Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	19.29	24.85	32.67	27.22	32.12	1.11	2.00	14.29	40.87	21.616
Exhaust NOX:	1.71	2.01	2.80	2.25	3.50	0.99	1.12	6.99	0.83	2.350

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	25.55	34.02	47.48	38.10	33.47	2.73	4.42	26.11	41.27	29.467
Idle CO:	260.93	330.03	433.97	361.55	368.80	11.47	20.66	147.35	473.37	295.696
Idle NOX:	6.23	7.56	10.55	8.46	7.09	4.71	5.32	33.16	2.11	9.106

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 25.7 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 25.7 (F)

Resting Loss Temp: 25.7 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 34.3 / 34.3 / 34.3 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Feb UP/15. Minimum Temp: 26. (F) Maximum Temp: 43. (F)

Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.87	2.37	3.34	2.66	2.50	0.42	0.67	3.98	3.05	2.292
Exhaust HC:	1.86	2.36	3.33	2.65	2.49	0.42	0.67	3.98	3.05	2.284
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007

Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	23.66	30.12	40.35	33.22	40.21	1.11	2.00	14.29	45.98	26.198
Exhaust NOX:	1.62	1.90	2.65	2.12	3.44	0.99	1.12	6.99	0.80	2.263

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	26.28	34.63	48.81	38.93	33.03	2.73	4.42	26.11	38.68	30.105
Idle CO:	344.46	400.05	535.93	441.26	461.63	11.47	20.66	147.35	532.50	359.274
Idle NOX:	5.93	7.14	9.98	8.00	6.97	4.71	5.32	33.16	2.02	8.787

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 34.3 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 34.3 (F)

Resting Loss Temp: 34.3 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 48.5 / 48.5 / 48.5 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Mar UP/15. Minimum Temp: 36. (F) Maximum Temp: 61. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.92	2.34	3.22	2.61	3.24	0.42	0.67	3.98	4.50	2.339
Exhaust HC:	1.57	1.94	2.75	2.19	2.17	0.42	0.67	3.98	2.68	1.967
Evaporat HC:	0.18	0.22	0.24	0.23	0.78				1.66	0.202
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.17	0.17	0.22	0.18	0.28					0.162
Rsting L HC:	0.01	0.01	0.01	0.01	0.01				0.16	0.008
Exhaust CO:	21.57	26.70	36.09	29.55	38.89	1.11	2.00	14.29	39.44	23.838
Exhaust NOX:	1.50	1.74	2.43	1.95	3.31	0.99	1.12	6.99	0.74	2.136

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	22.17	28.48	40.42	32.10	28.77	2.73	4.42	26.11	34.00	25.558
Idle CO:	314.14	354.56	479.26	392.45	446.46	11.47	20.66	147.35	456.76	326.516

Idle NOX:	5.48	6.55	9.14	7.33	6.70	4.71	5.32	33.16	1.89	8.323

0Evaporative Emissions by Component — Weathered RVP: 13.5 — Hot Soak Temp: 48.5 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 48.5 (F)

Resting Loss Temp: 48.5 (F)

Hot Soak	0.87	0.81	0.93	0.85	1.79				1.43	
WtDiurnal	2.07	3.65	4.34	3.85	17.24				14.69	
Multiple	3.08	5.20	6.09	5.46	17.58					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.01	0.01	0.01	0.01				0.07	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 48.7 / 48.7 / 48.7 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Apr UP/15. Minimum Temp: 35. (F) Maximum Temp: 63. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.94	2.36	3.25	2.63	3.30	0.42	0.67	3.98	4.79	2.359
Exhaust HC:	1.57	1.94	2.75	2.19	2.17	0.42	0.67	3.98	2.68	1.966
Evaporat HC:	0.19	0.24	0.26	0.25	0.83				1.95	0.220
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.17	0.17	0.23	0.19	0.28					0.166
Rsting L HC:	0.01	0.01	0.01	0.01	0.01				0.16	0.008
Exhaust CO:	21.62	26.75	36.15	29.60	38.95	1.11	2.00	14.29	39.36	23.881
Exhaust NOX:	1.50	1.74	2.42	1.94	3.30	0.99	1.12	6.99	0.74	2.134

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	22.15	28.45	40.38	32.07	28.73	2.73	4.42	26.11	33.95	25.537
Idle CO:	314.79	355.21	480.14	393.11	447.22	11.47	20.66	147.35	455.82	327.109
Idle NOX:	5.48	6.54	9.13	7.33	6.69	4.71	5.32	33.16	1.88	8.318

0Evaporative Emissions by Component — Weathered RVP: 13.5 — Hot Soak Temp: 48.7 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 48.7 (F)

Resting Loss Temp: 48.7 (F)

Hot Soak	0.90	0.84	0.96	0.87	1.85				1.46	
WtDiurnal	2.41	4.09	4.85	4.30	19.17				17.53	
Multiple	3.70	5.95	6.93	6.23	19.58					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	

Refuel	0.00	0.00	0.00	0.00	0.00	
Resting	0.01	0.01	0.01	0.01	0.01	0.07

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 58.4 / 58.4 / 58.4 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0May UP/15. Minimum Temp: 44. (F) Maximum Temp: 73. (F)
Period 1 RVP: 9.0 Period 2 RVP: 9.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.53	1.87	2.60	2.09	2.64	0.42	0.67	3.98	3.67	1.941
Exhaust HC:	1.32	1.61	2.28	1.81	1.91	0.42	0.67	3.98	2.48	1.702
Evaporat HC:	0.09	0.13	0.15	0.14	0.52				0.97	0.113
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.12	0.12	0.16	0.13	0.20					0.115
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.21	0.010
Exhaust CO:	17.51	21.26	28.83	23.56	34.78	1.11	2.00	14.29	35.75	19.568
Exhaust NOX:	1.41	1.62	2.26	1.82	3.28	0.99	1.12	6.99	0.71	2.043
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	18.64	23.55	33.52	26.58	25.35	2.73	4.42	26.11	31.49	21.769
Idle CO:	254.90	282.37	382.87	312.85	399.29	11.47	20.66	147.35	413.99	267.043
Idle NOX:	5.14	6.11	8.53	6.84	6.65	4.71	5.32	33.16	1.80	7.982

0Evaporative Emissions by Component Weathered RVP: 9.0 Hot Soak Temp: 58.4 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 58.4 (F)
Resting Loss Temp: 58.4 (F)

Hot Soak	0.26	0.34	0.40	0.36	0.87	1.28	
WtDiurnal	1.43	2.60	3.15	2.76	13.19	8.03	
Multiple	2.20	3.46	4.12	3.65	19.76		
Crankcase	0.01	0.01	0.01	0.01	0.01	0.00	
Refuel	0.00	0.00	0.00	0.00	0.00		
Resting	0.01	0.01	0.01	0.01	0.02	0.09	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 61.9 / 61.9 / 61.9 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Jun UP/15. Minimum Temp: 46. (F) Maximum Temp: 77. (F)
Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.43	1.74	2.43	1.95	2.46	0.42	0.67	3.98	3 50	1.831
Exhaust HC:	1.26	1.52	2.17	1.72	1.84	0.42	0.67	3.98	2.42	1.638
Evaporat HC:	0.08	0.13	0.14	0.13	0.47				0.84	0.106
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.08	0.08	0.11	0.09	0.13					0.076
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.24	0.012
Exhaust CO:	16.74	20.16	27.42	22.36	34.05	1.11	2.00	14.29	34.58	18.744
Exhaust NOX:	1.38	1.58	2.21	1.78	3.26	0.99	1.12	6.99	0.70	2.014
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	17.79	22.35	31.85	25.23	24.37	2.73	4.42	26.11	30.71	20.843
Idle CO:	243.75	267.76	364.13	296.99	390.97	11.47	20.66	147.35	400.52	255.583
Idle NOX:	5.04	5.97	8.34	6.69	6.60	4.71	5.32	33.16	1.77	7.875
0Evaporative Emissions by Component					Weathered RVP: 7.8				Hot Soak Temp: 61.9 (F)	
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr)									Running Loss Temp: 61.9 (F)	
									Resting Loss Temp: 61.9 (F)	
Hot Soak	0.22	0.30	0.34	0.31	0.73				1.34	
WtDiurnal	1.37	2.51	3.04	2.66	12.35				6.63	
Multiple	2.32	3.46	4.07	3.64	19.59					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.01	0.01	0.01	0.02				0.10	

-M170 Warning:
+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 69.0 / 69.0 / 69.0 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Jul UP/15. Minimum Temp: 52. (F) Maximum Temp: 86. (F)
Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	

VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.38	1.67	2.30	1.86	2.56	0.42	0.67	3.98	4.01	1.780
Exhaust HC:	1.15	1.37	1.96	1.55	1.69	0.42	0.67	3.98	2.31	1.520
Evaporat HC:	0.12	0.18	0.19	0.18	0.68				1.41	0.151
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.10	0.10	0.13	0.11	0.16					0.095
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.29	0.014
Exhaust CO:	15.28	18.06	24.76	20.09	32.63	1.11	2.00	14.29	32.42	17.174
Exhaust NOX:	1.32	1.51	2.11	1.69	3.21	0.99	1.12	6.98	0.67	1.956

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	16.21	20.16	28.81	22.78	22.48	2.74	4.43	26.11	29.32	19.144
Idle CO:	222.47	239.91	328.81	266.84	374.59	11.47	20.67	147.35	375.50	233.717
Idle NOX:	4.83	5.70	7.96	6.39	6.50	4.72	5.32	33.10	1.71	7.664

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 69.0 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 69.0 (F)

Resting Loss Temp: 69.0 (F)

Hot Soak	0.38	0.52	0.62	0.55	1.34				1.76	
WtDiurnal	1.77	3.16	3.79	3.34	15.42				11.72	
Multiple	3.72	5.37	5.93	5.53	25.24					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.02				0.12	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 70.0 / 70.0 / 70.0 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Aug UP/15. Minimum Temp: 53. (F) Maximum Temp: 87. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
\+										
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.37	1.66	2.29	1.85	2.58	0.42	0.67	3.98	4.08	1.775
Exhaust HC:	1.13	1.35	1.94	1.53	1.67	0.42	0.67	3.98	2.30	1.504
Evaporat HC:	0.12	0.19	0.20	0.19	0.72				1.48	0.159
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.10	0.10	0.14	0.11	0.17					0.098
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.30	0.014

Exhaust CO:	15.08	17.78	24.39	19.78	32.43	1.11	2.00	14.29	32.14	16.960
Exhaust NOX:	1.32	1.50	2.10	1.68	3.20	0.99	1.12	6.98	0.67	1.948

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	16.01	19.87	28.41	22.46	22.22	2.74	4.43	26.11	29.13	18.920
Idle CO:	219.58	236.12	324.00	262.74	372.34	11.47	20.67	147.35	372.21	230.749
Idle NOX:	4.81	5.67	7.91	6.34	6.48	4.72	5.32	33.10	1.70	7.635

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 70.0 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 70.0 (F)

Resting Loss Temp: 70.0 (F)

Hot Soak	0.40	0.57	0.67	0.59	1.45				1.81	
WtDiurnal	1.83	3.27	3.91	3.45	15.83				12.39	
Multiple	3.93	5.69	6.21	5.84	26.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.02				0.12	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 65.3 / 65.3 / 65.3 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Sep UP/15. Minimum Temp: 47. (F) Maximum Temp: 84. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+										
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.41	1.71	2.37	1.91	2.53	0.42	0.67	3.98	3.93	1.813
Exhaust HC:	1.20	1.45	2.07	1.64	1.77	0.42	0.67	3.98	2.37	1.580
Evaporat HC:	0.11	0.16	0.17	0.16	0.60				1.30	0.135
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.09	0.09	0.12	0.10	0.15					0.086
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.26	0.012
Exhaust CO:	16.03	19.14	26.13	21.26	33.36	1.11	2.00	14.29	33.52	17.983
Exhaust NOX:	1.35	1.55	2.16	1.74	3.23	0.99	1.12	6.98	0.69	1.986

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	17.01	21.27	30.36	24.02	23.45	2.74	4.43	26.11	30.02	20.007
Idle CO:	233.42	254.27	347.10	282.39	383.02	11.47	20.67	147.35	388.17	244.970
Idle NOX:	4.94	5.84	8.15	6.54	6.54	4.72	5.32	33.10	1.74	7.772

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 65.3 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 65.3 (F)

						Resting Loss Temp: 65.3 (F)
Hot Soak	0.29	0.39	0.46	0.41	0.99	1.54
WtDiurnal	1.70	3.04	3.66	3.22	14.97	10.99
Multiple	3.49	5.02	5.62	5.19	24.40	
Crankcase	0.01	0.01	0.01	0.01	0.01	0.00
Refuel	0.00	0.00	0.00	0.00	0.00	
Resting	0.01	0.02	0.02	0.02	0.02	0.11

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 54.9 / 54.9 / 54.9 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Oct UP/15. Minimum Temp: 41. (F) Maximum Temp: 69. (F)
Period 1 RVP: 11.5 Period 2 RVP: 11.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	
0*Composite Emission Factors (Gm/Mile)*										
VOC HC:	1.96	2.36	3.25	2.63	3.33	0.42	0.67	3.98	4.37	2.369
Exhaust HC:	1.52	1.86	2.66	2.10	2.07	0.42	0.67	3.98	2.55	1.911
Evaporat HC:	0.16	0.22	0.23	0.22	0.79				1.63	0.192
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.27	0.26	0.35	0.29	0.44					0.256
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.19	0.009
Exhaust CO:	22.39	27.29	37.16	30.28	40.42	1.11	2.00	14.29	36.98	24.563
Exhaust NOX:	1.46	1.68	2.35	1.88	3.19	0.99	1.12	6.98	0.72	2.088
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.50	27.34	38.97	30.87	27.52	2.74	4.43	26.11	32.32	24.758
Idle CO:	325.97	362.44	493.52	402.15	464.01	11.47	20.67	147.35	428.29	336.639
Idle NOX:	5.32	6.33	8.84	7.09	6.47	4.72	5.32	33.10	1.83	8.153

0Evaporative Emissions by Component Weathered RVP: 11.5 Hot Soak Temp: 54.9 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 54.9 (F)
Resting Loss Temp: 54.9 (F)

Hot Soak	*0.73*	*0.83*	*0.94*	*0.86*	1.81	1.62
WtDiurnal	2.02	3.56	4.24	3.76	16.88	14.15
Multiple	3.20	5.13	5.98	5.37	20.30	
Crankcase	0.01	0.01	0.01	0.01	0.01	0.00
Refuel	0.00	0.00	0.00	0.00	0.00	
Resting	0.01	0.01	0.01	0.01	0.02	0.08

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 40.4 / 40.4 / 40.4 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Nov UP/15. Minimum Temp: 27. (F) Maximum Temp: 54. (F)
Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120
Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035
Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.53	1.93	2.68	2.16	2.51	0.42	0.67	3.98	3.98	1.955
Exhaust HC:	1.45	1.80	2.53	2.03	2.15	0.42	0.67	3.98	2.81	1.850
Evaporat HC:	0.07	0.12	0.13	0.12	0.34				1.04	0.092
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.01	0.01	0.01	0.01	0.01					0.008
Rsting L HC:	0.01	0.01	0.01	0.01	0.01				0.13	0.006
Exhaust CO:	16.10	20.24	26.72	22.20	29.40	1.11	2.00	14.29	34.56	18.171
Exhaust NOX:	1.56	1.82	2.54	2.04	3.39	0.99	1.12	6.98	0.78	2.204
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	20.45	26.47	37.20	29.72	28.49	2.74	4.43	26.11	35.62	23.867
Idle CO:	234.41	268.75	354.92	294.86	337.55	11.47	20.67	147.35	400.23	247.750
Idle NOX:	5.72	6.86	9.58	7.69	6.87	4.72	5.32	33.10	1.96	8.571

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 40.4 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 40.4 (F)
Resting Loss Temp: 40.4 (F)

Hot Soak	0.03	0.03	0.03	0.03	0.06				0.07	
WtDiurnal	1.63	2.93	3.53	3.10	14.56				10.33	
Multiple	2.26	3.90	4.65	4.12	14.80					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.01	0.01	0.01	0.01				0.05	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 36.5 / 36.5 / 36.5 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Dec UP/15. Minimum Temp: 26. (F) Maximum Temp: 48. (F)

Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.54	1.93	2.71	2.17	2.25	0.42	0.67	3.98	2.91	1.950
Exhaust HC:	1.53	1.93	2.70	2.16	2.24	0.42	0.67	3.98	2.91	1.943
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	16.90	21.39	28.20	23.45	30.10	1.11	2.00	14.29	36.08	19.031
Exhaust NOX:	1.60	1.87	2.61	2.09	3.42	0.99	1.12	6.98	0.79	2.241
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.67	28.25	39.63	31.70	29.74	2.74	4.43	26.11	36.95	25.199
Idle CO:	246.03	284.02	374.58	311.46	345.57	11.47	20.67	147.35	417.81	259.701
Idle NOX:	5.85	7.04	9.83	7.88	6.93	4.72	5.32	33.10	2.00	8.707

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 36.5 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 36.5 (F)

