25.5	10,315	941,276	1.04
1	26	4	26.4	7,507	685,054	0.76
1	26	5	26.5	6,339	578,429	0.64
1	27	4	27.4	993	90,589	0.100
1	27	5	27.5	627	57,231	0.063
1	41	4	41.4	6,170	563,053	0.62
1	41	5	41.5	9,034	824,381	0.91
1	68	4	68.4	0.70	63.7	7.0E-05
1	68	5	68.5	0.53	48.2	5.3E-05
1	69	4	69.4	43.0	3,920	4.3E-03
1	69	5	69.5	19.4	1,770	2.0E-03
1	70	4	70.4	0	0	0
1	70	5	70.5	0	0	0
1	71	4	71.4	0.67	61.4	6.8E-05
1	71	5	71.5	0.71	64.6	7.1E-05
1	72	4	72.4	11.3	1,033	1.1E-03
1	72	5	72.5	5.14	469	5.2E-04
1	73	4	73.4	27.2	2,483	2.7E-03
1	73	5	73.5	15.4	1,403	1.5E-03
1	74	4	74.4	23.9	2,180	2.4E-03
1	74	5	74.5	20.1	1,838	2.0E-03
1	75	4	75.4	10.2	927	1.0E-03
1	75	5	75.5	9.20	839	9.3E-04
1	76	4	76.4	43.8	3,997	4.4E-03
1	76	5	76.5	45.8	4,183	4.6E-03
1	77	4	77.4	8.14	743	8.2E-04
1	77	5	77.5	8.36	763	8.4E-04
1	78	4	78.4	18.6	1,695	1.9E-03
1	78	5	78.5	11.2	1,018	1.1E-03
1	79	4	79.4	413,046	37,690,456	41.5
1	79	5	79.5	520,057	47,455,161	52.3
1	81	4	81.4	18.3	1,671	1.8E-03
1	81	5	81.5	7.59	693	7.6E-04
1	82	4	82.4	16.9	1,543	1.7E-03
1	82	5	82.5	17.4	1,589	1.8E-03
1	83	4	83.4	46.3	4,229	4.7E-03
1	83	5	83.5	20.7	1,889	2.1E-03
1	84	4	84.4	61.1	5,571	6.1E-03
1	84	5	84.5	27.0	2,467	2.7E-03
1	87	4	87.4	431,335	39,359,355	43.4
1	87	5	87.5	534,931	48,812,426	53.8
1	90	4	90.4	2,136,181,056	194,926,521,360	214,870
1	90	5	90.5	2,424,511,040	221,236,632,400	243,872
1	91	4	91.4	27,946	2,550,071	2.81
1	91	5	91.5	31,890	2,909,934	3.21

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	98	4	98.4	2,140,569,952	195,327,008,120	215,311
1	98	5	98.5	2,430,998,976	221,828,656,560	244,524
1	111	4	111.4	40,045	3,654,073	4.03
1	111	5	111.5	27,770	2,534,021	2.79
1	115	4	115.4	6,308	575,639	0.63
1	115	5	115.5	3,049	278,200	0.31
1	118	4	118.4	62,097	5,666,342	6.25
1	118	5	118.5	41,983	3,830,976	4.22
1	119	4	119.4	0	0	0
1	119	5	119.5	0	0	0
1	168	4	168.4	0	0	0
1	168	5	168.5	0	0	0
1	169	4	169.4	50.3	4,593	5.1E-03
1	169	5	169.5	37.5	3,423	3.8E-03
1	170	4	170.4	40.7	3,713	4.1E-03
1	170	5	170.5	29.0	2,648	2.9E-03
1	171	4	171.4	96.3	8,786	9.7E-03
1	171	5	171.5	89.7	8,186	9.0E-03
1	172	4	172.4	32.4	2,958	3.3E-03
1	172	5	172.5	23.5	2,148	2.4E-03
1	173	4	173.4	5.73	523	5.8E-04
1	173	5	173.5	4.04	369	4.1E-04
1	174	4	174.4	0.072	6.57	7.2E-06
1	174	5	174.5	0.11	9.63	1.1E-05
1	175	4	175.4	0.98	89.5	9.9E-05
1	175	5	175.5	1.44	131	1.4E-04
1	176	4	176.4	0.087	7.93	8.7E-06
1	176	5	176.5	0.041	3.77	4.2E-06
1	177	4	177.4	0.98	89.5	9.9E-05
1	177	5	177.5	1.44	131	1.4E-04
1	178	4	178.4	3.20	292	3.2E-04
1	178	5	178.5	2.99	273	3.0E-04
1	181	4	181.4	71.9	6,562	7.2E-03
1	181	5	181.5	53.7	4,902	5.4E-03
1	182	4	182.4	0	0	0
1	182	5	182.5	0	0	0
1	183	4	183.4	138	12,562	0.014
1	183	5	183.5	117	10,679	0.012
1	184	4	184.4	59.4	5,424	6.0E-03
1	184	5	184.5	43.8	3,996	4.4E-03
1	185	4	185.4	1,682	153,457	0.17
1	185	5	185.5	1,293	117,947	0.13

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 3
2017 DPM Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
2	100	4	100.4	92,910	8,478,010	9.35
2	100	5	100.5	34,921	3,186,532	3.51
2	110	4	110.4	85,477	7,799,740	8.60
2	110	5	110.5	32,127	2,931,600	3.23
2	112	4	112.4	49,195	4,489,080	4.95
2	112	5	112.5	17,310	1,579,497	1.74
2	115	4	115.4	5,355	488,643	0.54
2	115	5	115.5	2,043	186,414	0.21
2	118	4	118.4	36,281	3,310,662	3.65
2	118	5	118.5	14,818	1,352,103	1.49
2	119	4	119.4	0	0	0
2	119	5	119.5	0	0	0

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 4
2017 ZEV Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	1	4	1.4	3,045	277,871	0.31
1	1	5	1.5	5,157	470,551	0.52
1	20	4	20.4	19.0	1,738	1.9E-03
1	20	5	20.5	32.3	2,944	3.2E-03
1	41	4	41.4	3.45	314	3.5E-04
1	41	5	41.5	5.84	533	5.9E-04
1	79	4	79.4	3,045	277,871	0.31
1	79	5	79.5	5,157	470,551	0.52
1	87	4	87.4	3,446	314,442	0.35
1	87	5	87.5	5,835	532,481	0.59

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 5
2017 Summary
I-5 Rose Quarter Improvement Project

Pollutant	MOVES Pollutant ID	Pollutant ID (Roadtype 4)	Pollutant ID (Roadtype 5)	2017 Emissions Estimate (tons/yr)							
				Road Type ID							
				4 (Urban Restricted)				5 (Urban Unrestricted)			
				Standard	DPM	ZEV	Total	Standard	DPM	ZEV	Total
CO_2e	98	98.4	98.5	215,311	--	--	215,311	244,524	--	--	244,524
Primary Exhaust PM_{10} (DPM) - Total	100	100.4	100.5	--	9.35	--	9.35	--	3.51	--	3.51
Acetaldehyde	26	26.4	26.5	0.76	--	--	0.76	0.64	--	--	0.64
Acrolein	27	27.4	27.5	0.100	--	--	0.100	0.063	--	--	0.063
Benzene	20	20.4	20.5	1.14	--	1.9E-03	1.14	1.57	--	3.2E-03	1.58
1,3-Butadiene	24	24.4	24.5	0.13	--	--	0.13	0.16	--	--	0.16
Ethyl Benzene	41	41.4	41.5	0.62	--	3.5E-04	0.62	0.91	--	5.9E-04	0.91
Formaldehyde	25	25.4	25.5	1.50	--	--	1.50	1.04	--	--	1.04
Naphthalene gas	185	185.4	185.5	0.17	--	--	0.17	0.13	--	--	0.13
Naphthalene particle	23	23.4	23.5	2.3E-04	--	--	2.3E-04	2.4E-04	--	--	2.4E-04
Polycyclic Organic Matter (POM)											
Dibenzo(a,h)anthracene particle	68	68.4	68.5	7.0E-05	--	--	7.0E-05	5.3E-05	--	--	5.3E-05
Dibenzo(a,h)anthracene gas	168	168.4	168.5	0	--	--	0	0	--	--	0
Fluoranthene particle	69	69.4	69.5	4.3E-03	--	--	4.3E-03	2.0E-03	--	--	2.0E-03
Fluoranthene gas	169	169.4	169.5	5.1E-03	--	--	5.1E-03	3.8E-03	--	--	3.8E-03
Acenaphthene particle	70	70.4	70.5	0	--	--	0	0	--	--	0
Acenaphthene gas	170	170.4	170.5	4.1E-03	--	--	4.1E-03	2.9E-03	--	--	2.9E-03
Acenaphthylene particle	71	71.4	71.5	6.8E-05	--	--	6.8E-05	7.1E-05	--	--	7.1E-05
Acenaphthylene gas	171	171.4	171.5	9.7E-03	--	--	9.7E-03	9.0E-03	--	--	9.0E-03
Anthracene particle	72	72.4	72.5	1.1E-03	--	--	1.1E-03	5.2E-04	--	--	5.2E-04
Anthracene gas	172	172.4	172.5	3.3E-03	--	--	3.3E-03	2.4E-03	--	--	2.4E-03
Benz(a)anthracene particle	73	73.4	73.5	2.7E-03	--	--	2.7E-03	1.5E-03	--	--	1.5E-03
Benz(a)anthracene gas	173	173.4	173.5	5.8E-04	--	--	5.8E-04	4.1E-04	--	--	4.1E-04
Benzo(a)pyrene particle	74	74.4	74.5	2.4E-03	--	--	2.4E-03	2.0E-03	--	--	2.0E-03
Benzo(a)pyrene gas	174	174.4	174.5	7.2E-06	--	--	7.2E-06	1.1E-05	--	--	1.1E-05
Benzo(b)fluoranthene particle	75	75.4	75.5	1.0E-03	--	--	1.0E-03	9.3E-04	--	--	9.3E-04
Benzo(b)fluoranthene gas	175	175.4	175.5	9.9E-05	--	--	9.9E-05	1.4E-04	--	--	1.4E-04
Benzo(g,h,i)perylene particle	76	76.4	76.5	4.4E-03	--	--	4.4E-03	4.6E-03	--	--	4.6E-03
Benzo(g,h,i)perylene gas	176	176.4	176.5	8.7E-06	--	--	8.7E-06	4.2E-06	--	--	4.2E-06
Benzo(k)fluoranthene particle	77	77.4	77.5	8.2E-04	--	--	8.2E-04	8.4E-04	--	--	8.4E-04
Benzo(k)fluoranthene gas	177	177.4	177.5	9.9E-05	--	--	9.9E-05	1.4E-04	--	--	1.4E-04
Chrysene particle	78	78.4	78.5	1.9E-03	--	--	1.9E-03	1.1E-03	--	--	1.1E-03
Chrysene gas	178	178.4	178.5	3.2E-04	--	--	3.2E-04	3.0E-04	--	--	3.0E-04
Fluorene particle	81	81.4	81.5	1.8E-03	--	--	1.8E-03	7.6E-04	--	--	7.6E-04
Fluorene gas	181	181.4	181.5	7.2E-03	--	--	7.2E-03	5.4E-03	--	--	5.4E-03
Indeno(1,2,3,c,d)pyrene particle	82	82.4	82.5	1.7E-03	--	--	1.7E-03	1.8E-03	--	--	1.8E-03
Indeno(1,2,3,c,d)pyrene gas	182	182.4	182.5	0	--	--	0	0	--	--	0
Phenanthrene particle	83	83.4	83.5	4.7E-03	--	--	4.7E-03	2.1E-03	--	--	2.1E-03
Phenanthrene gas	183	183.4	183.5	0.014	--	--	0.014	0.012	--	--	0.012
Pyrene particle	84	84.4	84.5	6.1E-03	--	--	6.1E-03	2.7E-03	--	--	2.7E-03
Pyrene gas	184	184.4	184.5	6.0E-03	--	--	6.0E-03	4.4E-03	--	--	4.4E-03