Resting Loss Temp: 36.5 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

MOBILE5B INPUT - 12.5 MPH

```
1          PROMPT
 UP/SP Project - 12.5 MPH
1          TAMFLG - Default tampering rates.
1          SPDFLG - One average speed for all vehicle types.
1          VMFLAG - Use Mobile5 VMT mix.
1          MYMRFG - Use MOBILE5 values for mileage accumulation and registration distributions.
1          NEWFLG - Use MOBILE5 basic exhaust emission rates and Evap. Test procedure
2          IMFLAG - One user specified program.
1          ALHFLG - No corrections for A/C useage, load, trailers, humidity.
2          ATPFLG - User specifies ATP.
5          RLFLAG - No refueling emission factors calculated.
1          LOCFLG - LAP record will appear once for each scenario.
2          TEMFLG - Input value of ambient temperature used to correct emission factors for temperature effects.
3          OUTFMT - 112 column descriptive
4          PRTFLG - Print exhaust HC, CO, and NOx results.
2          IDLFLG - Idle emission factors calculated and printed.
3          NMHFLG - Calculate emissions for volatile organic hydrocarbons.
3          HCFLAG - Print sum (excludes refueling) and component; evap in gms.
88 24 68 93 02 02  95 211 2221 2111                    I/M - Basic I/M
88 68 93 2221 21 095. 22212222                         ATP - ATP program
2 95 12.5 25.7 20.6 27.3 20.6  1                       Scenario description record
Jan UP/95.          16.  36. 15.0 15.0 92 2 1 1 1      Local Area Parameter record
.88  .12  .027 .035 1                                  Oxygenated fuels descriptive record.
2 95 12.5 34.3 20.6 27.3 20.6  1                       Scenario description record
Feb UP/95.          26.  43. 15.0 15.0 92 1 1 1 1      Local Area Parameter record
2 95 12.5 48.5 20.6 27.3 20.6  1                       Scenario description record
Mar UP/95.          36.  61. 13.5 13.5 92 1 1 1 1      Local Area Parameter record
2 95 12.5 48.7 20.6 27.3 20.6  1                       Scenario description record
Apr UP/95.          35.  63. 13.5 13.5 92 1 1 1 1      Local Area Parameter record
2 95 12.5 58.4 20.6 27.3 20.6  1                       Scenario description record
May UP/95.          44.  73.  9.0  9.0 92 1 1 1 1      Local Area Parameter record
2 95 12.5 61.9 20.6 27.3 20.6  1                       Scenario description record
Jun UP/95.          46.  77.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 12.5 69.0 20.6 27.3 20.6  7                       Scenario description record
Jul UP/95.          52.  86.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 12.5 70.0 20.6 27.3 20.6  7                       Scenario description record
Aug UP/95.          53.  87.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 12.5 65.3 20.6 27.3 20.6  7                       Scenario description record
Sep UP/95.          47.  84.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 12.5 54.9 20.6 27.3 20.6  7                       Scenario description record
Oct UP/95.          41.  69. 11.5 11.5 92 1 1 1 1      Local Area Parameter record
2 95 12.5 40.4 20.6 27.3 20.6  7                       Scenario description record
Nov UP/95.          27.  54. 13.5 13.5 92 2 1 1 1      Local Area Parameter record
.88  .12  .027 .035 1                                  Oxygenated fuels descriptive record.
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2 07 12.5 70.0 20.6 27.3 20.6  7                    Scenario description record
Aug UP/07.          53.  87.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 07 12.5 65.3 20.6 27.3 20.6  7                    Scenario description record
Sep UP/07.          47.  84.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 07 12.5 54.9 20.6 27.3 20.6  7                    Scenario description record
Oct UP/07.          41.  69. 11.5 11.5 92 1 1 1 1   Local Area Parameter record
2 07 12.5 40.4 20.6 27.3 20.6  7                    Scenario description record
Nov UP/07.          27.  54. 13.5 13.5 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 07 12.5 36.5 20.6 27.3 20.6  7                    Scenario description record
Dec UP/07.          26.  48. 15.0 15.0 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 15 12.5 25.7 20.6 27.3 20.6  1                    Scenario description record
Jan UP/15.          16.  36. 15.0 15.0 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 15 12.5 34.3 20.6 27.3 20.6  1                    Scenario description record
Feb UP/15.          26.  43. 15.0 15.0 92 1 1 1 1   Local Area Parameter record
2 15 12.5 48.5 20.6 27.3 20.6  1                    Scenario description record
Mar UP/15.          36.  61. 13.5 13.5 92 1 1 1 1   Local Area Parameter record
2 15 12.5 48.7 20.6 27.3 20.6  1                    Scenario description record
Apr UP/15.          35.  63. 13.5 13.5 92 1 1 1 1   Local Area Parameter record
2 15 12.5 58.4 20.6 27.3 20.6  1                    Scenario description record
May UP/15.          44.  73.  9.0  9.0 92 1 1 1 1   Local Area Parameter record
2 15 12.5 61.9 20.6 27.3 20.6  1                    Scenario description record
Jun UP/15.          46.  77.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 12.5 69.0 20.6 27.3 20.6  7                    Scenario description record
Jul UP/15.          52.  86.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 12.5 70.0 20.6 27.3 20.6  7                    Scenario description record
Aug UP/15.          53.  87.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 12.5 65.3 20.6 27.3 20.6  7                    Scenario description record
Sep UP/15.          47.  84.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 12.5 54.9 20.6 27.3 20.6  7                    Scenario description record
Oct UP/15.          41.  69. 11.5 11.5 92 1 1 1 1   Local Area Parameter record
2 15 12.5 40.4 20.6 27.3 20.6  7                    Scenario description record
Nov UP/15.          27.  54. 13.5 13.5 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 15 12.5 36.5 20.6 27.3 20.6  7                    Scenario description record
Dec UP/15.          26.  48. 15.0 15.0 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
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MOBILE5b INPUT - 25.0 MPH

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1          PROMPT
 UP/SP Project - 25.0 mph
1          TAMFLG - Default tampering rates.
1          SPDFLG - One average speed for all vehicle types.
1          VMFLAG - Use Mobile5 VMT mix.
1          MYMRFG - Use MOBILE5 values for mileage accumulation and registration distributions.
1          NEWFLG - Use MOBILE5 basic exhaust emission rates and Evap. Test procedure
2          IMFLAG - One user specified program.
1          ALHFLG - No corrections for A/C useage, load, trailers, humidity.
2          ATPFLG - User specifies ATP.
5          RLFLAG - No refueling emission factors calculated.
1          LOCFLG - LAP record will appear once for each scenario.
2          TEMFLG - Input value of ambient temperature used to correct emission factors for temperature effects.
3          OUTFMT - 112 column descriptive
4          PRTFLG - Print exhaust HC, CO, and NOx results.
2          IDLFLG - Idle emission factors calculated and printed.
3          NMHFLG - Calculate emissions for volatile organic hydrocarbons.
3          HCFLAG - Print sum (excludes refueling) and component; evap in gms.
88 24 68 93 02 02  95 211 2221 2111                    I/M - Basic I/M
88 68 93 2221 21 095. 22212222                         ATP - ATP program
2 95 25.0 25.7 20.6 27.3 20.6  1                       Scenario description record
Jan UP/95.          16.  36. 15.0 15.0 92 2 1 1 1      Local Area Parameter record
.88  .12  .027 .035 1                                  Oxygenated fuels descriptive record.
2 95 25.0 34.3 20.6 27.3 20.6  1                       Scenario description record
Feb UP/95.          26.  43. 15.0 15.0 92 1 1 1 1      Local Area Parameter record
2 95 25.0 48.5 20.6 27.3 20.6  1                       Scenario description record
Mar UP/95.          36.  61. 13.5 13.5 92 1 1 1 1      Local Area Parameter record
2 95 25.0 48.7 20.6 27.3 20.6  1                       Scenario description record
Apr UP/95.          35.  63. 13.5 13.5 92 1 1 1 1      Local Area Parameter record
2 95 25.0 58.4 20.6 27.3 20.6  1                       Scenario description record
May UP/95.          44.  73.  9.0  9.0 92 1 1 1 1      Local Area Parameter record
2 95 25.0 61.9 20.6 27.3 20.6  1                       Scenario description record
Jun UP/95.          46.  77.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 25.0 69.0 20.6 27.3 20.6  7                       Scenario description record
Jul UP/95.          52.  86.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 25.0 70.0 20.6 27.3 20.6  7                       Scenario description record
Aug UP/95.          53.  87.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 25.0 65.3 20.6 27.3 20.6  7                       Scenario description record
Sep UP/95.          47.  84.  7.8  7.8 92 1 1 1 1      Local Area Parameter record
2 95 25.0 54.9 20.6 27.3 20.6  7                       Scenario description record
Oct UP/95.          41.  69. 11.5 11.5 92 1 1 1 1      Local Area Parameter record
2 95 25.0 40.4 20.6 27.3 20.6  7                       Scenario description record
Nov UP/95.          27.  54. 13.5 13.5 92 2 1 1 1      Local Area Parameter record
.88  .12  .027 .035 1                                  Oxygenated fuels descriptive record.
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2 07 25.0 70.0 20.6 27.3 20.6  7                    Scenario description record
Aug UP/07.          53.  87.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 07 25.0 65.3 20.6 27.3 20.6  7                    Scenario description record
Sep UP/07.          47.  84.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 07 25.0 54.9 20.6 27.3 20.6  7                    Scenario description record
Oct UP/07.          41.  69. 11.5 11.5 92 1 1 1 1   Local Area Parameter record
2 07 25.0 40.4 20.6 27.3 20.6  7                    Scenario description record
Nov UP/07.          27.  54. 13.5 13.5 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 07 25.0 36.5 20.6 27.3 20.6  7                    Scenario description record
Dec UP/07.          26.  48. 15.0 15.0 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 15 25.0 25.7 20.6 27.3 20.6  1                    Scenario description record
Jan UP/15.          16.  36. 15.0 15.0 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 15 25.0 34.3 20.6 27.3 20.6  1                    Scenario description record
Feb UP/15.          26.  43. 15.0 15.0 92 1 1 1 1   Local Area Parameter record
2 15 25.0 48.5 20.6 27.3 20.6  1                    Scenario description record
Mar UP/15.          36.  61. 13.5 13.5 92 1 1 1 1   Local Area Parameter record
2 15 25.0 48.7 20.6 27.3 20.6  1                    Scenario description record
Apr UP/15.          35.  63. 13.5 13.5 92 1 1 1 1   Local Area Parameter record
2 15 25.0 58.4 20.6 27.3 20.6  1                    Scenario description record
May UP/15.          44.  73.  9.0  9.0 92 1 1 1 1   Local Area Parameter record
2 15 25.0 61.9 20.6 27.3 20.6  1                    Scenario description record
Jun UP/15.          46.  77.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 25.0 69.0 20.6 27.3 20.6  7                    Scenario description record
Jul UP/15.          52.  86.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 25.0 70.0 20.6 27.3 20.6  7                    Scenario description record
Aug UP/15.          53.  87.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 25.0 65.3 20.6 27.3 20.6  7                    Scenario description record
Sep UP/15.          47.  84.  7.8  7.8 92 1 1 1 1   Local Area Parameter record
2 15 25.0 54.9 20.6 27.3 20.6  7                    Scenario description record
Oct UP/15.          41.  69. 11.5 11.5 92 1 1 1 1   Local Area Parameter record
2 15 25.0 40.4 20.6 27.3 20.6  7                    Scenario description record
Nov UP/15.          27.  54. 13.5 13.5 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
2 15 25.0 36.5 20.6 27.3 20.6  7                    Scenario description record
Dec UP/15.          26.  48. 15.0 15.0 92 2 1 1 1   Local Area Parameter record
.88  .12  .027 .035 1                               Oxygenated fuels descriptive record.
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[redacted] MOBILE5b OUTPUT - 12.5 MPH [redacted]

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1 UP/SP Project - 12.5 MPH
 MOBILE5b (14-Sep-96)
0
-M170 Warning:
+               Exhaust emissions for gasoline fueled vehicles
                beginning in 1995 have been reduced as a result of
                Gasoline Detergent Additive Regulations (1994).
-M 83 Comment:
+               One or more evaporative temperatures (input daily
                maximum, input ambient, calculated hot soak, and/or
                calculated running loss) is 40F or less, or input
                daily minimum is 25F or less; no evaporative emission
                factors (hot soak, diurnal, running loss, or resting
                loss) will be calculated.
0I/M program selected:

0     Start year (January 1):              1988
      Pre-1981 MYR stringency rate:         24%
      First model year covered:            1968
      Last model year covered:             1993
      Waiver rate (pre-1981):               2.%
      Waiver rate (1981 and newer):         2.%
      Compliance Rate:                     95.%
      Inspection type:                     Computerized Test and Repair
      Effectiveness - HC: 0.50  CO: 0.50  NOx: 0.50
      Inspection frequency                 Annual
      Vehicle types covered:               LDGV - Yes
                                          LDGT1 - Yes
                                          LDGT2 - Yes
                                           HDGV - No
      1981 & later MYR test type:          2500 rpm / Idle
     Cutpoints, HC:  220.000   CO:    1.200   NOx:  999.000
 High alt, Annl and Bien Insp Freq TECH 1 & 2 I/M cred data
 Annl Insp Freq & TECH 4+ I/M credit 2500/Idle test data
0Functional Check Program Description:
0Check Start Model Yrs Vehicle Classes Covered    Inspection        Comp   Eff
      (Jan1) Covered   LDGV LDGT1 LDGT2 HDGV   Type        Freq     Rate   Adj
 ATP   1988  1968-1993 Yes  Yes   Yes   No  Test & Repair Annual   95.0%  0.00
0Air pump system disablements:       Yes  Catalyst removals:                Yes
 Fuel inlet restrictor disablements: Yes  Tailpipe lead deposit test:        No
 EGR disablement:                    Yes  Evaporative system disablements:  Yes
 PCV system disablements:            Yes  Missing gas caps:                 Yes
0VOC HC emission factors include all evaporative HC emission factors, except for refueling emissions.
0
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factors (hot soak, diurnal, running loss, or resting
loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 34.3 / 34.3 / 34.3 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Feb UP/95. Minimum Temp: 26. (F) Maximum Temp: 43. (F)
Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.633	0.180	0.084		0.031	0.004	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	3.80	4.92	6.73	5.49	12.41	1.23	2.11	7.69	4.81	4.744
Exhaust HC:	3.79	4.91	6.72	5.48	12.38	1.23	2.11	7.69	4.81	4.736
Evaporat HC:	0.01	0.01	0.01	0.01	0.03				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	50.98	66.99	89.48	74.15	245.20	3.49	6.51	30.68	68.20	61.734
Exhaust NOX:	2.13	2.20	2.59	2.32	4.17	1.98	2.27	18.27	0.59	3.213
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	38.27	48.07	65.29	53.56	72.10	4.99	8.54	31.20	40.44	42.762
Idle CO:	522.40	698.28	962.72	782.49	1384.85	18.34	34.21	161.31	535.65	593.187
Idle NOX:	7.62	7.83	9.28	8.29	9.43	7.18	8.23	66.37	2.05	11.374

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 34.3 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 34.3 (F)
Resting Loss Temp: 34.3 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00	0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00	0.00	
Multiple	0.00	0.00	0.00	0.00	0.00		
Crankcase	0.01	0.01	0.01	0.01	0.03	0.00	
Refuel	0.00	0.00	0.00	0.00	0.00		
Resting	0.00	0.00	0.00	0.00	0.00	0.00	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 48.5 / 48.5 / 48.5 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Mar UP/95. Minimum Temp: 36. (F) Maximum Temp: 61. (F)
Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.63	0.38	0.52	0.42	1.08					0.543
Rsting L HC:	0.03	0.03	0.03	0.03	0.05				0.16	0.031
Exhaust CO:	43.98	57.94	78.17	64.38	233.00	3.49	6.51	30.68	58.38	54.285
Exhaust NOX:	1.94	2.02	2.37	2.13	4.00	1.98	2.27	18.27	0.55	3.036

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	30.66	38.70	53.19	43.31	65.50	4.99	8.54	31.20	35.50	35.007
Idle CO:	451.27	606.34	843.95	682.01	1315.98	18.34	34.21	161.31	458.52	519.034
Idle NOX:	6.94	7.17	8.52	7.60	9.07	7.18	8.23	66.37	1.90	10.746

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 48.7 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 48.7 (F)

Resting Loss Temp: 48.7 (F)

Hot Soak	1.24	1.03	1.26	1.10	2.75				1.45	
WtDiurnal	4.53	7.19	12.79	8.88	46.78				17.52	
Multiple	7.59	11.10	16.16	12.62	48.10					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.04	0.04	0.04	0.04	0.05				0.07	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 58.4 / 58.4 / 58.4 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0May UP/95. Minimum Temp: 44. (F) Maximum Temp: 73. (F)

Period 1 RVP: 9.0 Period 2 RVP: 9.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.633	0.180	0.084		0.031	0.004	0.002	0.061	0.007	

0Composite Emission Factors (Gm/Mile)

VOC HC:	3.09	4.02	5.64	4.54	12.63	1.23	2.11	7.69	5.11	4.052
Exhaust HC:	2.53	3.32	4.70	3.76	10.48	1.23	2.11	7.69	3.92	3.419
Evaporat HC:	0.16	0.24	0.40	0.30	1.34				0.97	0.226
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.36	0.41	0.50	0.44	0.73					0.366
Rsting L HC:	0.04	0.04	0.04	0.04	0.07				0.21	0.041
Exhaust CO:	35.68	48.35	66.86	54.25	221.41	3.49	6.51	30.68	53.02	45.969
Exhaust NOX:	1.81	1.90	2.24	2.01	3.94	1.98	2.27	18.27	0.52	2.919

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	25.52	32.57	45.48	36.68	61.04	4.99	8.54	31.20	32.92	29.851
Idle CO:	367.46	510.02	724.36	578.27	1250.51	18.34	34.21	161.31	416.44	436.351

Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.06	0.05	0.05	0.05	0.08				0.10	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 69.0 / 69.0 / 69.0 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Jul UP/95. Minimum Temp: 52. (F) Maximum Temp: 86. (F)
Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.73	3.48	4.91	3.94	11.40	1.22	2.06	7.56	5.29	3.627
Exhaust HC:	2.12	2.75	3.98	3.14	9.32	1.22	2.06	7.56	3.60	2.954
Evaporat HC:	0.19	0.29	0.43	0.33	1.34				1.41	0.262
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.36	0.39	0.46	0.41	0.65					0.357
Rsting L HC:	0.06	0.05	0.05	0.05	0.09				0.29	0.055
Exhaust CO:	29.20	40.15	56.54	45.35	202.32	3.44	6.40	30.44	48.09	38.921
Exhaust NOX:	1.67	1.77	2.14	1.89	3.82	1.96	2.24	17.69	0.50	2.771
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.41	26.95	38.34	30.57	54.27	4.97	8.37	30.68	30.23	25.407
Idle CO:	302.86	425.43	612.98	484.97	1142.71	18.10	33.66	160.06	377.73	367.513
Idle NOX:	5.96	6.27	7.67	6.71	8.64	7.11	8.15	64.25	1.73	9.794

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 69.0 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 69.0 (F)
Resting Loss Temp: 69.0 (F)

Hot Soak	0.48	0.58	0.77	0.64	2.01				1.76	
WtDiurnal	3.14	5.27	10.41	6.81	39.20				11.72	
Multiple	8.32	12.60	16.00	13.62	46.90					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.07	0.06	0.07	0.07	0.09				0.12	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.78	3.56	5.02	4.02	11.48	1.22	2.06	7.56	5.25	3.682
Exhaust HC:	2.24	2.90	4.17	3.30	9.57	1.22	2.06	7.56	3.68	3.078
Evaporat HC:	0.18	0.27	0.41	0.31	1.27				1.30	0.244
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.32	0.34	0.40	0.36	0.56					0.312
Rsting L HC:	0.05	0.05	0.05	0.05	0.08				0.26	0.049
Exhaust CO:	31.10	42.36	59.21	47.71	205.48	3.44	6.40	30.44	49.72	40.851
Exhaust NOX:	1.71	1.81	2.19	1.93	3.85	1.96	2.24	17.69	0.51	2.809
0Idle Emission Factors (Gm/Hr)										
VOC Idle HC:	22.58	28.40	40.22	32.15	55.70	4.97	8.37	30.68	30.96	26.614
Idle CO:	322.02	447.45	640.92	508.87	1160.54	18.10	33.66	160.06	390.46	386.577
Idle NOX:	6.11	6.41	7.84	6.87	8.71	7.11	8.15	64.25	1.76	9.931

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 65.3 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 65.3 (F)

Resting Loss Temp: 65.3 (F)

Hot Soak	0.39	0.47	0.62	0.51	1.73				1.54	
WtDiurnal	3.02	5.10	10.28	6.65	39.03				10.98	
Multiple	7.87	12.01	15.51	13.06	46.42					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.06	0.06	0.06	0.06	0.08				0.11	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 54.9 / 54.9 / 54.9 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Oct UP/95. Minimum Temp: 41. (F) Maximum Temp: 69. (F)

Period 1 RVP: 11.5 Period 2 RVP: 11.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	4.11	4.59	6.38	5.16	13.69	1.22	2.06	7.56	5.79	4.894
Exhaust HC:	2.82	3.59	5.04	4.05	10.39	1.22	2.06	7.56	3.97	3.672
Evaporat HC:	0.26	0.35	0.48	0.39	1.55				1.63	0.327
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.99	0.62	0.83	0.68	1.68					0.859
Rsting L HC:	0.04	0.04	0.03	0.04	0.06				0.19	0.037

Idle NOX:	7.23	7.50	9.12	8.01	9.21	7.11	8.15	64.25	1.98	10.955

0Evaporative Emissions by Component — Weathered RVP: 13.5 — Hot Soak Temp: 40.4 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 40.4 (F)

Resting Loss Temp: 40.4 (F)

Hot Soak	0.05	0.04	0.05	0.04	0.12				0.07	
WtDiurnal	2.91	4.94	10.15	6.50	38.90				10.32	
Multiple	4.27	6.89	11.72	8.34	39.79					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.03	0.03	0.03	0.03	0.04				0.05	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

\+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 36.5 / 36.5 / 36.5 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Dec UP/95. Minimum Temp: 26. (F) Maximum Temp: 48. (F)

Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	3.10	4.07	5.75	4.60	11.34	1.22	2.06	7.56	4.53	4.027
Exhaust HC:	3.09	4.06	5.74	4.59	11.31	1.22	2.06	7.56	4.53	4.020
Evaporat HC:	0.01	0.01	0.01	0.01	0.03				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	35.73	46.71	63.11	51.91	184.95	3.44	6.40	30.44	53.51	44.282
Exhaust NOX:	2.08	2.17	2.61	2.31	4.11	1.96	2.24	17.69	0.58	3.148

0Idle Emission Factors (Gm/Hr)

Exhaust NOX:	1.95	2.20	2.98	2.44	3.76	1.63	1.79	13.85	0.61	2.938

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	29.31	38.31	52.71	42.78	48.35	3.89	6.00	27.59	41.27	33.517
Idle CO:	311.82	401.48	532.59	442.20	714.43	14.90	26.13	152.19	473.37	349.786
Idle NOX:	7.02	7.92	10.76	8.80	8.51	5.94	6.51	50.30	2.11	10.455

0Evaporative Emissions by Componert Weathered RVP: 15.0 Hot Soak Temp: 25.7 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 25.7 (F)

Resting Loss Temp: 25.7 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

\+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 34.3 / 34.3 / 34.3 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Feb UP/00. Minimum Temp: 26. (F) Maximum Temp: 43. (F)

Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.616	0.191	0.086		0.031	0.002	0.001	0.068	0.006	

0Composite Emission Factors (Gm/Mile)

VOC HC:	3.18	3.97	5.47	4.44	8.15	0.96	1.48	6.80	4.60	3.928
Exhaust HC:	3.17	3.97	5.46	4.43	8.13	0.96	1.48	6.80	4.60	3.922
Evaporat HC:	0.01	0.01	0.01	0.01	0.02				0.00	0.006
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	41.42	52.05	68.67	57.21	154.09	2.83	4.97	28.94	67.80	48.508
Exhaust NOX:	1.84	2.08	2.82	2.31	3.70	1.63	1.79	13.85	0.58	2.834

WtDiurnal	2.80	4.67	7.09	5.38	31.72		14.69
Multiple	4.35	6.83	9.21	7.53	32.99		
Crankcase	0.01	0.01	0.01	0.01	0.02		0.00
Refuel	0.00	0.00	0.00	0.00	0.00		
Resting	0.03	0.03	0.03	0.03	0.04		0.07

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 48.7 / 48.7 / 48.7 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Apr UP/00. Minimum Temp: 35. (F) Maximum Temp: 63. (F)
Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.616	0.191	0.086		0.031	0.002	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	3.43	3.87	5.28	4.31	9.38	0.96	1.48	6.60	6.15	4.097
Exhaust HC:	2.61	3.19	4.44	3.58	7.31	0.96	1.48	6.80	4.04	3.311
Evaporat HC:	0.26	0.29	0.36	0.31	1.20				1.95	0.296
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.54	0.36	0.46	0.39	0.83					0.467
Rsting L HC:	0.02	0.02	0.02	0.02	0.04				0.16	0.024
Exhaust CO:	36.77	45.57	60.63	50.24	147.40	2.83	4.97	28.94	58.04	43.447
Exhaust NOX:	1.69	1.90	2.57	2.11	3.56	1.63	1.79	13.85	0.54	2.680
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	24.17	30.31	42.04	33.95	42.54	3.89	6.00	27.59	33.95	27.684
Idle CO:	335.49	426.35	575.22	472.59	832.48	14.90	26.13	152.19	455.82	376.319
Idle NOX:	6.09	6.82	9.28	7.59	8.07	5.94	6.51	50.30	1.88	9.532

0Evaporative Emissions by Component Weathered RVP: 13.5
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr)

Hot Soak Temp: 48.7 (F)
Running Loss Temp: 48.7 (F)
Resting Loss Temp: 48.7 (F)

Hot Soak	1.20	0.95	1.11	1.00	2.31	1.46
WtDiurnal	3.29	5.26	7.76	5.99	34.60	17.53
Multiple	5.38	7.86	10.36	8.59	36.12	
Crankcase	0.01	0.01	0.01	0.01	0.02	0.00
Refuel	0.00	0.00	0.00	0.00	0.00	
Resting	0.03	0.03	0.03	0.03	0.04	0.07

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.616	0.191	0.086		0.031	0.002	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.45	2.95	4.09	3.30	7.77	0.96	1.48	6.80	4.73	3.157
Exhaust HC:	2.07	2.50	3.53	2.82	6.51	0.96	1.48	6.80	3.65	2.742
Evaporat HC:	0.11	0.16	0.23	0.18	0.81				0.84	0.149
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.24	0.25	0.30	0.26	0.38					0.231
Rsting L HC:	0.04	0.03	0.03	0.03	0.06				0.24	0.034
Exhaust CO:	28.10	35.04	47.50	38.91	135.29	2.83	4.97	28.94	51.00	34.556
Exhaust NOX:	1.55	1.73	2.35	1.93	3.51	1.63	1.79	13.85	0.51	2.539
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	19.16	23.79	33.41	26.78	37.92	3.89	6.00	27.59	30.71	22.455
Idle CO:	257.03	331.00	454.24	369.28	764.10	14.90	26.13	152.19	400.52	296.976
Idle NOX:	5.57	6.23	8.49	6.93	7.95	5.94	6.51	50.30	1.77	9.027
0Evaporative Emissions by Component					Weathered RVP: 7.8				Hot Soak Temp: 61.9 (F)	
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr)									Running Loss Temp: 61.9 (F)	
									Resting Loss Temp: 61.9 (F)	
Hot Soak	0.27	0.34	0.41	0.36	1.16				1.34	
WtDiurnal	1.80	3.17	5.60	3.88	27.37				6.63	
Multiple	4.17	5.78	7.85	6.39	35.41					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.04	0.04	0.04	0.04	0.06				0.10	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 69.0 / 69.0 / 69.0 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Jul UP/00. Minimum Temp: 52. (F) Maximum Temp: 86. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.614	0.191	0.086		0.031	0.001	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.36	2.80	3.87	3.14	7.44	0.92	1.41	6.76	5.18	3.050
Exhaust HC:	1.86	2.22	3.17	2.51	5.88	0.92	1.41	6.76	3.49	2.511
Evaporat HC:	0.16	0.23	0.28	0.24	0.99				1.41	0.203

Idle NOX:	5.25	5.87	8.01	6.53	7.73	5.78	6.30	48.80	1.70	8.641

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 70.0 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 70.0 (F)

Resting Loss Temp: 70.0 (F)

Hot Soak	0.47	0.59	0.72	0.62	1.77				1.81	
WtDiurnal	2.38	4.07	6.24	4.70	28.75				12.39	
Multiple	6.82	10.04	11.90	10.58	40.38					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.05	0.05	0.05	0.05	0.07				0.12	

-M170 *Warning*:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 65.3 / 65.3 / 65.3 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Sep UP/00. Minimum Temp: 47. (F) Maximum Temp: 84. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.614	0.191	0.086		0.031	0.001	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.40	2.87	3.97	3.21	7.47	0.92	1.41	6.76	5.14	3.096
Exhaust HC:	1.96	2.34	3.33	2.65	6.07	0.92	1.41	6.76	3.57	2.615
Evaporat HC:	0.14	0.21	0.26	0.23	0.91				1.30	0.185
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.27	0.28	0.34	0.30	0.43					0.259
Rsting L HC:	0.04	0.04	0.04	0.04	0.06				0.26	0.036
Exhaust CO:	26.53	32.57	44.59	36.30	126.26	2.75	4.79	28.85	49.42	32.580
Exhaust NOX:	1.50	1.69	2.29	1.87	3.44	1.59	1.73	13.44	0.50	2.477
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	18.18	22.29	31.53	25.15	35.33	3.74	5.71	27.43	30.02	21.316
Idle CO:	242.75	308.72	427.41	345.53	713.11	14.43	25.17	151.68	388.17	279.928
Idle NOX:	5.40	6.05	8.26	6.73	7.80	5.78	6.30	48.80	1.74	8.796

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 65.3 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 65.3 (F)

Resting Loss Temp: 65.3 (F)

Hot Soak	0.34	0.43	0.52	0.45	1.38				1.54	
WtDiurnal	2.19	3.79	5.96	4.43	28.18				10.99	
Multiple	6.09	9.00	10.82	9.53	38.96					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 40.4 / 40.4 / 40.4 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Nov UP/00. Minimum Temp: 27. (F) Maximum Temp: 54. (F)
Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120
Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035
Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.614	0.191	0.086		0.031	0.001	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.57	3.20	4.48	3.60	7.72	0.92	1.41	6.76	5.41	3.314
Exhaust HC:	2.44	3.03	4.24	3.40	7.08	0.92	1.41	6.76	4.24	3.153
Evaporat HC:	0.09	0.14	0.20	0.16	0.57				1.04	0.122
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.02	0.02	0.02	0.02	0.04					0.021
Rsting L HC:	0.02	0.02	0.02	0.02	0.03				0.13	0.018
Exhaust CO:	27.89	34.63	45.99	38.16	111.86	2.75	4.79	28.85	50.96	33.492
Exhaust NOX:	1.76	1.99	2.69	2.20	3.61	1.59	1.73	13.44	0.57	2.731
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC.	22.65	28.79	40.18	32.32	41.25	3.74	5.71	27.43	35.62	26.267
Idle CO:	254.13	323.63	435.54	358.34	631.78	14.43	25.17	151.68	400.23	288.016
Idle NOX:	6.32	7.13	9.71	7.93	8.18	5.78	6.30	48.80	1.96	9.707

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 40.4 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 40.4 (F)
Resting Loss Temp: 40.4 (F)

Hot Soak	0.05	0.04	0.04	0.04	0.09				0.07	
WtDiurnal	2.11	3.66	5.03	4.29	27.92				10.33	
Multiple	2.96	4.95	7.12	5.58	28.85					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.03				0.05	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting

daily minimum is 25F or less; no evaporative emission
factors (hot soak, diurnal, running loss, or resting
loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 25.7 / 25.7 / 25.7 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Jan UP/07. Minimum Temp: 16. (F) Maximum Temp: 36. (F)
Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120
Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035
Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.98	3.73	5.19	4.17	6.15	0.65	1.09	6.47	4.91	3.689
Exhaust HC:	2.97	3.72	5.18	4.17	6.14	0.65	1.09	6.47	4.91	3.683
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	32.94	40.30	52.39	44.00	77.30	2.17	3.99	28.14	60.27	37.155
Exhaust NOX:	1.77	2.12	2.96	2.37	3.39	1.29	1.47	10.21	0.61	2.633
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	25.9	33.94	47.35	38.04	35.77	2.64	4.40	26.26	41.27	29.753
Idle CO:	281.51	333.25	438.44	365.43	436.61	11.41	21.00	147.95	473.37	300.056
Idle NOX:	6.40	7.66	10.69	8.58	7.69	4.68	5.33	37.07	2.11	9.392

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 25.7 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 25.7 (F)
Resting Loss Temp: 25.7 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:
+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:
+ One or more evaporative temperatures (input daily

Reformulated Gas: No

0Mar UP/07. Minimum Temp: 36. (F) Maximum Temp: 61. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	3.16	3.66	5.04	4.09	6.90	0.65	1.09	6.47	5.87	3.803
Exhaust HC:	2.55	3.08	4.34	3.47	5.34	0.65	1.09	6.47	4.05	3.205
Evaporat HC:	0.19	0.23	0.25	0.24	0.89				1.66	0.217
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.40	0.34	0.44	0.37	0.65					0.368
Rsting L HC:	0.01	0.01	0.01	0.01	0.03				0.16	0.013
Exhaust CO:	36.58	43.16	57.65	47.59	92.98	2.17	3.99	28.14	58.16	40.836
Exhaust NOX:	1.55	1.83	2.56	2.05	3.21	1.29	1.47	10.21	0.54	2.406
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	22.34	28.07	39.65	31.61	31.07	2.64	4.40	26.26	34.00	25.553
Idle CO:	312.82	357.82	483.72	396.33	525.13	11.41	21.00	147.95	456.76	330.253
Idle NOX:	5.61	6.63	9.25	7.43	7.28	4.68	5.33	37.07	1.89	8.577

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 48.5 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 48.5 (F)

Resting Loss Temp: 48.5 (F)

Hot Soak	0.96	0.85	0.98	0.89	1.97		
WtDiurnal	2.21	3.82	4.55	4.03	22.79	1.43	
Multiple	3.29	5.47	6.40	5.73	23.72	14.69	
Crankcase	0.01	0.01	0.01	0.01	0.01		
Refuel	0.00	0.00	0.00	0.00	0.00	0.00	
Resting	0.01	0.02	0.02	0.02	0.03	0.07	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 48.7 / 48.7 / 48.7 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Apr UP/07. Minimum Temp: 35. (F) Maximum Temp: 63. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	

0Composite Emission Factors (Gm/Mile)

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	18.74	23.19	32.84	26.14	27.74	2.64	4.40	26.26	31.49	21.726
Idle CO:	253.28	286.24	389.15	317.72	478.29	11.41	21.00	147.95	413.99	270.584
Idle NOX:	5.26	6.18	8.63	6.93	7.22	4.68	5.33	37.07	1.80	8.224

0Evaporative Emissions by Component Weathered RVP: 9.0 Hot Soak Temp: 58.4 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 58.4 (F)

Resting Loss Temp: 58.4 (F)

Hot Soak	0.28	0.35	0.42	0.37	1.14				1.28	
WtDiurnal	1.51	2.70	3.28	2.87	18.79				8.03	
Multiple	2.51	3.58	4.27	3.78	27.98					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.04				0.09	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 61.9 / 61.9 / 61.9 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Jun UP/07. Minimum Temp: 46. (F) Maximum Temp: 77. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	2.33	2.76	3.83	3.09	5.53	0.65	1.09	6.47	4.73	2.974
Exhaust HC:	2.04	2.41	3.41	2.72	4.60	0.65	1.09	6.47	3.65	2.662
Evaporat HC:	0.09	0.13	0.14	0.13	0.59				0.84	0.114
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.18	0.20	0.25	0.21	0.30					0.178
Rsting L HC:	0.02	0.02	0.02	0.02	0.04				0.24	0.020
Exhaust CO:	28.28	32.66	43.98	36.12	83.16	2.17	3.99	28.14	51.00	32.261
Exhaust NOX:	1.42	1.67	2.33	1.87	3.17	1.29	1.47	10.21	0.51	2.277

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	17.87	21.99	31.18	24.80	26.77	2.64	4.40	26.26	30.71	20.789
Idle CO:	241.86	271.53	370.37	301.76	469.67	11.41	21.00	147.95	400.52	258.870
Idle NOX:	5.15	6.04	8.43	6.77	7.17	4.68	5.33	37.07	1.77	8.113

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 61.9 (F)

(Hot Soak: g/trip, Diurnals g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 61.9 (F)

Resting Loss Temp: 61.9 (F)

Hot Soak	0.23	0.31	0.36	0.32	0.90				1.34	

beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 70.0 / 70.0 / 70.0 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Aug UP/07. Minimum Temp: 53. (F) Maximum Temp: 87. (F)
Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.595	0.199	0.087		0.032	0.002	0.002	0.077	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.23	2.64	3.63	2.94	5.50	0.65	1.08	6.47	5.25	2.876
Exhaust HC:	1.84	2.15	3.05	2.43	4.22	0.65	1.08	6.47	3.47	2.445
Evaporat HC:	0.13	0.20	0.22	0.21	0.83				1.48	0.174
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.24	0.26	0.33	0.28	0.41					0.234
Rsting L HC:	0.02	0.03	0.03	0.03	0.05				0.30	0.024
Exhaust CO:	25.44	28.79	39.16	31.96	79.10	2.16	3.95	28.13	47.39	29.232
Exhaust NOX:	1.35	1.58	2.21	1.78	3.11	1.29	1.46	10.09	0.49	2.200
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	16.07	19.60	27.92	22.14	24.56	2.64	4.36	26.24	29.13	18.884
Idle CO:	217.62	239.89	330.82	267.69	446.74	11.35	20.77	147.91	372.21	233.790
Idle NOX:	4.89	5.73	8.01	6.43	7.04	4.68	5.31	36.64	1.70	7.838

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 70.0 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 70.0 (F)
Resting Loss Temp: 70.0 (F)

Hot Soak	0.42	0.58	0.69	0.61	1.58				1.81	
WtDiurnal	1.92	3.40	4.08	3.60	20.83				12.39	
Multiple	4.80	7.23	7.86	7.41	33.61					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.03	0.03	0.03	0.03	0.05				0.12	

-M170 Warning:
+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 65.3 / 65.3 / 65.3 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Sep UP/07. Minimum Temp: 47. (F) Maximum Temp: 84. (F)
Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.64	0.55	0.72	0.60	1.05					0.586
Rsting L HC:	0.01	0.02	0.02	0.02	0.03				0.19	0.015
Exhaust CO:	37.91	44.06	59.32	48.73	95.77	2.16	3.95	28.13	54.53	42.020
Exhaust NOX:	1.50	1.77	2.48	1.99	3.11	1.29	1.46	10.09	0.53	2.348

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	21.64	26.99	38.32	30.45	29.86	2.64	4.36	26.24	32.32	24.760
Idle CO:	324.34	365.85	498.83	406.50	540.88	11.35	20.77	147.91	428.29	340.319
Idle NOX:	5.42	6.40	8.95	7.18	7.05	4.68	5.31	36.64	1.83	8.373

0Evaporative Emissions by Component Weathered RVP: 11.5 Hot Soak Temp: 54.9 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 54.9 (F)

Resting Loss Temp: 54.9 (F)

Hot Soak	0.79	0.87	1.00	0.91	2.03				1.62	
WtDiurnal	2.12	3.72	4.43	3.93	22.09				14.15	
Multiple	3.54	5.36	6.26	5.62	27.08					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.03				0.08	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 40.4 / 40.4 / 40.4 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Nov UP/07. Minimum Temp: 27. (F) Maximum Temp: 54. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.595	0.199	0.087		0.032	0.002	0.002	0.077	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	2.46	3.04	4.22	3.40	5.80	0.65	1.08	6.47	5.41	3.157
Exhaust HC:	2.36	2.89	4.05	3.25	5.34	0.65	1.08	6.47	4.24	3.032
Evaporat HC:	0.07	0.12	0.13	0.12	0.41				1.04	0.097
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.02	0.02	0.02	0.02	0.03					0.018
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.13	0.010
Exhaust CO:	27.44	32.93	43.08	36.03	72.19	2.16	3.95	28.13	50.96	31.394
Exhaust NOX:	1.61	1.92	2.69	2.16	3.31	1.29	1.46	10.09	0.57	2.471

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Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	40.75	49.71	66.59	54.83	81.73	2.18	3.93	28.02	67.80	45.059
Exhaust NOX:	1.64	1.97	2.76	2.21	3.08	1.30	1.46	9.13	0.58	2.464

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	26.28	34.63	48.81	38.93	33.03	2.73	4.42	26.11	38.68	30.105
Idle CO:	344.46	400.05	535.93	441.26	461.63	11.47	20.66	147.35	532.50	359.274
Idle NOX:	5.93	7.14	9.98	8.00	6.97	4.71	5.32	33.16	2.02	8.787

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 34.3 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 34.3 (F)

Resting Loss Temp: 34.3 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 48.5 / 48.5 / 48.5 (F) Region: High

Anti Tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Mar UP/15. Minimum Temp: 36. (F) Maximum Temp: 61. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	3.13	3.73	5.18	4.17	6.33	0.67	1.09	6.44	5.87	3.809
Exhaust HC:	2.56	3.15	4.47	3.55	4.94	0.67	1.09	6.44	4.05	3.245
Evaporat HC:	0.18	0.22	0.24	0.23	0.78				1.66	0.202
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.38	0.35	0.47	0.39	0.60					0.354
Rsting L HC:	0.01	0.01	0.01	0.01	0.01				0.16	0.008
Exhaust CO:	37.17	44.07	59.55	48.76	79.05	2.18	3.93	28.02	53.16	41.076
Exhaust NOX:	1.52	1.81	2.53	2.03	2.96	1.30	1.46	9.13	0.54	2.334

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	22.17	28.48	40.42	32.10	28.77	2.73	4.42	26.11	34.09	25.558
Idle CO:	314.14	354.66	479.26	392.45	446.46	11.47	20.66	147.35	456.76	326.516
Idle NOX:	5.48	6.55	9.14	7.33	6.70	4.71	5.32	33.16	1.89	8.323

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 48.5 (F)

Exhaust CO:	28.82	34.80	45.45	38.06	73.85	2.16	3.95	28.13	53.20	32.857
Exhaust NOX:	1.65	1.97	2.76	2.21	3.33	1.29	1.46	10.09	0.58	2.510

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	21.94	28.19	39.55	31.66	32.37	2.64	4.36	26.24	36.95	25.388
Idle CO:	246.46	288.64	382.09	317.21	417.11	11.35	20.77	147.91	417.81	264.439
Idle NOX:	5.97	7.13	9.98	8.00	7.55	4.68	5.31	36.64	2.00	8.950

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 36.5 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 36.5 (F)

Resting Loss Temp: 36.5 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.00	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

\+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 25.7 / 25.7 / 25.7 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Jan UP/15. Minimum Temp: 16. (F) Maximum Temp: 36. (F)

Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	2.96	3.77	5.26	4.22	5.76	0.67	1.09	6.44	4.91	3.704
Exhaust HC:	2.95	3.76	5.25	4.21	5.75	0.67	1.09	6.44	4.91	3.697
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000

Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.69	2.19	3.19	2.51	5.81	0.76	1.28	4.67	4.01	2.227
Exhaust HC:	1.32	1.76	2.58	2.02	4.20	0.76	1.28	4.67	2.44	1.805
Evaporat HC:	0.18	0.27	0.41	0.31	1.27				1.30	0.244
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.14	0.12	0.15	0.13	0.27					0.129
Rsting L HC:	0.05	0.05	0.05	0.05	0.08				0.26	0.049
Exhaust CO:	18.16	25.13	36.04	28.59	101.09	1.75	3.26	15.52	33.72	23.360
Exhaust NOX:	1.70	1.83	2.25	1.96	4.30	1.50	1.72	13.54	0.69	2.567
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	22.58	28.40	40.22	32.15	55.70	4.97	8.37	30.68	30.96	26.614
Idle CO:	322.02	447.45	640.92	508.87	1160.54	18.10	33.66	160.06	390.4[illegible]	386.577
Idle NOX:	6.11	6.41	7.84	6.87	8.71	7.11	8.15	64.25	1.76	9.931
0Evaporative Emissions by Component					Weathered RVP: 7.8				Hot Soak Temp: 65.3 (F)	
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr)									Running Loss Temp: 65.3 (F)	
									Resting Loss Temp: 65.3 (F)	
Hot Soak	0.39	0.47	0.62	0.51	1.73				1.54	
WtDiurnal	3.02	5.10	10.28	6.65	39.03				10.98	
Multiple	7.87	12.01	15.51	13.06	46.42					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.06	0.06	0.06	0.06	0.08				0.11	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 54.9 / 54.9 / 54.9 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Oct UP/95. Minimum Temp: 41. (F) Maximum Temp: 69. (F)
Period 1 RVP: 11.5 Period 2 RVP: 11.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.31	2.80	3.99	3.18	6.93	0.76	1.28	4.67	4.45	2.836
Exhaust HC:	1.66	2.18	3.12	2.48	4.56	0.76	1.28	4.67	2.63	2.157
Evaporat HC:	0.26	0.35	0.48	0.39	1.55				1.63	0.327
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.35	0.24	0.35	0.27	0.75					0.316

Idle CO:	345.88	459.05	640.81	516.75	1027.31	18.10	33.66	160.06	402.60	399.686
Idle NOX:	7.23	7.50	9.12	8.01	9.21	7.11	8.15	64.25	1.98	10.955

0Evaporative Emissions by Component — Weathered RVP: 13.5 — Hot Soak Temp: 40.4 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 40.4 (F)

Resting Loss Temp: 40.4 (F)

Hot Soak	0.05	0.04	0.05	0.04	0.12				0.07	
WtDiurnal	2.91	4.94	10.15	6.50	38.90				10.32	
Multiple	4.27	6.89	11.72	8.34	39.79					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.03	0.03	0.03	0.03	0.04				0.05	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

\+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 1995 — I/M Program: Yes — Ambient Temp: 36.5 / 36.5 / 36.5 (F) — Region: High

Anti-tam. Program: Yes — Operating Mode: 20.6 / 27.3 / 20.6 — Altitude: 5500. Ft.

Reformulated Gas: No

0Dec UP/95. — Minimum Temp: 26. (F) — Maximum Temp: 48. (F)

Period 1 RVP: 15.0 — Period 2 RVP: 15.0 — Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 — Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 — Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.83	2.47	3.57	2.82	4.99	0.76	1.28	4.67	3.01	2.368
Exhaust HC:	1.82	2.46	3.55	2.81	4.96	0.76	1.28	4.67	3.01	2.361
Evaporat HC:	0.01	0.01	0.01	0.01	0.03				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	20.87	27.77	38.49	31.17	90.99	1.75	3.26	15.52	36.29	25.458
Exhaust NOX:	2.06	2.18	2.67	2.33	4.59	1.50	1.72	13.54	0.80	2.903

Hot Soak	1.17	0.93	1.08	0.97	2.25				1.43	
WtDiurnal	2.80	4.67	7.09	5.38	31.72				14.69	
Multiple	4.35	6.83	9.21	7.53	32.99					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.03	0.03	0.03	0.03	0.04				0.07	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 48.7 / 48.7 / 48.7 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Apr UP/00. Minimum Temp: 35. (F) Maximum Temp: 63. (F)
Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.616	0.191	0.086		0.031	0.002	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.06	2.42	3.33	2.70	4.81	0.59	0.91	4.20	4.79	2.480
Exhaust HC:	1.58	1.95	2.75	2.20	3.21	0.59	0.91	4.20	2.68	1.980
Evaporat HC:	0.26	0.29	0.36	0.31	1.20				1.95	0.296
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.20	0.15	0.20	0.16	0.36					0.180
Rsting L HC:	0.02	0.02	0.02	0.02	0.04				0.16	0.024
Exhaust CO:	21.54	27.32	36.97	30.31	72.51	1.44	2.53	14.76	39.36	25.147
Exhaust NOX:	1.67	1.86	2.54	2.07	3.98	1.25	1.37	10.60	0.74	2.451
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	24.17	30.31	42.04	33.95	42.54	3.89	6.09	27.59	33.95	27.684
Idle CO:	335.49	426.35	575.22	472.59	832.48	14.90	26.13	152.19	455.82	376.319
Idle NOX:	6.09	6.82	9.28	7.59	8.07	5.94	6.51	50.30	1.88	9.532

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 48.7 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 48.7 (F)
Resting Loss Temp: 48.7 (F)

Hot Soak	1.20	0.95	1.11	1.00	2.31				1.46	
WtDiurnal	3.29	5.26	7.76	5.99	34.60				17.53	
Multiple	5.38	7.86	10.36	8.59	36.12					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.03	0.03	0.03	0.03	0.04				0.07	

-M170 Warning:

Exhaust CO:	20.04	25.91	34.52	28.58	62.23	1.44	2.53	14.76	40.87	23.435
Exhaust NOX:	1.93	2.16	2.93	2.40	4.20	1.25	1.37	10.60	0.83	2.706

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	29.31	38.31	52.71	42.78	48.35	3.89	6.00	27.59	41.27	33.517
Idle CO:	311.82	401.48	532.59	442.20	714.43	14.90	26.13	152.19	473.37	349.786
Idle NOX:	7.02	7.92	10.76	8.80	8.51	5.94	6.51	50.30	2.11	10.455

0Evaporative Emissions by Component — Weathered RVP: 15.0 — Hot Soak Temp: 25.7 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 25.7 (F)

Resting Loss Temp: 25.7 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00		
WtDiurnal	0.00	0.00	0.00	0.00	0.00	0.00	
Multiple	0.00	0.00	0.00	0.00	0.00	0.00	
Crankcase	0.01	0.01	0.01	0.01	0.02		
Refuel	0.00	0.00	0.00	0.00	0.00	0.00	
Resting	0.00	0.00	0.00	0.00	0.00		
						0.00	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

\+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2000 — I/M Program: Yes — Ambient Temp: 34.3 / 34.3 / 34.3 (F) Region: High

Anti-tam. Program: Yes — Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Feb UP/00. — Minimum Temp: 26. (F) — Maximum Temp: 43. (F)

Period 1 RVP: 15.0 — Period 2 RVP: 15.0 — Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.616	0.191	0.086		0.031	0.002	0.001	0.068	0.006	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.92	2.43	3.38	2.72	3.58	0.59	0.91	4.20	3.05	2.353
Exhaust HC:	1.92	2.42	3.37	2.72	3.57	0.59	0.91	4.20	3.05	2.347
Evaporat HC:	0.01	0.01	0.01	0.01	0.02				0.00	0.006
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	24.25	31.21	41.88	34.52	75.81	1.44	2.53	14.76	45.98	28.128

Idle CO:	225.92	287.41	400.56	322.50	697.45	14.43	25.17	151.68	372.21	262.621
Idle NOX:	5.25	5.87	8.01	6.53	7.73	5.78	6.30	48.80	1.70	8.641

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 70.0 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 70.0 (F)

Resting Loss Temp: 70.0 (F)

Hot Soak	0.47	0.59	0.72	0.62	1.77				1.81	
WtDiurnal	2.38	4.07	6.24	4.70	28.75				12.39	
Multiple	6.82	10.04	11.90	10.58	40.38					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.05	0.05	0.05	0.05	0.07				0.12	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 65.3 / 65.3 / 65.3 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Sep UP/00. Minimum Temp: 47. (F) Maximum Temp: 84. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.614	0.191	0.086		0.031	0.001	0.001	0.068	0.006	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.48	1.78	2.49	2.00	3.84	0.57	0.87	4.18	3.93	1.897
Exhaust HC:	1.18	1.43	2.06	1.63	2.66	0.57	0.87	4.18	2.37	1.565
Evaporat HC:	0.14	0.21	0.26	0.23	0.91				1.30	0.185
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.12	0.10	0.13	0.11	0.20					0.111
Rsting L HC:	0.04	0.04	0.04	0.04	0.06				0.26	0.036
Exhaust CO:	15.50	19.52	27.19	21.90	62.11	1.40	2.44	14.71	33.52	18.744
Exhaust NOX:	1.48	1.65	2.25	1.84	3.85	1.22	1.33	10.29	0.69	2.252

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	18.18	22.29	31.53	25.15	35.33	3.74	5.71	27.43	30.02	21.316
Idle CO:	242.75	308.72	427.41	345.53	713.11	14.43	25.17	151.68	388.17	279.928
Idle NOX:	5.40	6.05	8.26	6.73	7.80	5.78	6.30	48.80	1.74	8.796

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 65.3 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 65.3 (F)

Resting Loss Temp: 65.3 (F)

Hot Soak	0.34	0.43	0.52	0.45	1.38				1.54	
WtDiurnal	2.19	3.79	5.96	4.43	28.18				10.99	
Multiple	6.09	9.00	10.82	9.53	38.96					

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.616	0.191	0.086		0.031	0.002	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.50	1.82	2.56	2.05	3.91	0.59	0.91	4.20	3.50	1.921
Exhaust HC:	1.25	1.53	2.19	1.73	2.86	0.59	0.91	4.20	2.42	1.639
Evaporat HC:	0.11	0.16	0.23	0.18	0.81				0.84	0.149
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.11	0.09	0.12	0.10	0.18					0.098
Rsting L HC:	0.04	0.03	0.03	0.03	0.06				0.24	0.034
Exhaust CO:	16.45	20.98	28.99	23.47	66.56	1.44	2.53	14.76	34.58	19.908
Exhaust NOX:	1.53	1.70	2.32	1.89	3.92	1.25	1.37	10.60	0.70	2.313
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	19.16	23.79	33.41	26.78	37.92	3.89	6.00	27.59	30.71	22.455
Idle CO:	257.03	331.00	454.24	369.28	764.10	14.90	26.13	152.19	400.52	296.976
Idle NOX:	5.57	6.23	8.49	6.93	7.95	5.94	6.51	50.30	1.77	9.027

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 61.9 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 61.9 (F)

Resting Loss Temp: 61.9 (F)

Hot Soak	0.27	0.34	0.41	0.36	1.16	1.34	
WtDiurnal	1.80	3.17	5.60	3.88	27.37	6.63	
Multiple	4.17	5.78	7.85	6.39	35.41		
Crankcase	0.01	0.01	0.01	0.01	0.02	0.00	
Refuel	0.00	0.00	0.00	0.00	0.00		
Resting	0.04	0.04	0.04	0.04	0.06	0.10	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 69.0 / 69.0 / 69.0 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Jul UP/00. Minimum Temp: 52. (F) Maximum Temp: 86. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.614	0.191	0.086		0.031	0.001	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.46	1.74	2.43	1.96	3.88	0.57	0.87	4.18	4.01	1.872
Exhaust HC:	1.13	1.36	1.96	1.54	2.58	0.57	0.87	4.18	2.31	1.502

VOC HC:	2.21	2.65	3.68	2.96	4.90	0.67	1.09	6.44	5.18	2.875
Exhaust HC:	1.87	2.23	3.18	2.52	3.86	0.67	1.09	6.44	3.49	2.506
Evaporat HC:	0.12	0.18	0.19	0.18	0.68				1.41	0.151
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.21	0.23	0.29	0.25	0.34					0.204
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.29	0.014
Exhaust CO:	26.32	29.81	40.86	33.16	66.32	2.18	3.93	28.02	47.81	29.740
Exhaust NOX:	1.34	1.58	2.20	1.77	2.87	1.30	1.47	9.11	0.49	2.151

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	15.21	20.16	28.81	22.78	22.48	2.74	4.43	26.11	29.32	19.144
Idle CO:	222.47	239.91	328.81	266.84	374.59	11.47	20.67	147.35	375.50	233.717
Idle NOX:	4.83	5.70	7.96	6.39	6.50	4.72	5.32	33.10	1.71	7.664

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 69.0 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 69.0 (F)

Resting Loss Temp: 69.0 (F)

Hot Soak	0.38	0.52	0.62	0.55	1.34				1.76	
WtDiurnal	1.77	3.16	3.79	3.34	15.42				11.72	
Multiple	3.72	5.37	5.93	5.53	25.24					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.02				0.12	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 70.0 / 70.0 / 70.0 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Aug UP/15. Minimum Temp: 53. (F) Maximum Temp: 87. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+										
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	2.20	2.63	3.65	2.94	4.90	0.67	1.09	6.44	5.25	2.863
Exhaust HC:	1.85	2.20	3.14	2.48	3.82	0.67	1.09	6.44	3.47	2.480
Evaporat HC:	0.12	0.19	0.20	0.19	0.72				1.48	0.159
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.21	0.23	0.30	0.25	0.35					0.209
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.30	0.014
Exhaust CO:	25.98	29.34	40.26	32.65	65.92	2.18	3.93	28.02	47.39	29.377
Exhaust NOX:	1.33	1.57	2.19	1.75	2.86	1.30	1.47	9.11	0.49	2.143

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 58.4 / 58.4 / 58.4 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0May UP/15. Minimum Temp: 44. (F) Maximum Temp: 73. (F)
Period 1 RVP: 9.0 Period 2 RVP: 9.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.50	3.02	4.22	3.39	5.30	0.67	1.09	6.44	4.93	3.177
Exhaust HC:	2.15	2.60	3.71	2.94	4.35	0.67	1.09	6.44	3.75	2.809
Evaporat HC:	0.09	0.13	0.15	0.14	0.52				0.97	0.113
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.25	0.28	0.35	0.30	0.40					0.245
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.21	0.010
Exhaust CO:	30.16	35.08	47.57	38.87	70.70	2.18	3.93	28.02	52.71	33.808
Exhaust NOX:	1.42	1.69	2.36	1.89	2.94	1.30	1.46	9.13	0.52	2.240
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	18.64	23.55	33.52	26.58	25.35	2.73	4.42	26.11	31.49	21.769
Idle CO:	254.90	282.37	382.87	312.85	399.29	11.47	20.66	147.35	413.99	267.043
Idle NOX:	5.14	6.11	8.53	6.84	6.65	4.71	5.32	33.16	1.80	7.982

0Evaporative Emissions by Component Weathered RVP: 9.0 Hot Soak Temp: 58.4 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 58.4 (F)
Resting Loss Temp: 58.4 (F)

Hot Soak	0.26	0.34	0.40	0.36	0.87				1.28	
WtDiurnal	1.43	2.60	3.15	2.76	13.19				8.03	
Multiple	2.20	3.46	4.12	3.65	19.76					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.01	0.01	0.01	0.02				0.09	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 61.9 / 61.9 / 61.9 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.06	0.05	0.05	0.05	0.08				0.10	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 69.0 / 69.0 / 69.0 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Jul UP/95. Minimum Temp: 52. (F) Maximum Temp: 86. (F)
Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.631	0.181	0.084		0.031	0.003	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.66	2.14	3.11	2.45	5.83	0.76	1.28	4.67	4.08	2.196
Exhaust HC:	1.25	1.67	2.46	1.92	4.09	0.76	1.28	4.67	2.39	1.732
Evaporat HC:	0.19	0.29	0.43	0.33	1.34				1.41	0.262
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.16	0.13	0.17	0.15	0.31					0.148
Rsting L HC:	0.06	0.05	0.05	0.05	0.09				0.29	0.055
Exhaust CO:	17.05	23.82	34.42	27.19	99.53	1.75	3.26	15.52	32.62	22.232
Exhaust NOX:	1.66	1.79	2.21	1.92	4.27	1.50	1.72	13.54	0.68	2.528
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.41	26.95	38.34	30.57	54.27	4.97	8.37	30.68	30.23	25.407
Idle CO:	302.86	425.43	612.98	484.97	1142.71	18.10	33.66	160.06	377.73	367.513
Idle NOX:	5.96	6.27	7.67	6.71	8.64	7.11	8.15	64.25	1.73	9.194

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 69.0 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 69.0 (F)
Resting Loss Temp: 69.0 (F)

Hot Soak	0.48	0.58	0.77	0.64	2.01				1.76	
WtDiurnal	3.14	5.27	10.41	6.81	39.20				11.72	
Multiple	8.32	12.60	16.00	13.62	46.90					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.07	0.06	0.07	0.07	0.09				0.12	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

Evaporat HC:	0.31	0.38	0.54	0.43	1.63				1.95	0.376
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.22	0.15	0.22	0.17	0.48					0.197
Rsting L HC:	0.03	0.03	0.03	0.03	0.05				0.16	0.031
Exhaust CO:	25.69	34.45	47.61	38.64	114.63	1.78	3.32	15.64	39.59	31.216
Exhaust NOX:	1.93	2.04	2.45	2.17	4.48	1.51	1.73	13.99	0.75	2.789

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	30.66	38.70	53.19	43.31	65.50	4.99	8.54	31.20	35.50	35.007
Idle CO:	451.27	606.34	843.95	682.01	1315.98	18.34	34.21	161.31	458.52	519.034
Idle NOX:	6.94	7.17	8.52	7.60	9.07	7.18	8.23	66.37	1.90	10.746

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 48.7 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 48.7 (F)

Resting Loss Temp: 48.7 (F)

Hot Soak	1.24	1.03	1.26	1.10	2.75				1.45	
WtDiurnal	4.53	7.19	12.79	8.88	46.78				17.52	
Multiple	7.59	11.10	16.16	12.62	48.10					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.04	0.04	0.04	0.04	0.05				0.07	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 58.4 / 58.4 / 58.4 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0May UP/95. Minimum Temp: 44. (F) Maximum Temp: 73. (F)

Period 1 RVP: 9.0 Period 2 RVP: 9.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.633	0.180	0.084		0.031	0.004	0.002	0.061	0.007	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.84	2.44	3.54	2.79	6.36	0.76	1.30	4.75	3.79	2.418
Exhaust HC:	1.49	2.02	2.92	2.30	4.60	0.76	1.30	4.75	2.60	2.004
Evaporat HC:	0.16	0.24	0.40	0.30	1.34				0.97	0.226
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.15	0.13	0.18	0.15	0.35					0.147
Rsting L HC:	0.04	0.04	0.04	0.04	0.07				0.21	0.041
Exhaust CO:	20.83	28.74	40.81	32.58	108.92	1.78	3.32	15.64	35.96	26.342
Exhaust NOX:	1.80	1.92	2.32	2.05	4.40	1.51	1.73	13.99	0.72	2.673

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	25.52	32.57	45.48	36.68	61.04	4.99	8.54	31.20	32.92	29.851

daily minimum is 25F or less; no evaporative emission
factors (hot soak, diurnal, running loss, or resting
loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 34.3 / 34.3 / 34.3 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Feb UP/95. Minimum Temp: 26. (F) Maximum Temp: 43. (F)
Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.633	0.180	0.084		0.031	0.004	0.002	0.061	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.24	2.99	4.18	3.37	5.47	0.76	1.30	4.75	3.19	2.789
Exhaust HC:	2.23	2.98	4.16	3.36	5.43	0.76	1.30	4.75	3.19	2.782
Evaporat HC:	0.01	0.01	0.01	0.01	0.03				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	29.74	39.84	54.54	44.52	120.62	1.78	3.32	15.64	46.25	35.563
Exhaust NOX:	2.11	2.22	2.67	2.36	4.66	1.51	1.73	13.99	0.81	2.965
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	38.27	48.07	65.29	53.56	72.10	4.99	8.54	31.20	40.44	42.762
Idle CO:	522.40	698.28	962.72	782.49	1384.85	18.34	34.21	161.31	535.65	593.187
Idle NOX:	7.62	7.83	9.28	8.29	9.43	7.18	8.23	66.37	2.05	11.374

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 34.3 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 34.3 (F)
Resting Loss Temp: 34.3 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.03				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 1995 I/M Program: Yes Ambient Temp: 48.5 / 48.5 / 48.5 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Mar UP/95. Minimum Temp: 36. (F) Maximum Temp: 61. (F)

MOBILE5B OUTPUT - 25.0 MPH

```
1 UP/SP Project - 25.0 mph
 MOBILE5b (14-Sep-96)
0
-M170 Warning:
+               Exhaust emissions for gasoline fueled vehicles
                beginning in 1995 have been reduced as a result of
                Gasoline Detergent Additive Regulations (1994).
-M 83 Comment:
+               One or more evaporative temperatures (input daily
                maximum, input ambient, calculated hot soak, and/or
                calculated running loss) is 40F or less, or input
                daily minimum is 25F or less; no evaporative emission
                factors (hot soak, diurnal, running loss, or resting
                loss) will be calculated.
0I/M program selected:

0    Start year (January 1):
     Pre-1981 MYR stringency rate:
     First model year covered:          1968
     Last model year covered:
     Waiver rate (pre-1981):             2.%
     Waiver rate (1981 and newer):       2.%
     Compliance Rate:                   95.%
     Inspection type:                   Computerized Test and Repair
     Effectiveness - HC: 0.50  CO: 0.50  NOx: 0.50
     Inspection frequency               Annual
     Vehicle types covered:             LDGV - Yes
                                       LDGT1 - Yes
                                       LDGT2 - Yes
                                        HDGV - No
     1981 & later MYR test type:        2500 rpm / Idle
     Cutpoints, HC:  220.000   CO:    1.200   NOx:  999.000
 High alt, Annl and Bien Insp Freq TECH 1 & 2 I/M cred data
 Annl Insp Freq & TECH 4+ I/M credit 2500/Idle test data
0Functional Check Program Description:
0Check Start Model Yrs Vehicle Classes Covered    Inspection        Comp   Eff
      (Jan1) Covered   LDGV LDGT1 LDGT2 HDGV   Type        Freq     Rate   Adj
 ATP   1988  1968-1993 Yes  Yes   Yes   No  Test & Repair Annual    95.0%  0.00
0Air pump system disablements:       Yes  Catalyst removals:                Yes
 Fuel inlet restrictor disablements: Yes  Tailpipe lead deposit test:        No
 EGR disablement:                    Yes  Evaporative system disablements:  Yes
 PCV system disablements:            Yes  Missing gas caps:                 Yes
0VOC HC emission factors include all evaporative HC emission factors, except for refueling emissions.
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calculated running loss) is 40F or less, or input
daily minimum is 25F or less; no evaporative emission
factors (hot soak, diurnal, running loss, or resting
loss) will be calculated.