Table C - 6
2045 No Build Standard Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	1	4	1.4	159,292	14,535,366	16.0
1	1	5	1.5	150,451	13,728,685	15.1
1	5	4	5.4	41,859	3,819,621	4.21
1	5	5	5.5	18,859	1,720,924	1.90
1	6	4	6.4	8,487	774,412	0.85
1	6	5	6.5	10,504	958,463	1.06
1	20	4	20.4	1,811	165,291	0.18
1	20	5	20.5	1,661	151,606	0.17
1	23	4	23.4	0.77	70.0	7.7E-05
1	23	5	23.5	0.91	82.7	9.1E-05
1	24	4	24.4	28.0	2,555	2.8E-03
1	24	5	24.5	10.0	914	1.0E-03
1	25	4	25.4	8,124	741,318	0.82
1	25	5	25.5	3,257	297,246	0.33
1	26	4	26.4	2,669	243,545	0.27
1	26	5	26.5	1,121	102,272	0.11
1	27	4	27.4	369	33,680	0.037
1	27	5	27.5	145	13,238	0.015
1	41	4	41.4	1,821	166,183	0.18
1	41	5	41.5	2,265	206,649	0.23
1	68	4	68.4	0.14	12.7	1.4E-05
1	68	5	68.5	0.15	14.1	1.6E-05
1	69	4	69.4	1.45	133	1.5E-04
1	69	5	69.5	1.20	109	1.2E-04
1	70	4	70.4	0	0	0
1	70	5	70.5	0	0	0
1	71	4	71.4	0.23	20.8	2.3E-05
1	71	5	71.5	0.27	24.6	2.7E-05
1	72	4	72.4	0.57	52.2	5.8E-05
1	72	5	72.5	0.39	35.9	4.0E-05
1	73	4	73.4	2.18	199	2.2E-04
1	73	5	73.5	2.57	235	2.6E-04
1	74	4	74.4	5.49	501	5.5E-04
1	74	5	74.5	6.45	588	6.5E-04
1	75	4	75.4	2.67	244	2.7E-04
1	75	5	75.5	3.14	286	3.2E-04
1	76	4	76.4	14.7	1,344	1.5E-03
1	76	5	76.5	17.4	1,588	1.8E-03
1	77	4	77.4	2.67	244	2.7E-04
1	77	5	77.5	3.14	286	3.2E-04
1	78	4	78.4	1.87	170	1.9E-04
1	78	5	78.5	2.18	199	2.2E-04
1	79	4	79.4	117,433	10,715,756	11.8
1	79	5	79.5	131,592	12,007,768	13.2
1	81	4	81.4	0.68	62.2	6.9E-05
1	81	5	81.5	0.23	21.1	2.3E-05
1	82	4	82.4	5.54	506	5.6E-04
1	82	5	82.5	6.54	597	6.6E-04
1	83	4	83.4	6.26	571	6.3E-04
1	83	5	83.5	2.82	257	2.8E-04
1	84	4	84.4	1.50	137	1.5E-04