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 36.5 / 36.5 / 36.5 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Dec UP/15. Minimum Temp: 26. (F) Maximum Temp 48. (F)
Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120
Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035
Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.51	3.13	4.39	3.51	5.12	0.67	1.09	6.44	4.40	3.214
Exhaust HC:	2.50	3.12	4.38	3.50	5.11	0.67	1.09	6.44	4.40	3.207
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	29.11	35.29	46.54	38.70	61.18	2.18	3.93	28.02	53.20	32.837
Exhaust NOX:	1.62	1.95	2.72	2.18	3.06	1.30	1.47	9.11	0.58	2.442
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.67	28.25	39.63	31.70	29.74	2.74	4.43	26.11	36.95	25.199
Idle CO:	246.03	284.02	374.58	311.46	345.57	11.47	20.67	147.35	417.81	259.701
Idle NOX:	5.85	7.04	9.83	7.88	6.93	4.72	5.32	33.10	2.00	8.707

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 36.5 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 36.5 (F)
Resting Loss Temp: 36.5 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00	0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00	0.00	
Multiple	0.00	0.00	0.00	0.00	0.00		
Crankcase	0.01	0.01	0.01	0.01	0.01	0.00	
Refuel	0.00	0.00	0.00	0.00	0.00		
Resting	0.00	0.00	0.00	0.00	0.00	0.00	

WtDiurnal	1.70	3.04	3.66	3.22	14.97				10.99	
Multiple	3.49	5.02	5.62	5.19	24.40					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.02	0.02	0.02	0.02				0.11	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 54.9 / 54.9 / 54.9 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Oct UP/15. Minimum Temp: 41. (F) Maximum Temp: 69. (F)
Period 1 RVP: 11.5 Period 2 RVP: 11.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	12.5	12.5	12.5		12.5	12.5	12.5	12.5	12.5	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	3.25	3.81	5.29	4.26	6.48	0.67	1.09	6.44	5.67	3.912
Exhaust HC:	2.48	3.02	4.31	3.41	4.73	0.67	1.09	6.44	3.85	3.153
Evaporat HC:	0.16	0.22	0.23	0.22	0.79				1.63	0.192
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.60	0.56	0.74	0.61	0.95					0.558
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.19	0.009
Exhaust CO:	38.57	45.03	61.32	49.97	82.16	2.18	3.93	28.02	54.53	42.328
Exhaust NOX:	1.47	1.75	2.44	1.96	2.86	1.30	1.47	9.11	0.53	2.286
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.50	27.34	38.97	30.87	27.52	2.74	4.43	26.11	32.32	24.758
Idle CO:	325.97	362.44	493.52	402.15	464.01	11.47	20.67	147.35	428.29	336.639
Idle NOX:	5.32	6.33	8.84	7.09	6.47	4.72	5.32	33.10	1.83	8.153

0Evaporative Emissions by Component Weathered RVP: 11.5 Hot Soak Temp: 54.9 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 54.9 (F)
Resting Loss Temp: 54.9 (F)

Hot Soak	0.73	0.83	0.94	0.86	1.81				1.62	
WtDiurnal	2.02	3.56	4.24	3.76	16.88				14.15	
Multiple	3.20	5.13	5.98	5.37	20.30					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.01	0.01	0.01	0.02				0.08	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2000 I/M Program: Yes Ambient Temp: 40.4 / 40.4 / 40.4 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Nov UP/00. Minimum Temp: 27. (F) Maximum Temp: 54. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.614	0.191	0.086		0.031	0.001	0.001	0.068	0.006	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.59	2.02	2.84	2.27	3.72	0.57	0.87	4.18	3.98	2.035
Exhaust HC:	1.47	1.85	2.62	2.09	3.11	0.57	0.87	4.18	2.81	1.886
Evaporat HC:	0.09	0.14	0.20	0.16	0.57				1.04	0.122
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.01	0.01	0.01	0.01	0.02					0.008
Rsting L HC:	0.02	0.02	0.02	0.02	0.03				0.13	0.018
Exhaust CO:	16.29	20.79	28.08	23.05	55.03	1.40	2.44	14.71	34.56	19.335
Exhaust NOX:	1.74	1.94	2.65	2.16	4.04	1.22	1.33	10.29	0.78	2.503
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	22.65	28.79	40.18	32.32	41.25	3.74	5.71	27.43	35.62	26.267
Idle CO:	254.13	323.63	435.54	358.34	631.78	14.43	25.17	151.68	400.23	288.016
Idle NOX:	6.32	7.13	9.71	7.93	8.18	5.78	6.30	48.80	1.96	9.707

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 40.4 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 40.4 (F)

Resting Loss Temp: 40.4 (F)

Hot Soak	0.05	0.04	0.04	0.04	0.09				0.07	
WtDiurnal	2.11	3.66	5.83	4.29	27.92				10.33	
Multiple	2.96	4.95	7.12	5.58	28.85					
Crankcase	0.01	0.01	0.01	0.01	0.02				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.03				0.05	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission

calculated running loss) is 40F or less, or input
daily minimum is 25F or less; no evaporative emission
factors (hot soak, diurnal, running loss, or resting
loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 25.7 / 25.7 / 25.7 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Jan UP/07. Minimum Temp: 16. (F) Maximum Temp: 36. (F)
Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120
Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035
Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.82	2.30	3.20	2.58	2.71	0.40	0.67	4.00	3.26	2.237
Exhaust HC:	1.82	2.30	3.20	2.57	2.70	0.40	0.67	4.00	3.26	2.230
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	19.17	24.41	31.70	26.64	38.03	1.11	2.04	14.35	40.87	21.573
Exhaust NOX:	1.75	2.04	2.85	2.29	3.79	0.99	1.12	7.81	0.83	2.426
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	25.99	33.94	47.35	38.04	35.77	2.64	4.40	26.26	41.27	29.753
Idle CO:	281.51	333.25	438.44	365.43	436.61	11.41	21.00	147.95	473.37	300.056
Idle NOX:	6.40	7.66	10.69	8.58	7.69	4.68	5.33	37.07	2.11	9.392

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 25.7 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 25.7 (F)
Resting Loss Temp: 25.7 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Mar UP/07. Minimum Temp: 36. (F) Maximum Temp: 61. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.94	2.30	3.15	2.56	3.55	0.40	0.67	4.00	4.50	2.332
Exhaust HC:	1.56	1.90	2.68	2.14	2.34	0.40	0.67	4.00	2.68	1.941
Evaporat HC:	0.19	0.23	0.25	0.24	0.89				1.66	0.217
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.17	0.16	0.21	0.17	0.29					0.161
Rsting L HC:	0.01	0.01	0.01	0.01	0.03				0.16	0.013
Exhaust CO:	21.29	26.13	34.88	28.81	45.74	1.11	2.04	14.35	39.44	23.693
Exhaust NOX:	1.53	1.76	2.46	1.98	3.59	0.99	1.12	7.81	0.74	2.203
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	22.34	28.07	39.65	31.61	31.07	2.64	4.40	26.26	34.00	25.553
Idle CO:	312.82	357.82	483.72	396.33	525.13	11.41	21.00	147.95	456.76	330.253
Idle NOX:	5.61	6.63	9.25	7.43	7.28	4.68	5.33	37.07	1.89	8.577

0Evaporative Emissions by Component Weathered RVP: 13.5 Hot Soak Temp: 48.5 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 48.5 (F)
Resting Loss Temp: 48.5 (F)

Hot Soak	0.96	0.85	0.98	0.89	1.97				1.43	
WtDiurnal	2.21	3.82	4.55	4.03	22.79				14.69	
Multiple	3.29	5.47	6.40	5.73	23.72					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.02	0.02	0.02	0.03				0.07	

-M170 Warning:
+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 48.7 / 48.7 / 48.7 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Apr UP/07. Minimum Temp: 35. (F) Maximum Temp: 63. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	

Exhaust NOX:	1.44	1.65	2.30	1.85	3.56	0.99	1.12	7.81	0.71	2.107
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	18.74	23.19	32.84	26.14	27.74	2.64	4.40	26.26	31.49	21.726
Idle CO:	253.28	286.24	389.15	317.72	478.29	11.41	21.00	147.95	413.99	270.584
Idle NOX:	5.26	6.18	8.63	6.93	7.22	4.68	5.33	37.07	1.80	8.224

0Evaporative Emissions by Component Weathered RVP: 9.0 Hot Soak Temp: 58.4 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 58.4 (F)

Resting Loss Temp: 58.4 (F)

Hot Soak	0.28	0.35	0.42	0.37	1.14				1.28	
WtDiurnal	1.51	2.70	3.28	2.87	18.79				8.03	
Multiple	2.51	3.58	4.27	3.78	27.98					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.04				0.09	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 61.9 / 61.9 / 61.9 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Jun UP/07. Minimum Temp: 46. (F) Maximum Temp: 77. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+										
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.596	0.198	0.087		0.032	0.002	0.002	0.077	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.44	1.72	2.38	1.92	2.79	0.40	0.67	4.00	3.50	1.826
Exhaust HC:	1.25	1.49	2.11	1.68	2.02	0.40	0.67	4.00	2.42	1.612
Evaporat HC:	0.09	0.13	0.14	0.13	0.59				0.84	0.114
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.08	0.08	0.11	0.09	0.15					0.081
Rsting L HC:	0.02	0.02	0.02	0.02	0.04				0.24	0.020
Exhaust CO:	16.46	19.77	26.60	21.86	40.91	1.11	2.04	14.35	34.58	18.649
Exhaust NOX:	1.41	1.61	2.25	1.80	3.54	0.99	1.12	7.81	0.70	2.076
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	17.87	21.99	31.18	24.80	26.77	2.64	4.40	26.26	30.71	20.789
Idle CO:	241.86	271.53	370.37	301.76	469.67	11.41	21.00	147.95	400.52	258.870
Idle NOX:	5.15	6.04	8.43	6.77	7.17	4.68	5.33	37.07	1.77	8.113

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 61.9 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 61.9 (F)

Resting Loss Temp: 61.9 (F)

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 70.0 / 70.0 / 70.0 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Aug UP/07. Minimum Temp: 53. (F) Maximum Temp: 87. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.595	0.199	0.087		0.032	0.002	0.002	0.077	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.39	1.66	2.27	1.85	2.92	0.40	0.66	4.00	4.08	1.784
Exhaust HC:	1.12	1.33	1.88	1.50	1.85	0.40	0.66	4.00	2.30	1.480
Evaporat HC:	0.13	0.20	0.22	0.21	0.83				1.48	0.174
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.11	0.11	0.14	0.12	0.19					0.106
Rsting L HC:	0.02	0.03	0.03	0.03	0.05				0.30	0.024
Exhaust CO:	14.80	17.43	23.68	19.34	38.91	1.10	2.01	14.34	32.14	16.863
Exhaust NOX:	1.34	1.53	2.13	1.71	3.47	0.99	1.12	7.72	0.67	2.002
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	16.07	19.60	27.92	22.14	24.56	2.64	4.36	26.24	29.13	18.884
Idle CO:	217.62	239.89	330.82	267.69	446.74	11.35	20.77	147.91	372.21	233.790
Idle NOX:	4.89	5.73	8.01	6.43	7.04	4.68	5.31	36.64	1.70	7.838

0Evaporative Emissions by Component Weathered RVP: 7.8 Hot Soak Temp: 70.0 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 70.0 (F)
Resting Loss Temp: 70.0 (F)

Hot Soak	0.42	0.58	0.69	0.61	1.58				1.81	
WtDiurnal	1.92	3.40	4.08	3.60	20.83				12.39	
Multiple	4.80	7.23	7.86	7.41	33.61					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.03	0.03	0.03	0.03	0.05				0.12	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 65.3 / 65.3 / 65.3 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Sep UP/07. Minimum Temp: 47. (F) Maximum Temp: 84. (F)

Evaporat HC:	0.17	0.23	0.24	0.23	0.91				1.63	0.206
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.27	0.25	0.34	0.28	0.47					0.258
Rsting L HC:	0.01	0.02	0.02	0.02	0.03				0.19	0.015
Exhaust CO:	22.06	26.68	35.90	29.50	47.11	1.10	2.01	14.34	36.98	24.375
Exhaust NOX:	1.48	1.70	2.39	1.91	3.48	0.99	1.12	7.72	0.72	2.147

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	21.64	26.99	38.32	30.45	29.86	2.64	4.36	26.24	32.32	24.760
Idle CO:	324.34	365.85	498.83	406.50	540.88	11.35	20.77	147.91	428.29	340.319
Idle NOX:	5.42	6.40	8.95	7.18	7.05	4.68	5.31	36.64	1.83	8.373

0Evaporative Emissions by Component Weathered RVP: 11.5 Hot Soak Temp: 54.9 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 54.9 (F)

Resting Loss Temp: 54.9 (F)

Hot Soak	0.79	0.87	1.00	0.91	2.03				1.62	
WtDiurnal	2.12	3.72	4.43	3.93	22.09				14.15	
Multiple	3.54	5.36	6.26	5.62	27.08					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.02	0.02	0.02	0.02	0.03				0.08	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2007 I/M Program: Yes Ambient Temp: 40.4 / 40.4 / 40.4 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Nov UP/07. Minimum Temp: 27. (F) Maximum Temp: 54. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.595	0.199	0.087		0.032	0.002	0.002	0.077	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.54	1.92	2.65	2.15	2.79	0.40	0.66	4.00	3.98	1.950
Exhaust HC:	1.45	1.78	2.50	2.00	2.34	0.40	0.66	4.00	2.81	1.835
Evaporat HC:	0.07	0.12	0.13	0.12	0.41				1.04	0.097
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.01	0.01	0.01	0.01	0.01					0.008
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.13	0.010
Exhaust CO:	15.96	19.94	26.07	21.81	35.52	1.10	2.01	14.34	34.56	18.171

Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	16.77	21.07	27.50	23.04	36.33	1.10	2.01	14.34	36.08	19.033
Exhaust NOX:	1.63	1.90	2.66	2.13	3.73	0.99	1.12	7.72	0.79	2.306

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	21.94	28.19	39.55	31.66	32.37	2.64	4.36	26.24	36.95	25.388
Idle CO:	246.46	288.64	382.09	317.21	417.11	11.35	20.77	147.91	417.81	264.439
Idle NOX:	5.97	7.13	9.98	8.00	7.55	4.68	5.31	36.64	2.00	8.950

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 36.5 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 36.5 (F)

Resting Loss Temp: 36.5 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles beginning in 1995 have been reduced as a result of Gasoline Detergent Additive Regulations (1994).

-M 83 Comment:

\+ One or more evaporative temperatures (input daily maximum, input ambient, calculated hot soak, and/or calculated running loss) is 40F or less, or input daily minimum is 25F or less; no evaporative emission factors (hot soak, diurnal, running loss, or resting loss) will be calculated.

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 25.7 / 25.7 / 25.7 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Jan UP/15. Minimum Temp: 16. (F) Maximum Temp: 36. (F)

Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120

Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035

Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.82	2.33	3.24	2.61	2.53	0.42	0.67	3.98	3.26	2.247
Exhaust HC:	1.81	2.32	3.24	2.60	2.52	0.42	0.67	3.98	3.26	2.240
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007

Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	23.66	30.12	40.35	33.22	40.21	1.11	2.00	14.29	45.98	26.198
Exhaust NOX:	1.62	1.90	2.65	2.12	3.44	0.99	1.12	6.99	0.80	2.263

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	26.28	34.63	48.81	38.93	33.03	2.73	4.42	26.11	38.68	30.105
Idle CO:	344.46	400.05	535.93	441.26	461.63	11.47	20.66	147.35	532.50	359.274
Idle NOX:	5.93	7.14	9.98	8.00	6.97	4.71	5.32	33.16	2.02	8.787

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 34.3 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 34.3 (F)

Resting Loss Temp: 34.3 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00				0.00	
Multiple	0.00	0.00	0.00	0.00	0.00					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.00	0.00	0.00	0.00	0.00				0.00	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 48.5 / 48.5 / 48.5 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Mar UP/15. Minimum Temp: 36. (F) Maximum Temp: 61. (F)

Period 1 RVP: 13.5 Period 2 RVP: 13.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
\+										
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.92	2.34	3.22	2.61	3.24	0.42	0.67	3.98	4.50	2.339
Exhaust HC:	1.57	1.94	2.75	2.19	2.17	0.42	0.67	3.98	2.68	1.967
Evaporat HC:	0.18	0.22	0.24	0.23	0.78				1.66	0.202
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.17	0.17	0.22	0.18	0.23					0.162
Rsting L HC:	0.01	0.01	0.01	0.01	0.01				0.16	0.008
Exhaust CO:	21.57	26.70	36.09	29.55	38.89	1.11	2.00	14.29	39.44	23.838
Exhaust NOX:	1.50	1.74	2.43	1.95	3.31	0.99	1.12	6.99	0.74	2.136

0Idle Emission Factors (Gm/Hr)

VOCIdle HC:	22.17	28.48	40.42	32.10	28.77	2.73	4.42	26.11	34.00	25.558
Idle CO:	314.14	354.66	479.26	392.45	446.46	11.47	20.66	147.35	456.76	326.516
Idle NOX:	5.48	6.55	9.14	7.33	6.70	4.71	5.32	33.16	1.89	8.323

Resting	0.01	0.01	0.01	0.01	0.01				0.07	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 58.4 / 58.4 / 58.4 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0May UP/15. Minimum Temp: 44. (F) Maximum Temp: 73. (F)
Period 1 RVP: 9.0 Period 2 RVP: 9.0 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.582	0.204	0.089		0.033	0.002	0.004	0.082	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.53	1.87	2.60	2.09	2.64	0.42	0.67	3.98	3.67	1.941
Exhaust HC:	1.32	1.61	2.28	1.81	1.91	0.42	0.67	3.98	2.48	1.702
Evaporat HC:	0.09	0.13	0.15	0.14	0.52				0.97	0.113
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.12	0.12	0.16	0.13	0.20					0.115
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.21	0.010
Exhaust CO:	17.51	21.26	28.83	23.56	34.78	1.11	2.00	14.29	35.75	19.568
Exhaust NOX:	1.41	1.62	2.26	1.82	3.28	0.99	1.12	6.99	0.71	2.043
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	18.64	23.55	33.52	26.58	25.35	2.73	4.42	26.11	31.49	21.769
Idle CO:	254.90	282.37	382.87	312.85	399.29	11.47	20.66	147.35	413.99	267.043
Idle NOX:	5.14	6.11	8.53	6.84	6.65	4.71	5.32	33.16	1.80	7.982

0Evaporative Emissions by Component Weathered RVP: 9.0 Hot Soak Temp: 58.4 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 58.4 (F)
Resting Loss Temp: 58.4 (F)

Hot Soak	0.26	0.34	0.40	0.36	0.87				1.28	
WtDiurnal	1.43	2.60	3.15	2.76	13.19				8.03	
Multiple	2.20	3.46	4.12	3.65	19.76					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.01	0.01	0.01	0.02				0.09	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of Jan. 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 61.9 / 61.9 / 61.9 (F) Region: High

0Composite Emission Factors (Gm/Mile)

VOC	HC:	1.38	1.67	2.30	1.86	2.56	0.42	0.67	3.98	4.01	1.780
Exhaust	HC:	1.15	1.37	1.96	1.55	1.69	0.42	0.67	3.98	2.31	1.520
Evaporat	HC:	0.12	0.18	0.19	0.18	0.68				1.41	0.151
Refuel L	HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L	HC:	0.10	0.10	0.13	0.11	0.16					0.095
Rsting L	HC:	0.01	0.01	0.01	0.01	0.02				0.29	0.014
Exhaust	CO:	15.28	18.06	24.76	20.09	32.63	1.11	2.00	14.29	32.42	17.174
Exhaust	NOX:	1.32	1.51	2.11	1.69	3.21	0.99	1.12	6.98	0.67	1.956

0Idle Emission Factors (Gm/Hr)

VOCIdle	HC:	16.21	20.16	28.81	22.78	22.48	2.74	4.43	26.11	29.32	19.144
Idle	CO:	222.47	239.91	328.81	266.84	374.59	11.47	20.67	147.35	375.50	233.717
Idle	NOX:	4.83	5.70	7.96	6.39	6.50	4.72	5.32	33.10	1.71	7.664

0Evaporative Emissions by Component — Weathered RVP: 7.8 — Hot Soak Temp: 69.0 (F)

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) — Running Loss Temp: 69.0 (F)

Resting Loss Temp: 69.0 (F)

Hot Soak	0.38	0.52	0.62	0.55	1.34			1.76	
WtDiurnal	1.77	3.16	3.79	3.34	15.42			11.72	
Multiple	3.72	5.37	5.93	5.53	25.24				
Crankcase	0.01	0.01	0.01	0.01	0.01			0.00	
Refuel	0.00	0.00	0.00	0.00	0.00				
Resting	0.02	0.02	0.02	0.02	0.02			0.12	

-M170 Warning:

\+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 70.0 / 70.0 / 70.0 (F) Region: High

Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.

Reformulated Gas: No

0Aug UP/15. Minimum Temp: 53. (F) Maximum Temp: 87. (F)

Period 1 RVP: 7.8 Period 2 RVP: 7.8 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	

0Composite Emission Factors (Gm/Mile)

VOC	HC:	1.37	1.66	2.29	1.85	2.58	0.42	0.67	3.98	4.08	1.775
Exhaust	HC:	1.13	1.35	1.94	1.53	1.67	0.42	0.67	3.98	2.30	1.504
Evaporat	HC:	0.12	0.19	0.20	0.19	0.72				1.48	0.159
Refuel L	HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L	HC:	0.10	0.10	0.14	0.11	0.17					0.098
Rsting L	HC:	0.01	0.01	0.01	0.01	0.02				0.30	0.014
Exhaust	CO:	15.08	17.78	24.39	19.78	32.43	1.11	2.00	14.29	32.14	16.960

Hot Soak	0.29	0.39	0.46	0.41	0.99				1.54	
WtDiurnal	1.70	3.04	3.66	3.22	14.97				10.99	
Multiple	3.49	5.02	5.62	5.19	24.40					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.02	0.02	0.02	0.02				0.11	

-M170 Warning:

+ Exhaust emissions for gasoline fueled vehicles
beginning in 1995 have been reduced as a result of
Gasoline Detergent Additive Regulations (1994).

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 54.9 / 54.9 / 54.9 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Oct UP/15. Minimum Temp: 41. (F) Maximum Temp: 69. (F)
Period 1 RVP: 11.5 Period 2 RVP: 11.5 Period 2 Start Yr: 1992

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.96	2.36	3.25	2.63	3.33	0.42	0.67	3.98	4.37	2.369
Exhaust HC:	1.52	1.86	2.66	2.10	2.07	0.42	0.67	3.98	2.55	1.911
Evaporat HC:	0.16	0.22	0.23	0.22	0.79				1.63	0.192
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.27	0.26	0.35	0.29	0.44					0.256
Rsting L HC:	0.01	0.01	0.01	0.01	0.02				0.19	0.009
Exhaust CO:	22.39	27.29	37.16	30.28	40.42	1.11	2.00	14.29	36.98	24.563
Exhaust NOX:	1.46	1.68	2.35	1.88	3.19	0.99	1.12	6.98	0.72	2.088
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.50	27.34	38.97	30.67	27.52	2.74	4.43	26.11	32.32	24.758
Idle CO:	325.97	362.44	493.52	402.15	464.01	11.47	20.67	147.35	428.29	336.639
Idle NOX:	5.32	6.33	8.84	7.09	6.47	4.72	5.32	33.10	1.83	8.153

0Evaporative Emissions by Component Weathered RVP: 11.5 Hot Soak Temp: 54.9 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 54.9 (F)
Resting Loss Temp: 54.9 (F)

Hot Soak	0.73	0.83	0.94	0.86	1.61				1.62	
WtDiurnal	2.02	3.56	4.24	3.76	16.88				14.15	
Multiple	3.20	5.13	5.98	5.37	20.30					
Crankcase	0.01	0.01	0.01	0.01	0.01				0.00	
Refuel	0.00	0.00	0.00	0.00	0.00					
Resting	0.01	0.01	0.01	0.01	0.02				0.08	

-M170 Warning:

maximum, input ambient, calculated hot soak, and/or
calculated running loss) is 40F or less, or input
daily minimum is 25F or less; no evaporative emission
factors (hot soak, diurnal, running loss, or resting
loss) will be calculated.

0Emission factors are as of July 1st of the indicated calendar year.

0Cal. Year: 2015 I/M Program: Yes Ambient Temp: 36.5 / 36.5 / 36.5 (F) Region: High
Anti-tam. Program: Yes Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 5500. Ft.
Reformulated Gas: No

0Dec UP/15. Minimum Temp: 26. (F) Maximum Temp: 48. (F)
Period 1 RVP: 15.0 Period 2 RVP: 15.0 Period 2 Start Yr: 1992

0 Ether Blend Market Share: 0.880 Alcohol Blend Market Share: 0.120
Ether Blend Oxygen Content: 0.027 Alcohol Blend Oxygen Content: 0.035
Alcohol Blend RVP Waiver: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.581	0.204	0.089		0.033	0.002	0.004	0.083	0.005	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.54	1.93	2.71	2.17	2.25	0.42	0.67	3.98	2.91	1.950
Exhaust HC:	1.53	1.93	2.70	2.16	2.24	0.42	0.67	3.98	2.91	1.943
Evaporat HC:	0.01	0.01	0.01	0.01	0.01				0.00	0.007
Refuel L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Runing L HC:	0.00	0.00	0.00	0.00	0.00					0.000
Rsting L HC:	0.00	0.00	0.00	0.00	0.00				0.00	0.000
Exhaust CO:	16.90	21.39	28.20	23.45	30.10	1.11	2.00	14.29	36.08	19.031
Exhaust NOX:	1.60	1.87	2.61	2.09	3.42	0.99	1.12	6.98	0.79	2.241
0Idle Emission Factors (Gm/Hr)										
VOCIdle HC:	21.67	28.25	39.63	31.70	29.74	2.74	4.43	26.11	36.95	25.199
Idle CO:	246.03	284.02	374.58	311.46	345.57	11.47	20.67	147.35	417.81	259.701
Idle NOX:	5.85	7.04	9.83	7.88	6.93	4.72	5.32	33.10	2.00	8.707

0Evaporative Emissions by Component Weathered RVP: 15.0 Hot Soak Temp: 36.5 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Running Loss Temp: 36.5 (F)
Resting Loss Temp: 36.5 (F)

Hot Soak	0.00	0.00	0.00	0.00	0.00			0.00	
WtDiurnal	0.00	0.00	0.00	0.00	0.00			0.00	
Multiple	0.00	0.00	0.00	0.00	0.00				
Crankcase	0.01	0.01	0.01	0.01	0.01			0.00	
Refuel	0.00	0.00	0.00	0.00	0.00				
Resting	0.00	0.00	0.00	0.00	0.00			0.00	

United States of America

Before the

SURFACE TRANSPORTATION BOARD

F.D. No 32760

Union Pacific Corporation et al.--
Control and Merger -- Southern Pacific Corporation et al.

VERIFIED STATEMENT OF RODGER G. STEEN

My Name is Rodger G. Steen. I am an air quality specialist and am employed by Air Sciences Inc., 12596 W. Bayaud Ave., Lakewood, Colorado.

My education is in engineering and geophysical sciences. I am a Certified Consulting Meteorologist (American Meteorological Society) and a Professional Engineer, registered in Colorado. The services I provide are entirely related to the technical and regulatory aspects of air pollution, and I have been providing these services, since 1973, to industry and government throughout the world. These technical services include advice on regulations, data collection, data analysis, pollution control technology, and dispersion meteorology. My functional responsibilities include the supervision of air quality analyses and quality control of the workmanship at Air Sciences.

I have served as project manager and principal investigator for the evaluation of the air quality aspects of the Preliminary Mitigation Plan and associated documents.

The attached document titled "Analysis of Air Emission Increases Resulting From the Union Pacific and Southern Pacific Railroad Merger and Effects on the Management of the Air Resource of the Truckee Meadows Nonattainment Area," dated October 1997, is Air Sciences' product provided to Nevadans for Fast and Responsible Action under my supervision.

The factual information contained in this report was obtained by independent analysis of data and regulatory information from identified public sources.

The contents of the above referenced report on the analysis of air emissions and executive summary attached hereto are incorporated herein for the purpose of this statement.

Respectfully submitted,

Rodger G. Steen

Rodger G. Steen
Principal

VERIFICATION

I, Rodger G. Steen, declare under penalty of perjury that the foregoing statement and attachment hereto are true and correct. Further, I certify that I am qualified and authorized to file this statement and attached documents on behalf or Nevadans for Fast and Responsible Action and for the City of Reno.

Executed on October 9, 1997.

Rodger G. Steen

Rodger G. Steen
Principal

RAILROAD NOISE/VIBRATION ASSESSMENT
UP/SP MERGER

Reno, Nevada

BBA Project No. 97-315

Prepared For

Bob Bunr
Nevadans for Fast and Responsible Action
c/o Washoe Health System
77 Pringle Way
Reno, NV 89520

October 6, 1997

Prepared By

Brown-Buntin Associates, Inc.
Fair Oaks, California

BBA

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EXECUTIVE SUMMARY
RAILROAD NOISE AND VIBRATION ASSESSMENT
UP/SP MERGER

Brown-Buntin Associates, Inc. (BBA)

October 6, 1997

Brown-Buntin Associates, Inc. (BBA) prepared an independent analysis of potential railroad noise and vibration impacts associated with the UP/SP merger upon noise sensitive land uses in the vicinity of Reno, Nevada. The objectives of the analysis were to:

- Improve the statistical validity of noise level assumptions made by others in the Reno area.
- Describe train noise levels in different local environments at reference distances which are not significantly affected by shielding.
- Estimate the shielding effects of large buildings in the downtown Reno area using acoustical modeling techniques.
- Describe vibration levels due to train passages.
- Describe the train noise reduction offered by hotel building facades.
- Recommend noise and vibration impact criteria consistent with current Federal interagency recommendations.
- Assess the noise and vibration impacts of the proposed merger in the Reno area.
- Evaluate the proposed mitigation methods for noise and vibration.

The analysis included railroad noise level measurements at six different locations, including one extended measurement period of seven days. The observed railroad noise levels were used to calculate railroad noise levels at a reference distance, and noise level predictions were made for a number of different operational scenarios. In addition, BBA used the noise level data to predict noise levels in the Reno area which accounted for shielding by tall buildings. The predicted noise levels were higher than those cited in the project environmental documents. BBA was unable to determine the reason for the discrepancies in predicted noise levels on the basis of the data provided in the project environmental documentation.

The predicted railroad noise levels were displayed as noise level contours, overlaid on aerial photos of the Reno area. BBA counted the numbers of homes, hotels and churches included in the noise contours to describe the noise impacts of the proposed action. The predicted numbers of noise sensitive uses exposed to unacceptable levels of railroad noise were higher than those cited in the project environmental documents.

BBA evaluated vibration due to train passages, and found that vibration levels produced by train passages in the nearest hotel rooms were within acceptable limits.

BBA measured railroad noise levels inside of representative hotel rooms adjacent to the railroad tracks. BBA found that interior noise levels inside of typical hotel rooms could be

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expected to cause an awakening rate of from 15% to 45% for each train noise event. The project would cause the number of such incidences to increase by a factor of almost two. The predicted interior noise levels in typical hotel rooms were also found to be unacceptable in terms of Federal guidelines. BBA found that acoustical treatments could significantly improve the noise reduction of hotel room windows, and that such treatment would provide an acceptable interior noise environment.

Given the increased railroad activity associated with the project, BBA found that the following conditions would constitute a significant noise impact:

- An additional 34 homes, 261 hotel rooms, and one church would be exposed to a noise level equal to or greater than DNL 65 dB.
- An increase of DNL 2.7 dB would be experienced at homes and hotel rooms within the existing DNL 65 dB contour.
- Interior noise levels in typical hotel rooms would increase by 2.7 dB, aggravating the existing unacceptable condition.
- The number of train noise events expected to cause a substantial rate of awakening would increase by a factor of 1.9.

The noise mitigation measure proposed by the STB is to increase train speed from 20 mph to 30 mph in the downtown Reno area. BBA found that the theoretical improvement in noise impact would be a reduction of 1.9 dB, but the actual extent of the improvement cannot be quantified without specific data concerning the effects of the speed increase on the use and duration of warning horns. If the speed increase were to effectively reduce noise levels by 1.9 dB, the numbers of homes and hotel rooms affected by increased or unacceptable noise levels would be reduced. Interior noise levels in typical hotel rooms would remain unacceptable, though the potential for awakening due to train noise events would be reduced slightly.

INTRODUCTION

The purposes of this analysis are to describe railroad noise and vibration levels associated with the proposed UP/SP merger as they affect the Reno, Nevada, area, and to recommend appropriate criteria for acceptable exposure to the expected railroad noise and vibration levels.

Noise and vibration assessments for this project have been performed by others, but there are apparent disagreements and concerns about modeling assumptions, noise level data and conclusions. Brown-Buntin Associates, Inc. (BBA) was retained to review the available data, supplement those data as necessary, and to arrive at conclusions regarding railroad noise and vibration impacts in the vicinity of Reno, Nevada.

METHODS

The work program undertaken by Brown-Buntin Associates, Inc. (BBA) addressed the following objectives:

- Increase the numbers of train noise level measurements at representative locations to improve the statistical validity of noise level assumptions in the Reno area.
- Describe train noise levels in different local environments at reference distances which are not significantly affected by shielding.
- Estimate the shielding effects of large buildings in the downtown Reno area using acoustical modeling techniques.
- Describe vibration levels due to train passages.
- Describe noise reduction offered by hotel building facades.
- Recommend noise and vibration impact criteria which are consistent with the most current Federal interagency recommendations.
- Assess the noise and vibration impacts of the proposed merger in the Reno area.
- Evaluate the proposed mitigation methods for noise and vibration.

RESULTS

Railroad Noise Levels:

To achieve the first two objectives, BBA conducted railroad noise measurements in Reno during the period from August 21 to August 27, 1997. Two types of measurements were performed: observed single event noise measurements and unobserved single event and cumulative noise measurements. The observed noise measurements were performed on August 21, 22 and 27, 1997. Six monitoring sites were selected, to represent rural wayside conditions with no horns, rural crossings with the use of horns, urban crossings with horns (and local reflections), and urban wayside with nearly continuous use of horns. One monitoring site was abandoned after the first day and was replaced with another. The monitoring sites are shown by Figure 1.

One of the sites used for observed measurements (at the Del Curto Road crossing) was also retained as a long-term monitoring site to document the distribution of train passages over the 24-hour day, and as a means of improving the statistical reliability of the observed single event data.

The equipment used for noise monitoring included Bruel & Kjaer Types 2218 and 2230, and Larson Davis Laboratories Models 820 and 870 precision integrating sound level meters. Each meter was calibrated before use with either a Bruel & Kjaer Type 4230 or a Larson Davis Model CA-250 acoustical calibrator.

The single event noise level data collected at the six observed monitoring sites are shown by Table I. Assuming that there was no significant shielding of the sites by buildings, the measured sound exposure levels (SEL[1]) were normalized to a distance of 50 feet from the track centerline, and the values for SP and UP long-haul freight trains were averaged. (Note that the attenuation with distance was assumed to be that theoretically calculated for spreading from a moving point source, at 15 times the logarithm of the distance. This is the same assumption used by others in the noise analyses prepared for the project.)

In some cases, additional analysis was performed to describe different types of noise events, such as for westbound *versus* eastbound trains at the Lake Street crossing. These data were used to prepare initial assumptions for noise modeling purposes.

The observed single event noise measurements provided insight into noise modeling assumptions for railroad noise in the Reno area. Specifically, the data indicated that, in the urban area, the use of the warning horn is solely responsible for the severity of the noise exposure. Thus the assumptions used to model wayside noise, such as train speed and numbers of locomotives and cars, were insignificant in areas where the horns were used. It was typical for the noise levels of the passing cars to be 20 to 30 dB lower than the maximum noise level produced by the horn. The locomotive noise was similarly masked by the horn, and was at least 10 dB lower than the horn.

There is variability in the level of sound produced by the horns. Different brands of horns are fitted to different locomotives, and each brand may produce a different level (and tone) of sound. Sound exposure levels due to horns also depend upon the method of horn actuation. A short pull on the horn cord will produce a single tone at a relatively low level, and of short duration. A longer pull will engage all of the horn chimes (typically 3 to 5), which produces a significantly higher sound level. The increased duration of the horn use also increases the sound exposure level, which is a function of both sound level and duration. Observations of horn use indicated that horn noise events ranged from short, relatively quiet, "toots" by Amtrak and one freight, to long, loud, nearly continuous noise events during passage of certain freights.

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[1] For explanation of the acoustical terminology used in this report, refer to Appendix A.