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	84	5	84.5	1.27	116	1.3E-04
1	87	4	87.4	128,954	11,767,081	13.0
1	87	5	87.5	140,538	12,824,104	14.1
1	90	4	90.4	1,946,392,000	177,608,270,000	195,780
1	90	5	90.5	1,635,865,984	149,272,771,040	164,545
1	91	4	91.4	25,307	2,309,267	2.55
1	91	5	91.5	21,455	1,957,783	2.16
1	98	4	98.4	1,949,965,984	177,934,396,040	196,139
1	98	5	98.5	1,639,464,000	149,601,090,000	164,907
1	111	4	111.4	8,791	802,173	0.88
1	111	5	111.5	8,003	730,315	0.81
1	115	4	115.4	11,192	1,021,295	1.13
1	115	5	115.5	4,075	371,862	0.41
1	118	4	118.4	23,442	2,139,120	2.36
1	118	5	118.5	15,336	1,399,397	1.54
1	119	4	119.4	0	0	0
1	119	5	119.5	0	0	0
1	168	4	168.4	0	0	0
1	168	5	168.5	0	0	0
1	169	4	169.4	2.99	273	3.0E-04
1	169	5	169.5	2.02	184	2.0E-04
1	170	4	170.4	2.84	259	2.9E-04
1	170	5	170.5	1.69	154	1.7E-04
1	171	4	171.4	7.50	684	7.5E-04
1	171	5	171.5	5.75	525	5.8E-04
1	172	4	172.4	1.90	173	1.9E-04
1	172	5	172.5	1.25	114	1.3E-04
1	173	4	173.4	0.15	13.3	1.5E-05
1	173	5	173.5	0.14	13.1	1.4E-05
1	174	4	174.4	7.3E-03	0.67	7.4E-07
1	174	5	174.5	7.6E-03	0.69	7.6E-07
1	175	4	175.4	0.100	9.12	1.0E-05
1	175	5	175.5	0.10	9.46	1.0E-05
1	176	4	176.4	7.0E-03	0.64	7.0E-07
1	176	5	176.5	2.5E-03	0.23	2.5E-07
1	177	4	177.4	0.100	9.12	1.0E-05
1	177	5	177.5	0.10	9.46	1.0E-05
1	178	4	178.4	0.17	15.4	1.7E-05
1	178	5	178.5	0.16	14.8	1.6E-05
1	181	4	181.4	8.89	811	8.9E-04
1	181	5	181.5	4.55	415	4.6E-04
1	182	4	182.4	0	0	0
1	182	5	182.5	0	0	0
1	183	4	183.4	35.1	3,205	3.5E-03
1	183	5	183.5	16.2	1,478	1.6E-03
1	184	4	184.4	2.92	267	2.9E-04
1	184	5	184.5	2.13	194	2.1E-04
1	185	4	185.4	623	56,853	0.063
1	185	5	185.5	258	23,545	0.026

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 7
2045 No Build DPM Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
3	100	4	100.4	17,728	1,617,713	1.78
3	100	5	100.5	6,018	549,160	0.61
3	110	4	110.4	16,310	1,488,291	1.64
3	110	5	110.5	5,537	505,225	0.56
3	112	4	112.4	1,633	149,014	0.16
3	112	5	112.5	559	50,982	0.056
3	115	4	115.4	10,861	991,063	1.09
3	115	5	115.5	3,684	336,140	0.37
3	118	4	118.4	14,677	1,339,277	1.48
3	118	5	118.5	4,978	454,243	0.50
3	119	4	119.4	0	0	0
3	119	5	119.5	0	0	0

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 8
2045 No Build ZEV Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	1	4	1.4	537	49,021	0.054
1	1	5	1.5	772	70,467	0.078
1	20	4	20.4	3.36	307	3.4E-04
1	20	5	20.5	4.83	441	4.9E-04
1	41	4	41.4	0.61	55.5	6.1E-05
1	41	5	41.5	0.87	79.8	8.8E-05
1	79	4	79.4	537	49,021	0.054
1	79	5	79.5	772	70,467	0.078
1	87	4	87.4	608	55,479	0.061
1	87	5	87.5	874	79,750	0.088

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 9
2045 No Build Summary
I-5 Rose Quarter Improvement Project