Table I
Measured Railroad Noise Levels
August 21-22, 1997

Site	Date	Time	RR	Train	Direction	No. Locos	No. Cars	Distance feet	Lmax dB	Duration Seconds	SEL dB	Horn
1	08/21/97	1604	SP	8537	EB	4	89	50	97	230	105	YES
1	08/22/97	1104	AM	PASS	WB	3	12	50	98	84	101	YES
1	08/22/97	1137	CNW	8602	EB	2	34	50	104	77	105	YES
1	08/22/97	1208	CNW	8672	WB	3	31	50	110	89	114	YES
1	08/22/97	1555	UP	6691	WB	5	92	50	108	268	117	YES
2	08/21/97	1605	SP	8537	EB	4	89	157	88	285	99	YES
2	08/21/97	2155	UP	8152	EB	3	104	157	102	237	107	YES
2	08/22/97	1104	AM	PASS	WB	3	12	157	97	73	101	YES
2	08/22/97	1137	CNW	8602	EB	2	34	157	99	95	106	YES
2	08/22/97	1208	CNW	8672	WB	3	31	157	103	107	111	YES
2	08/22/97	1252	SP	5394	EB	1	0	157	84	18	88	YES
2	08/22/97	1332	UP	6062	WB	3	80	157	99	229	109	YES
2	08/22/97	1408	SP	5394	WB	1	4	157	87	54	92	YES
2	08/22/97	1555	UP	6691	WB	5	92	157	103	282	115	YES
3	08/21/97	1605	SP	8537	EB	4	89	150	64	24	73	YES
4	08/21/97	2155	UP	8152	EB	3	104	95	104	220	111	YES
4	08/21/97	2155	UP	8152	EB	3	104	105	101	200	108	YES
4	08/22/97	1115	AM	PASS	WB	3	12	95	91	80	96	YES
4	08/22/97	1137	CNW	8602	EB	2	34	95	105	101	100	YES
4	08/22/97	1208	CNW	8672	WB	3	31	95	108	110	113	YES
4	08/22/97	1252	SP	5394	EB	1	0	95	89	22	92	YES
4	08/22/97	1332	UP	6062	WB	3	80	95	100	200	109	YES
4	08/22/97	1408	SP	5394	WB	1	4	95	94	40	100	YES
4	08/22/97	1605	UP	6691	WB	5	92	95	106	306	116	YES
5	08/21/97	1544	SP	8537	EB	4	89	150	88	74	96	YES
5	08/21/97	2149	UP	8152	EB	3	104	190	99	155	103	YES
5	08/22/97	1118	AM	PASS	WB	3	12	190	81	53	90	YES
5	08/22/97	1128	CNW	8602	EB	2	34	190	100	112	103	YES
5	08/22/97	1214	CNW	8672	WB	3	31	190	98	74	100	YES
5	08/22/97	1342	UP	6062	WB	3	80	190	92	379	101	YES
5	08/22/97	1412	SP	5394	WB	1	4	190	88	105	91	YES
5	08/22/97	1602	SP	6691	WB	4	89	190	94	248	103	YES
5	08/22/97	1824	UP		EB		LONG	190	97	486	104	YES
5	08/22/97	1840	UP		EB		LONG	190	96	599	104	YES
6	08/22/97	1121	AM	PASS	WB	3	12	150	77	42	88	NO
6	08/22/97	1128	CNW	8602	EB	2	34	150	77	67	88	NO
6	08/22/97	1216	CNW	8672	WB	3	31	150	81	54	92	NO
6	08/22/97	1350	UP	6062	WB	3	80	150	81	248	97	NO
6	08/22/97	1424	SP	5394	WB	1	4	150	70	47	83	NO
6	08/22/97	1606	SP	6691	WB	4	89	150	84	228	97	NO

The noise event observations also revealed that the extent of noise exposure in the urban area of Reno depended upon where the observer was located. For example, at the east edge of the urban area, such as at Lake Street, the westbound trains were louder than the eastbound trains, as the horns would be used nearly continuously from the time of the first appearance of the train, past the intersection, and beyond. Eastbound trains, however, used the horns only briefly on approach to the crossing, and terminated horn use as they crossed the street. This is similar to what was observed at the rural crossing.

An observer located between Keystone Avenue and Lake Street is exposed to nearly continuous horn noise from the first appearance of the train until it has passed well beyond the observer. The noise exposure for observers in this area also includes some reflections of the sound from nearby buildings, especially high-rise buildings on the opposite side of the tracks. And finally, observers located on the upper floors of high-rise buildings also receive an increase in noise exposure due to reflections from the ground, longer exposure to the noise source, and the lack of absorption of sound by an intervening ground surface. These factors are clearly accounted for in the single event noise measurement data.

Due to the relatively low number of train operations during the measurement period, there still remained the possibility that the measured noise levels were not representative of normal conditions. Two methods were used to check for apparent credibility of the data. One method was to place a noise measurement unit into continuous service at the Del Curto Road crossing, and the other method was to compare BBA's data to those collected by DeLeuw, Cather & Co. (DCCO) at comparable locations, after accounting for shielding effects.

One Larson Davis Model 820 precision integrating sound level meter was placed into continuous service in a front yard at the Del Curto Road crossing, about 190 feet from the track centerline, from August 22 to August 27, 1997. The meter was programmed to capture single noise events exceeding 65 dBA for more than 10 seconds. These parameters were established based upon the noise levels and event durations observed in the field August 21-22, 1997. BBA staff reviewed the single event data, and determined that 55 of the recorded events were likely to be due to train passages, again based upon the observed noise events at that location. Included in these events were two known local freight trains and six probable Amtrak operations. The average number of long-haul freight trains was estimated to be about nine per day. The overall distribution of likely train noise events was 74% during daytime hours (7 a.m. to 10 p.m.), and 26% during nighttime hours.

Figure 2 shows the frequency of SEL values associated with the likely train noise events at the Del Curto crossing. The energy mean of the SEL values was 103 dB, which, in this case, is also the most frequently occurring value. If this value is normalized to a distance of 50 feet, the mean SEL is 111.7 dB. This value is within 0.6 dB of the mean SEL value for freight trains observed at this site on August 21-22, 1997. Thus the data collected at this site on August 22-27, 1997, are consistent with the observed noise levels at that location on August 21-22, 1997.

As another check on the credibility of the noise measurements results, BBA compared the data collected on August 21-22, 1997, with the data collected by DCCO during the week of February 3-10, 1997. Those data included measurements of train noise levels at varying distances from the track centerline, in an effort to quantify noise attenuation and shielding in the complex acoustical environment of the Reno urban railroad corridor. The DCCO data have been of concern to some observers due to the fact that so few trains were observed at any one location, and due to the elimination of some noise events from the calculations. BBA compared the noise levels measured by DCCO to those recorded by BBA at the same, or comparable, locations. Table II shows the results of that comparison. In general, the data collected by DCCO at locations which were not shielded by buildings were consistent with the data collected by BBA. Thus BBA is of the opinion that the data collected on August 21-27, 1997, provide a credible basis for railroad noise modeling.

Table II
Comparison of BBA and DCCO Measured Noise Levels

Location	BBA Site No.	DCCO Site No.	Mean SEL, dB	Distance (feet)	Mean SEL, dB at 50 feet	
					DCCO	BBA
Del Curto Xing	5	5	102.9	150	110.1	111.7
Ambrose/ Oxbow Park	6	4	99.0	100	103.5	101.8
Same	6	4	101.2	50	101.2	101.8
Same	6	4	96.0	190	104.7	101.8
Arlington Xing	4	3	103.4	150	110.6	115.8

On the basis of the above findings, BBA concluded that the SEL values in Table III may be used to reasonably represent railroad noise exposures in the Reno area.

Table III
Calculated DNL Values
For Different Operational Conditions

	Ops/ Day	Wayside	Rural Xing	Urban Xing	El. Urban Xing	Urban Corridor	Elev. Urban Corridor
SEL, dB, at 50 feet		103	112	114	117	117	120
DNL, dB, at 50 feet	12.7	71.3	80.3	82.3	85.3	85.3	88.3
Distance to DNL 65 , feet		131	521	708	1122	1122	1778
DNL, dB, at 50 feet	24	74.0	83.0	85.0	88.0	88.0	91.0
Distance to DNL 65, feet		200	796	1082	1715	1715	2718
DNL, dB, at 50 feet	26	74.4	83.4	85.4	88.4	88.4	91.4
Distance to DNL 65, feet		211	840	1141	1809	1809	2867
DNL, dB, at 50 feet	28	74.7	83.7	85.7	88.7	88.7	91.7
Distance to DNL 65, feet		222	882	1199	1901	1901	3012
DNL, dB, at 50 feet	30	75.0	84.0	86.0	89.0	89.0	92.0
Distance to DNL 65, feet		232	924	1256	1990	1990	3154
DNL, dB, at 50 feet	32	75.3	84.3	86.3	89.3	89.3	92.3
Distance to DNL 65, feet		242	964	1311	2078	2078	3293
DNL, dB, at 50 feet	36	75.8	84.8	86.8	89.8	89.8	92.8
Distance to DNL 65, feet		262	1043	1418	2247	2247	3562
DNL, dB, at 50 feet	38	76.0	85.0	87.0	90.0	90.0	93.0
Distance to DNL 65, feet		272	1081	1470	2330	2330	3693

The criterion used for land use compatibility determinations by Federal government agencies is the Day-Night Average Level, abbreviated as either DNL or L_{dn}. The DNL is calculated from the sum of the noise events occurring during an annual average 24-hour day, with a 10 dB penalty, or weighting, applied to events occurring at nighttime (10 p.m. to 7 a.m.). For railroad noise exposures, it is common to calculate the DNL value at a given location using the formula:

$$DNL = \overline{SEL} + 10*\log (N_{eq}) - 49.4, \text{ dB};$$

where $\overline{SEL}$ is the mean SEL of train passages, N_{eq} is the sum of the daytime operations plus ten times the sum of the nighttime operations, and 49.4 is 10 times the logarithm of the number of seconds in a 24-hour day.

Assuming the SEL values shown by Table III, it is next necessary to describe the day/night distribution of railroad operations in the Reno area. If one were to assume a completely random distribution of trains over the 24-hour day, the day/night mix would be 62.5%/37.5% (15 hours day/9 hours night). The distribution of likely train noise events August 22-27, 1997, at the Del Curto crossing was 76%/24%. BBA conducted railroad noise measurements in the Verdi area over a 3-day period in June, 1997, and found a distribution of 66% day and 34% night. The STB reported that, during the week of February 3-10, 1997, a total of 140 freight trains passed through

the Reno area, which were distributed 60% day and 40% night. BBA used the day/night traffic distribution obtained from the STB data (60%/40%) to calculate the N_{eq} in its railroad noise predictions.

Table III shows the DNL values calculated using the above assumptions at reference distance of 50 feet from the track centerline in representative environments in the Reno area. This table also estimates the distance to the DNL 65 dB contour, assuming no excess attenuation due to ground absorption or shielding by buildings. This table also shows the relative sensitivity of DNL values as a function of changes in daily operations assumptions.

Effects of Shielding by Buildings:

In reality, noise produced by railroad operations in downtown Reno is attenuated (reduced) by the presence of large buildings such as hotels and parking garages. Observers at ground level who cannot see the locomotives because buildings are in the way will hear lower noise levels than observers with an unobstructed line of sight to the locomotives. To provide an estimate of the shielding effects of the large buildings in the downtown Reno, BBA prepared a predictive noise model for railroad operations using the Environmental Noise Model (ENM). The ENM has been developed by RTA Technology Pty Ltd, and incorporates accepted methods of modeling outdoor noise exposures, accounting for ground and air absorption of sound, as well as shielding by buildings or barriers.

Based upon aerial photographs of the area within about 1400 feet on either side of the railroad tracks, BBA digitized the railroad centerline and the outlines of the buildings nearest the tracks into the ENM base map. Building heights were also entered into the ENM. Heights were estimated from a field check of the numbers of stories of buildings which offered apparent shielding of the train noise sources. With this method, it was possible for ENM to account for the shielding provided by buildings near the railroad tracks. The temperature was assumed to be 10 degrees Celsius, at 30% humidity. The ground elevation was input at 1365 meters. The ground was assumed to be relatively soft, typical of open ground. The ENM terrain category was set to Urban.

Noise sources for the ENM were characterized by source heights of 3 meters for locomotives without horns, and 4 meters for locomotives with horns. The source frequency content was derived from BBA file data for locomotives with and without horns, collected in California's Central Valley for operations by SPRR trains. Source sound power levels were adjusted to produce the calculated DNL values for each train type as given by Table II, at a reference distance of 15 meters (50 feet). Each source was input as a line source of limited length (typically 365 meters), and the ENM prediction results were initially checked to ensure that the rate of attenuation with distance was about 15 times the logarithm of the ratio of the change in distance within a distance of 300 meters from the railroad tracks.

BBA then used the ENM to predict the location of the DNL 65 dB noise exposure contour BBA

counted the numbers of noise sensitive units located within the DNL 65 dB contours for two scenarios of railroad operations: 12.7 and 24 per day. The results of those counts are given by Table IV. For this analysis, if a hotel or apartment building was included in the DNL 65 dB contour, it was assumed that 25% of the rooms were impacted, to account for the fact that some rooms are shielded by the building.

Table IV
Noise Sensitive Uses
Within DNL 65 dB Contours

Condition	Residences	Hotels	Hotel Rooms*	Apartment Units*	Churches
Existing	84	18	875	185	0
24 Trains/Day	118	27	1136	185	1

* Estimated as 25% of total rooms in hotel or apartment building

The noise exposure contours for existing conditions and 24 trains per day which were developed using the ENM are shown by Figures 3 and 4. These contours differ significantly from those prepared by Acentech, as the ENM predictions correct for shielding on the basis of site-specific inputs, while the Acentech contours appear to be generalized. In addition, the sound attenuation rate with distance used by Acentech appears to be significantly greater than assumed by BBA or by Wilson-Ihrig Associates, even though the data presented in the Preliminary Mitigation Plan do not support such an assumption.

Specifically, the distances to the noise contours shown by Acentech are significantly less than our projections. BBA reviewed the noise levels and attenuation rate results which were previously published by Acentech, and found that, while the reported SEL values were of similar magnitude, the distances to the contours were dramatically less, especially for the post-merger condition.

The distances to contours may be calculated in a straightforward manner, using the SEL value, the number of operations (weighted for day/night split) and an assumed attenuation (drop-off) rate. Referring to the two sites where shielding is not a significant factor, a rural crossing and a rural wayside (without horn use), and assuming that the reference SEL values used by Acentech are similar to those reported by Acentech and BBA, and that the STB day/night traffic split is used, the only significant difference between the calculation methods will be the attenuation rate. (It should be noted here that the Acentech reports are silent on the assumed day/night split.)

BBA assumed a noise attenuation factor of 15 times the logarithm of the relative change in distance, which is consistent with the methods and theoretical approach used by WIA, as well as by others. Acentech reported attenuation factors at the rural crossing ranging from 2 to 40.9.

The higher values were all ascribed to "shielding", and presumably were discounted. At the rural wayside, Acentech reported attenuation factors ranging from 5.4 to 11.6. If attenuation factors less than 15 were used by Acentech, the contour distances would have been greater than those which BBA calculated. Instead, the distances are less, so a higher attenuation factor must have been used. BBA could find no data in the Acentech reports describing the assumed attenuation factor or the rationale for its selection.

The Acentech noise contours also fail to account specifically for the presence or lack of shielding. It appears that the contours in the downtown area are generalized, representing primarily areas where tall buildings block line of sight to train noise. Field observations and aerial photos reveal, however, that this is not a universal condition, nor is it the dominant condition outside of a small area. The approach employed by BBA, where the ENM was used to calculate shielding due to tall buildings, based on aerial photos, is more definitive.

Vibration Due to Train Passages:

BBA measured the vibration due to a single eastbound SPRR freight train passage at the base of a metal signpost at the edge of the railroad right-of-way on August 21, 1997. The vibration measurement instrumentation consisted of a Bruel & Kjaer (B&K) Type 2218 precision integrating sound level meter fitted with a B&K JJ2617 input adaptor and a B&K ZR0020 integrator. The transducer was a B&K Type 4382 accelerometer.

The B&K Type 2218 sound level meter was used for railroad noise level measurements on the following day to replace another instrument which appeared to be malfunctioning. Therefore it was not possible to conduct any additional vibration measurements during the August 21-22 measurement period.

The measured maximum root mean square (RMS) vibration velocity during the freight train passage was 1.7222×10^{-2} inches/second. This level corresponds to a vibration velocity level of 84.7 VdB, which is above the threshold of ground-borne vibration impact for infrequent events at residential uses. The measurement location, about 25 feet from the railroad centerline, is not representative of typical sensitive receiver locations along the railroad, but was selected as a worst case situation to determine if there is the potential for vibration impact.

BBA also measured vibration levels inside Room 89 of the El Dorado Hotel, on September 16, 1997. During the passage of four freight trains, vibration levels at the window frame were undetectable using the sound level meter and transducer system described above. Vibration from train passages is therefore not expected to be a significant factor in the compatibility of train operations with noise sensitive land uses in the Reno area.

Railroad Noise Levels Inside Noise Sensitive Uses:

The noise sensitive uses located nearest the railroad tracks are hotel rooms in downtown Reno.

Given the high measured noise levels in the downtown railroad corridor, there is a concern about noise levels inside the hotel rooms adjacent to the tracks. Railroad noise has the potential to render the interior noise environment of such room unacceptable according to commonly-accepted land use criteria, and in terms of the potential for sleep disturbance. The railroad noise level data collected August 21-22, 1997, indicated that exterior railroad noise levels are higher at elevated receivers than at a receiver at ground level. Thus it is expected that the noise levels at the facades of hotel rooms adjacent to the tracks are higher than at street level, and that interior noise levels will be correspondingly higher.

BBA conducted simultaneous outdoor/indoor noise measurements in six hotel rooms during September 16-17, 1997. The results of those noise measurements are summarized by Table V. Typical frequency content of a train passage is shown for both exterior and interior receivers by Figure V, which represents the simultaneous SEL values obtained at the Flamingo Hilton Hotel on September 17, 1997. This figure also shows the effectiveness of the acoustical treatment in Room 254.

Table V
Average A-Weighted Train Noise Reduction
Reno, Nevada
September 16-17, 1997

Location	El Dorado			Flamingo Hilton		Sands Regency
	Room 89	Room 99	Room 2500	Room 253	Room 254	Room 675
Lmax, dBA	-40.8	-48.6	-35.5	-30.6	-53.1	-33.2
SEL, dBA	-41.1	-49.5	-36.1	-26.4	-48.4	-32.9

The average measured noise reduction values ranged from 26 dBA to 53 dBA. Rooms having older fixed or operable windows did not fare as well as rooms with newer windows. The highest noise reduction values were obtained in Room 99 of the El Dorado Hotel and Room 254 of the Flamingo Hilton; those rooms had been fitted with acoustical window systems. The results of the noise measurements suggest that typical hotel and residential window systems in the downtown Reno area can be expected to reduce train horn noise by 25 to 30 dBA. Rooms fitted with modern, energy-conserving, fixed windows can expect better acoustical performance, typified by

the El Dorado Room 89, which achieved a noise reduction of 41 dBA. Rooms fitted with acoustical glazing systems can be expected to provide up to 50 dBA train noise reduction.

Average interior noise levels in terms of Sound Exposure Level (SEL) were in the range of about 65 to 75 dB in typical rooms, and in the range of 82 to 89 dB in Room 253 at the Flamingo Hilton. In acoustically treated room, SEL values ranged from 55 dB to 68 dB. When compared to the FICON chart describing the potential for sleep disturbance, approximately 15% to 25% of the persons sleeping in "typical" rooms would be expected to awaken as a result of the train horn noise. In Room 253, about 35% to 45% of the occupants would be expected to awaken. In acoustically treated rooms, about 9% to 18% of the occupants would be expected to awaken.

Table VI lists the interior noise levels which would be expected for occupants of different types of rooms, assuming that the rooms are located within about 100 feet of the railroad centerline in the urban corridor. These data indicate that occupants of "typical" rooms would receive a noise exposure of DNL 50 dB or greater under existing and projected future conditions (24 trains per day).

Table VI
Interior Noise Levels in Terms of DNL Exposures
Within 100 feet of Railroad Centerline in the Urban Corridor Area

Condition		DNL, dB, Inside Generalized Room Type		
	Noise Reduction	-30 dB	-40 dB	-50 dB
	Exterior DNL, dB	Typical	Modern	Treated
Existing	80.8	50.8	40.8	30.8
24 Trains/Day	83.5	53.5	43.5	33.5

Noise and Vibration Criteria:

The Surface Transportation Board (STB) has adopted a noise compatibility standard of DNL 65 dB for noise sensitive land uses, which it defines as residences, schools and churches. The STB standard for a significant change in noise levels, as applied to this project, is a DNL 3 dB increase in noise sensitive areas affected by the DNL 65 dB contour. Vibration was not addressed by the project environmental assessment.

The STB noise standards are in a format which has been commonly employed over the last 20 or more years. However, in 1992, the Federal Interagency Committee On Noise (FICON), focusing on aircraft noise, made a series of recommendations concerning noise and land use compatibility which resulted in changes in the manner in which federal, state and local agencies currently evaluate transportation noise sources. These recommendations were contained in the FICON report, entitled Federal Agency Review of Selected Airport Noise Analysis Issues, dated August 1992.

The most significant change in approach to assessing noise impacts relative to this project was that, in the FICON report, the so-called "Schultz Curve" relating annoyance to DNL values was used to assess the potential for significant changes in annoyance, rather than the 3 dB criterion which had been widely used before. As a consequence, the FICON report supported FAA guidance which indicated that an increase of DNL 1.5 dB in areas exposed to aircraft noise levels exceeding DNL 65 dB was potentially significant. In addition, the FICON report stated that areas exposed to DNL values of 60 dB to 65 dB which experienced a DNL 3 dB increase would be considered for noise mitigation options.

Building on the FICON report, several agencies have adopted standards of significance which incorporate the concept that incremental changes in DNL values have potential impacts as a function of the DNL value, rather than solely as a function of the amount of change. Examples include California's Department of Transportation (Caltrans), which recently modified its criteria for traffic noise impacts, and more relevant to this project, the Federal Transit Administration (FTA).

The FTA released a guidance manual for transit noise and vibration impact in April 1995, entitled Transit Noise and Vibration Impact Assessment. This manual was developed "in the interest of promoting quality and uniformity in assessments", and is expected to be used in association with the urban transit industry. Since urban transit projects also include heavy rail operations, the FTA impact assessment criteria could reasonably be expected to be applicable to this project.

The FTA noise impact criteria are attached to this report as Appendix B. Using the FTA criteria, an increase of DNL 1.5 to 3 dB due to a project would be considered an "impact" in noise sensitive areas which are currently exposed to a transit noise level of DNL 65 dB, while an increase of DNL 3.5 dB or more would be considered a "severe impact." The threshold of noise impact is DNL 65 dB. Significantly, noise sensitive land uses, in the FTA's view, include "residences and buildings where people sleep." (This interpretation is consistent with that used by the FAA and Caltrans for aircraft noise.)

The assessment of the change in DNL values is intended to describe significant increases in annoyance due to the change in the noise environment. However, it is important to note that persons exposed to noise exceeding the threshold value, regardless of the change, should be considered to be impacted as well. For example, regulations adopted by both the FAA and the

State of California for aircraft noise assume that a residential land use (including hotels) is incompatible with the aircraft noise environment where the DNL equals or exceeds 65 dB. Thus, if a project causes additional residences or hotel rooms to be included in the DNL 65 dB contour, those uses should be considered to be subject to a significant environmental impact.

For interior noise exposures, FTA presumes that typical residences will provide noise reduction of 25 dB with windows closed, which correlates to an interior noise level of DNL 40 dB at the DNL 65 dB threshold of impact. The FAA and the State of California presume that an interior noise level of DNL 45 dB is acceptable for residential uses.

Even if an interior noise level of DNL 40 to 45 dB can be achieved, single event noise levels inside noise sensitive uses adjacent to the railroad tracks in the downtown Reno area could be high enough to result in the potential for sleep disturbance. The FICON report offers guidance with respect to aircraft single event noise levels and the potential for sleep disturbance. These guidelines are potentially applicable to railroad noise events as well.

The FICON report includes a chart (attached as Appendix C) which relates the percent of awakenings to the indoor aircraft Sound Exposure Level. The data described by this chart include a significant amount of "scatter", as the data include observations in both the field and the laboratory. Recent research conducted by the U.S. Air Force has indicated that people can become habituated to aircraft noise events, and that the percent of awakenings in such populations is consistent with the lowest percentages shown by the FICON chart. This is consistent with anecdotal accounts of people who live near railroad tracks. The data imply, however, that people who are <u>not</u> habituated to the noise source, such as hotel guests, are more likely to awaken at the higher percentages shown by the FICON chart. Therefore it appears reasonable to assume that the FICON chart could be applied to assessing the potential for awakening due to railroad single event noise levels.

With respect to vibration, the FTA guidance manual applies a vibration velocity level criterion of 80 VdB for "infrequent" events affecting residences and buildings where people normally sleep. (Infrequent events are defined as occurring less than 70 times per day.) The vibration velocity level is defined in terms of the root mean square amplitude of the vibration velocity, referenced to 1×10^{-6} inches per second. The FTA manual recommends more stringent vibration criteria for land uses such as concert halls, TV studios, recording studios, auditoriums and theaters. The FTA manual specifically notes that the vibration criteria "can be applied to freight train vibration as well."

IMPACTS

Based upon the data presented above, the proposed merger is expected to result in addition of approximately 34 residences, 261 hotel rooms, and one church to the area within the DNL 65 dB railroad noise contour. This should be considered a significant noise impact.

The proposed merger will result in an increase in the railroad noise level of 2.7 dB within the existing DNL 65 dB contour. This should be considered a significant impact.

Railroad noise levels within typical rooms and homes immediately adjacent to the railroad tracks are presently in excess of recommended interior noise levels, in terms of DNL. Inside the affected rooms, the railroad noise level is predicted to increase by 2.7 dB, which will aggravate the existing unacceptable condition. This should be considered a significant impact.

Currently, single event noise levels due to train warning horns in the downtown Reno area, and adjacent to railroad crossings, are sufficient inside of typical hotel rooms to result in about a 35% to 45% awakening rate for each event. The awakening rate will not change as a result of the proposed merger, but the number of occurrences per night will increase by a factor of 1.9. That is, the number of events which have the potential to awaken 35% to 45% of hotel occupants exposed to railroad noise will increase from about 0.53 per hour to one per hour, or from about four times an 8-hour night to about eight times a night. This should be considered a significant impact.

Vibration due to train passages is not expected to be significant inside of noise sensitive uses, in terms of the criteria used by the Federal Transit Administration.

MITIGATION MEASURES

The Proposed Mitigation Plan recommends that, to reduce train noise impacts, the train speed through the downtown Reno area should be increased from 20 miles per hour (mph) to 30 mph. The increase in train speed from 20 mph to 30 mph would, all other factors being equal, result in a change in DNL values of -1.8 dB. However, all factors may not be equal in the downtown Reno area, as it may be necessary, at a higher speed, for the engineer to actuate the horn for a greater proportion of the time to ensure that all crossings are clear. In addition, it may be necessary in either rural or urban situations to activate the horn farther from the crossings, which could increase the noise levels at receivers distant from the crossings. We cannot quantify the effects of the increase of train speeds without more specific information regarding the duration of horn use in the urban area, and regarding the point at which horns would first be activated on approach to crossings.

If this measure is found to result in a decrease in single event noise levels, the numbers of noise sensitive uses added to the area within the DNL 65 dB contour would decrease from those projected for the proposed merger. In addition, the change in DNL values for noise sensitive uses within the DNL 65 dB contour would be less than 1.5 dB, and therefore the change would be considered insignificant. Interior noise levels in typical hotel rooms adjacent to the railroad tracks would remain unacceptable. The potential for awakening in typical hotel rooms would decrease slightly, although the number of noise events would remain the same.

FINDINGS

Based upon the above information, BBA has concluded that:

1. Railroad noise and vibration impact criteria for this project should be consistent with the guidelines produced by the Federal Transit Administration (FTA).

2. Railroad noise levels in the Reno area are dominated by the use of locomotive warning horns. The measured noise levels are higher than those predicted in the initial project-related documents, and the differences are primarily due to differences between assumed and measured warning horn noise levels.

3. Warning horn noise levels are variable, and appear to be dependent upon the manufacturer of the horn, and upon the manner in which the horn is operated.

4. The locations of DNL 65 dB contours have been predicted for railroad noise exposures in the Reno area which account for wayside and urban conditions with and without the shielding provided by buildings near the railroad tracks. These contours have been used to provide a consistent method of analyzing the potential noise impacts of the project on noise sensitive land uses. The ENM contours differ from those prepared by Acentech, due to differences in assumptions about shielding provided by buildings, and due to apparent differences in the assumed sound attenuation rate with distance.

5. The projected changes in railroad noise levels as a result of the proposed project should be considered significant in terms of the exposure of additional noise sensitive land uses to the DNL 65 dB contour, and in terms of the noise impact criteria used by the Federal Transit Administration.

6. Train noise levels inside typical hotel and residential building facades adjacent to the railroad tracks do not comply with FTA interior noise guidelines, and railroad single event noise levels inside the rooms are expected to cause substantial sleep disturbance. The number of noise events which may result in awakening will be almost doubled. Noise levels inside modern rooms with fixed windows, as well as in those with acoustically treated window systems, are expected to be within acceptable limits.

7. Vibration due to train passages is not expected to be significant in terms of the criteria used by the Federal Transit Administration.

Respectfully submitted,
Brown-Buntin Associates, Inc.



Jim Buntin
Vice President

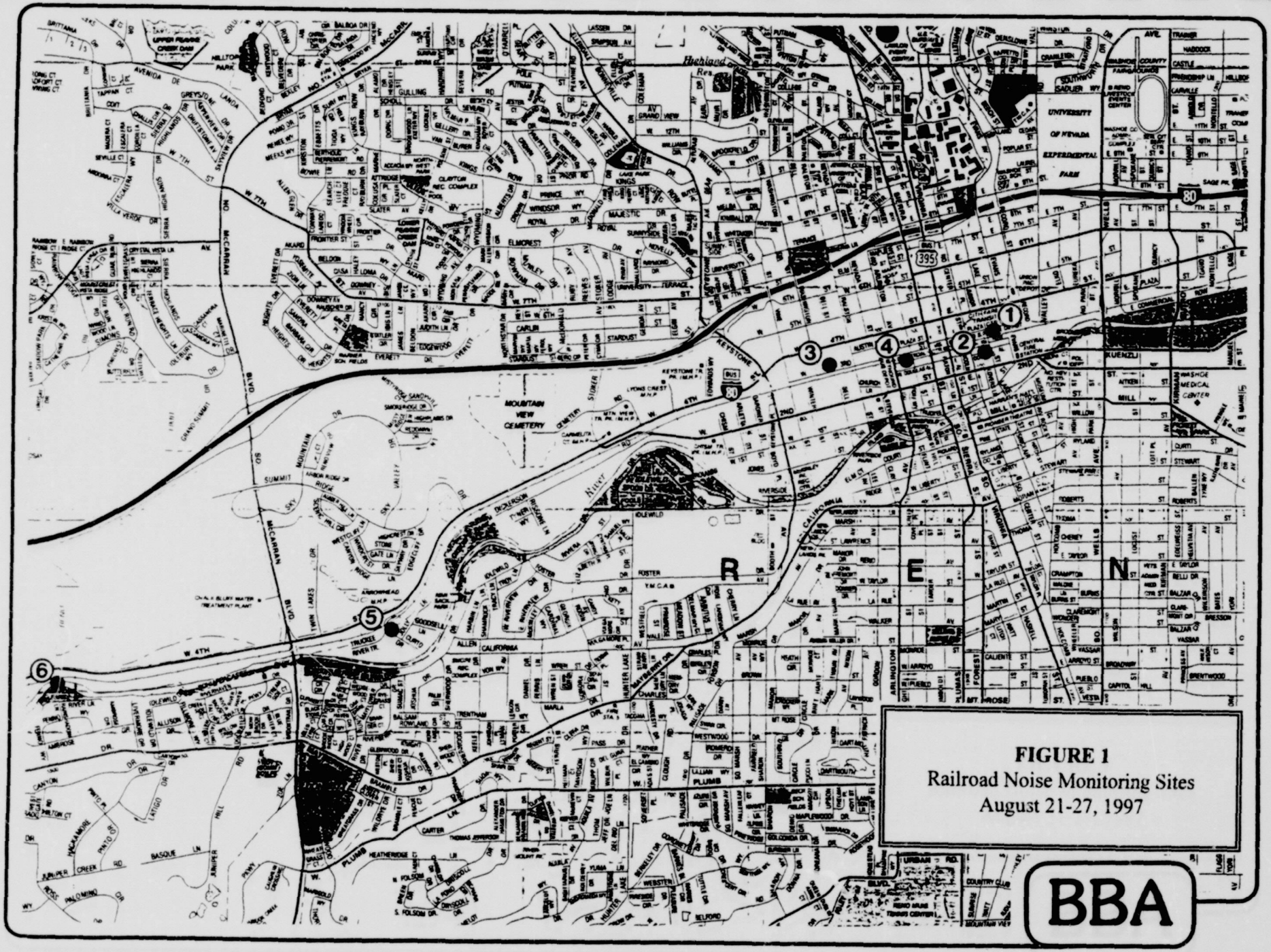
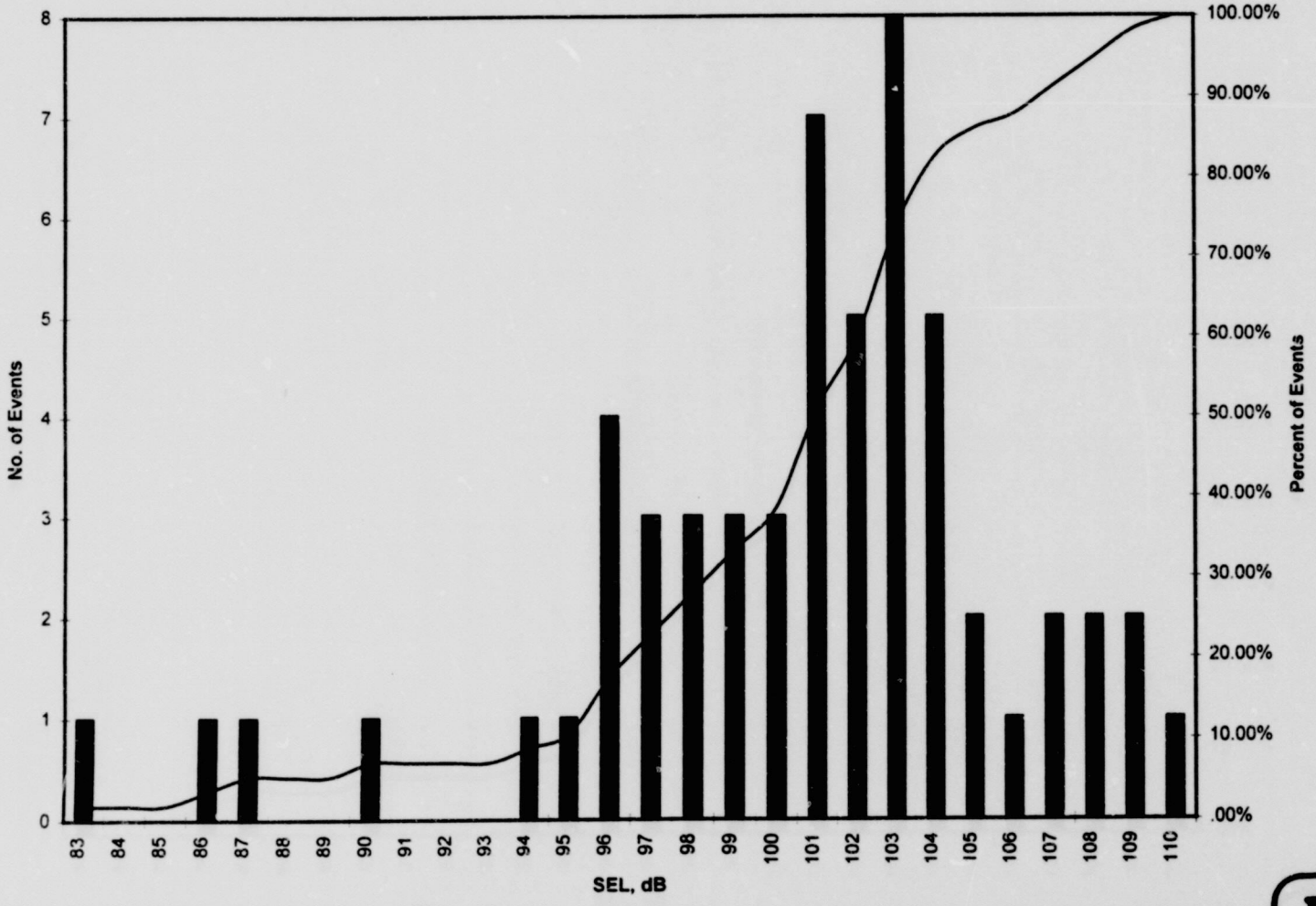


FIGURE 1
Railroad Noise Monitoring Sites
August 21-27, 1997

BBA

FIGURE 2

Frequency of SEL Values
Del Curto Crossing
August 22-27, 1997



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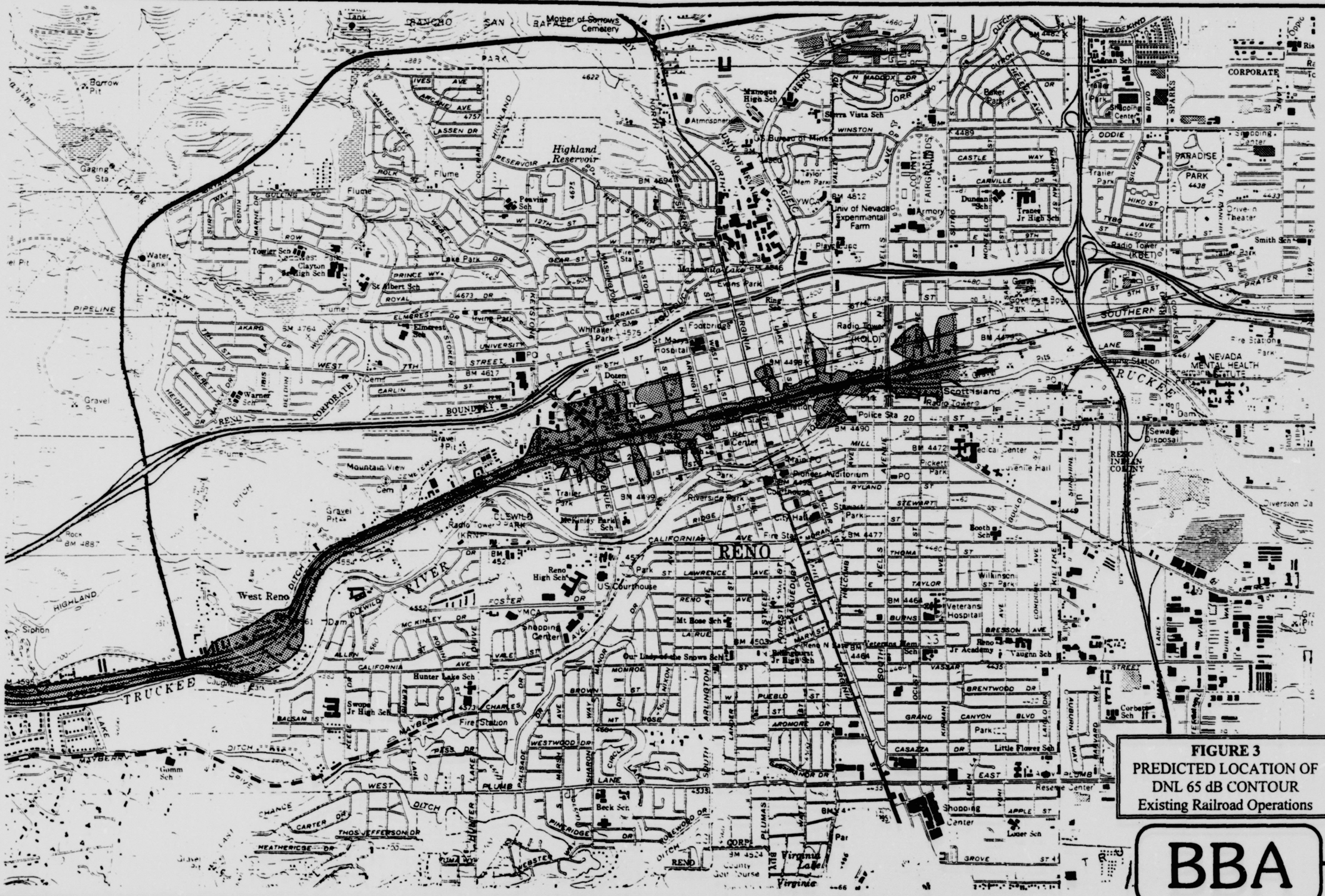

FIGURE 3
PREDICTED LOCATION OF
DNL 65 dB CONTOUR
Existing Railroad Operations

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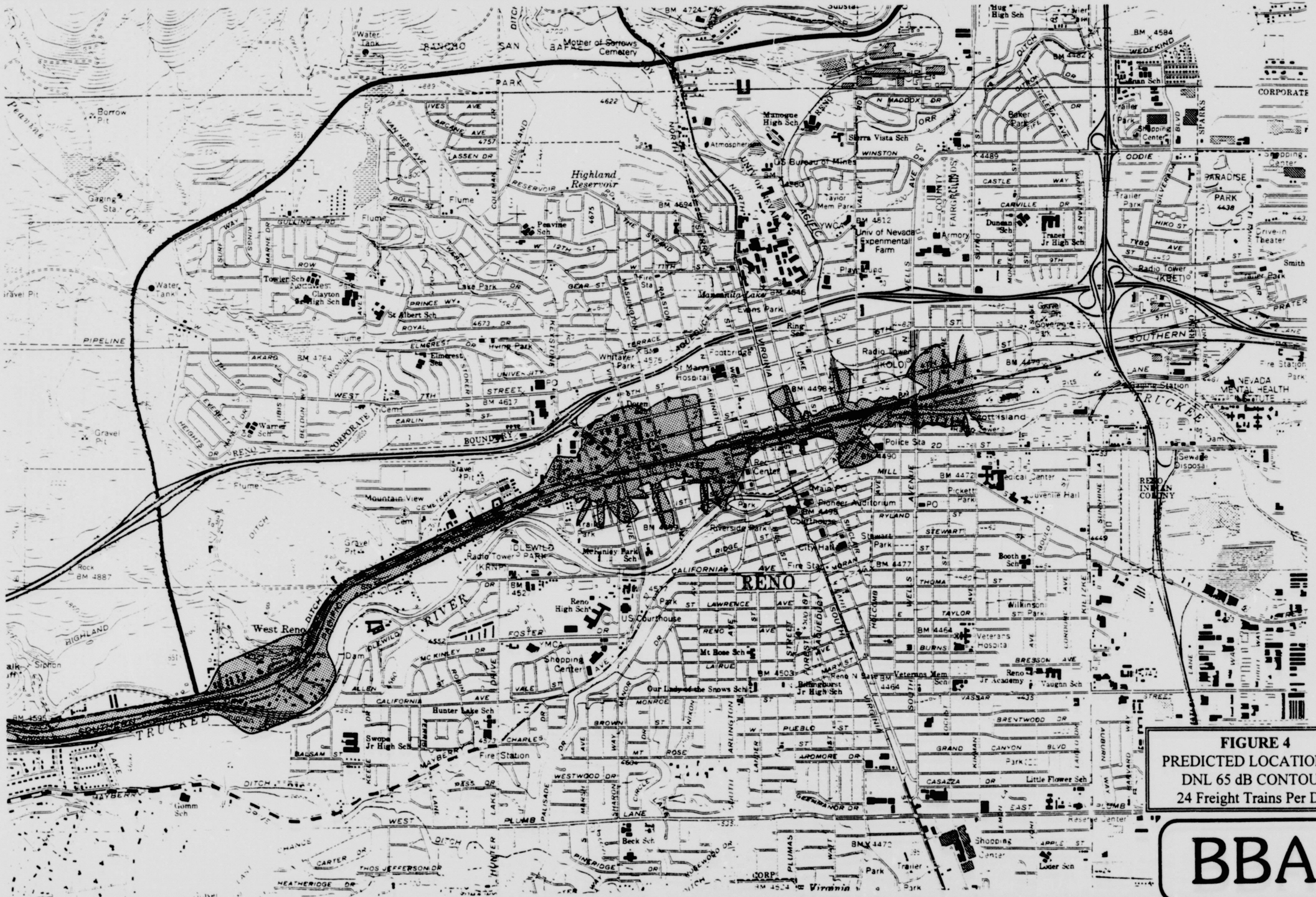

FIGURE 4
PREDICTED LOCATION OF
DNL 65 dB CONTOUR
24 Freight Trains Per Day

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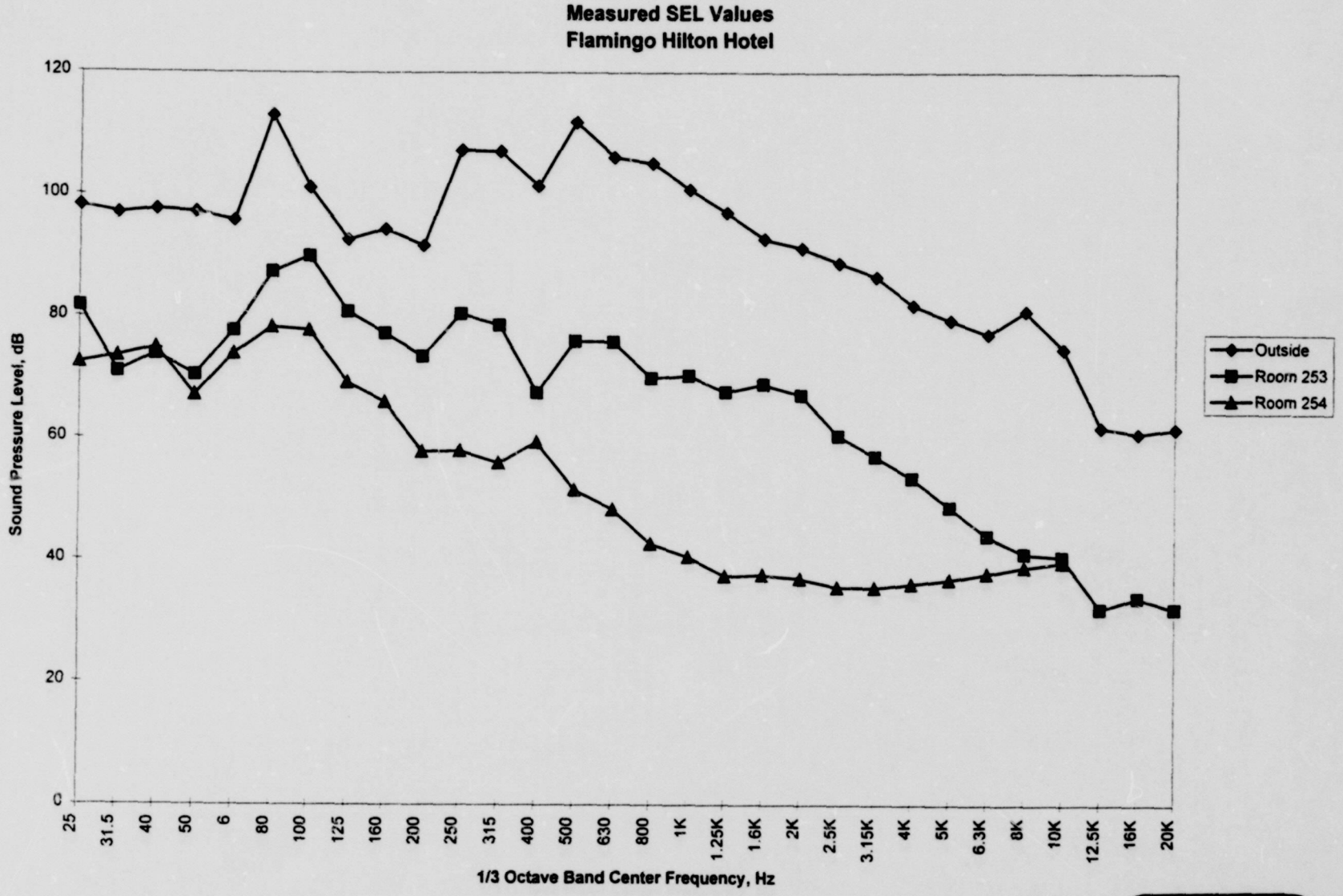
FIGURE 5


Measured SEL Values
Flamingo Hilton Hotel
Sound Pressure Level, dB
120
100
80
60
40
20
0
25
31.5
40
50
6
80
100
125
160
200
250
315
400
500
630
800
1K
1.25K
1.6K
2K
2.5K
3.15K
4K
5K
6.3K
8K
10K
12.5K
16K
20K
1/3 Octave Band Center Frequency, Hz
Outside
Roorn 253
Room 254

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APPENDIX A
ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

L_{dn}: Day-Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

Note: CNEL and L_{dn} represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum sound level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval. L_{10} equals the level exceeded 10 percent of the time (L_{90}, L_{50}, etc.)

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A-2

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and L_{dn} contours are frequently utilized to describe community exposure to noise.

SEL OR SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure level for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

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APPENDIX B

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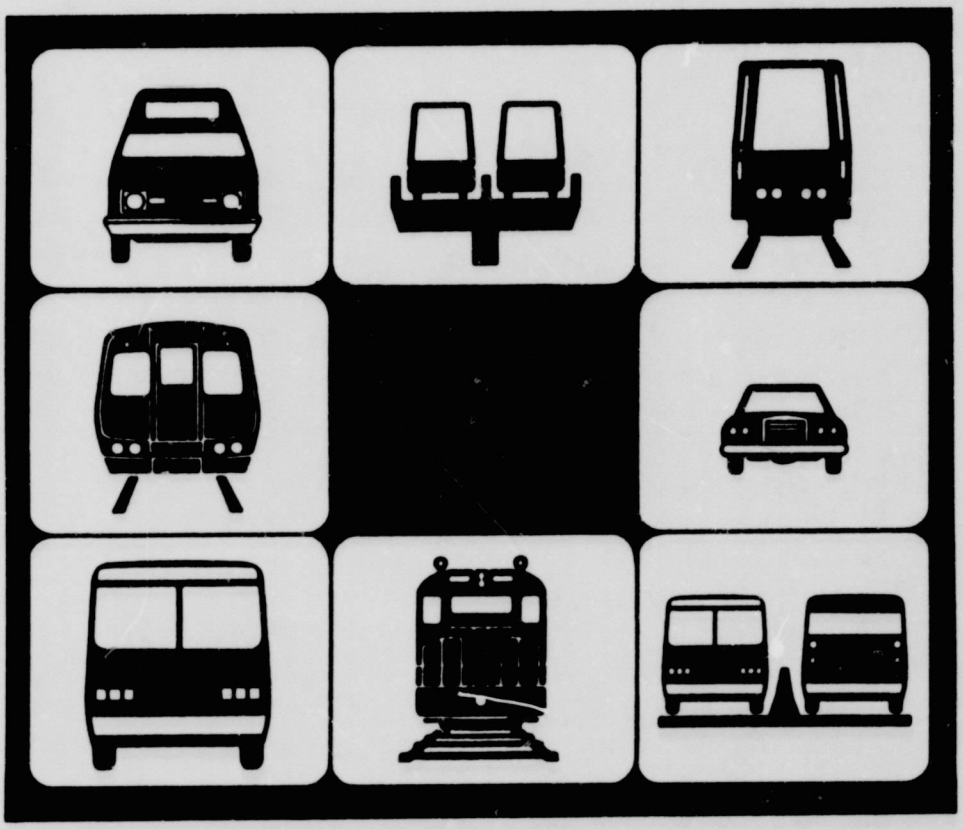
U.S. Department
of Transportation

Transit Noise and Vibration Impact Assessment

April 1995



FEDERAL TRANSIT ADMINISTRATION

percentage of people highly annoyed by project noise. Guidelines for the application of the criteria are included in Section 3.2, and background material on the development of the criteria are included in Appendix A.

For transit projects integrated with an existing or newly-constructed highway, such as HOV lanes or exclusive bus lanes, the determination of noise impact is based on existing Federal Highway Administration (FHWA) noise prediction procedures and impact criteria, as summarized in Section 3.3 of this chapter. The latter criteria are used to maintain consistency with established noise impact assessment methods for projects that involve modifications to existing roadways or the construction of new roadways.

3.1 NOISE IMPACT CRITERIA FOR TRANSIT PROJECTS

The noise impact criteria for mass transit projects involving rail or bus facilities are shown graphically in Figure 3-1 and are tabulated in Table 3-1. The equations used to define these criteria are included in Appendix A. The criteria apply to all rail projects (e.g., rail rapid transit, light rail transit, commuter rail, and automated guideway transit) as well as fixed facilities such as storage and maintenance yards, passenger stations and terminals, parking facilities, and substations. They may also be used for bus projects operating on local streets and separate roadways built exclusively for buses. In contrast, for busways and HOV lanes which are to be integrated in existing highways (e.g., the addition of new lanes or the redesignation of existing lanes on a highway), the FHWA's noise abatement criteria contained in Federal-Aid Highway Program Manual 7-7-3 are the appropriate noise criteria to use. Likewise, if the project is a new highway involving both general-purpose and dedicated bus/HOV lanes, the FHWA approach is followed. The FHWA criteria are briefly summarized in Section 3.3.

3.1.1 Basis of Noise Impact Criteria

The noise impact criteria in Figure 3-1 and Table 3-1 are based on comparison of the existing outdoor noise levels and the future outdoor noise levels from the proposed project. They incorporate both absolute criteria, which consider activity interference caused by the transit project alone, and relative criteria, which consider annoyance due to the change in the noise environment caused by the transit project.

Whereas noise impact criteria that have been used for previous transit projects take existing ambient noise levels into account based on generalized community categories, the criteria in this manual depend on specific estimates of existing community noise levels as part of the determination of noise impact. These criteria were developed to apply to various transit modes, to recognize the heightened community annoyance caused by late-night or early-morning transit service, and to respond to the varying sensitivity of communities to projects under different background noise conditions.

The noise criteria and descriptors depend on land use, as defined in Table 3-2. Further guidance on the definition of land use, the selection of the appropriate noise metric and the application of the criteria is given in Section 3.2 of this chapter, with more detailed guidelines given in Chapters 5 and 6.

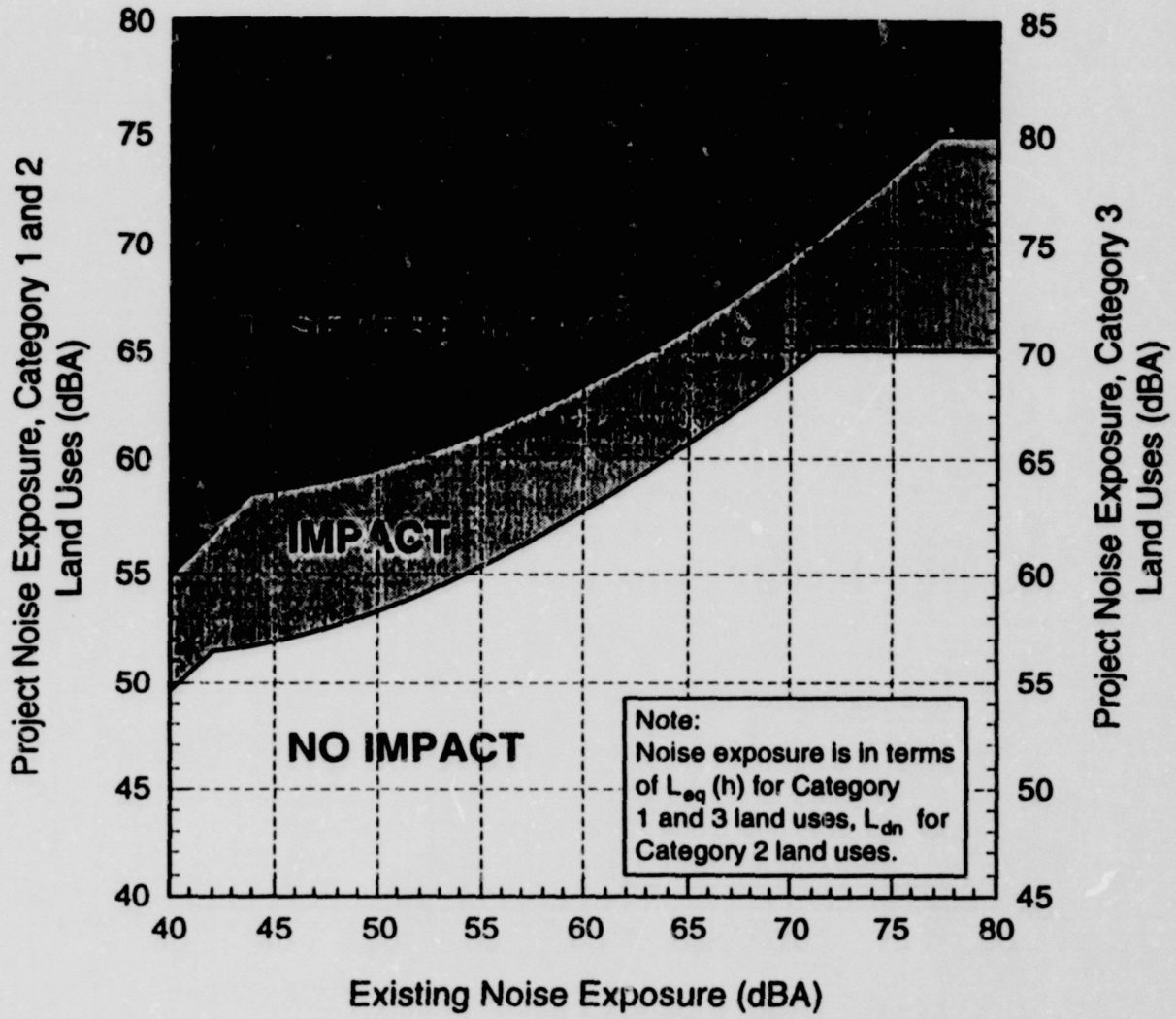


Figure 3-1 Noise Impact Criteria for Transit Projects

Table 3-1 Noise Levels Defining Impact for Transit Projects

Existing Noise Exposure* L_{eq}(h) or L_{dn} (dBA)	Project Noise Impact Exposure,* L_{eq}(h) or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Impact	Severe Impact	No Impact	Impact	Severe Impact
<43	< Ambient+10	Ambient + 10 to 15	>Ambient+15	<Ambient+15	Ambient + 15 to 20	>Ambient+20
43	<52	52-58	>58	<57	57-63	>63
44	<52	52-58	>58	<57	57-63	>63
45	<52	52-58	>58	<57	57-63	>63
46	<53	53-59	>59	<58	58-64	>64
47	<53	53-59	>59	<58	58-64	>64
48	<53	53-59	>59	<58	58-64	>64
49	<54	54-59	>59	<59	59-64	>64
50	<54	54-59	>59	<59	59-64	>64
51	<54	54-60	>60	<59	59-65	>65
52	<55	55-60	>60	<60	60-65	>65
53	<55	55-60	>60	<60	60-65	>65
54	<55	55-61	>61	<60	60-66	>66
55	<56	56-61	>61	<61	61-66	>66
56	<56	56-62	>62	<61	61-67	>67
57	<57	57-62	>62	<62	62-67	>67
58	<57	57-62	>62	<62	62-67	>67
59	<58	58-63	>63	<63	63-68	>68
60	<58	58-63	>63	<63	63-68	>68
61	<59	59-64	>64	<64	64-69	>69
62	<59	59-64	>64	<64	64-69	>69
63	<60	60-65	>65	<65	65-70	>70
64	<61	61-65	>65	<66	66-70	>70
65	<61	61-66	>66	<66	66-71	>71
66	<62	62-67	>67	<67	67-72	>72
67	<63	63-67	>67	<68	68-72	>72
68	<63	63-68	>68	<68	68-73	>73
69	<64	64-69	>69	<69	69-74	>74
70	<65	65-69	>69	<70	70-74	>74
71	<66	66-70	>70	<71	71-75	>75
72	<66	66-71	>71	<71	71-76	>76
73	<66	66-71	>71	<71	71-76	>76
74	<66	66-72	>72	<71	71-77	>77
75	<66	66-73	>73	<71	71-78	>78
76	<66	66-74	>74	<71	71-79	>79
77	<66	66-74	>74	<71	71-79	>79
>77	<66	66-75	>75	<71	71-80	>80

* L_{dn} is used for land use where nighttime sensitivity is a factor; L_{eq} during the hour of maximum transit noise exposure is used for land use involving only daytime activities.

Table 3-2 Land Use Categories and Metrics for Transit Noise Impact Criteria		
Land Use Category	**Noise Metric (dBA)**	**Description of Land Use Category**
1	Outdoor $L_{eq}(h)^*$	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)^*$	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios and concert halls fall into this category. Places for meditation or study associated with cemeteries, monuments, museums. Certain historical sites, parks and recreational facilities are also included.
* L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.		

3.1.2 Defining the Levels of Impact

The noise impact criteria are defined by two curves which allow increasing project noise levels as existing noise increases up to a point, beyond which impact is determined based on project noise alone. Below the lower curve in Figure 3-1, a proposed project is considered to have no noise impact since, on the average, the introduction of the project will result in an insignificant increase in the number of people highly annoyed by the new noise. The curve defining the onset of noise impact stops increasing at 65 dB for Category 1 and 2 land use, a standard limit for an acceptable living environment defined by a number of Federal agencies. Project noise above the upper curve is considered to cause Severe Impact since a significant percentage of people would be highly annoyed by the new noise. This curve flattens out at 75 dB for Category 1 and 2 land use, a level associated with an unacceptable living environment. As indicated by the right-hand scale on Figure 3-1, the project noise criteria are 5 decibels higher for Category 3 land uses since these types of land use are considered to be slightly less sensitive to noise than the types of land use in categories 1 and 2.

Between the two curves the proposed project is judged to have an impact, though not severe. The change in the cumulative noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation, such as the predicted level of increase over existing noise levels and the types and numbers of noise-sensitive land uses affected.

Although the curves in Figure 3-1 are defined in terms of the project noise exposure and the existing noise exposure, it is important to emphasize that it is the increase in the cumulative noise – when project is added to existing – that is the basis for the criteria. The complex shapes of the curves are based on the considerations of cumulative noise increase described in Appendix A. To illustrate this point, Figure 3-2

shows the noise impact criteria for Category 1 and 2 land use in terms of the allowable increase in the cumulative noise exposure. The horizontal axis is the existing noise exposure and the vertical axis is the increase in cumulative noise level due to the transit project. The measure of noise exposure is L_{dn} for residential areas and L_{eq} for land uses that do not have nighttime noise sensitivity. Since L_{dn} and L_{eq} are measures of total acoustic energy, any new noise source in a community will cause an increase, even if the new source level is less than the existing level. Referring to Figure 3-2, it can be seen that the criterion for Impact allows a noise exposure increase of 10 dBA if the existing noise exposure is 42 dBA or less but only a 1 dBA increase when the existing noise exposure is 70 dBA.

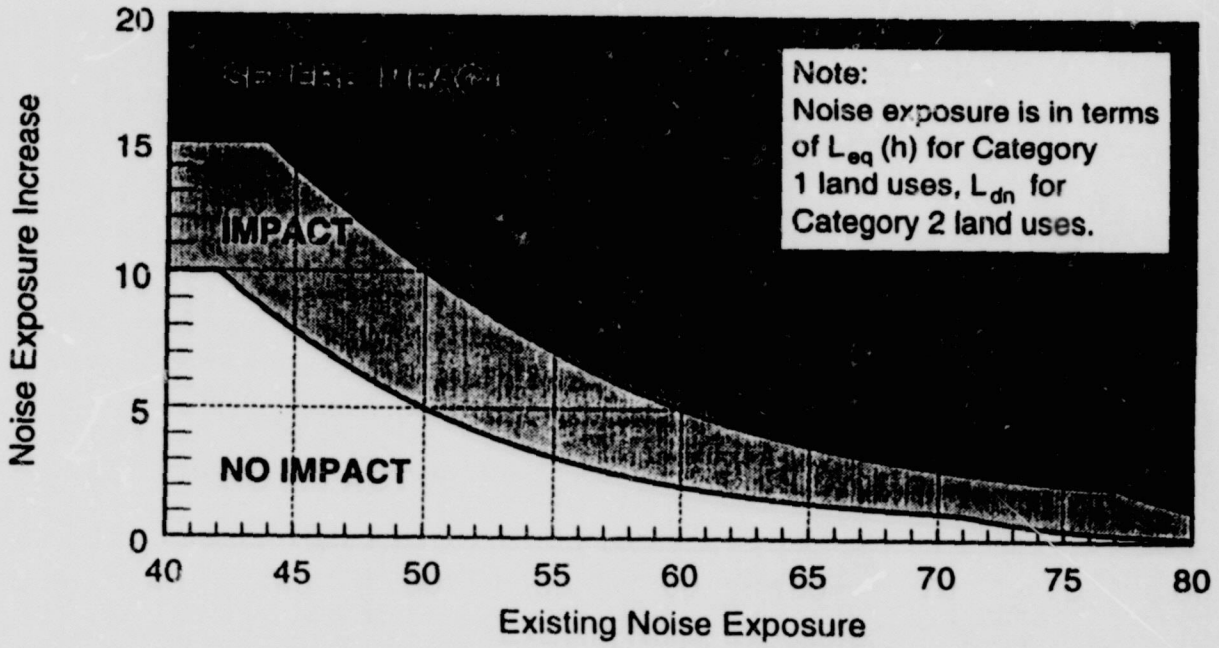


Figure 3-2 Increase in Cumulative Noise Levels Allowed by Criteria (Land Use Cat. 1 & 2)

As the existing level of ambient noise increases, the allowable level of transit noise increases, but the total amount that community noise exposure is allowed to increase is reduced. This accounts for the unexpected result that a project noise exposure which is less than the existing noise exposure can still cause Impact. This is clearer from the examples given in Table 3-3 which indicate the level of transit noise allowed for different existing levels of exposure.

Table 3-3 Noise Impact Criteria: Effect on Cumulative Noise Exposure			
L_{dn} or L_{eq} in dBA (rounded to nearest whole decibel)			
Existing Noise Exposure	**Allowable Project Noise Exposure**	**Allowable Combined Total Noise Exposure**	**Allowable Noise Exposure Increase**
45	51	52	7
50	53	55	5
55	55	58	3
60	57	62	2
65	60	66	1
70	64	71	1
75	65	75	0

Any increase greater than shown above in Table 3-3 will cause Impact. This table shows that as the existing noise exposure increases from 45 dBA to 75 dBA, the allowed transit noise exposure increases from 51 dBA to 65 dBA. However, the allowed increase in the cumulative noise level decreases from 7 dBA to 0 dBA (rounded to the nearest whole decibel). The justification for this is that people already exposed to high levels of noise will notice and be annoyed by only a small increase in the amount of noise in their community. In contrast, if the existing noise levels are quite low, a greater change in the community noise will be required for the equivalent level of annoyance. It should be noted that these annoyance levels are based on general community reactions to noise at varying levels which have been documented in scientific literature and do not account for specific community attitudinal factors which may exist.

3.2 APPLICATION OF NOISE IMPACT CRITERIA

3.2.1 Noise-Sensitive Land Uses

As indicated in Section 3.1.1, the noise impact criteria and descriptors depend on land use, designated either Category 1, Category 2 or Category 3. Category 1 includes tracts of land where quiet is an essential element in their intended purpose, such as outdoor concert pavilions or National Historic Landmarks where outdoor interpretation routinely takes place. Category 2 includes residences and buildings where people sleep, while Category 3 includes institutional land uses with primarily daytime and evening use such as schools, places of worship and libraries.

The criteria do not apply to most commercial or industrial uses because, in general, the activities within these buildings are compatible with higher noise levels. They do apply to business uses which depend on quiet as an important part of operations, such as sound and motion picture recording studios.

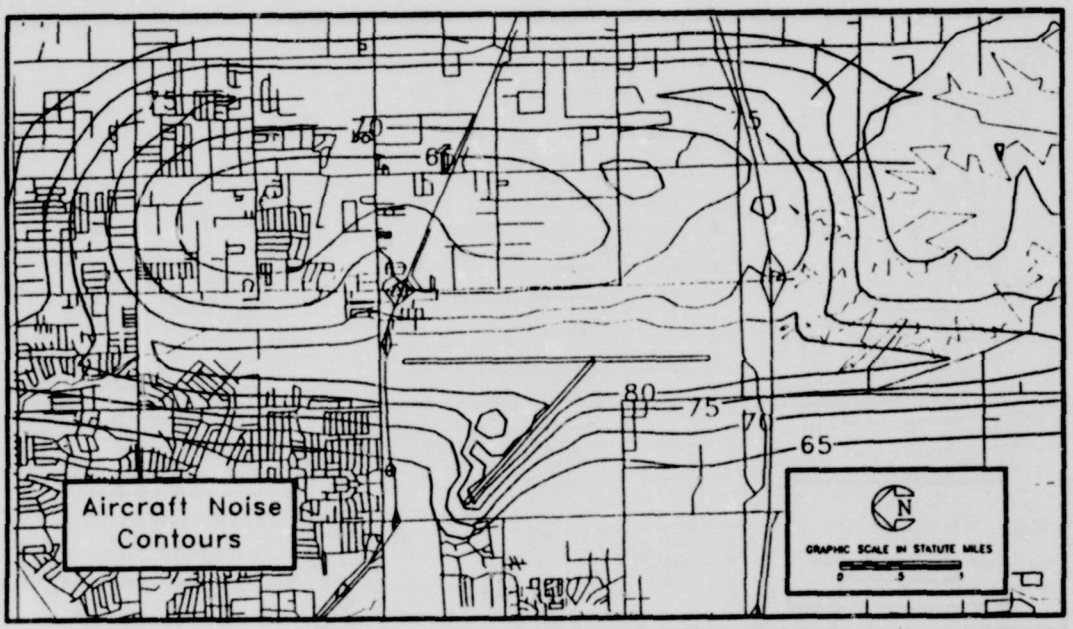
Historically significant sites are treated as noise-sensitive depending on the land use activities. Sites of national significance with considerable outdoor use required for site interpretation would be in Category 1. Historical sites that are currently used as residences will be in Category 2. Historic buildings with indoor

APPENDIX C

BBA

FEDERAL AGENCY REVIEW OF SELECTED AIRPORT NOISE ANALYSIS ISSUES

FEDERAL INTERAGENCY COMMITTEE ON NOISE



AUGUST 1992

Single event analysis is not generally used to evaluate speech interference because there is no accepted impact evaluation criteria, and there is no accepted procedure for deriving a cumulative effects analysis. The American National Standards Institute (ANSI) Standard S3.14 (1977), "Rating noise with respect to speech interference," includes a Speech Interference Level (SIL) metric which may be used to evaluate the speech interference produced by relatively constant noise sources. However, because this standard is based on steady state noise, its applicability to evaluation of non-steady state noise events such as aircraft flyovers is limited. This procedure may be useful in evaluation of the impacts of aircraft ground operations, particularly ground run-ups associated with maintenance activities. Use of the SIL would require careful judgement regarding the variability of level, duration, and frequency spectrum of aircraft noise.

If speech interference is a particularly critical issue requiring detailed analysis, the supplemental metric, Time Above (TA) (The total time that the noise level exceeds a "threshold" level during a specified interval), provides a useful "single number" indicator of the potential for speech interference. A major limitation on the usefulness of this metric is that it does not provide information concerning the number of individual events or their timing relative to activities subject to speech interference. The FAA Integrated Noise Model, the computer model most commonly used for modeling aircraft noise levels at civilian airports, includes the capability to calculate TA for airport operations.

For specific locations at which speech interference is a critical concern, tabulation of the individual aircraft operations affecting the location, including the number of each type of operation by aircraft type, the noise levels (SEL and possibly L_{max}) associated with each type of event, and the timing of the events may provide the most useful information. Calculation of this information, particularly for points which are affected by a large number of different types of operations (e.g., points affected by operations on more than one runway or affected by closed pattern operations) requires extensive computation; however, both the FAA INM and the NOISEMAP program developed by the USAF have the capability to identify and tabulate aircraft activities (by aircraft type, flight track and power/altitude/airspeed profile) which are the most significant contributors to the cumulative noise level at up to 20 specific locations. If detailed analysis of the potential for speech interference is determined to be necessary, use of the specific point analysis capability provided by these programs should be considered.

3.2.2.4 Sleep Disturbance

The effects of noise on sleep have long been a concern of parties interested in assessing residential noise environments. Early studies, conducted mainly in the 1970s, measured noise levels in bedrooms in which sleep was apparently undisturbed by noise. Tests were conducted mainly in laboratory environments in which sleep disturbance was measured in a variety of ways. Most frequently, awakening was measured either by a verbal response, or a button push; in some instances, sleep disturbance, as well as awakening, was determined by electroencephalograph (EEG) recordings of brain activity which indicated stages of sleep and awakening. Various types of noise were presented to the sleeping subjects throughout the night. These noises consisted primarily of transportation noises, including those produced by aircraft, trucks, cars and trains. The aircraft

noises included both subsonic aircraft flyover noises as well as sonic booms. Synthetic noises, including laboratory-generated sounds consisting of shaped noises and tones, were also studied.

Reviews by Lukas (1975), Griefahn and Muzet (1978), and Pearsons et al. (1989) provide an overview of data available in the 1970s on the effects of different levels of noise on sleep-state changes and waking. Various A-weighted levels between 25 and 50 dB were observed to be associated with an absence of sleep disturbance. Because of the large variability of the data in these reviews, there is some question as to the reliability of the results. Consequently, the dose-response curve developed by Lukas, which plots the probability of awakening as a function of SEL, provides a guide only to the most extreme limits of the potential effects of noise on sleep.

The 10-dB nighttime "penalty" added to noise levels for the period 10 PM to 7 AM in computing DNL is intended to account for the intrusiveness of noise at night, partly due to the lower nighttime ambient, and therefore tends to reflect to some extent the potential for wakeups. However, some agencies believe that if there is an unusual number of nighttime noise events, supplemental analysis to indicate sleep disturbance semi-quantitatively, in terms of the putative number of wakeups, is desirable. Such an analysis is generally based on a "single-event" parameter, such as SEL or L_{max}.

Based on the literature reviewed in a recent Air Force sponsored study of sleep disturbance (Pearsons et al. 1989), no specific adverse health effects have been clearly associated with sleep disturbance, either awakening or sleep-state changes. Nevertheless, sleep disturbance, particularly awakening, is generally considered undesirable, and may be considered an impact caused by noise exposure (consequently, awakening has been selected as the parameter recommended for evaluating the effects of noise on sleep). The U.S. Air Force plans to conduct a field study of sleep disturbance, using awakening as the dependent variable, in the near future (1993/1995) (Finegold et al. 1990).

As reported in the 1989 study by Pearsons et al, the effort to develop an sleep disturbance prediction curve identified the need for substantially more research in this area. Of concern were:

- large discrepancies between laboratory and field studies;
- highly variable and incomplete data bases;
- lack of appropriate field studies;
- the studies' methodologies;
- the need to consider non-acoustic effects;
- the role of habituation.

In cases where supplemental analysis of potential sleep disturbance is considered necessary, the USAF has developed an interim dose-response curve to predict the percent of the exposed population expected to be awakened (% awakening) as a function of exposure to single event noise levels expressed as SEL (Finegold et al. 1992). This interim prediction curve is based on statistical adjustment of the most recent, inclusive analysis of published sleep disturbance studies conducted by Pearson et al. (1989). The recommended dose-response relationship is expressed by the equation:

$$\%Awaking = (7.079 \times 10^{-6}) \times SEL^{3.496}$$

This recommended interim dose-response relationship is shown by the curve in Figure 3.2 and the individual points shown in the figure represent groupings of observed data.

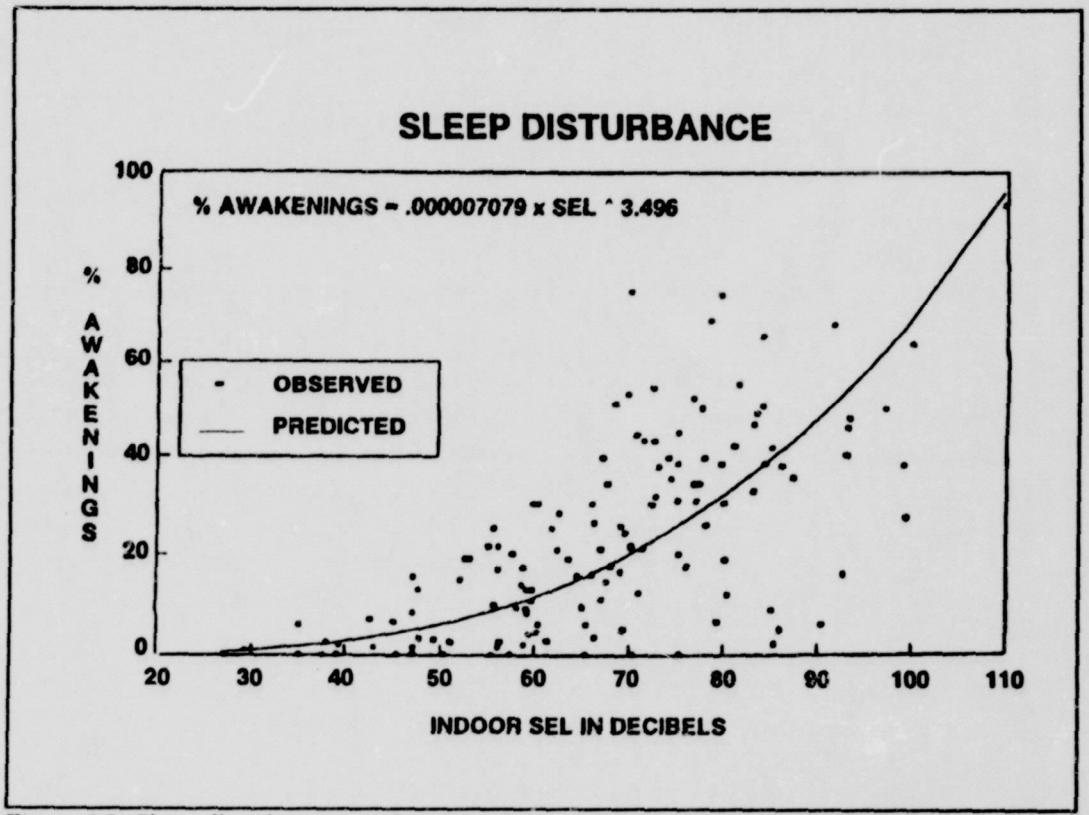


Figure 3.2 Sleep disturbance as a function of single event noise exposure (Finegold et al. 1992)

There should be continued research into community reactions to aircraft noise, including both sleep disturbance and non-auditory health effects of noise.

3.2.3 Levels of Environmental Noise Requisite to Protect Public Health and Welfare

The EPA "Levels Document" identified the environmental noise levels listed in Table 3.4 as requisite to protect public health and welfare with an adequate margin of safety. These levels are not to be construed as standards, criteria, or regulatory goals, as they <u>do not</u> take into account cost or technical feasibility and <u>do</u> include a margin of safety. According to the report, these levels provide a margin of safety of 5 dB, and should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise (U.S. EPA 1974).

United States of America

Before the

SURFACE TRANSPORTATION BOARD

F.D. No. 32760

Union Pacific Corporation et al.--
Control and Merger -- Southern Pacific Corporation et al.

VERIFIED STATEMENT OF JIM BUNTIN

My Name is Jim Buntin. I am an acoustical consultant in the State of California. I am Vice President of Brown-Buntin Associates, Inc. (BBA), and maintain offices at 7996 California Avenue, Fair Oaks, California. My functional responsibilities include management of Brown-Buntin Associates, Inc., and preparation of environmental noise assessments.

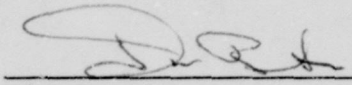
I have served as project manager for BBA in evaluating noise and vibration issues in the Preliminary Mitigation Plan prepared by the STB for the merger of the Union Pacific and Southern Pacific railroads, and its effects on the City of Reno.

The attached document entitled, "Railroad Noise/Vibration Assessment, UP/SP Merger" dated October 6, 1997 was a product which I prepared and provided to Nevadans for Fast and Responsible Action.