Pollutant	MOVES Pollutant ID	Pollutant ID (Roadtype 4)	Pollutant ID (Roadtype 5)	2045 No Build Emissions Estimate (tons/yr)							
				Road Type ID							
				4 (Urban Restricted)				5 (Urban Unrestricted)			
				Standard	DPM	ZEV	Total	Standard	DPM	ZEV	Total
CO_2e	98	98.4	98.5	196,139	--	--	196,139	164,907	--	--	164,907
Primary Exhaust PM_{10} (DPM) - Total	100	100.4	100.5	--	1.78	--	1.78	--	0.61	--	0.61
Acetaldehyde	26	26.4	26.5	0.27	--	--	0.27	0.11	--	--	0.11
Acrolein	27	27.4	27.5	0.037	--	--	0.037	0.015	--	--	0.015
Benzene	20	20.4	20.5	0.18	--	3.4E-04	0.18	0.17	--	4.9E-04	0.17
1,3-Butadiene	24	24.4	24.5	2.8E-03	--	--	2.8E-03	1.0E-03	--	--	1.0E-03
Ethyl Benzene	41	41.4	41.5	0.18	--	6.1E-05	0.18	0.23	--	8.8E-05	0.23
Formaldehyde	25	25.4	25.5	0.82	--	--	0.82	0.33	--	--	0.33
Naphthalene gas	185	185.4	185.5	0.063	--	--	0.063	0.026	--	--	0.026
Naphthalene particle	23	23.4	23.5	7.7E-05	--	--	7.7E-05	9.1E-05	--	--	9.1E-05
Polycyclic Organic Matter (POM)											
Dibenzo(a,h)anthracene particle	68	68.4	68.5	1.4E-05	--	--	1.4E-05	1.6E-05	--	--	1.6E-05
Dibenzo(a,h)anthracene gas	168	168.4	168.5	0	--	--	0	0	--	--	0
Fluoranthene particle	69	69.4	69.5	1.5E-04	--	--	1.5E-04	1.2E-04	--	--	1.2E-04
Fluoranthene gas	169	169.4	169.5	3.0E-04	--	--	3.0E-04	2.0E-04	--	--	2.0E-04
Acenaphthene particle	70	70.4	70.5	0	--	--	0	0	--	--	0
Acenaphthene gas	170	170.4	170.5	2.9E-04	--	--	2.9E-04	1.7E-04	--	--	1.7E-04
Acenaphthylene particle	71	71.4	71.5	2.3E-05	--	--	2.3E-05	2.7E-05	--	--	2.7E-05
Acenaphthylene gas	171	171.4	171.5	7.5E-04	--	--	7.5E-04	5.8E-04	--	--	5.8E-04
Anthracene particle	72	72.4	72.5	5.8E-05	--	--	5.8E-05	4.0E-05	--	--	4.0E-05
Anthracene gas	172	172.4	172.5	1.9E-04	--	--	1.9E-04	1.3E-04	--	--	1.3E-04
Benz(a)anthracene particle	73	73.4	73.5	2.2E-04	--	--	2.2E-04	2.6E-04	--	--	2.6E-04
Benz(a)anthracene gas	173	173.4	173.5	1.5E-05	--	--	1.5E-05	1.4E-05	--	--	1.4E-05
Benzo(a)pyrene particle	74	74.4	74.5	5.5E-04	--	--	5.5E-04	6.5E-04	--	--	6.5E-04
Benzo(a)pyrene gas	174	174.4	174.5	7.4E-07	--	--	7.4E-07	7.6E-07	--	--	7.6E-07
Benzo(b)fluoranthene particle	75	75.4	75.5	2.7E-04	--	--	2.7E-04	3.2E-04	--	--	3.2E-04
Benzo(b)fluoranthene gas	175	175.4	175.5	1.0E-05	--	--	1.0E-05	1.0E-05	--	--	1.0E-05
Benzo(g,h,i)perylene particle	76	76.4	76.5	1.5E-03	--	--	1.5E-03	1.8E-03	--	--	1.8E-03
Benzo(g,h,i)perylene gas	176	176.4	176.5	7.0E-07	--	--	7.0E-07	2.5E-07	--	--	2.5E-07
Benzo(k)fluoranthene particle	77	77.4	77.5	2.7E-04	--	--	2.7E-04	3.2E-04	--	--	3.2E-04
Benzo(k)fluoranthene gas	177	177.4	177.5	1.0E-05	--	--	1.0E-05	1.0E-05	--	--	1.0E-05
Chrysene particle	78	78.4	78.5	1.9E-04	--	--	1.9E-04	2.2E-04	--	--	2.2E-04
Chrysene gas	178	178.4	178.5	1.7E-05	--	--	1.7E-05	1.6E-05	--	--	1.6E-05
Fluorene particle	81	81.4	81.5	6.9E-05	--	--	6.9E-05	2.3E-05	--	--	2.3E-05
Fluorene gas	181	181.4	181.5	8.9E-04	--	--	8.9E-04	4.6E-04	--	--	4.6E-04
Indeno(1,2,3,c,d)pyrene particle	82	82.4	82.5	5.6E-04	--	--	5.6E-04	6.6E-04	--	--	6.6E-04
Indeno(1,2,3,c,d)pyrene gas	182	182.4	182.5	0	--	--	0	0	--	--	0
Phenanthrene particle	83	83.4	83.5	6.3E-04	--	--	6.3E-04	2.8E-04	--	--	2.8E-04
Phenanthrene gas	183	183.4	183.5	3.5E-03	--	--	3.5E-03	1.6E-03	--	--	1.6E-03
Pyrene particle	84	84.4	84.5	1.5E-04	--	--	1.5E-04	1.3E-04	--	--	1.3E-04
Pyrene gas	184	184.4	184.5	2.9E-04	--	--	2.9E-04	2.1E-04	--	--	2.1E-04