The factual information contained in the report was obtained from independent analyses performed by BBA staff under my supervision, as well as identified public sources.

The contents of the noise/vibration assessment, executive summary and other items attached hereto are incorporated herein for the purpose of this statement.

Respectfully Submitted,



Jim Buntin

VERIFICATION

I, Jim Buntin, declare under penalty of perjury that the foregoing statement and attachments hereto, are true and correct. Further, I certify that I am qualified and authorized to file this statement, and attached documents on behalf of Nevadans for Fast and Responsible Action and/or the City of Reno.

Executed on October 9, 1997.



Jim Buntin

STB FD 32760 10-16-97 K 1/16

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STB

October 16, 1997

Mr. Vernon A. Williams
Secretary
Surface Transportation Board
1925 K Street, NW
Suite 700
Washington, D.C. 20423

Re: F.D. No. 32760 Union Pacific Corporation, et al. - Control and Merger - Southern Pacific Rail Corporation, et al. (UP/SP Merger)
Reno Mitigation Study - Preliminary Mitigation Plan
Comments of The City of Reno

Dear Secretary Williams:

Enclosed on behalf of the City of Reno please find an original and eleven (11) copies Comment on the Preliminary Mitigation Plan (PMP) for the City of Reno and ring binder Comment Document. Also enclosed is a disc containing Comment Document text.

Also in the enclosed envelope please find two (2) video tapes of the Reno City Council meeting, Tuesday, October 7, 1997, during which the PMP was reviewed by the City Council.

Please file the same items, and return a file stamped copy of Reno's Comment.

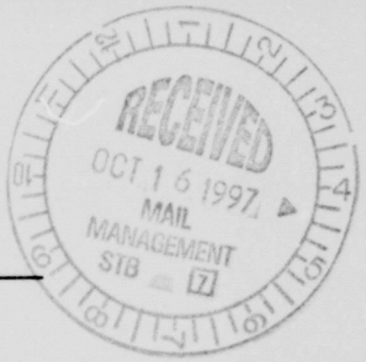
Thank you for your assistance.

Very truly yours,

Paul H. Lamboley

ENVIRONMENTAL
DOCUMENT

Enclosures



BEFORE THE
SURFACE TRANSPORTATION BOARD

Finance Docket No. 32760

UNION PACIFIC CORPORATION, UNION PACIFIC RAILROAD COMPANY
AND MISSOURI PACIFIC RAILROAD COMPANY
-- CONTROL AND MERGER --
SOUTHERN PACIFIC RAIL CORPORATION, SOUTHERN PACIFIC
TRANSPORTATION COMPANY, ST. LOUIS SOUTHWESTERN RAILWAY
COMPANY, SPCSL CORP. AND THE DENVER AND
RIO GRANDE WESTERN RAILROAD COMPANY

**COMMENTS ON PRELIMINARY MITIGATION PLAN (PMP)
FOR THE CITY OF RENO, ISSUE DATE SEPTEMBER 15, 1997**

Paul H. Lamboley
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ENVIRONMENTAL
DOCUMENT

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October 16, 1997

Counsel for The City of Reno

COMMENTS ON PRELIMINARY MITIGATION PLAN (PMP)
FOR THE CITY OF RENO
ISSUE DATE SEPTEMBER 15, 1997

The City of Reno here submits Comments on the Preliminary Mitigation Plan (PMP) for the City of Reno, issued September 15, 1997. The contents of the ring binder Comment Document which accompanies these Comments are expressly incorporated by this reference as if set out in full herein.

This prefatory statement emphasizes the City's view that the Board should have required preparation of an environmental impact statement (EIS) for the Reno/Sparks/Truckee Meadows Basin under requirements of the National Environmental Policy Act (NEPA), 42 USC 4332(2), and regulations of the Council on Environmental Quality (CEQ), 40 CFR Parts 1500-1508. Had the Reno Mitigation Study (RMS) been undertaken as an EIS, the Preliminary Mitigation Plan (PMP) could have avoided two flaws fatal to its credibility: first, the failure to comply with the study mandate in Decision No. 44; and second, the unlawful delegation of the actual selection and implementation of the principal mitigation measure proposed.

1. The PMP Fails To Comply With The Study Mandate In Decision No. 44.

In relevant part Decision No. 44 provides:

> The sole purpose of the mitigation studies will be to arrive at specifically tailored mitigation plans that will ensure that localized environmental issues unique to the two communities are effectively addressed. For example, with respect to vehicular and pedestrian safety, SEA has determined that separated grade crossing and pedestrian overpasses and/or underpasses will be needed to address safety concerns on the existing rail lines in Reno and

> Wichita. Accordingly, the studies will identify the appropriate number and precise location of highway/rail grade separations and rail/pedestrian grade separations in Reno and Wichita. With respect to air quality, we have imposed mitigation measures that reduce locomotive fuel consumption and air pollution, call for more efficient railroad equipment and operating practices, and require consultation with air quality officials. As further insurance, the studies will consider additional mitigation to address the air quality effects unique to Reno and Wichita. In this merger, noise impacts would result from more frequent exposure to horn noise rather than greater intensity of sound. No additional types of noise would be introduced. To address noise impacts, we are requiring UP/SP to consult with affected counties to develop focused noise abatement plans. As the Post EA notes, however, safety dictates that railroads sound their horns at grade crossings.[1] Any attempt significantly to reduce noise levels at grade crossings would jeopardize safety, which we consider to be of paramount importance.

Decision No. 44, p. 221 - 222. (footnotes omitted.)

The study protocol requires public consultation "regarding the range of additional mitigation to must effectively address increased rail traffic on the existing rail lines in Reno and Wichita." Decision No. 44, p. 222.

The goal of the Mitigation Study is to "design the most effective mitigation for these particular communities to add to the mitigation that has already been imposed." Id.

In Decision No. 55, the Board further explained Decision No. 44, stating:

> In Decision No. 44 we found that our environmental mitigation conditions (including Condition #22) specifically remedy the environmental impacts associated with the merger and ensure that there will be no significant environmental effects. We noted that, in Reno, the environmental impacts are limited to the effects of an

---

[1] SEA indicates that FRA has been directed by the Swift Act generally to require that horns be sounded at all grade crossings.

> increase of traffic on an existing rail line. As the environmental assessment (EA), post-environmental assessment (Post-EA) and Decision No. 44 (At 220-23) show, we have already assessed the impact of the merger on Reno and identified its likely environmental effects. We explained that, with the systemwide and corridor-specific mitigation already imposed, and the conditions to be arrived at in the Reno mitigation study, there will be no significant environmental impacts to Reno. We emphasized that we already know the nature and general parameters of the appropriate mitigation measures for Reno, and that the sole purpose of the Reno study is to arrive at a specifically tailored mitigation plan to address impacts of additional traffic that will eventually move through Reno.

Decision No. 55 p.3 (emphasis added.)

Even a casual reading demonstrates that the PMP does not identify the "appropriate [or for that matter any] number and precise location of highway/rail grade separations in Reno", as tailored mitigation specific to the significant adverse impacts to public health, safety and environment that will result from the merger in the City of Reno. The Reno Mitigation Study consequently fails to achieve its stated objective or fulfill its directed mission. Rather, the PMP proposes to increase train speeds to 30 mph as the prime mitigation measure for the significant adverse impacts resulting from the merger in the City of Reno.[2]

---

[2] "UP shall make necessary operating changes and capital improvements...to enable trains to generate over the rail line segment between the east end of the Sparks yard (approximately MP 247) and a point just west of Keystone Avenue (approximately MP 242) in Reno at a speed of 30 miles per hour. UP shall then operate, and require BNSF to operate, all trains over the described rail line segment at a speed of 30 mph consistent with safe operating practices dictated by conditions present at the time each train traversesthe segment."

PMP pp. ES-5, 10-1. Not only does PMP fail its purpose, in proposing increase in train speeds it abandons mitigation responsibility to the discretion of others.[3]

2. in Proposing An Increase In Train Speeds, The PMP Unlawfully Delegates The Actual Selection And Implementation Of The Principal Mitigation Measure To The Railroads.

Train safety and operating speeds limits are not specifically set by any agency, but are generally governed according to class of track under Federal Railroad Administration (FRA) regulations. See 49 CFR 213.9. Accordingly in Reno, the line segment Class 3 track status authorizes rail operations up to a maximum speed of 40 mph. 49 CFR 213.9(a). No where are other speed limits set. In short, specific train speed within the maximum authorized for the class of track lies solely within the operating discretion of the railroad. Thus, selection of train speed, and consequently implementation of the mitigation measure is delegated to the discretion of the railroad.

The delegation of environmental investigation and documentation responsibilities under NEPA by the Interstate Commerce Commission (ICC), the STB's predecessor agency, has been consistently held unlawful. See State of Idaho v. ICC, 35 F3d 585, 595 (DC Cir. 1994); Illinois Commerce Comm'n v. ICC, 848 F2d 1246, 1258 (DC Cir. 1988); Harlem Transportation Ass'n v. Stafford, 500 F2d 328, 335-36 (2nd Cir. 1974).

---

[3] A persuasive argument can be made that grade separation mitigation was not a significant consideration in the PMP because under Decision No. 71 the costs of such measure would be borne by the railroad. Such infrastructure mitigation costs are now known to be substantially more than costs associated with mitigation through operational changes.

If environmental investigation cannot be lawfully delegated, abdication of responsibility for actual selection and implementation of mitigation measures to others, is even less supportable. In this instance, the delegation to the railroad is not limited in choice of train speed, length of trains, numbers or frequency of trains.

Conclusion

The Preliminary Mitigation Plan issued September 12, 1997 demonstrates the current lack of both process and substance in the Reno Mitigation Study. If NEPA procedural structure is recognized as facilitating substantive determination, the Board should now a order site-specific EIS for the Reno/Sparks/Truckee Meadows Basin to properly explore an appropriate range of mitigation alternatives. See 40 CFR Parts 1500-1508.

It is now painfully evident that because of the unstructured, ad hoc nature of the Reno Mitigation Study undertaken to date, the parties and the Board are no closer to a rational, responsible approach to mitigation of the significant adverse impacts to public health, safety and environment in the City of Reno. Surely, the PMP cannot be fairly construed as reducing or minimizing the significance of the impacts to support the FONSI determination as anticipated in Decision No. 44. Indeed, the proposed increase in train speed, which was not subject to serious review by the Study Task Force, creates more problems than remedies.

Ordering preparation of an environmental impact statement (EIS) will contribute substantially to resolution of mitigation issues,[4]

Dated: October 16, 1997

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Counsel for The City of Reno

[4] This will be true even if retention of the current independent contractor is continued.

Certificate of Service

This is to certify that I have this 16th day of October, 1997, served a copy of the foregoing Comments on Preliminary and ring binder Comment Document Mitigation Plan (PMP) for the City of Reno, Issue Date September 15, 1997, via the most expeditious means first-class mail, postage prepaid on:

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Richard B. Herzog
James M. Guinivan
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Paul H. Lamboley

CITY OF RENO
Comment Document
Preliminary Mitigation Plan
Union Pacific/Southern Pacific Railroad Merger
Surface Transportation Board
Section of Environmental Analysis



Service Date: September 15, 1997
Comment Due Date: October 16, 1997
Submission Date: October 15, 1997
Finance Docket No. 32760

CITY OF RENO

Preliminary Mitigation Plan

Comment Document



Finance Docket No. 32760

Union Pacific Corporation, Union Pacific Railroad Company,
and Missouri Pacific Railroad Company

— Control and Merger —

Southern Pacific Rail Corporation, Southern Pacific Transportation Company,
St. Louis Southwestern Railway Company, SPCSL Corporation,
and the Denver & Rio Grande Western Railroad Company

Submitted to and in Cooperation with:

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Submitted by:

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Reno, Nevada

Consisting of:

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MADCON Consultation Services
Mark A. Demuth (702) 829-1126

Service Date: September 15, 1997
Comment Due Date: October 16, 1997
Submission Date: October 15, 1997

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CITY OF RENO
Preliminary Mitigation Plan
Comment Document

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APPENDIX G - "Railroad Noise and Vibration Impact Assessment. UP/SP Merger" by Brown-Buntin Associates, Inc.

APPENDIX H - "Analysis of Air Emission Increases Resulting From the Union Pacific and Southern Pacific Railroad Merger and Effects on the Management of the Air Resource of the Truckee Meadows Nonattainment Area" by Air Sciences Inc.

APPENDIX I - "Comments on Union Pacific's *Downtown Reno & the Railroad*" by Stuart M. Peters, Ph.D., City of Reno

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Verified Statement of Abbas Mohaddes, Meyer, Mohaddes Associates, Inc.
Verified Statement of Jim Buntin, Brown-Buntin Associates, Inc.
Verified Statement of Rodger G. Steen, Air Sciences Inc.
Verified Statement of Stuart M. Peters, Ph.D.

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LIST OF ACRONYMS AND SYMBOLS

automatic block signal	ABS
average daily traffic	ADT
Air Quality Control Region	AQCR
Air Sciences Inc.	ASI
Brown-Buntin Associates, Inc.	BBA
Council on Environmental Quality	CEQ
Code of Federal Regulations	CFR
centralized traffic control	CTC
decibels	dB
adjusted decibel level	dBA
De Leuw, Cather & Company	DCCo
day-night average level	DNL
data validation activities	DVAs
Environmental Assessment	EA
Employment Development Department	EDD
Environmental Impact Statement	EIS
environmental noise model	ENM
Environmental Report	ER
executive summary	ES
Endangered Species Act	ESA
Federal Emergency Management Agency	FEMA
Final Mitigation Plan	FMP
Finding of No Significant Impacts	FONSI
Federal Register	FR
Federal Railroad Administration	FRA
hydrocarbons	HC
Highway	Hwy
Interstate Commerce Commission	ICC
Joint Intermodal Terminal	JIT
Lahontan cutthroat trout	LCT
day/night equivalent sound level	L_{dn}
Meyer, Mohaddes Associates, Inc.	MMA
Nevada Department of Transportation	NDOT
National Environmental Policy Act	NEPA
Nevadans for Fast and Responsible Action	NFRA
National Historic Preservation Act	NHPA
National Register of Historic Places	NRHP

LIST OF ACRONYMS AND SYMBOLS (continued)

Preliminary Mitigation Plan	PMP
parts per million	ppm
Regional Emergency Medical Services Authority	REMSA
Reno Police Department	RPD
Section of Environmental Analysis	SEA
Sound Exposure Level	SEL
Burlington Northern/Santa Fe	BN/SF
Surface Transportation Board	STB
University of Nevada - Reno	UNR
United States Code	USC
U.S. Fish and Wildlife Services	USFWS
volatile organic compounds	VOC
volumes	Vols.
westbound	wb
Washoe County District Health Department Air Quality Management District	WCAQMD
Wilson, Ihrig & Associates, Inc.	WIA

...anticipated impacts to public health and safety for the Reno / Sparks / Truckee Meadows area include...

- *Increased number of trains: Union Pacific indicates an increase of 11.3 trains per day over the next 5 years (without any adjustment for future expansion or Port of Oakland growth). Based upon these projected train numbers...*

- *Increased traffic delay time: Idling vehicle delay time will more than double from 188 hours to 473 hours*

- *Increased air pollution: Carbon Monoxide (CO) will increase by 68 tons per year and Nitrogen Oxides (NO_x) by 390 tons*

- *Increased emergency service calls delays: 564 Police calls, 168 ambulance calls, and 108 fire calls will be delayed in one year*

- *Increased train vehicle accidents and pedestrian fatalities: Accidents and fatalities may increase from 1 accident every 15 months to 1 accident every 13 months*

- *Increased risk of Derailment and potential hazardous material accidents: Existing risk of 1 contamination event every 53.1 years will increase to 1 event every 29.4 years*

- *Increased Noise: A total of 118 homes, 185 apartment units, 1,136 hotel rooms, and 1 church will be impacted by train whistles noise; Interior noise levels in hotel rooms would increase by 2.7 dB, aggravating the existing unacceptable condition; the increased number of train is expected to cause a 90 percent increase in awakening*

EXECUTIVE SUMMARY

CITY OF RENO
Preliminary Mitigation Plan
Comment Document

EXECUTIVE SUMMARY

On August 12, 1997 the Surface Transportation Board (STB), in Decision No. 44, Finance Docket No. 32760, approved the Union Pacific/Southern Pacific (UP/SP) Merger application. As part of this approval, the STB reached a Finding of No Significant Impact (FONSI) regarding all environmental impacts associated with this merger. Nonetheless, the STB concluded that as a condition of this approval the STB's Section on Environmental Analysis (SEA) must conduct a "mitigation study" for both the Reno, Nevada area and the Wichita, Kansas area to "arrive at specifically tailored mitigation plans that will ensure that localized environmental issues unique to these two communities are effectively addressed" (STB, 1997d:Appendix A, p. 5). The STB directed SEA to do the following:

> ...[W]ith respect to vehicular and pedestrian safety, SEA has determined that separated grade crossings and pedestrian overpasses and/or underpasses will be needed to address safety concerns on the existing rail lines in Reno and Wichita. Accordingly, the studies will identify the appropriate number and precise location of highway/rail grade separations and rail /pedestrian grade separations in Reno and Wichita" (STB, 1997d:Appendix A, p. 5).

Despite this clear, unambiguous directive, the Preliminary Mitigation Plan (PMP), issued September 15, 1997, fails to require the UP to implement any underpasses or overpasses for vehicles in the Reno area. The City of Reno (City) opposes final implementation of this merger because the merged operations proposed by UP/SP will have unmitigated significant adverse impacts on the environment, public health and safety, as well as commerce of the City. Neither the application nor UP/SP, nor the Environmental Assessment (EA), nor the Post EA, nor the PMP proposes mitigation measures that will adequately safeguard the environment, public health and safety, and mitigate the adverse impacts of the proposed merger, in accordance with the requirements of National Environmental Policy Act (NEPA) or under any "reasonableness" standard because of the increases in significant adverse impacts.

The PMP is the final step in the process of developing "specifically tailored mitigation plans" to adequately mitigate the adverse impacts of the merger on the Reno / Sparks / Truckee Meadows area. Although the City has never agreed with the concept of deferred mitigation (as evidenced by the City's comprehensive comments on the EA and Post EA) the PMP was supposed to contain specific mitigation measures whose sole purpose were to reduce all merger related impacts to less than significant levels. The PMP falls miserably short of this intended goal. As such, the Environmental Assessment (EA) prepared April 12, 1996, which heavily relied on deferred mitigation to prepare a FONSI, is not valid. In the event that the Final Mitigation Plan (FMP) does not contain adequate provisions to mitigate each and every

EXECUTIVE SUMMARY (continued)

significant effect of the merger (as set forth in this comment) the NEPA process must be re-initiated, and a new EA prepared and circulated for public review and comment.

The STB and SEA have stated that both the EA and the Post EA are a complete analysis sufficient to reach a FONSI determination. That being so, this mitigation study appears to be an undefined attempt to support a previously reached FONSI conclusion, rather than a scientific study based upon established NEPA procedures to resolve identified serious environmental impacts in the Reno / Sparks / Truckee Meadows resulting from the merger.

The PMP states that NEPA requires that agencies take a "hard look" at environmental consequences of their decisions and that this directive served as SEA's guide in conducting this mitigation study. The City can only interpret this statement to mean that SEA took a "hard look" at the increased speed mitigation option, and the other mitigation options received a "softer", less discerning "look". This is evidenced by the lack of specific analysis reported on both grade separations and the depressed railway mitigation options. SEA's approach appears to be that when typical construction project impacts such as dust / noise and potential pre-historic and historic resource clearances are present, these "impacts" are used as an excuse to justify the discontinuance of that "hard look" and "need for further study", such is the case with grade separations and the depressed railway. Ironically, a "no further study required" determination was made by SEA relating to the building of pedestrian overpasses which would have the identical dust / noise and potential pre-historic and historic resource clearances (the identical basis for "needing further study" determinations by SEA for grade separations and the depressed railway).

As specifically set forth in this comment, the City opposes the suggestion that the major "required" mitigation solution for this area is to increase train speeds to run "consistently" at 30 mph. The City provides comments refuting SEA's assumptions upon which it based its conclusions regarding the "benefits" of the increased speed "requirement". The City questions the basis for the "required" speed mitigation, and if the necessary UP rail yard improvements with out additional capacity, are sufficient and are not simply operational changes imposed only to facilitate train operations and interstate commerce, which do little or nothing to protect the safety and health concerns proven to be significantly impacted by this merger throughout the Truckee Meadows area. This issue must be given a "hard look" and rectified in the FMP.

The PMP's reference to perceived details of private negotiations, and speculation as to the status of such negotiations, are inappropriate and have no place in a federally mandated environmental mitigation study. The PMP sets forth no authority for discussing the perceived details of

EXECUTIVE SUMMARY (continued)

private negotiations, nor does the PMP explain why such information is useful or relevant to the STB mandated environmental (vs. economic) mitigation study. Further, SEA can only, at best, speculate as to the status of private negotiations between the City and the UP because it is not a participant in those negotiations. Any reference to details of private negotiations between UP and the City must be deleted from the FMP.

The PMP sets forth a measure of impact of average daily gate down time per crossing on major crossings. The City does not consider this appropriate. If the existing potential for blocked emergency response vehicles is 12 times a day under current conditions, then the post-merger 24 times a day is a 100 percent increase in blockage. The fact that the current 12 blockages total 42.9 minutes per day compared to the mitigated 24 blockages totaling 54.8 minutes or 27 percent increase is not a comparable, as each emergency response which is blocked must either be re-assigned or re-routed - emergency vehicles do not and will not wait at crossings during responses or transports.

The PMP explains that the Federal Railroad Administration (FRA) is conducting a safety review which includes the rail line through both the Reno / Sparks / Truckee Meadows area as well as the larger Washoe County area. The City is unaware of the scope and extent of this safety review because the PMP addresses this critical issue with only one line of text and no specific explanation. The PMP does not mention or address any of the serious safety issues and problems that caused the safety review in the first place. This is another example of how SEA and its environmental consultants are bias towards the UP and do not provide an adequate analysis of this issue. The City has directly requested the FRA to include the Reno / Sparks / Truckee Meadows area in its in-depth study of UP operations. To date, the City has not received a response.

Throughout the Reno Mitigation Study process, the City requested that SEA put the issue of endangered species inhabiting the Truckee River (the endangered cui-ui and the threatened Lahontan cutthroat trout [LCT]) on the Reno Mitigation Task Force agenda so that this critical issue could be publicly studied and reasonable mitigation solutions could be discussed. SEA failed to honor this request.

A review of SEA's request to the United States Fish and Wildlife Service (USFWS) reveals that certain misleading information was given to the USFWS to consider. This misleading information was in the form of an incomplete summary of a study conducted by James Carr, Ph.D., P.E. of the University of Nevada, Reno. SEA reported that based upon Dr. Carr's findings, the probability (risk) of a contamination event in the Truckee River was once in every

EXECUTIVE SUMMARY (continued)

154.15 [sic] years. This finding was not based on the increased train traffic (post merger 24 trains per day per UP), but rather it was based upon existing baseline train traffic (14.7 trains per day) and only the Nevada portion of the Truckee River. In a September 2, 1997 letter to the City, Dr. Carr verified that the summary information from his report provided by SEA to the USFWS was in fact misleading.

The SEA study team independently estimated the likelihood of a hazardous materials release associated with a derailment on the portion of the UP rail line (formerly the SP rail line). The City would also question the scientific independence of the SEA study team performing this "likelihood" study as De Leuw, Cather & Company (DCCo) admittedly has worked for UP and other railroads prior to this "third party independent study".

The City, on the other hand, has no financial relationship with the author of an unpublished study *Development of an Integrated Computer Platform for the Evaluation of Contaminant Mitigation Scenarios along the Truckee River: Risk of Transporting Hazardous Substances Adjacent to the Truckee River* by University of Nevada, Reno (UNR), Geological Engineering Professor and statistician James R. Carr, Ph.D., P.E. (commissioned by and independently completed for Sierra Pacific Power Company) which estimated that a rail accident that spilled hazardous substances into the Truckee River could happen once every 53.1 years (Carr, 1996:26). The Carr study was based the 1996 rail traffic of 14 trains per day; however, based on the UP's proposed 25 trains per day or the City estimate of approximately 35 trains per, thereby increasing the statistical certainty of contaminating the Truckee River every 29.4 years and 21.0 years respectively (Carr, 1996:19, 29, 30). Risks of accidents increased with steeper grades, stronger curves, and higher trains speeds. All these factors are most prevalent in the upper Truckee River canyon between Truckee, California, and Verdi, Nevada, where the probability of a spill is therefore greatest (Carr, 1996:18, 19, 21).

Initially when Carr's report was released, UP embraced the report claiming the railroad industry's superior safety in transporting hazardous materials, as evidenced by the July 28, 1996, Reno Gazette-Journal article entitled *Rail study: River spill odds fairly low*: "'There is no accepted method that we are aware of to accurately predict any future event, certainly including the possibility of toxic spill into the Truckee River,' said Mike Furtney, Southern Pacific spokesman. 'But having said that, we are impressed by the positive nature of UNR's statistics.'" (July 28, 1996:C1).

Based upon information provided to the USFWS by the City which was not previously provided by SEA, SEA rightfully determined to re-initiate informal consultation with the

EXECUTIVE SUMMARY (continued)

USFWS (regarding biological resources) on September 29, 1997. However, it would appear that the public, who has indicated that risk of hazardous materials spills is a priority environmental concern for the community, will have no opportunity to evaluate that consultation process prior to the end of the comment period (October 16, 1997). This is unacceptable to the citizens of Reno and the City. The adequacy of the proposed "mitigation" can not be evaluated without the complete consultation process of the USFWS.

Required consultation with the Native Americans was never conducted during the EA and Post EA NEPA process, and as evidenced in the PMP, has not been completed during the preparation of the PMP. All attempts to conduct Native American consultation were initiated following completion of the EA NEPA process which is a violation of NEPA. It is the City's understanding that only one meeting was held with Reno-Sparks Indian Colony and no direct meetings or contacts have been completed with the Washoe or Paiute Nations.

The PMP states that the Sparks switchyard operations are not associated with the merger. In fact, if the increase in freight trains through the Reno / Sparks / Truckee Meadows area increases the switchyard activity levels, then the increase in switchyard activities and associated air emissions are an effect of the merger, just as the increase in emissions due to vehicle delays is an effect of the merger. The Sparks rail yard impacts from increased traffic must be given a "hard look" in the FMP.

Contrary to the PMP, the STB is subject to general conformity as discussed in ASI's recently released report (ASI, 1997:Sect. 5). The STB's ability to limit freight train traffic through Truckee Meadows during the mitigation study period (see STB, 1996c:222) is evidence of the STB's program control over railroad emissions.

The PMP fails to set forth any economic analysis outlining decreased performances of the entire downtown area which will occur even after implementation of the mitigation measures identified in the PMP. Some of these impacts will occur due to restricted access and impaired utilization which will financially affect the downtown casinos and businesses. The PMP does not address the fact that downtown casinos and businesses represent a major source of funding for cultural activities, parks, schools, police and fire protection, and other services offered by the City and if casinos and businesses located downtown are financially affected, so are the financial resources that help to fund those services.

The PMP sets forth the assumption that any type of mitigation for noise would be based upon change or reduction of the noise source. The City acknowledges that "to alter noise would

EXECUTIVE SUMMARY (continued)

jeopardize safety which is of paramount importance". However, there are other ways, including other mitigation options, to mitigate the increased number of sensitive receptors exposed to post-merger noise which must be given a "hard look" by SEA.

The City finds the PMP's explanation and history of the depressed railway project lacks factual analysis. During the February 13, 1997, SEA public meetings in Reno, UP presented a model of the depressed railway and made statements to the public and the media touting the benefits of the depressed railway. Due to UP's January 31, 1997 proposal to provide the depressed railway at no cost to the City, the City Council subsequently (February 18, 1997) directed the City Manager to emphasize the depressed railway as the City's primary objective. UP has strongly advocated the construction of depressed railway as demonstrated by UP's lobbying efforts the week of March 17-21, 1997, when UP again presented its model of the depressed train and lobbied state legislators for a week regarding funding options.

Finally, SEA staff member and study director Harold McNulty stated at the SEA public hearings held in Reno on October 9, 1997 that SEA has studied the rail line through Reno "more thoroughly" than any study has ever been done on any stretch of any other rail line and that "we've gone far beyond the EIS process". The City, and the numerous citizens who presented testimony at the public hearings, emphatically disagree that this mitigation study has gone "far beyond" the EIS process as evidenced by the facts and scientific evidence presented for consideration in this comment document. A full EIS, following established NEPA procedures, and based upon sound scientific data, must be conducted by SEA rather than this undefined mitigation study which appears to reach conclusions contrary to sound scientific evidence, common sense and logical itself.

Union Pacific Railroad is committed to protecting the environment for our customers, our employees, and the communities in which we operate. Beyond compliance with laws and regulations, Union Pacific is committed to the development and use of new technologies to preserve the environment for future generations.

Richard K. Davidson, Chairman, President, and Chief Executive Officer of Union Pacific Corporation, Union Pacific Railroad's World Wide Web Page

As discussed in the previous section, severity of train/vehicular accidents can be expected to slightly increase with train speed. However, for train/pedestrian accidents, the same tragedy occurs independent of the speed.

Section of Environmental Analysis, Reno Preliminary Mitigation Plan

1.0 INTRODUCTION/ OVERVIEW

1.0 INTRODUCTION/OVERVIEW

1.1 PURPOSE

The City of Reno (City), Nevada has conducted a comprehensive review of the Preliminary Mitigation Plan (PMP) (STB, 1997d) prepared for the Union Pacific / Southern Pacific (UP/SP) merger (Finance Docket No. 32760) by the Surface Transportation Board (STB), Section of Environmental Analysis (SEA) dated September 15, 1997 and has been reviewed for compliance with the statutory provisions outlined in the National Environmental Policy Act of 1969, as amended (NEPA) (Pub. L. No. 91-190, 42 U.S.C. 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1500-1508, 43 Federal Register [FR] 55990, Nov. 28, 1978, Revised through July 1, 1991); the Interstate Commerce Commission (ICC) Regulations (49 CFR 1105, 56 FR 36105, July 31, 1991) adopted by the STB[1]; and accepted professional environmental and engineering analyses practices along with consideration of community issues and concerns.

The following documents were evaluated in the City's Review of the PMP:

Air Sciences Inc. (ASI). 1997. *Analysis of Air Emission Increases Resulting From the Union Pacific and Southern Pacific Railroad Merger and Effects on the Management of the Air Resource of the Truckee Meadows Nonattainment Area*. Manuscript (Ms.) copy available from Nevadan's for Fast and Responsible Action (NFRA), Reno. (ASI, 1997).

Brown-Buntin Associates, Inc. (BBA). 1997. *Railroad Noise/Vibration Assessment: UP/SP Merger*. Ms. copy available from Nevadan's for Fast and Responsible Action (NFRA), Reno. (BBA, 1997).

City of Reno. v.d. "City of Reno Mitigation Task Force Meeting Summaries: October 23 & 24, 1996 - Kick-off Meetings Summaries; January 15, 1997 - Task Force #1 Meeting Summary; February 12, 1997 - Task Force #2 Meeting Summary; March 12, 1997 - Task Force #3 Meeting Summary; April 23, 1997 - Task Force #4 Meeting Summary; May 14, 1997 - Task Force #5 Meeting Summary; June 11, 1997 - Task Force #6 Meeting Summary; and July 9, 1997 - Task Force #7 Meeting Summary. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (City of Reno, v.d.)

Meyer, Mohaddes Associates, Inc. (MMA). 1997. *UP/SP Railroad Merger Impact Analysis: Traffic / Delay Analysis*. Ms. copy available from Nevadan's for Fast and Responsible Action (NFRA), Reno. (MMA, 1997).

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[1]The ICC Termination Act of 1995, PL 104-88, 109 Stat. 803, which was enacted on December 29, 1995 and took effect on January 1, 1996, abolished the Interstate Commerce Commission and transferred its railroad merger approval functions to the Surface Transportation Board.

Peters, Stuart M. Ph.D. (1997). "Comments on Union Pacific's *Downtown Reno & the Railroad*". Ms. copy available from Nevadan's for Fast and Responsible Action (NFRA), Reno. (Peters, 1997).

Surface Transportation Board. 1995. *Railroad Merger Application, ICC Finance Docket No. 32760*, Applicant's Environmental Report and Operating Plan, Union Pacific / Southern Pacific Control and Merger, Volumes 1-7. November 30, 1995. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1995).

Surface Transportation Board. 1996a. *Environmental Assessment, Finance Document No. 32760*, Vols. 1-5, Union Pacific Corp., et al. — Control and Merger — Southern Pacific Rail Corp., et al. April 12, 1996. Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (Note: this includes the *Errata to Environmental Assessment* issued April 18, 1996, by the Surface Transportation Board, Section of Environmental Analysis. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1996a).

Surface Transportation Board. 1996b. *Post Environmental Assessment*, Finance Docket No. 32760, Union Pacific Corp. et al. — Control and Merger — Southern Pacific Rail Corp., et al., June 24, 1996. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1996b).

Surface Transportation Board. 1996c. *Final Merger Order No. 44*, issued on August 12, 1996 in Union Pacific Corp., et al. — Control and Merger — Southern Pacific Rail Corp., et al., Finance Docket No. 32760. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1996c).

Surface Transportation Board. 1996d. *Decision No. 55*, issued on September 27, 1996 in Union Pacific Corp., et al. — Control and Merger — Southern Pacific Rail Corp., et al., Finance Docket No. 32760. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1996d).

Surface Transportation Board. 1997a. *Decision No. 71*, issued on April 17, 1997, in Union Pacific Corp., et al. — Control and Merger — Southern Pacific Rail Corp., et al., Finance Docket No. 32760. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1997a).

Surface Transportation Board. 1997b. *Decision No. 9*, issued on June 11, 1997 in CSX / Norfolk Southern — Control and Operating Leases / Agreements — Conrail, Finance Docket No. 33388. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1997b).

Surface Transportation Board. 1997c. *Applicants' Report on Merger and Condition Implementation - Sub-Document No. 21* in Union Pacific Corp., et al. — Control and Merger — Southern Pacific Rail Corp., et al., Finance Docket No. 32760. July 1, 1997. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1997c).

Surface Transportation Board. 1997d. *Preliminary Mitigation Plan, UP/SP Merger - Reno Mitigation Study - Reno, Nevada - September 1997 - Finance Document No. 32760*, Union Pacific Corp., et al. — Control and Merger — Southern Pacific Rail Corp., et al. September 15, 1997. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1997d).

Surface Transportation Board. 1997e. *Preliminary Mitigation Plan, UP/SP Merger - Wichita Mitigation Study - Wichita, Kansas - September 1997 - Finance Document No. 32760*, Union Pacific Corp., et al. — Control and Merger — Southern Pacific Rail Corp., et al. September 15, 1997. Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, 1997e).

Surface Transportation Board. v.d. "Various Task Force Meeting Handouts: October 23 & 24, 1996 - Kick-off Meetings Summaries; January 15, 1997 - Task Force #1 Meeting Summary; February 12, 1997 - Task Force #2 Meeting Summary; February 12, 1997 Agenda Item No. 3 & May 14, 1997 Agenda Item No. 2, Train Traffic Projections Handout; February 12, 1997, UP/SP Merger Reno Mitigation Study Overview (February 1997); March 12, 1997 - Task Force #3 Meeting Summary; April 23, 1997 - Task Force #4 Meeting Summary; May 14, 1997 - Task Force #5 Meeting Summary; May 14, 1997 Agenda Item No. 3, Noise and Train Speed Survey Results Handouts; June 11, 1997 - Task Force #6 Meeting Summary; June 11, 1997 Agenda Item No. 3, Methodology Handout & Figures 1-10; June 11, 1997 Agenda Item No. 3, Methodology Handout & Figures A-F; July 9, 1997 - Task Force #7 Meeting Summary; July 9, 1997 Agenda Item No. 3, Distribution of Freight Trains Handout; and July 9, 1997 Agenda Item No. 4, Feasibility of Train Speed Increase Handout". Ms. copy available from Surface Transportation Board, Section of Environmental Analysis, Washington, D.C. (STB, v.d.), set forth in Appendix B of this comment document.

Noticeable differences in results have consistently plagued the studies from SEA. This document continues the difficulty of determining the impacts to Reno's resources. Table 1 provides a resource chronology indicate the results and findings of all environmental documents produced for the UP/SP merger as well as the three recently completed independent studies. The first line of the table indicates the resources which were evaluated in each of the documents. Note, no one particular merger related environmental document provides resource evaluation of all the resources of the Reno / Sparks / Truckee Meadows area.

Table 1

Resource Evaluation Chronology

Resources Evaluated	UP's Filing 11/30/95 (STB, 1995)	STB's EA 4/12/96 (STB, 1996a)	STB's Post-EA 6/24/96 (STB, 1996b)	STB's Dec. 44 08/12/96 (STB, 1996c)	STB's Task Force Materials (Appendix B)	STB's PMP 9/15/97 (STB, 1997d)	City of Reno's Comments 10/15/97 (MMA, 1997; ASI, 1997; BBA, 1997)
Traffic Delay Safety - Pedestrians Safety - Emergency Vehicle Access Safety - Train/Vehicle Accidents Safety - Hazardous Commodities Train Operations Native American Issues Biological Resources Noise/Vibration Air Quality - Trains Air Quality - Vehicles Property Impacts/Land Use	Safety - Train/Vehicle Accidents Safety - Hazardous Commodities Train Operations Noise/Vibration Air Quality - Trains	Traffic Delay Safety - Train/Vehicle Accidents Safety - Hazardous Commodities Train Operations Noise/Vibration Air Quality - Trains Air Quality - Vehicles	Safety - Pedestrians Safety - Train/Vehicle Accidents Train Operations Noise/Vibration Air Quality - Trains Air Quality - Vehicles	Safety - Pedestrians Safety - Emergency Vehicle Access Safety - Train/Vehicle Accidents Safety - Hazardous Commodities Train Operations Noise/Vibration Air Quality - Trains Air Quality - Vehicles	Traffic Delay Safety - Train/Vehicle Accidents Train Operations Noise/Vibration	Traffic Delay Safety - Pedestrians Safety - Emergency Vehicle Access Safety - Train/Vehicle Accidents Train Operations Noise/Vibration Air Quality - Vehicles	Traffic Delay Noise/Vibration Air Quality - Trains Air Quality - Vehicles
Traffic Delay		48 minutes/day/crossing (pre-merger) increases to 88 minutes/day/crossing (post-merger). Maximum queue length per train due to peak-hour vehicle traffic would range from 1 to 80 vehicles. Delay per vehicle would vary from 1.35 to 2.06 minutes.			188 hours/day (16 crossings pre-merger, year 2000 traffic) increases to 356 hours/day (16 crossings post-merger, year 2000 traffic). Delay per total vehicle 5.5 seconds (pre-merger, year 2000 traffic) increases to 10.4 seconds (post-merger, year 2000 traffic).	189 hours/day (16 crossings pre-merger, year 2000 traffic) increases to 373 hours/day (16 crossings post-merger, year 2000 traffic). Delay per delayed vehicle 1.98 min. (pre-merger, year 2000 traffic) increases to 2.01 min. (post-merger, year 2000 traffic).	189 hours/day (13 crossings pre-merger, year 1995 traffic) increases to 473 hours/day (13 crossings post-merger, year 2000 traffic).
Safety - Pedestrians			...SEA concludes that the post-merger operations proposed over the Sparks to Roseville rail line segment would pose a safety risk to the City of Reno.	SEA also concluded that the merger...could have potential environmental effects regarding safety...		No data provided.	NDOT found that in 121 out of 165 train events (73.3 percent) pedestrians intrude onto the right-of-way, a total of 1,350 pedestrian intrusions in a 1 week period studied.