Table C - 10
2045 Build Standard Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	1	4	1.4	144,243	13,162,147	14.5
1	1	5	1.5	154,737	14,119,716	15.6
1	5	4	5.4	38,174	3,483,376	3.84
1	5	5	5.5	19,552	1,784,115	1.97
1	6	4	6.4	7,251	661,614	0.73
1	6	5	6.5	10,778	983,493	1.08
1	20	4	20.4	1,772	161,681	0.18
1	20	5	20.5	1,712	156,176	0.17
1	23	4	23.4	0.84	77.1	8.5E-05
1	23	5	23.5	0.93	85.0	9.4E-05
1	24	4	24.4	25.0	2,279	2.5E-03
1	24	5	24.5	10.4	951	1.0E-03
1	25	4	25.4	7,320	667,980	0.74
1	25	5	25.5	3,383	308,670	0.34
1	26	4	26.4	2,416	220,416	0.24
1	26	5	26.5	1,163	106,139	0.12
1	27	4	27.4	332	30,293	0.033
1	27	5	27.5	151	13,750	0.015
1	41	4	41.4	1,635	149,190	0.16
1	41	5	41.5	2,325	212,147	0.23
1	68	4	68.4	0.15	13.8	1.5E-05
1	68	5	68.5	0.16	14.5	1.6E-05
1	69	4	69.4	1.50	137	1.5E-04
1	69	5	69.5	1.23	113	1.2E-04
1	70	4	70.4	0	0	0
1	70	5	70.5	0	0	0
1	71	4	71.4	0.25	22.9	2.5E-05
1	71	5	71.5	0.28	25.3	2.8E-05
1	72	4	72.4	0.58	52.6	5.8E-05
1	72	5	72.5	0.41	37.1	4.1E-05
1	73	4	73.4	2.40	219	2.4E-04
1	73	5	73.5	2.64	241	2.7E-04
1	74	4	74.4	6.04	551	6.1E-04
1	74	5	74.5	6.63	605	6.7E-04
1	75	4	75.4	2.94	268	3.0E-04
1	75	5	75.5	3.23	295	3.2E-04
1	76	4	76.4	16.2	1,481	1.6E-03
1	76	5	76.5	17.9	1,633	1.8E-03
1	77	4	77.4	2.94	268	3.0E-04
1	77	5	77.5	3.23	295	3.2E-04
1	78	4	78.4	2.05	187	2.1E-04
1	78	5	78.5	2.24	205	2.3E-04
1	79	4	79.4	106,069	9,678,774	10.7
1	79	5	79.5	135,185	12,335,597	13.6
1	81	4	81.4	0.64	58.4	6.4E-05
1	81	5	81.5	0.24	22.0	2.4E-05
1	82	4	82.4	6.10	557	6.1E-04
1	82	5	82.5	6.73	614	6.8E-04
1	83	4	83.4	6.01	548	6.0E-04
1	83	5	83.5	2.92	267	2.9E-04
1	84	4	84.4	1.55	142	1.6E-04
1	84	5	84.5	1.31	119	1.3E-04
1	87	4	87.4	115,761	10,563,228	11.6
1	87	5	87.5	144,387	13,175,332	14.5
1	90	4	90.4	1,889,941,984	172,457,206,040	190,102
1	90	5	90.5	1,684,198,976	153,683,156,560	169,407
1	91	4	91.4	24,573	2,242,330	2.47
1	91	5	91.5	22,088	2,015,509	2.22

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	98	4	98.4	1,893,055,968	172,741,357,080	190,415
1	98	5	98.5	1,687,899,008	154,020,784,480	169,779
1	111	4	111.4	9,223	841,622	0.93
1	111	5	111.5	8,241	751,973	0.83
1	115	4	115.4	10,564	963,945	1.06
1	115	5	115.5	4,236	386,499	0.43
1	118	4	118.4	23,437	2,138,639	2.36
1	118	5	118.5	15,830	1,444,444	1.59
1	119	4	119.4	0	0	0
1	119	5	119.5	0	0	0
1	168	4	168.4	0	0	0
1	168	5	168.5	0	0	0
1	169	4	169.4	2.87	262	2.9E-04
1	169	5	169.5	2.09	190	2.1E-04
1	170	4	170.4	2.67	244	2.7E-04
1	170	5	170.5	1.75	160	1.8E-04
1	171	4	171.4	7.33	669	7.4E-04
1	171	5	171.5	5.93	542	6.0E-04
1	172	4	172.4	1.81	165	1.8E-04
1	172	5	172.5	1.29	117	1.3E-04
1	173	4	173.4	0.15	13.6	1.5E-05
1	173	5	173.5	0.15	13.5	1.5E-05
1	174	4	174.4	7.6E-03	0.69	7.6E-07
1	174	5	174.5	7.8E-03	0.71	7.9E-07
1	175	4	175.4	0.10	9.43	1.0E-05
1	175	5	175.5	0.11	9.74	1.1E-05
1	176	4	176.4	6.2E-03	0.57	6.3E-07
1	176	5	176.5	2.6E-03	0.24	2.6E-07
1	177	4	177.4	0.10	9.43	1.0E-05
1	177	5	177.5	0.11	9.74	1.1E-05
1	178	4	178.4	0.17	15.6	1.7E-05
1	178	5	178.5	0.17	15.3	1.7E-05
1	181	4	181.4	8.21	749	8.3E-04
1	181	5	181.5	4.71	430	4.7E-04
1	182	4	182.4	0	0	0
1	182	5	182.5	0	0	0
1	183	4	183.4	32.1	2,928	3.2E-03
1	183	5	183.5	16.8	1,532	1.7E-03
1	184	4	184.4	2.83	258	2.8E-04
1	184	5	184.5	2.20	201	2.2E-04
1	185	4	185.4	563	51,385	0.057
1	185	5	185.5	268	24,439	0.027

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October.
Data from MOVES 2014a, model run June 28, 2018.

Table C - 11
2045 Build DPM Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
2	100	4	100.4	16,648	1,519,164	1.67
2	100	5	100.5	6,262	571,420	0.63
2	110	4	110.4	15,316	1,397,625	1.54
2	110	5	110.5	5,761	525,705	0.58
2	112	4	112.4	1,534	139,997	0.15
2	112	5	112.5	581	53,042	0.058
2	115	4	115.4	10,199	930,646	1.03
2	115	5	115.5	3,833	349,769	0.39
2	118	4	118.4	13,782	1,257,628	1.39
2	118	5	118.5	5,180	472,662	0.52
2	119	4	119.4	0	0	0
2	119	5	119.5	0	0	0

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 12
2045 Build ZEV Run Emissions Estimate
I-5 Rose Quarter Improvement Project

MOVES Run ID [1]	PollutantID [1]	RoadTypeID [1]	Pollutant.RoadID [2]	SUM(emissionQuant) [3] (g)	Annual Emissions Estimate	
					(g/yr) [a]	(tons/yr) [b]
1	1	4	1.4	456	41,594	0.046
1	1	5	1.5	791	72,142	0.080
1	20	4	20.4	2.85	260	2.9E-04
1	20	5	20.5	4.95	451	5.0E-04
1	41	4	41.4	0.52	47.1	5.2E-05
1	41	5	41.5	0.89	81.7	9.0E-05
1	79	4	79.4	456	41,594	0.046
1	79	5	79.5	791	72,142	0.080
1	87	4	87.4	516	47,074	0.052
1	87	5	87.5	895	81,646	0.090

Notes:

(a) Annual emissions estimate (g/yr) = (Sum[emissionQuant] [g/4 days]) x (365 days/yr)

(b) Annual emissions estimate (tons/yr) = (annual emissions estimate [g/yr]) / (453.592 g/lb) / (2,000 lbs/ton)

References:

(1) Data from MOVES 2014a, model run June 28, 2018.

(2) Value is a unique identifier created by Maul Foster & Alongi representing the Pollutant ID and RoadType ID.

(3) Sum(emissionQuant) represents the sum of emissions for a typical day in January, April, July and October. Data from MOVES 2014a, model run June 28, 2018.