Table 1

Resource Evaluation Chronology

Resources Evaluated	UP's Filing 11/30/95 (STB, 1995)	STB's EA 4/12/96 (STB, 1996a)	STB's Post-EA 6/24/96 (STB, 1996b)	STB's Dec. 44 08/12/96 (STB, 1996c)	STB's Task Force Materials (Appendix B)	STB's PMP 9/15/97 (STB, 1997d)	City of Reno's Comments 10/15/97 (MMA, 1997; ASI, 1997; BBA, 1997)
Safety - Emergency Vehicle Access				SEA also concluded that the merger…could have potential environmental effects regarding safety…		With 12.7 freight trains per day, the total average gate closed time is projected to be 42.9 minutes per day. With 24 freight trains per day, the total average gate closed time is determined to be 82.7 minutes per day, an increase of 39.8 minutes.	The existing potential for blocked emergency response vehicles is 12 times a day under current conditions, then the post-merger 24 times a day is a 100 percent increase in blockage. Each emergency response which is blocked must either be re-assigned or re-routed - emergency vehicles do not wait at crossings during an emergency response.
Safety - Train/Vehicle Accidents	On a particular rail line, the number of accidents/incidents related to train/vehicle collisions is statistically likely to vary…	SEA concludes that the accident exposure in Nevada will range form an increase of 90 percent to a decrease of 52 percent depending on rail segment.	…SEA concludes that the post-merger operations proposed over the Sparks to Roseville rail line segment would pose a safety risk to the City of Reno.	SEA also concluded that the merger…could have potential environmental effects regarding safety…	1.26 accidents year (16 crossings pre-merger, year 2000 traffic) increases to 1.70 accidents year (16 crossings post-merger, year 2000 traffic).	"…accidents are likely to be more severe with increased train speeds."	Accidents and fatalities may increase from 1 accident every 15 months to 1 accident every 13 months

Table 1

Resource Evaluation Chronology

Resources Evaluated	UP's Filing 11/30/95 (STB, 1995)	STB's EA 4/12/96 (STB, 1996a)	STB's Post-EA 6/24/96 (STB, 1996b)	STB's Dec. 44 08/12/96 (STB, 1996c)	STB's Task Force Materials (Appendix B)	STB's PMP 9/15/97 (STB, 1997d)	City of Reno's Comments 10/15/97 (MMA, 1997; ASI, 1997; BBA, 1997)
Safety - Hazardous Commodities (Derailments/Spills/Water Quality)		SEA concludes that, using the same rate of safe transport, the projected increases in accidents and shipments of hazardous materials as a result of the proposed merger do not constitute a significant safety risk. 99.98 percent of the shipments arrived at their destination without incident.	[SEA methodology]	SEA also concluded that the merger...could have potential environmental effects regarding safety...including the transportation of hazardous materials... UP/SP shall participate on a systemwide basis...to develop hazardous material and emergency response plans...(Systemwide Mitigation No. 5). UP/SP shall adopt UP's training program for community and emergency response personnel...(Systemwide Mitigation No. 7). UP/SP shall give priority to equipping key trains...with two-way end of train devices...(Corridor Mitigation No. 17).		On-going.	Risk increases from 1 event in 53. 1 years to 1 event in 29.4 years (25 trains) or 1 event in 21.0 years (35 trains).
Train Operations	Sparks to Roseville segment: 139.0 miles; 13.6 (pre-merger), 22.6 (post-merger), & 9.0 (increase) trains/day; and 67.7 percent change in gross ton-miles/year.	Sparks to Roseville segment: 139.0 miles; 13.8 (pre-merger), 25.1 (post-merger), & 11.3 (increase) trains /day; and 78.7 percent change in gross ton-miles/year.	Sparks to Roseville segment: 139.0 miles; 13.8 (pre-merger), 25.1 (post-merger), & 11.3 (increase) trains /day; and 78.7 percent change in gross ton-miles/year.	SEA conducted a thorough independent analysis, which included verifying projected rail operations...	1995 and Projected Future Average Daily Train Volumes Through Reno: 13.8 [12.7 freight + 1.1 Amtrak] (pre-merger), 25.1 [24.0 freight + 1.1 Amtrak] (post-merger), & 11.3 (increase) trains/day; and 78.7 percent change in gross ton-miles/year.	1995 and Projected Future Average Daily Train Volumes Through Reno: 13.8 (pre-merger), 25.1 (post-merger), & 11.3 (increase) trains/day Increase in speed from 20 mph to 30 mph	38 percent of all trains may not be able to increase speed by 10 mph

Table 1

Resource Evaluation Chronology

Resources Evaluated	UP's Filing 11/30/95 (STB, 1995)	STB's EA 4/12/96 (STB, 1996a)	STB's Post-EA 6/24/96 (STB, 1996b)	STB's Dec. 44 08/12/96 (STB, 1996c)	STB's Task Force Materials (Appendix B)	STB's PMP 9/15/97 (STB, 1997d)	City of Reno's Comments 10/15/97 (MMA, 1997; ASI, 1997; BBA, 1997)
Native American Issues				SEA conducted a thorough independent analysis, which included...historic and cultural resource surveys [none in Nevada].		On-going.	Native American consultation is incomplete.
Biological Resources				SEA conducted a thorough independent analysis, which included...performing...habitat, surface water and wetlands surveys...[none in Nevada].		USFWS informal consultation re-initiated.	USFWS informal consultation process is incomplete and warrants formal consultation process.
Noise/Vibration	Increase in sensitive receptors exposed to noise levels exceeding L_{dn} 65 = 105 residences	L_{dn} 65 Contour changes from 480 feet from centerline (pre-merger) to 670 feet from centerline (post-merger). Increase in sensitive receptors exposed to noise levels exceeding L_{dn} 65 = 86 residences	SEA concludes that there would be no adverse noise impacts as a result of the proposed merger.	SEA conducted a thorough independent analysis, which included...estimating noise level impacts... SEA also concluded that the merger...could have potential environmental effects regarding...noise...	L_{dn} 65 Contour: Urban grade crossing with shielding = 345 feet from centerline (post-merger); Rural grade crossing with little shielding = 390 feet from centerline (post-merger); and No horn = 112 feet from centerline (post-merger)	Post-merger: DNL 65 dB = +2.7 dB Distance to Post-merger 65 dBA L_{dn} Contour: 404 to 345 feet Mitigated: DNL 65 dB = +0.9 dB Sensitive Receptors: An additional 40 receptors	Post-merger: DNL 65 dB = +2.7 dB Distance to Post-merger 65 dBA L_{dn} Contour: highly variable predicted via ENM Mitigated: DNL 65 dB = +0.9 dB Sensitive Receptors: An additional 34 homes, 261 hotel rooms, and 1 church Interior noise levels in typical hotel rooms would increase by 2.7 dB

Table 1

Resource Evaluation Chronology

Resources Evaluated	UP's Filing 11/30/95 (STB, 1995)	STB's EA 4/12/96 (STB, 1996a)	STB's Post-EA 6/24/96 (STB, 1996b)	STB's Dec. 44 08/12/96 (STB, 1996c)	STB's Task Force Materials (Appendix B)	STB's PMP 9/15/97 (STB, 1997d)	City of Reno's Comments 10/15/97 (MMA, 1997; ASI, 1997; BBA, 1997)
Air Quality - Trains	Air Emissions from Trains: AQCR 148 is non-attainment PM, PM_{10}, CO, & O_3 Sparks to Roseville segment: tons/year increase = HC 33.09 CO 102.87 NO_x 770.04 SO_2 55.80 PM 16.69	Air Emissions from Trains: SEA concludes that adverse impacts could result from *increased rail segment* activity in this AQCR [148]. Sparks to Roseville segment: tons/year increase = HC 3.1 CO 9.6 NO_x 71.6 SO_2 5.2 PM_{10} 1.6	Air Emissions from Trains: Sparks to Roseville segment: *tons/year increase =* HC 0.27 CO 0.83 NO_x 6.20 SO_2 0.45 PM_{10} 0.13	We believe that air quality has been thoroughly analyzed, and that the mitigation will be arrived at in the further mitigation studies for Reno…adequately mitigates any potential adverse air impacts. UP/SP shall convert all railroad locomotives to the standards for visible smoke reduction…(Systemwide Mitigation No. 11).	Note: SEA made no presentation of Air Quality *resource evaluation.* Baseline conditions partially covered by Washoe County District Health.	Air Emissions from Trains: tons/year increase = VOC 16.9 CO 14.3 NO_x 394.6 PM_{10} 2.6	Air Emissions from Trains: tons/year increase = CO 50 NO_x 390
Air Quality - Vehicles		Air Emissions from Vehicles: SEA concludes that no adverse air quality impacts would result from increased grade crossing delays… Per Train Crossing: *tons/year increase =* VOC 0.0021 *HC 0.0013* CO 0.0111 NO_x 0.0003	Air Emissions from Vehicles: 10 Train Crossings: tons/year increase = HC 1.6 CO 20.0 NO_x 0.4 SO_2 0.01 PM_{10} 0.01	From Appendix H: Net Emissions (Air Quality): AQCR 148, Northwest Nevada = HC -10.17 CO 0.83 NO_x -353.66 SO_2 0.45 PM_{10} -4.25		Air Emissions from Vehicles: VOC 1.8 CO 19.1 NO_x 0.7 PM_{10} 0.01	Air Emissions from Vehicles: CO 18 NO_x <1
Property Impacts/Land Use				SEA conducted a thorough independent analysis, which included…performing land use…surveys…[none in Washoe County].			Justly compensated property is not impacted.

Source: ASI, 1997; BBA, 1997; MMA, 1997; STB, 1995; STB, 1996a; STB, 1996b; STB, 1996c; STB, 1997d

The City opposes final implementation of the merger of the UP and SP Railroads because the merged operations proposed by UP/SP will have unmitigated significant adverse impacts on the environment and public health and safety, as well as commerce of the City, and neither the application nor UP/SP, nor the Environmental Assessment (EA), nor the Post EA, nor the PMP, proposes mitigation measures that will adequately safeguard the environment, public health and safety, and mitigate the adverse impacts of the proposed merger, in accordance with the requirements of NEPA or under any "reasonableness" standard because of the increases in significant adverse impacts.

Based on the analysis contained in this comment document, it is clear that the PMP mandated by Decision No. 44 is not adequate because: it does not adhere to the specific directives contained in Decision No. 44; it does not comply with the provisions of NEPA; it does not meet any "reasonableness" standard; and as a result, an Environmental Impact Statement (EIS) for the merger related impacts to the Reno / Sparks / Truckee Meadows area must be prepared.

The PMP is the final step in the process of developing "specifically tailored mitigation plans" to adequately mitigate the adverse impacts of the merger on the Reno / Sparks / Truckee Meadows area. Although the City has never agreed with the concept of deferred mitigation, as evidenced by the City's comprehensive comments on the EA and Post EA, the PMP was supposed to contain specific mitigation measures whose sole purpose were to reduce all merger related impacts to less than significant levels. The PMP falls miserably short of this intended goal, and as such, the Environmental Assessment (EA) prepared April 12, 1996, which heavily relied on deferred mitigation to prepare a Finding of No Significant Impact (FONSI), is not valid. In the event that the Final Mitigation Plan (FMP) does not contain adequate provisions to mitigate each and every significant effect of the merger, the NEPA process must be re-initiated, and a new EA prepared and circulated for public review and comment.

The specific basis for the City's position relating to the PMP is contained in the following sections of this comment document.

1.2 ORGANIZATION OF COMMENTS

This comment document has been organized to provide comments on the PMP in a logical manner, generally following the structure of the PMP unless the discussion is more appropriately focused upon the environmental resources themselves. Comments contained in this document are focused on the rail line segment within Washoe County, Nevada including the portion of the line segment traversing the corporate limits of the City. In cases where impact categories are not affected by political boundaries, such as air quality, the comments address a broader impact area as documented in that section.

Comments on the PMP are evaluated in the following sections of this comment document: 2.0 — Procedural Issues; 3.0 — Resource Impact Evaluation; 4.0 — Mitigation Evaluation including Tier 1 Mitigation (speed) and Tier 2 Mitigation (grade separations, depressed railway, I-80 re-route, and other mitigation options); and 5.0 — References.

The appendices include: Appendix A - Task Force Record as August 8, 1997; Appendix B - SEA Task Force Meeting Handouts & City of Reno Mitigation Task Force Meeting Summaries; Appendix C - Comments; Appendix D - "UP/SP Railroad Merger Impact Analysis: Traffic / Delay Analysis"; Appendix E - Current Media; Appendix F - USFWS Correspondence; Appendix G - "Railroad Noise and Vibration Impact Assessment: UP/SP Merger"; Appendix H - "Analysis of Air Emission Increases Resulting From the Union Pacific and Southern Pacific Railroad Merger and Effects on the Management of the Air Resource of the Truckee Meadows Nonattainment Area"; Appendix I - "Comments on Union Pacific's *Downtown Reno & the Railroad*"; Appendix J - Verified Statements; and Appendix K - Transcribed Comments from the October 7, 1997, Reno City Council Meeting.

Mitigation of conditions resulting from the preexisting development of hotels, casinos, and other tourist- oriented businesses on both sides of the existing SP rail line in Reno ... are not within the scope of the [study].

Surface Transportation Board, Decision No. 44, Condition 22

2.0

PROCEDURAL ISSUES

2.0 PROCEDURAL ISSUES

The National Environmental Policy Act (NEPA) is the United States' basic national charter for protection of the environment and is the governing environmental protection law for the merger. NEPA establishes environmental policy for the nation, provides an interdisciplinary framework for federal agencies to prevent environmental damage and degradation, and contains procedures to ensure that federal agency decision-makers consider environmental factors in the decision making process (42 U.S.C. 4321 et seq.; 40 CFR 1500.1).

In order to effectively implement NEPA, the CEQ established NEPA regulations for guidance to federal agencies under 40 CFR 1500-1508. In addition, 40 CFR 1507.3(a) requires that every federal agency prepare procedures to supplement NEPA and the NEPA regulations. The STB has adopted the ICC's environmental regulations for implementation of NEPA (49 CFR 1105). The STB's version of NEPA implementing regulations are not consistent with NEPA and the NEPA regulations, in that they substantially narrow the focus for impact analysis, resulting in unevaluated significant environmental factors.

NEPA defines an EA as a concise public document that a lead agency prepares when a project is not covered by a categorical exclusion, and the lead agency does not know whether the impacts will be significant (40 CFR 1508.9(a)). The EA has three purposes, outlined as follows: 1) it provides sufficient evidence and analysis to determine whether an EIS is required; 2) it supports an agency's compliance with NEPA when no EIS is required; and 3) it facilitates preparation of an EIS when one is required.

SEA's EA and the Post EA, which have been indicated by SEA and the STB as a "complete analysis sufficient to reach a FONSI determination", left sufficient doubt about the public health and safety of the human environment in Reno, as to warrant special conditions under Decision No. 44 requiring a mitigation study which now appears to be an undefined attempt to support a previously reached FONSI conclusion.

2.1 PROCEDURAL COMMENTS

The following section of comments are on NEPA, Decision No. 44, Reno's issues and concerns, historic development of Reno, data collection, speculation on private negotiations in a public document, and other procedural matters.

2.1.1 NATIONAL ENVIRONMENTAL POLICY ACT

PMP Text Quote #1: page 1 - 2, ¶ 1, line 5: *Section 6 provides a geographically focused analysis of the potential environmental impacts on Reno, Washoe County, and the surrounding area of the increased freight train traffic associated with the merger. This section supplements the environmental analysis presented in the Environmental Assessment (EA) and Post Environmental Assessment (Post EA) that were prepared by SEA pursuant to the National Environmental Policy Act (NEPA) for the UP/SP merger. Evaluation criteria and methodology*

are provided, along with preliminary recommendations regarding potential mitigation measures for the potential environmental impacts.

> **Comment #1.1:** SEA has stated that the Post EA is a complete analysis sufficient to reach a FONSI determination. Thus, a mitigation study appears to be an undefined attempt to support a previously reached FONSI conclusion, rather than a scientific study based upon established NEPA procedures to resolve identified serious environmental impacts in the Reno / Sparks / Truckee Meadows area resulting from the merger.

PMP Text Quote #2: pages 2 - 1 to 2 - 2, ¶ 6, line 1: *Because the review and approval of the UP/SP merger is a major Federal action, the proposed merger is subject to environmental review under the National Environmental Policy Act, NEPA, 42 U.S.C. §4321, et. seq. The [Surface Transportation Board] Board has adopted environmental rules consistent with NEPA to guide its environmental review of proposed mergers, 49 CFR 1105 (1996). Those rules generally call for the preparation of an Environmental Assessment (EA) for railroad merger cases, 49 CFR 1105.6(b)(4)(1996). The EA is prepared by the Board's Section of Environmental Analysis (SEA), with assistance of an independent third-party contractor, and considers information supplied by the applicant, comments from interested parties and government agencies, and the results of SEA's independent investigations and verification, 49 CFR 1105.7; 1105.109(b)(d)(1996).*

> **Comment #2.1:** As the very nature of an EA is to determine the necessity of an EIS due to the significance of the impacts of the action, the City finds it difficult to reconcile the STB's opposition to the preparation an EIS for the Reno / Sparks / Truckee Meadows area in the face of overwhelming evidence of significant impacts on the human environment. On the other hand, the STB predetermined the need for an EIS in the CSX Corporation and CSX Transportation, Inc., Norfolk Southern Corporation and Norfolk Southern Railway Company — Control and Operating Leases / Agreements — Conrail, Inc. and Consolidated Rail Corporation (STB Finance Docket No. 33388) as demonstrated by the STB's statement in the July 7, 1997 Federal Register (FR):
>
> > *...[t]o evaluate and consider the potential environmental impacts that **may result** from the proposed transaction, the Board's Section of Environmental Analysis (SEA) will prepare an environmental impact statement (EIS)* [emphasis added] (62 FR 36332).
>
> The statement itself indicates both SEA's and the STB's current lack of knowledge of environmental impacts that may result from the proposed Conrail transaction. The Reno / Sparks / Truckee Meadows area deserves this same consideration.

PMP Text Quote #3: page 2 - 9, ¶ 5, line 1: *The Reno Mitigation Study is being conducted by SEA with the assistance of an independent third-party contractor. The President's Council on Environmental Quality regulations, 40 CFR 1 506.5(c)(1996), allow a Federal agency to*

select a contractor to prepare an environmental document, provided that: (1) the contractor is selected solely by the lead agency, (2) the contractor has no conflict of interest, (3) the contractor executes a disclosure statement prepared by the lead agency specifying that the contractor has no financial or other interest in the outcome of the project, (4) the responsible federal official furnishes guidance and participates in the preparation of the document, (5) the responsible federal official independently evaluates the document prior to approval, and (6) the responsible federal official is responsible for the scope and content of the document. SEA has applied these standards to its independent contractor in the preparation of this Preliminary Mitigation Plan (PMP).

page 2 - 10, ¶ 1, line 1: *SEA supplied the City of Reno with appropriate information concerning the third-party contractor and subcontractor. However, information relating to compensation was not provided, because SEA is not involved in matters of compensation for independent third-party contractors.*

> **Comment #3.1:** The City made an appropriate and reasonable request for disclosure of the financial compensation being paid to SEA's retained independent contractor, De Leuw Cather, & Company (DCCo). Please refer to the November 22, 1996 letter to Elaine Kaiser, Chief Section of Environmental Analysis from Paul Lamboley, lead counsel for the City, placed in the record by the City on August 8, 1997 as set forth in Appendix A of this comment document. This information is again requested in order to ascertain any conflict of interest which may exist.

PMP Text Quote #4: page 6 - 3 to 6 - 4, ¶ 5, line 4: *To evaluate reasonably foreseeable conditions, the SEA study team used future vehicular traffic volumes projected for the Year 2000. Calculations of both pre- and post-merger conditions used these projected Year 2000 traffic levels to assure that the difference between pre- and post-merger potential environmental impacts could be attributed solely to changes in train traffic.*

> **Comment #4.1:** SEA would have you believe that some how the pre-merger conditions are the year 2000 vehicular traffic. How can this be pre-merger? It is the City's understanding that pre-merger would have to be some time prior to August 12, 1996, when the STB approved the UP/SP merger. Post-merger would have to some time after September 12, 1996, the merger consummation date. The entire PMP and all of its analyses are missing comparisons between the "pre-merger existing environmental conditions" with 1995 vehicle traffic (ADT) and 12.7 through freight trains per day and the post-merger conditions with year 2000 vehicle traffic (ADT) and 24.0 through freight trains per day.

PMP Text Quote #5: page Executive Summary - 2, ¶ 1, line 1: *The National Environmental Policy Act (NEPA) requires that agencies take a "hard look" at the environmental consequences of their decisions, and this directive served as SEA's guide in conducting the Reno Mitigation Study...*

Comment #5.1: Determination of the "affected environment" required "description of environment of the area(s) to be affected or created by the alternatives" (40 CFR 1502.15) including a biological assessment of the Truckee River (see Section 3.8 - Biological Resources on page 3 - 25 of this comment document for detailed comments from the City).

Comment #5.2: "Environmental consequences" required review of scientific and analytic basis of the elements required by NEPA section 102(2)(c)(I-v) and sections (a)-(k) (§1502.16) not the scientifically inaccurate method to determine the average speed of a train that SEA has chosen (see Speed Calculation Comment #22.1 on page 2 - 22 of this comment document, relative to Data Collection Comment #21.1 on page 2 - 20 of this comment document).

Comment #5.3: Review of "alternatives" built on the definition and description of affected environment and environmental consequences (§ 1502.14) which would have equally investigated grade separations and the depressed railway options (see Section 4.2 - Tier 2 Mitigation on page 4 - 14 of this comment document for detailed comments from the City).

Comment #5.4: Overall methodology of the Reno Mitigation Study should have been designed to ensure professional integrity (§1502.24) as opposed to the methodology the PMP employs with its substandard speed calculations (see Speed Calculation Comment #22.1 on page 2 - 22 of this comment document, relative to Data Collection Comment #21.1 on page 2 - 20 of this comment document).

Comment #5.5: Cost-benefit analysis of alternative choices should have been a material consideration (§ 1502.23) (see Section 3.13 - Economic Issues on page 3 - 35 of this comment document for detailed comment from the City).

Comment #5.6: The PMP states that NEPA requires that agencies take a "hard look" at environmental consequences of their decisions and that this directive served as SEA's guide in conducting this mitigation study. The City can only interpret this statement to mean that SEA took a "hard look" at the increased speed mitigation option, and the other mitigation options received a "softer", less discerning "look". This is evidenced by the lack of specific analysis reported on both grade separations and the depressed railway mitigation options. The PMP's approach appears to be that when typical construction project impacts such as dust / noise and potential pre-historic and historic resource clearances are present, these "impacts" are used as an excuse to justify the discontinuance of that "hard look" and "need for further study", such is the case with grade separations and the depressed railway. Ironically, a "no further study required" determination was made by SEA relating to the building of pedestrian overpasses which would have the identical dust / noise and potential pre-historic and historic resource clearances (the identical basis for "needing further study" determinations by SEA for grade separations and the depressed railway).

Comment #5.7: SEA staff member and study director Harold McNulty stated at the SEA public hearings held in Reno on October 9, 1997 that SEA has studied the rail line through Reno "more thoroughly" than any study has ever been done on any stretch of any other rail line and that "we've gone far beyond the EIS process". The City, and the numerous citizens who presented testimony at the public hearings, emphatically disagree that this mitigation study has gone "far beyond" the EIS process as evidenced by the facts and scientific evidence presented for consideration in this comment document. A full EIS, following established NEPA procedures, and based upon sound scientific data, must be conducted by SEA rather than this undefined mitigation study which appears to reach conclusions contrary to sound scientific evidence, common sense and logical itself.

2.1.2 DECISION NO. 44

PMP Text Quote #6: page 2 - 10, ¶ 2, line 1: *SEA and its study team began the mitigation study in October 1996. In an effort to develop a specifically tailored mitigation plan for Reno as directed by the Board, SEA established the following objectives for the study:*

- *Focus on the effects of increased merger-related rail traffic on the existing UP (formerly SP) line to arrive at additional specifically tailored mitigation for communities in and around Reno to ensure that localized environmental issues are effectively addressed.*
- ***Identify the number and precise location of highway/rail grade separations and rail/pedestrian grade separations, if warranted*** [emphasis added].
- *Consider additional mitigation to supplement the mitigation already imposed to address air quality effects on Reno resulting from the merger.*
- *Examine private and public funding options to share the cost of additional mitigation.*
- *Provide a forum to exchange ideas and concerns.*
- *Explore independent and innovative mitigation options for Reno.*
- *Facilitate the negotiation of an independent, mutually acceptable agreement among the parties.*
- *Provide an opportunity for public input throughout the study process.*

Comment #6.1: SEA states that one goal of the mitigation study was to "identify the number and precise location of highway / rail grade separations and rail / pedestrian grade separations, **if warranted**" [emphasis added]. This emphasized language is factually inaccurate as evidenced by both the clear mandate of the STB's Decision No. 44 and the handouts distributed by SEA in February, 1997 to the Reno Mitigation Task Force. Specifically, Decision No. 44 states:

> *...[w]ith respect to vehicular and pedestrian safety, SEA has determined that separated grade crossings and pedestrian overpasses and underpasses* ***will be needed*** *to address safety concerns on the existing rail lines in Reno and Wichita. Accordingly,* ***the studies will identify the appropriate number and precise location of highway/rail***

grade separations and rail/pedestrian grade separations in Reno and Wichita [emphasis added] (STB, 1997d:Appendix A, page 5 - 6).

Further, Appendix B of this comment document sets forth a handout distributed by SEA to task force members expressly stating that the mitigation study goals include, "indentif[ing] the number and precise location of highway/rail grade separations and rail pedestrian grade separations". No "if warranted" disclaimer is included in either Decision No. 44 or the documents distributed by SEA during the task force process. Clearly, the PMP fails to address a mandatory directive of the STB and this oversight must be corrected in the FMP.

PMP Text Quote #7: page 2 - 13, ¶ 3, line 2: *The task force inquired about why there were differences in information provided to the Reno Mitigation Task Force and Wichita's parallel Mitigation Committee, and SEA explained that the studies have different issues and somewhat different schedules.*

Comment #7.1: SEA notes that the City questioned why there were differences in information being disclosed to Wichita than to Reno throughout the task force process. SEA responds to this inquiry by stating that "the studies have different issues and somewhat different schedules". In fact, both the Reno PMP and the Wichita PMP were issued by SEA on the same day, September 15, 1997. Further, of the 11 mitigation measures required of UP for Wichita, 7 of these measures were identical to those required of UP for Reno (see Table 2 below).

PMP Text Quote #8: page 6 - 59, ¶ 3, line 1: *The Board, in its Decision No. 44, directed only a further focused review of the potential environmental impacts of the merger-related increased train traffic levels. SEA has determined, therefore, that additional economic analysis is not required.*

Comment #8.1: Throughout the PMP, clear mandates of the STB's Decision No. 44 are completely ignored by SEA, while other mandates of the STB's Decision No. 44 are steadfastly embraced. The Port of Oakland expansion, benefits of UP's extensive expansions at the Roseville Yard, the UP's own statement that the Central Corridor is their "premier route", and UP's Sierra Nevada tunnel expansion must be fully studied in order to adequately calculate the increased rail traffic the Reno / Sparks / Truckee Meadows area will experience as documented in the UP's July 1, 1997 filing entitled "Applicants' Report on Merger and Condition Implementation" (STB, 1997c).

Table 2

Comparison of Wichita vs. Reno Mitigation Measures

Wichita Mitigation	as compared to	Reno Mitigation
1. Improved tracks and a centralized train control system that would allow increased train speeds and a requirement to operate at those higher speeds.		1. UP shall make the necessary operating changes and capital improvements...to enable trains to operate over the rail line segment [through Reno]. UP shall then operate, and require BN/SF to operate, all trains over the described rail line segment at a speed of 30 mph consistent with safe operating practices dictated by conditions present at the time each train traverses the segment.
2. Elimination of crew changes for through trains in Wichita.		4. UP shall discontinue the practice of adding "helper" locomotives in Woodland Ave. area.
3. Installation of a communications system to inform the emergency dispatch center of train locations on UP rail line.		2 and 3. Subject to City agreement, UP shall install color video displays coordinated with the UP signal system circuitry showing location of each train present on the rail line segment.
7. School safety education program conducted twice a year.		6. Enhanced rail safety program. Supplementing existing school educational programs.
8. Rail safety information to employers employees, and residents adjacent to the UP rail line.		6. Establishing a safety training program for Reno's downtown employees.
9. Train detectors to identify potential problems and reduce risk of derailment.		13 and 14. Installation of a high, wide, shifted load detector and installation of a hot box detector at MP 240.
10. Establishment of a community advisory panel.		15. Establishment of a community advisory panel.
11. Quarterly monitoring reports to be submitted to the City of Wichita and Sedwick County.		17. Quarterly monitoring reports provided to City of Reno and Washoe County.

Sources: STB, 1997d; 1997e

PMP Text Quote #9: page 7 - 43, ¶ 2, line 1: *The City of Reno has requested that consideration be given to a bypass whereby the UP tracks would be relocated out of the downtown area on a new rail line running south of I-80. However, there is no support in the Board's precedent for requiring a railroad seeking merger authority to construct a new railroad line to bypass a city. Nonetheless, private parties could decide to pursue and fund an I-80 bypass. This would require that the parties seek authority to construct and operate from the Board. At that time, the Board would undertake the appropriate environmental review for a bypass alternative.*

Comment #9.1: Throughout the PMP, clear mandates of the STB's Decision No. 44 are completely ignored by SEA, while other mandates of the STB's Decision No. 44 are steadfastly embraced. An EIS is necessary for the Reno / Sparks / Truckee Meadows area to insure that all alternatives, including relocation of the right-of-way, are fully considered[2]. Please refer to the STB's Decision No. 9, issued June 11, 1997 in F.D. No. 33388 ordering a systemwide EIS for the recent merger application of CSX / Norfolk Southern / Conrail.

PMP Text Quote #10: page 8 - 2, ¶ 6, line 1: *In determining whether additional mitigation measures are reasonable, SEA considered the following questions for each option:*

- *Is it consistent with the Board's directives in Decision No. 44 and Decision No.71?*
- *Does it apply directly to the potential environmental impacts of the merger-related increase in trains on existing right-of-way in Reno and Washoe County?*
- *Is it effective in achieving a high degree of mitigation for Reno and Washoe County while still protecting public health and safety?*
- *Is the degree of mitigation tailored to the degree of potential environmental impacts from the merger-related increase in train traffic?*
- *Does it unduly interfere with UP's right to conduct its business and provide rail freight service to its customers?*

Comment #10.1: These mandated directives were not followed by SEA in setting forth this PMP. For example, no requirement for placement of grade separation underpasses or overpasses for vehicles are set forth as required mitigation under the STB's Decision No. 44 directive.

2.1.3 RENO'S ISSUES AND CONCERNS

PMP Text Quote #11: page 2 - 16, ¶ 3, line 4: *City staff members have further stated that the City does not consider requiring UP/SP to construct highway/rail grade separations in Reno to be acceptable mitigation...*

Comment #11.1: To the contrary, during the June 11, 1997, Task Force Meeting #6, Agenda Item No. 3 - Presentation of Traffic Data and Vehicle Traffic Delay Projections for a Range of Mitigation Options, once again the City staff reiterated that the City must first know the impacts to the resources prior to determining the necessary and appropriate mitigation. It is difficult and unreasonable to request the City's opinion regarding specific mitigation options when a complete impact analysis has not yet been set forth. Excerpted from the City's meeting summary for the June 11, 1997 - Task Force #6 Meeting (see Appendix B of this comment document for a complete copy of this meeting summary):

[2]Please note that SEA Study Director Harold McNulty offered stated at the SEA public hearings held in Reno on October 9, 1997 that SEA has studied the rail line through Reno "more thoroughly" than any study has ever been done on any stretch of any other rail line and that "we've gone far beyond the EIS process".

Merri Belaustegui-Traficanti asked how can tier one/tier two mitigation classification decisions be seemingly already made without first knowing the level of impact associated with the merger... Mark [Demuth] followed up by asking how we can be talking now about the level of the solution, when we have not completed the impact analysis...

Mark Demuth stated that baseline conditions are defined as the environment existing at the moment of the action and that the UP must take the environment as it finds it at the time of the merger and can't go back to pre-merger times in the 1960's. [Michael] Hemmer [UP legal council] replied angrily that "that's not what Decision 44 says".

PMP Text Quote #12: page 1 - 1, ¶ 4, line 3: *In preparing this PMP, SEA reviewed and considered the issues and concerns raised by all interested parties.*

page 2 - 15, ¶ 4, line 1: *Appendix E [of the PMP] contains a list of the major issues raised by the public to date. The list summarizes most written comments and letters, input received at the public meetings in February 1997, and input received at the seven task force meetings held to date. The list is organized by topic and identifies where in the PMP the topic is discussed.*

page 2 - 16, ¶ 1, line 3: *SEA has considered all of the City's written submittals in preparation of the PMP. SEA has responded to the City's comments in written correspondence, in task force meetings, and by provision of information in the PMP.*

Comment #12.1: Appendix E of the PMP (ostensibly) lists all of the issues raised (and a number of items are indicated as discussed). To the contrary, they are not. Other issues are merely noted as "comment noted" which appears to the City to mean "acknowledged but no action taken". Table 3 below indicates a number of issues identified from Appendix E of the PMP, which are either not discussed as indicated or indicated "comment noted". The City notes that these items were raised in 38 requests by the City in numerous correspondence placed in the record by the City on August 8, 1997 as set forth in Appendix A of this comment document and have not been addressed, resolved or mitigated t levels below significance.

Table 3

Summary of Key Issues not Discussed in PMP as Indicated

Key Issue Area	Topic	Sub-Topic	Specific Comment / Question / or Issue	Discussed in PMP Section
Environmental Impacts	Safety	Emergency Response Delays	What will happen with emergency services and public transportation access for people living downtown?	6.2.1 & 6.2.3
			The Old Reno Casino has fire truck access problems.	7.2.3
	Air Quality		What are the air quality impacts of increased train traffic?	6.2.11 & 7.2.1
	Noise		The rumbling of the trains (especially hose traveling at slow speeds) and train horns are both a source of annoyance, especially during evening hours; can train horn noise be mitigated?	6.2.9 & 7.2.6
			Noise from train horns affects residents along the tracks, especially in the Verdi area	6.2.9
	Water Quality		What steps has UP taken regarding the potential for future flooding? What impact will FEMA regulations have on the integrity of railbed in the Truckee River canyons?	Beyond scope of study
	Native American Issues		The City supports complete involvement and consultation with Native Americans during the study; the Reno-Sparks indian Colony plans to join the City of Reno's lawsuit;	6.2.7
	Biological Resources		SEA should provide information regarding consultation with US Fish and Wildlife Service (USFWS) regarding endangered species	6.2.8
Other Potential Impacts	Problems in Surrounding Areas		None of the mitigation options seems to address blocked access to the 27 residences in the West 4th St. via Del Curto neighborhood	7.2.6
Train Operations	Increased Train Numbers		Although in the past there were more trains coming through Reno and no complaints, it should be noted that Reno was much smaller the, with less pedestrian and vehicle traffic, and freight trains did not carry the toxic materials they carry today.	Comment noted

Table 3

Summary of Key Issues not Discussed in PMP as Indicated

Key Issue Area	Topic	Sub-Topic	Specific Comment / Question / or Issue	Discussed in PMP Section
Train Operations (Cont'd).	Projections		What is meant by "Future" projections?	4.4
			What assurances does the City have that train traffic will not increase after 5 years?	4.4.1
			How many other towns have similar problems because of the merger?	Beyond scope of study
Involved Parties	Union Pacific/ City of Reno Relations		According to city staff, "UP has reportedly attempted to meet privately with downtown businesses to 'buy them off'" and the City objects to this.	2.9
			The City requested that UP provide detailed information to the task force regarding compensation and fees paid to third-party contractors and related issues regarding other contracts and limitations imposed by the Board	2.6.1
	Third Party Contractor		The City has stated there may be a potential conflict of interest regarding SEA's independent third-party contractor and/or its subcontractors;	2.61
			The City requested that the third-party contractor project director discuss with the task force and provide detailed information concerning potential conflicts of interest of all parties involved in the Board's environmental investigation in connection with the preparation of the EA, the Post-EA, and/or the Reno Mitigation Plan	2.6.1
Mitigation Study	Methodology & Process	NEPA Study Scheduling	The City of Reno submitted the following comments on methodology and study process. • Determination of the "affected environment" requires "description of environment of the area(s) to be affected or created by the alternatives" (§ 1502.15) et al.	Comment noted
		Historical Data/ Preexisting Conditions	The UP submitted a study and letter indicating that development patterns allowed by the City have contributed to the existing land use and train conflicts, long before the merger. The UP letter notes that the City of Reno voted down the funding of a depressed railway in 1980.	3

Table 3

Summary of Key Issues not Discussed in PMP as Indicated

Key Issue Area	Topic	Sub-Topic	Specific Comment / Question / or Issue	Discussed in PMP Section
Mitigation Study (Cont'd.)	Study Data	Trains	If the study investigates the effective mitigation potential of manipulation of train speed, a similar evaluation of the manipulation of train numbers per day and length of trains should also be performed	in 7.1
		Noise	That is the Board's definition of noise receptors? It seems the Board uses a very narrow definition; noise receptors analysis should include consideration of hotels and other commercial properties adjacent to UP's trackage in Reno	6.2.9
			Night-weighted averages are not relevant in Reno because it is a 24-hour/day city	6.2.9
			The sensitive receptor inventory should be provided for review	6.2.9
	Public Involvement/ Public Review Schedule		The mitigation study and task force schedule should be extended up to 90 days; can sea recommend to the Board that the study schedule be extended?	2.7.2
		Task Force	The City stated its view that "The mission of the task force should be to ensure that all adverse impacts associated with the merger are mitigated to less than significant levels, and that mitigation proposals do not in and of themselves create additional adverse impact.	2.7.2
			The City wrote a letter stating their view that the task force meetings seem to focus on mitigation options and do not include full discussion of possible merger-related environmental impacts in Reno;	2.7.2
Board Jurisdiction			Can the Board control train speed? Length of trains? Numbers of cars?	2.2
			Can the Board impose further caps or limitations on the number of trains as a long-term solution?	2.2
Mitigation	Evaluation Criteria		The City should look ahead 20-40 years when thinking about mitigation options	Comment noted
	Impacts of Mitigation		Consider time and costs necessary to build various mitigation options; some parties noted that five years of construction is "unthinkable"	7 & 8

Table 3

Summary of Key Issues not Discussed in PMP as Indicated

Key Issue Area	Topic	Sub-Topic	Specific Comment / Question / or Issue	Discussed in PMP Section
Mitigation (Cont'd.)	Mitigation Options	City Preference	In task force meetings, the City stated that underpass/overpass mitigation options are unacceptable and the City expressed reservations about speeding up the trains.	2.8
		Depressed Rail Corridor	Are there examples of successful uses of depressed corridor in other cities?	Beyond study scope
			Can all of the traffic be rerouted to the Feather River route during construction? What factors determine the maximum capacity of the Feather River route, and what is required to increase the capacity if necessary?	Beyond study scope
		Options for Mitigating Noise Impacts	Noise impacts can be mitigated by creating sound buffers	7.2.6
		Scheduling Trains	Decrease number of trains at night	8
			Noted in the study a system should be provided which alerts emergency responder dispatch centers as to when trains are on the tracks	7.26
		Grade separations	Underpasses, such as the one on W. Second St., make people feel "trapped" and "at-risk"	Comment noted
			Underpasses should be built at the following streets one at a time to avoid inconvenience" Keystone, Arlington, Washington, Ralston, and Evans	Comment noted

Source: STB, 1997d: Appendix E

PMP Text Quote #13: page 2 - 4 to 2 - 5, ¶ 7, line 1: *SEA also concluded that the merger and related rail line abandonments and constructions could have potential environmental effects regarding safety, air quality, noise, and/or transportation, including the transportation of hazardous materials. In the EA and Post EA, SEA proposed extensive mitigation measures, including the Reno Mitigation Study, that address environmental concerns that were raised, e.g., issues raised by the City of Reno.*

> **Comment #13.1:** Almost every concern raised by the citizens of the Reno / Sparks / Truckee Meadows area were not addressed in the Tier 1 (required) mitigation for the UP. Rather, the concerns raised were summarily addressed as Tier 2, (or shared funding) mitigation. Please refer specifically to the City's summary of issues and concerns, with supporting letter requests, placed in the record throughout the task force process and again placed in the record by the City on August 8, 1997 as set forth in Appendix A of this comment document.