Table C - 13
2045 Build Summary
I-5 Rose Quarter Improvement Project

Pollutant	MOVES Pollutant ID	Pollutant ID (Roadtype 4)	Pollutant ID (Roadtype 5)	2045 Build Emissions Estimate (tons/yr)							
				Road Type ID							
				4 (Urban Restricted)				5 (Urban Unrestricted)			
				Standard	DPM	ZEV	Total	Standard	DPM	ZEV	Total
CO_2e	98	98.4	98.5	190,415	--	--	190,415	169,779	--	--	169,779
Primary Exhaust PM_{10} (DPM) - Total	100	100.4	100.5	--	1.67	--	1.67	--	0.63	--	0.63
Acetaldehyde	26	26.4	26.5	0.24	--	--	0.24	0.12	--	--	0.12
Acrolein	27	27.4	27.5	0.033	--	--	0.033	0.015	--	--	0.015
Benzene	20	20.4	20.5	0.18	--	2.9E-04	0.18	0.17	--	5.0E-04	0.17
1,3-Butadiene	24	24.4	24.5	2.5E-03	--	--	2.5E-03	1.0E-03	--	--	1.0E-03
Ethyl Benzene	41	41.4	41.5	0.16	--	5.2E-05	0.16	0.23	--	9.0E-05	0.23
Formaldehyde	25	25.4	25.5	0.74	--	--	0.74	0.34	--	--	0.34
Naphthalene gas	185	185.4	185.5	0.057	--	--	0.057	0.027	--	--	0.027
Naphthalene particle	23	23.4	23.5	8.5E-05	--	--	8.5E-05	9.4E-05	--	--	9.4E-05
Polycyclic Organic Matter (POM)											
Dibenzo(a,h)anthracene particle	68	68.4	68.5	1.5E-05	--	--	1.5E-05	1.6E-05	--	--	1.6E-05
Dibenzo(a,h)anthracene gas	168	168.4	168.5	0	--	--	0	0	--	--	0
Fluoranthene particle	69	69.4	69.5	1.5E-04	--	--	1.5E-04	1.2E-04	--	--	1.2E-04
Fluoranthene gas	169	169.4	169.5	2.9E-04	--	--	2.9E-04	2.1E-04	--	--	2.1E-04
Acenaphthene particle	70	70.4	70.5	0	--	--	0	0	--	--	0
Acenaphthene gas	170	170.4	170.5	2.7E-04	--	--	2.7E-04	1.8E-04	--	--	1.8E-04
Acenaphthylene particle	71	71.4	71.5	2.5E-05	--	--	2.5E-05	2.8E-05	--	--	2.8E-05
Acenaphthylene gas	171	171.4	171.5	7.4E-04	--	--	7.4E-04	6.0E-04	--	--	6.0E-04
Anthracene particle	72	72.4	72.5	5.8E-05	--	--	5.8E-05	4.1E-05	--	--	4.1E-05
Anthracene gas	172	172.4	172.5	1.8E-04	--	--	1.8E-04	1.3E-04	--	--	1.3E-04
Benz(a)anthracene particle	73	73.4	73.5	2.4E-04	--	--	2.4E-04	2.7E-04	--	--	2.7E-04
Benz(a)anthracene gas	173	173.4	173.5	1.5E-05	--	--	1.5E-05	1.5E-05	--	--	1.5E-05
Benzo(a)pyrene particle	74	74.4	74.5	6.1E-04	--	--	6.1E-04	6.7E-04	--	--	6.7E-04
Benzo(a)pyrene gas	174	174.4	174.5	7.6E-07	--	--	7.6E-07	7.9E-07	--	--	7.9E-07
Benzo(b)fluoranthene particle	75	75.4	75.5	3.0E-04	--	--	3.0E-04	3.2E-04	--	--	3.2E-04
Benzo(b)fluoranthene gas	175	175.4	175.5	1.0E-05	--	--	1.0E-05	1.1E-05	--	--	1.1E-05
Benzo(g,h,i)perylene particle	76	76.4	76.5	1.6E-03	--	--	1.6E-03	1.8E-03	--	--	1.8E-03
Benzo(g,h,i)perylene gas	176	176.4	176.5	6.3E-07	--	--	6.3E-07	2.6E-07	--	--	2.6E-07
Benzo(k)fluoranthene particle	77	77.4	77.5	3.0E-04	--	--	3.0E-04	3.2E-04	--	--	3.2E-04
Benzo(k)fluoranthene gas	177	177.4	177.5	1.0E-05	--	--	1.0E-05	1.1E-05	--	--	1.1E-05
Chrysene particle	78	78.4	78.5	2.1E-04	--	--	2.1E-04	2.3E-04	--	--	2.3E-04
Chrysene gas	178	178.4	178.5	1.7E-05	--	--	1.7E-05	1.7E-05	--	--	1.7E-05
Fluorene particle	81	81.4	81.5	6.4E-05	--	--	6.4E-05	2.4E-05	--	--	2.4E-05
Fluorene gas	181	181.4	181.5	8.3E-04	--	--	8.3E-04	4.7E-04	--	--	4.7E-04
Indeno(1,2,3,c,d)pyrene particle	82	82.4	82.5	6.1E-04	--	--	6.1E-04	6.8E-04	--	--	6.8E-04
Indeno(1,2,3,c,d)pyrene gas	182	182.4	182.5	0	--	--	0	0	--	--	0
Phenanthrene particle	83	83.4	83.5	6.0E-04	--	--	6.0E-04	2.9E-04	--	--	2.9E-04
Phenanthrene gas	183	183.4	183.5	3.2E-03	--	--	3.2E-03	1.7E-03	--	--	1.7E-03
Pyrene particle	84	84.4	84.5	1.6E-04	--	--	1.6E-04	1.3E-04	--	--	1.3E-04
Pyrene gas	184	184.4	184.5	2.8E-04	--	--	2.8E-04	2.2E-04	--	--	2.2E-04