PMP Text Quote #14: page 2 - 2, ¶ 7, line 1: *The United States Congress provides its policies regarding railroad regulation in the 1995 ICC Termination Act (Pub. L. No. 104-88; December 29, 1995), which states in part:*

"In regulating the railroad industry, it is the policy of the United States Government...

(3) to promote a safe and efficient rail transportation system by allowing rail carriers to earn adequate revenues, as determined by the Board;...

(8) to operate transportation facilities and equipment without detriment to the public health and safety;...

> **Comment #14.1:** As established in this comment document and demonstrated in SEA's PMP, public health and safety concerns have been largely ignored by SEA. For example, SEA concedes (STB, 1997d:7 - 10, 8 - 8) that "accidents are likely to be more severe with increased train speeds. Specifically, Figure 7.2.1-2 [of the PMP] shows that anticipated fatality rates (number of fatalities per accident) increase as train speeds increase."

PMP Text Quote #15: page 2 - 12, ¶ 3, line 3: *The task force serves as a local forum to provide input throughout the study, to disseminate appropriate study information to the community, and to help define community issues.*

> **Comment #15.1:** If the purpose of the task force was to define community issues — then SEA has failed to accomplish this goal because the majority of the community concerns were not addressed nor analyzed as Tier 1 required mitigation.

PMP Text Quote #16: page 2 - 13, ¶ 1, line 1: *The City representatives and several other task force members requested that additional task force meetings be held in the summer, that the*

entire study schedule be extended, and that the public review period be longer than 30 days. SEA conducted a task force meeting in July, but not in August, given the need to focus on finalizing the PMP so it would be ready for public review and comment in September. SEA plans to hold both a task force meeting and two public meetings on the PMP in October.

Comment #16.1: On June 11, 1997, 14 task force members placed a letter in the record expressly requesting that the study calendar be extended in order to allow SEA the sufficient time needed to fully study each of the issues and concerns raised by the task force (see Appendix A of this comment document). SEA failed to honor this request and in fact never proposed such an extension of time before the STB. Furthermore, two task force meetings were originally scheduled each month through September 1997. SEA only held one meeting monthly failing to utilize the community resources available to meet twice each month, and abruptly cancelled both the August 1997 and September 1997 meetings without input from the task force members.

2.1.4 HISTORIC DEVELOPMENT OF RENO

PMP Text Quote #17: page 2 - 18, ¶ 2, line 1: *Reno has experienced an upswing in growth in the century since the railroad's inception.*

Comment #17.1: The Reno / Sparks / Truckee Meadows area has not experienced the periods of "explosive" growth (usually associated with the boom-bust cycle) typical of many communities in Nevada. When, for example, Reno began its battle to cross the tracks downtown in the 1880s, Reno's population was about 1,300; it had grown only to a little over 20,000 when the battle ended in the 1940s. Like the rest of the country, the growth of Reno's economy and population accelerated in the post-war period. By 1950, the population stood at 32, 497; in 1960 it was 51,470; and, in 1970 the population was 72,863. In other words, *Reno remained a small town*. More important, perhaps, is the pattern of growth. Reno, like most other towns in the age of the automobile, grew out not up; therefore, the downtown suffered a decline as retail and service uses followed the population to subdivisions on the periphery. This growth pattern, which continues to the present, acts to counterbalance the increase in downtown traffic associated with growth in the community as a whole (see Appendix I of this comment document). Further, the railroads themselves, travelling through the Reno / Sparks / Truckee Meadows area have experienced an "upswing" in growth since the late 1800s.

PMP Text Quote #18: page 3 - 1, ¶ 2, 3, 4, 5, & 6, line 1: *Located in Washoe County, the City of Reno has historically been the regional center for goods, services, education, and cultural and recreational activities serving the smaller communities in northern Nevada and northeastern California.*

The town was originally developed more than a hundred years ago by the transcontinental North American Railroad, which chose the site for its strategic location and natural suitability

for commerce. In 1868, the Central Pacific Railroad purchased a tract of land and established the street grid and town platting that still exists in contemporary downtown Reno.

Initially, Reno grew as a classic railroad town. Local commerce and the City core developed from east to west along Commercial Row, adjacent to the rail corridor. Residential areas were situated beyond the tracks to the north, and Virginia Street was the main north-south artery through town. The central business core gradually shifted to the south, away from the tracks to Virginia Street between the train station and the Truckee River.

Reno remained primarily a railroad town until the early 1930s when the legalization of gambling and a growing number of casinos shifted the economic emphasis from rail-based commerce to tourism. The growth of the legalized gaming industry continued to expand south of the railroad tracks until after World War II.

In 1947, the City Council adopted the "Red Line Ordinance," which restricted casino gambling to a commercial district along Virginia Street. This restriction prevented the development of casinos elsewhere in the City. Although the boundaries of the Red Line area expanded during the 1950s and 1960s, the designated gambling district remained south of the tracks.

page 3 - 2, ¶ 1, line 1: *In 1970, the Reno City Council removed the original Red Line Ordinance, thereby permitting gaming establishments outside of the designated downtown district. The removal of this ordinance triggered the rapid growth of new casinos and hotels during the 1970s and 1980s as well as the migration of development north of the railroad tracks. This northward growth movement was also encouraged by the construction of I-80 between Seventh and Eighth streets and the availability of affordable land north of the tracks. Table 3-1 shows the hotels/casinos north of the rail right-of-way that were approved for development since 1970. This northward expansion meant that the railroad tracks were again in the center of the downtown area. Figure 3-1 is an aerial view of the downtown Reno area.*

> **Comment #18.1:** By the early years of this century, downtown Reno was firmly established where it is centered today, around Virginia Street and the Truckee River. From the 1970s onward, the growth of downtown destination resorts has taken place north of the railroad. This growth has been impressive — nearly 6,000 rooms in destination resorts and the National Bowling Stadium. It took place north of the tracks because land was less expensive, and because that is where the I-80 interstate freeway, primary vehicular tourist access, was located in the 1960s. With the exception of the marked growth of the Saint Mary's Medical "Campus" adjacent to I-80, there has been no other significant commercial or office development in the downtown to the north of the tracks. Certainly, this must result in a reduction in the total number of vehicular and pedestrian crossings of the railroad.

PMP Text Quote #19: page 3 - 6 to 3 - 9, Section 3.3 - Key Planning Policies: *The SEA study team reviewed the City of Reno's and the Redevelopment Agency's planning documents to*

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determine how their policies relate to the railroad. This section summarizes these policies. Reviewed documents include:

- *City of Reno, Amendment to the Redevelopment Plan for the Downtown Redevelopment Area Reno, Nevada 1990, December 14, 1990.*
- *City of Reno, City of Reno Master Plan Part One: Growth and Development, November 1, 1996.*
- *City of Reno, City of Reno Master Plan Part Two: Community Design Handbook, November 1, 1996.*
- *City of Reno, Plan Report Downtown Redevelopment Area Reno, Nevada 1990, November 27, 1990.*
- *City of Reno, Reno, Nevada Downtown Development Plan, March 4, 1983.*
- *City of Reno, Revised Project Report Railroad Merger Mitigation Alternatives, July 10, 1996.*
- *City of Reno Redevelopment Agency, Center City Housing Strategy for the City of Reno, November 7, 1995*
- *City of Reno Redevelopment Agency, Reno Downtown Traffic/Parking Study, December 1995.*
- *City of Reno Redevelopment Agency, The Blueprint. A Revitalization Strategy for Downtown Reno, December 8, 1992.*

Several documents prepared prior to the merger address physical conditions adjacent to the existing railroad track through downtown Reno. For example, The Blueprint: A Revitalization Study for Downtown Reno states that "...minimize[ing] the effects of the railroad on the downtown..." is a major issue regarding redevelopment of the entertainment core area. The study proposes improvements along the railroad corridor such as street lighting and landscaping (trees and honeysuckle along chain-link fences) along the railroad right-of-way. The Amendment to the Redevelopment Plan for the Downtown Redevelopment Area Reno, Nevada 1990 has similar proposals:

- *Encourage attractive landscaping adjacent to the tracks whenever possible.*
- *Promote the reduction of the dust adjacent to the tracks by encouraging dust-free surfaces.*
- *Promote a mechanism to maintain a clean track side.*
- *Encourage the improvement of the visual quality of fencing and maintenance of fencing for safety.*

The City's redevelopment plans also identify railroad-related impacts on noise and public health and safety as a concern. The Amendment to the Redevelopment Plan has policies stating the following: "encourage the railroad to reduce and/or abate noise caused by the crossing signs and train 'whistle'" and "encourage the abatement of noise caused by trains." The City of Reno Master Plan Part Two: Community Design Handbook policy number UC-12 states: "To protect the health and safety of its visitors, any potential adverse effects of the railroad line must be identified and mitigated."

Several policies suggest that the City of Reno be proactive in working with the railroad in planning and problem solving. This is evident in the Amendment to the Redevelopment Plan's policy to "encourage working relationship with the Southern Pacific Railway Company to improve conditions at and adjacent to the tracks." The City of Reno Master Plan Part Two also contains policies supporting involvement with the railroad:

- *CD-46: Work with the railroad in planning new lines and spurs. Discourage new railroad lines and spurs through residential areas.*
- *UC-17: Work with the railroad company to coordinate schedules to minimize rail traffic through Reno during peak hours.*

Other policies address reuse or refurbishment of railroad buildings. The City of Reno Master Plan Part Two policy number UC-16 states "Identify and encourage the refurbishment and reuse of existing buildings along the railroad tracks and public acquisition of railroad right-of-way along the river for public purposes." Policy number UC-14 is more specific: "Encourage and assist in the refurbishment of the building now used by Amtrak to make it an attractive facility for visitors and an asset to the downtown area." The Amendment to the Redevelopment Plan outlines these policies:

- *Identify existing railroad buildings that could be reused by the public or private sector and work to promote the purchase of these from the railway companies.*
- *Promote the investigation, and support of the refurbishment of the railway station on Commercial Row to make it an attractive facility to visitors.*

The Reno Downtown Traffic/Parking Study identifies the railroad as a major traffic constraint in the downtown area. The study states that Amtrak trains arriving and departing cause traffic interruption. The study suggests relocating the Amtrak station and forming a multimodal transportation hub that also provides bus service.

The study indicates that freight trains have a larger impact to downtown traffic. Lowering the tracks below grade through the downtown area is an option that continues to be considered by the City. The idea of underpasses at Arlington and/or Evans Avenue has been discussed, to a limited extent, as an alternative to lowering the tracks. The Amendment to the Redevelopment Plan also contains policies addressing the impacts of trains on vehicular and pedestrian traffic:

- *Promote the investigation of tunneling under the tracks to provide for enhanced vehicular and pedestrian traffic circulation.*
- *Encourage shorter trains coming into the area so as not to disturb and disrupt vehicular street traffic.*

Other policies suggest passenger trains as part of the solution to traffic. The Amendment to the Redevelopment Plan states: "Encourage the establishment of 'shuttle' trains from Reno to Sparks," while the City of Reno Master Plan Part Two policy number UC-13 suggests: "Encourage and promote Amtrak passenger service to downtown Reno."

Comment #19.1: The railroad runs through town — it has for over 130 years. This is a simple fact that the City has learned to live with. When conflict has come, it has been a result railroad interests being at variance with those of the citizens of the City. For example, as the UP sponsored *Downtown Reno & The Railroad: A Railroad: A Railroad Runs Through It* (Starrs, n.d.) points out, the railroad "...hoping to profit from land sales and generate business for its trains...platted the downtown street pattern that is still in use today, using a design that minimized wagon crossings of the railroad grade". Minimizing wagon crossings means that important north-south streets like Virginia, Center, Lake, and Arlington stopped dead at tracks, yards, and other railroad facilities. From the 1880s, when the population was about 1,300, through the 1930s, when the City had grown to about 20,000, the City fought to open up its circulation pattern. This response, which made good planning and common sense in a town of Reno's size, the age of the horse and wagon, and later of the trolley, was made necessary by the symmetrical plan the railroad had used when it platted the town.

Clearly, such battles are time-consuming and costly; because of this, the immunity of the railroad to City regulations in its operations and the uses of its right-of-way, and the great difficulty historically experienced by local governments in their dealings with the railroad, the City has generally been forced to coexist by planning around the railroad interests whenever the health and safety of its citizens is not directly threatened.

PMP Text Quote #20: page 6 - 11, ¶ 6, line 1: *As noted in Section 3, the City has developed around the rail line over the years and is bisected by the east-west tracks. There are several at-grade crossings, with only two highway/rail grade-separated crossings near downtown Reno -- an underpass on the west side of the downtown area at 2nd Street and Dickerson Road, and an underpass and a new overpass on the east side of downtown at Wells Avenue. These highway/rail grade separations are two miles apart.*

Comment #20.1: As the City noted in its comments[3] on the Starrs' *Downtown Reno & The Railroad: A Railroad: A Railroad Runs Through It* (n.d.) sponsored by UP, the railroad used a symmetrical plan, which put the tracks through the center of town, when it planned Reno. Some towns created by the railroad, for example Las Vegas and Sparks, were laid-out on only one side of the tracks. Reno, in contrast was laid out on both sides of the tracks. In all three cases, actual downtown development followed the original plan. Thus, the original form of the town relative to the tracks, a factor controlled not by the town but by the railroad, determined the potential for downtown growth as well as for conflicts between the communities and the railroad. The City's comments also noted the active

[3]Please refer to a document entitled the "Comments on Union Pacific's *Downtown Reno & the Railroad*" by Stewart M. Peters, Ph.D., Principal Planner for the City, for a complete discussion of the historical development of downtown Reno (see Appendix I of this comment document).

participation in the development and sale for development of downtown right-of-way no longer useful for railroad operations.

2.1.5 DATA COLLECTION

PMP Text Quote #21: page 5 - 4, ¶ 5, line 1: *Data verification involved a joint effort among representatives of the City of Reno, UP, and the SEA study team and included a comparison of survey results with videotapes of grade crossings that were filmed independently by the City of Reno. UP furnished actual train length data that were added to the database. Appendix G [of the PMP] includes a full printout of the train survey database.*

During the train survey, the SEA study team counted vehicular traffic on the five surveyed streets. The survey included mechanical counts of street traffic volumes by 15-minute periods. The SEA study team corrected some minor gaps and entered these data into a database (Appendix H [of the PMP]). The following sections include summary graphs from the survey databases. Traffic data were verified by review of the videotapes, including a review of sample situations on several streets to define a relationship between approaching traffic volumes and average dissipation rates of vehicles delayed by trains.

Comment #21.1: As set forth in a report from Mark A. Demuth of *The Environmental Team* to Merri Belaustegui-Traficanti, Deputy City Attorney, the following validity and reliability information was noted during the data verification activities (DVAs) which began on Friday February 28, 1997, at DCCo's office in San Francisco by Dave Mansen and David Tait from DCCo, D. Patrick Jumper from UP, and Mark A. Demuth from *The Environmental Team* representing the City:

> *The initial DVAs included verifying the correlation between the observed train events and the actual consists provided by UP, as well as noting gate down times which appeared by inspection to be unwarrantedly high or low. These suspect times were verified by viewing and timing the gates from the tapes; corrections were made as noted.*
>
> *Specific DVAs for each crossing follow:*
>
> ***CENTER** - Observed train car and locomotive counts were verified and cross checked with UP data and corrected at the same time the Center Street events were verified for gate down times and vehicle queue counts. Of specific note, train arrives at Center Street intersection approximately 25 to 30 seconds after gate activation and the crossing gates rise after the train is 50 feet clear of the intersection (approximately 10 seconds later).*

ARLINGTON *- The initial DVAs concluded that the observed train events were unreliable for both gate down times and vehicle queue counts for the AM observer at Arlington. Events 1 - 38 were re-done by Jumper, Mansen, Tait, and Demuth from the City of Reno's tapes. Events 39 - 152 were re-done by a De Leuw employee after being familiarized with the methodology. Events 153 - 176 were completed by Tait and Demuth. Of specific note, motion detector switches in Arlington account for frequently an additional 10 - 45 seconds of premature gate down times on WB moves.*

SIERRA *- The DVAs indicated that the vehicle queue calculations were inaccurately calculated. After viewing approximately 35 events it was determined that a computational error had been made on all Sierra vehicle queue calculations, it was mutually determined that the calculated vehicle queues for Sierra should be reduced based upon the 4th street intersection being included in potential stacking area. Secondly all vehicle queue calculations were re-done based upon an observed spacing or packing of vehicles on Sierra from the originally calculated 20-feet per car to 25-feet per car.*

VIRGINIA *- The DVAs concluded that the gate down times and vehicle queue calculations and counts were within acceptable levels of confidence.*

KEYSTONE *- The DVAs concluded that the gate down times and vehicle queue calculations were within acceptable levels of confidence.*

The final activity of the data validation was to create event records for missing events which could be created from the tapes. Data forms were completed and the records added noting the observation was from video tape.

PMP Text Quote #22: page 4 - 2, ¶ 5, line 1: *Freight trains generally pass through downtown Reno at 20 mph, which is the established train speed limit for this segment of track.*

page 6 - 3, Table 6.2.1-1, Note [*]: *Arlington Street measured 43 seconds average 2/3-10/97; UP reset the mechanism following the survey, with the resulting average estimated to be 32 seconds.*

page 6 - 3, ¶ 2, line 1: *Model Calibration: Using a data set of approximately 40 videotaped train observations each for Keystone and Virginia streets and approximately 20 videotaped train observations each for Arlington, Center, and Sierra streets, the SEA study team calibrated the computer mathematical model used to analyze traffic delay. Keystone and Virginia streets were sampled much more heavily than the other streets, because those two streets experienced*

greater delay during the survey week. Appendix I [of the PMP] provides the details of the calibration procedures.

For each crossing, the team collected data on the amount of time during which the gate was closed immediately before and after trains passed, i.e., the amount of time the crossing gate is down when the train is not in the crossing. This amount of time is constant for each individual crossing. The SEA study team found that the average gate down time during which the train was not in the crossing was 32.4 seconds, and this value was used when better information was not available for a given street. (During the survey week, the timing on the Arlington gate was set too high, with values averaging approximately 43 seconds. According to Union Pacific (UP), this gate was reset during the week following the survey.)

page 7 - 4, ¶ 6, line 1: *Vehicular Traffic Delay: The vehicular traffic delay model described in Appendix I [of the PMP] was expanded to allow for an analysis of the effects of increases or decreases in train speeds. An important relationship utilized is that between train speed and gate down time, as follows:*

[Gate down time] = [Train length]/[Train speed] + [Gate time constant]

where:

[Gate time constant] = average time the crossing gate is down before and after the train is in the crossing.

Application of these equations allows for analysis of changes in vehicular traffic delay associated with changes in train speed. Appendix I [of the PMP] includes a more detailed compilation of the basic delay equations.

For this analysis, train speed was calculated using observed gate down time and train length from the train survey...Variations in the gate time data resulted in a few trains with calculated speeds higher than the UP established limit of 20 mph, and these are considered to be anomalies in the survey data. Overall, the calculated average speeds appear to be consistent with the established UP limit, with a calculated average speed during the survey of 18.7 mph and a median speed of 19.0 mph.

To evaluate increased train speeds as a potential mitigation option, the SEA study team first calculated the speed of each freight train that passed through downtown Reno during the train survey in February 1997...SEA used the observed crossing gate down times and actual length of each train (provided by UP) to calculate the speed of each train during the survey week. The calculated average train speed during the February survey week was 18.7 miles per hour (mph), which is near the current UP-established train speed limit of 20 mph.

Comment #22.1: The City is disheartened that SEA would choose to use such a scientifically inaccurate method to determine the average speed of a train. The above passage indicates that the speed of each train event as defined in Section

6.2.1 of the FMP as "[a] train event is the passage of a train through a crossing" (STB, 1997d:6 - 4) and is calculated in miles per hours as:

[Gate down time] = [Train length] / [Train speed] + [Gate time constant]

where:

[Gate time constant] = average time the crossing gate is down before and after the train is in the crossing

or as restated:

[Train speed mph] = [Train length miles] / [Gate down time (hours)] - [Gate time constant]

where:

[Gate time constant] = 0.009 hours for signal activation and deactivation

These equations would be accurate only if the object is moving at a steady speed with no acceleration or deceleration and if all gate time constants were actually "a constant". As indicated in Data Collection Comment #21.1 on page 2 - 20 of this comment document, the video tapes of UP trains during the subject data collection period showed widely varying gate activation and deactivation times. SEA also indicates in Table 6.2.1-1 (STB, 1997d:6 - 3) that **average** gate time were used as **constants** regardless that they vary from 31 seconds to 43 seconds. In spite of these methodological errors, the City attempted to recreate the 18.7 mph average and 19.0 median speeds indicated by SEA.

Initially the City was unable to obtain the same results. The City accounted for these initial results through a number of database inaccuracies:

1. Initially all events or records in the database totaled 901 [176 trains, noting there is no Event #5, therefore there are only 176 trains numbered 1-4 and 6-177].

2. Eighteen (18) train events were deleted as they were actually gate events where no actual train crossed yet the signals were activated. Three (3) hi-rail events were deleted as they were not considered in counts of freight trains.

3. Event #118 for Virginia Street was changed from freight to Amtrak.

4. Direction of Events #15 and #74 for Center Street were changed to eastbound. This provided a revised total of all events or records totaling 880 events [176 trains].

5. All non-freight events were then deleted leaving 700 events or records [140 trains].

6. Twenty-five (25) freight events (events #19, #65, #70, #71, AND #130 at each of 5 crossings) with no length were deleted leaving 675 events [135 trains].

7. All overlapping train events (either freight & freight [40 events or 18 trains] or freight & non-freight [13 events or 4 trains] including events #11 & #12 (3 each); #52 & #53 (1 each); #80 & non-freight (4 total); #85 & #86 (1 each), #102 & #103 (4 each); #106 & #107 (3 each); #119 & #120 (1 each); #123 & #124 (1 each); #135 & non-freight (4 total); #137, non-freight, & #139 (5 total); #151 & #152 (3 each); and #153 & #154 (3 each) for a total of 53 events) were deleted from the database after careful consideration determining that without the exact length of the overlap in trains it was mathematically impossible to determine the speed of the trains from the given data, leaving 622 events [113 trains].

Using the above equations and revised database as described above, the City was able to reproduce a 18.6 ± 0.1 mph calculated average speed and a median speed of 18.9 ± 0.1 mph. As initially suspected by the City, these included 237 events where trains have calculated speed in excess of the SP timetable / speed limit of 20 mph (minimum 5.4 mph and maximum 49.9 mph), therefore only 385 events [115 trains] **may** have correctly calculated speeds based upon SEA's methodology of determining the speed of the trains.

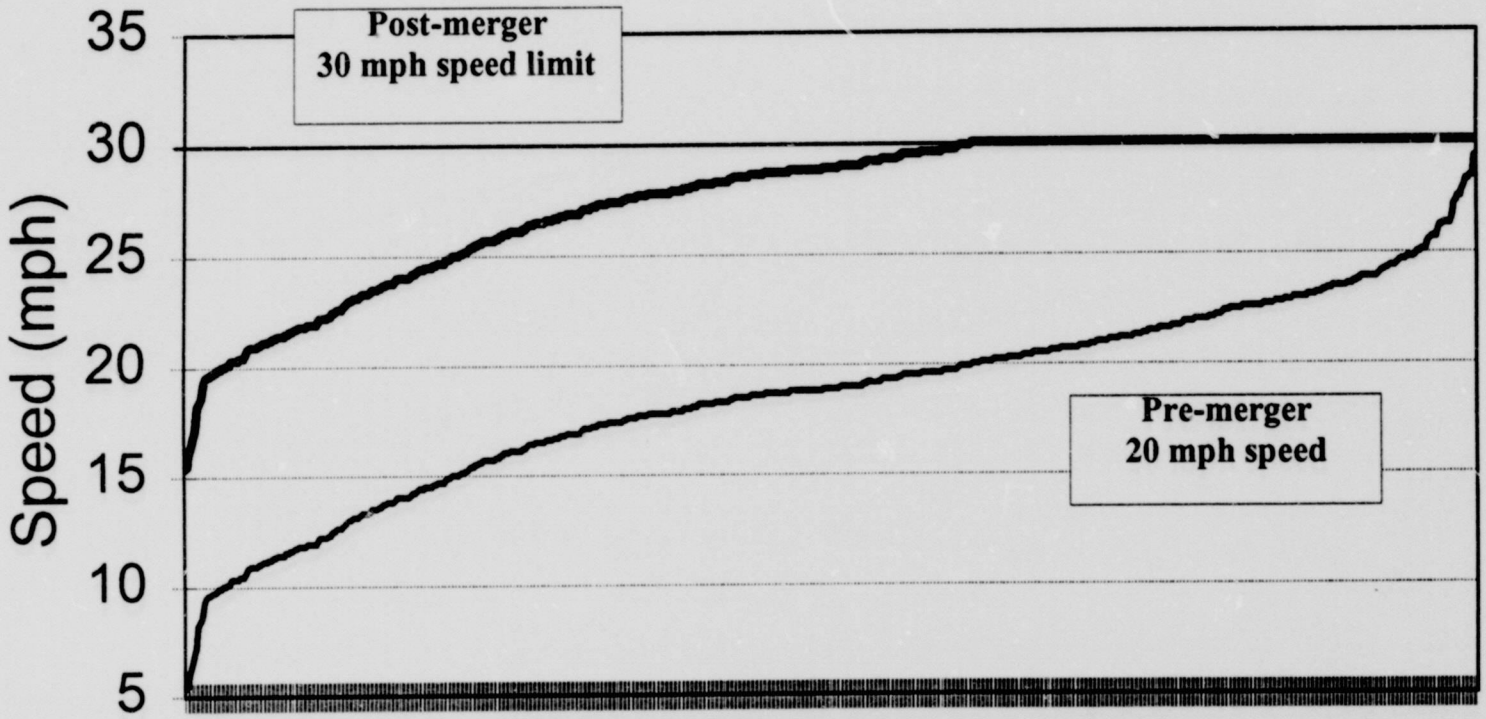
As noted in the PMP (1997:7-5): "Variations in the gate time data resulted in a few trains with calculated speeds higher than the UP established limit of 20 mph, and these are considered to be anomalies in the survey data." The City would note that 38 percent of all calculated speeds are higher than the UP established limit of 20 mph (see Figure 1). This was confirmed by Mr. Gui Sheerin of DCCo at the October 8, 1997, Task Force meeting when he stated his own database indicated 27 percent of the speeds were above 21 mph.

The City is critically concerned that though SEA has stated that "...NEPA...served as SEA's guide in conducting the Reno Mitigation Study..." (STB, 1997d:ES - 2) it would appear that this **most basic of scientific data required for the reliable and valid determination of impacts and subsequent mitigation is seriously flawed, lacking** "...the professional integrity including scientific integrity, of the discussions and analyses..." required under CEQ regulations (40 CFR 1502.24). How can the City and the citizens of Reno trust an agency's "hard look" when the data presented is questionable at best.

PMP Text Quote #23: page 7 - 5, ¶ 4, line 1: *SEA then evaluated the effects of increasing the speed of each train in downtown Reno by 10 mph. For example, a train that was calculated as traveling at eight mph was assumed to travel at 18 mph, a different train traveling at 20 mph was assumed to travel at 30 mph, and so on.*

Figure 1

STB Calculated Train Speeds - Feb 1997



All freight events (n=622)

Pre-merger speed of train (mph)

Post-merger max speed of train (mph)

page 7 - 7, Table 7.2.1-1, Note [1]: *Data are calculated assuming an increase of 10 mph for each train over the actual train speeds monitored by SEA during Phase I of the study.*

Comment #23.1: The above two passages appear to indicate that the inflated calculated speeds (see Speed Calculation Comment #22.1 on page 2 - 22 of this comment document, relative to Data Collection Comment #21.1 on page 2 - 20 of this comment document) were then increased by 10 mph for each event. There is no explanation if train events already exceeding 20 mph were capped at 30 mph or, for the purposes of SEA's analysis, allowed to increase above 30 mph. Again, this data can not be used for any subsequent speed increase analyses when the inflated calculated speed error is now compounded by the inflated 10 mph speed increase. The City has requested the FRA expressly respond to this phenomenon. SEA must also provide a detailed explanation in the FMP.

PMP Text Quote #24: page 5 - 9, ¶ 4, line 1: *The survey team used a radar gun to determine speeds of 17 trains at the short-term noise measurement locations. Table 5.3.2-1 lists the recorded train speeds at the short-term locations.*

Comment #24.1: It should be noted that only four train event speeds were determined by radar gun corresponding to data the SEA study team collected in February. Events #4 & #31 on Virginia Street: at 17 mph & 20 mph respectively on radar gun and Events #37 & #38 on Vine Street: at 18 mph & 22 mph respectively on radar gun. As indicated in Table 4 below, there appears to be no correlation between the speeds recorded by radar gun and the calculated speeds by the SEA study team (see Speed Calculation Comment #22.1 on page 2 - 22 of this comment document, relative to Data Collection Comment #21.1 on page 2 - 20 of this comment document).

Table 4

Train Speed Measurements

Location	Date	Time	Speed (mph) radar gun	Speed (mph) calculated
Virginia Street	2/3/97	10:46	17	18.8
Virginia Street	2/4/97	10:45	20	NA*
Washington	2/4/97	14:07	18	18.2
Washington	2/4/97	15:03	22	18.7

*This train event is an Amtrack train and was not used in the SEA calculated speed/delay model.
Source: STB, 1997d: Table 5.3.2-1, Appendix G

Regardless of the questionable reliability of the data, a sample of four events is not statistically representative of the 622 train events used by SEA to determine the average calculated speed (four measurements represent less than 0.1 percent of the 622 train events used by SEA to determine the average calculated speed) and therefore can not be used to validate the above calculations.

2.1.6 SPECULATION ON PRIVATE NEGOTIATIONS IN A PUBLIC DOCUMENT

PMP Text Quote #25: page 2 - 16, ¶ 2 & 3, line 1: *Initially, in actions taken on March 12, 1996 prior to the merger approval, the Reno City Council expressed support for the railroad to be rerouted to the I-80 corridor. Later in the study process, the City focused on a proposal to construct a depressed railway. At its February 18, 1997 meeting, the Reno City Council directed the City Manager to negotiate with UP representatives emphasizing the downtown depressed railway as the City's primary objective and to pursue all forms of funding sources. The Council further directed that the City's litigation with the Board be continued and that the I-80 corridor not be ruled out. On June 17, 1997, the City passed Resolution 5368 [illegible] depressed railway project as a priority for the City of Reno. (Appendix F [of the PMP] includes recent Reno City Council actions regarding UP/SP merger mitigation options.) From further studies done on the depressed railway, it has been estimated to cost in excess of $180 million. UP has offered to contribute $35 million to partially fund a depressed railway. However, the City has asked that UP pay $100 million. At the time of issuance of this PMP, this funding issue was not resolved...*

Notwithstanding the parties' disagreements on how to fund a depressed railway, which SEA has announced would be a Tier 2 mitigation measure (only binding if there is a voluntary agreement to share cost), in the spring of 1997, Reno City officials and staff indicated that the City views a depressed railway as the most viable outcome.

page 2 - 22, ¶ 4 & 5, line 1: *Throughout the mitigation study process, SEA has encouraged a private resolution. UP and the City of Reno were in private negotiations to explore the feasibility and funding of the depressed railway from February through June 1997. UP offered $35 million to partially fund the depressed railway. The City of Reno then requested that UP increase its funding to $100 million and UP declined.*

The City of Reno withdrew from negotiations in June 1997, because additional funding was not offered by UP as requested by the City. At that time, UP stated it was still willing to continue to negotiate with the City at any time. In July 1997, UP notified the City that it planned to pursue discussions with downtown business interests, and UP invited the City via a letter to participate in those discussions. At the time of the issuance of this PMP, the City and UP have not reached any formal mitigation agreements that were submitted to SEA for review.

page 2 - 13, ¶ 4, line 1: *At the start of the study in October 1996, SEA study team members held a series of introductory meetings with City, County, and State agencies; elected officials; and community business leaders.*

Comment #25.1: SEA's reference to perceived details of private negotiations, and speculation as to the status of such negotiations, are inappropriate and have no place in a federally mandated environmental mitigation study. SEA does not set forth their authority for discussing the perceived details of private negotiations, nor does SEA explain why such information is useful or relevant to the STB mandated environmental (vs. economic) mitigation study. Further, SEA can only, at best, speculate as to the status of private negotiations between the City and the UP because it is not a participant in those negotiations. Any reference to details of private negotiations between UP and the City must be deleted in the FMP.

PMP Text Quote #26: page 2 - 13, ¶ 4, line 1: *At the start of the study in October 1996, SEA study team members held a series of introductory meetings with City, County, and State agencies; elected officials; and community business leaders. During these meetings, SEA distributed an information packet containing background information about the study and details of the study's purpose.*

Comment #26.1: When SEA initiated a series of meetings with separate, private business interests and citizens in Reno, Nevada on October 22, 23 and 24, 1996, SEA expressly requested that the City representatives be excluded from the meetings. However, 16 out of the 17 groups with scheduled meetings with SEA invited representatives of the City to attend the private meetings (see summaries of these meeting as set forth in Appendix B of this comment document). During 16 of the meetings that the City representatives attended, SEA repeatedly expressed their opinion as to the benefits of individual, private negotiations with the UP. For example, Ms. Elaine Kaiser extensively repeated the details of the private negotiations between the Town of Truckee, California and UP wherein the UP agreed to purchase obsolete wood burning stoves in an effort to help resolve air quality issues resulting from increased train traffic through the Town of Truckee, California. Again, speculation on the merits of private negotiations are inappropriate in a federally mandated environmental mitigation study. SEA does not set forth their authority to discuss private negotiations, nor does SEA explain why such information is useful or relevant to an STB mandated environmental mitigation study.

The STB missed the mark by a mile. What they are requiring of the railroad is even less than the railroad has offered to do ... Where the city has asked for constructive solutions, this report provides mere crumbs.

United States Senator Richard Bryan

I have this nagging thought in the back of my head the authors of the report use the computer simulations to justify predetermined outcomes, not raise the confidence of the outcomes. In essence, I have the feeling the use of computer models was an attempt to gain credibility.

Lawrence J. Torango, Reno Citizen, Comment to Surface Transportation Board, October 1, 1997

RESOURCE IMPACT EVALUATION

3.0 RESOURCE IMPACT EVALUATION

3.1 TRAFFIC DELAY

The City has been provided a copy of a recently completed traffic / delay analysis completed by Meyer, Mohaddes Associates, Inc. of Seal Beach, California entitled *Union Pacific/Southern Pacific (UP/SP) Railroad Merger Impact Analysis* (MMA, 1997). The following comments were taken in part from that report, which appears in its entirety as Appendix D of this comment document.

PMP Text Quote #27: page 7 - 7, ¶ 3, line 5: *Gate closed time is primarily determined by the numbers of trains, train speed, and length.*

> **Comment #27.1:** SEA concedes gate closed time is determined by number of trains, train speed, and/or length.

PMP Text Quote #28: page 6 - 3 to 6 - 4, ¶ 5, line 4: *To evaluate reasonably foreseeable conditions, the SEA study team used future vehicular traffic volumes projected for the Year 2000. Calculations of both pre- and post-merger conditions used these projected Year 2000 traffic levels to assure that the difference between pre- and post-merger potential environmental impacts could be attributed solely to changes in train traffic.*

page J - 1, Appendix J of the PMP - Pre-merger Average Daily Vehicular Delay with 1995 Traffic: *As a sensitivity test, pre-merger average daily vehicular traffic delay was computed with 1995 traffic volumes instead of 2000 traffic volumes. The results were then compared with pre- and post-merger vehicular delay based on 2000 traffic volumes. Figures 1 through 3 illustrate the results. Instead of 189 hours of total delay with 2000 traffic (Figure 7.1), Figure 1 shows that the pre-merger projected delay with 12.7 trains and 1995 traffic would be 166 hours. Figure 2 corresponding depicts a total daily vehicular delay with 2000 traffic and a post-merger volume of 24 trains per day to be 373 hours, an increase of 207 hours attributable to the increase in trains and the increase in traffic between 1995 and 2000. From Figure 7.2, the increase in vehicular delay from the increase in trains only would be 184 hours (from 189 to 373 hours).*

With a 10-mph train speed increase as mitigation, Figure 3 shows that the total daily vehicular delay for a post-merger volume of 24 freight trains per day and 2000 traffic would be 154 hours, 12 hours less than the pre-merger delay of 166 hours with 1995 traffic. Thus, speeding the trains up by 10 mph reduces the post-merger vehicular delay to below pre-merger levels regardless of whether the pre-merger traffic is assumed to correspond to 1995 or 2000.

> **Comment #28.1:** The above passages are a few of the many examples of SEA's use and mis-use of the terms "pre-merger conditions" and "post-merger condition". It should be noted that the difference between SEA's pre-merger traffic delay based upon the year 1995 and the year 2000 represents a 14 percent inflation of the actual pre-merger traffic. The City offers the following information which is part of the

record (see Appendix A of this comment document) from the Reno Mitigation Task Force meeting held June 11, 1997:

> *Though we do not have complete methodologies or assumptions from De Leuw, Cather & Company, based upon our initial analysis of the data presented by Gui Sheerin at the June 11, 1997 Task Force meeting [see handouts in Appendix B of this comment document], we have documented the following discrepancies in their methodology:*
>
> - *pre-merger actually represent the cumulative affects of the environment with the no action alternative (no merger) [year 2000 vehicle traffic (ADT) and 12.7 through freight trains per day].*
> - *post-merger represent the proposed action as defined by UP (the fully implemented merger) [year 2000 vehicle traffic (ADT) and 24.0 through freight trains per day].*
> - *All analyses are missing items labeled pre-merger existing environment conditions in 1995 [year 1995 vehicle traffic (ADT) and 12.7 through freight trains per day].*

Please refer to the June 20, 1997 letter to Elaine Kaiser, Chief Section of Environmental Analysis from Charles McNeely, City Manager for the City, placed in the record by the City on August 8, 1997 as set forth in Appendix A of this comment document.

PMP Text Quote #29: page 6 - 4, ¶ 3, line 10: *Table 6.2.1-2 summarizes the vehicular traffic values used in the model.*

Comment #29.1: SEA has assumed year 2000 traffic as the baseline condition (pre-merger) and therefore no analysis has been done for conditions prior to year 2000 (year 1995). The City understands that "[f]or purposes of comparison, the SEA study team has provided an evaluation of potential traffic delay impacts using 1995 vehicular traffic with pre-merger train levels and Year 2000 vehicular traffic with post-merger train levels. This analysis is contained in Appendix J of the PMP" (STB, 1997d:6 - 4). Unfortunately, SEA does not provide the actual traffic counts, only summary delay information, which is then not used. The difference is significant (14 percent). As the City does not have access to the traffic counts used by SEA to determine these delays, replication of the SEA study team's work is not possible.

The SEA study team's model calibration has been based on the February 1997 survey and field observations. Particularly, the gate down time is a function of the train speeds at various occasions which might have been greater than 20 mph (see Speed Calculation Comment #22.1 on page 2 - 22 of this comment document, relative to Data Collection Comment #21.1 on page 2 - 20 of this comment

document). MMA's analyses are based on a 20 mph train speed and an average train length of 6,500 feet.

The SEA study team has assumed a uniform vehicular arrival during the day and ignored the heavy traffic volumes during the AM and PM peak hours. Furthermore, the distribution of train arrivals during the day is not clear. These two factors combined will have a significant impact on total calculated delay.

Table 5 below, is a comparison between traffic volume for year 2000 as forecasted by the SEA study team in the PMP and forecast completed by MMA. The differences, although not large, are significant and need to be identified and discussed.

Table 5

Comparison Between Traffic Volume for year 2000

Rail Crossing Location	PMP Traffic Volume Year 2000	MMA Traffic Volume Year 2000	Difference
Keystone	28,017	24,300	3,717
Vine	3,946	4,600	-654
Washington	1,891	2,100	-209
Ralston	3,654	4,200	-546
Arlington	9,254	16,700	-7,446
West	4,783	3,500	1,283
Sierra	20,982	21,700	-718
Virginia	13,551	15,400	-849
Center	14,351	12,800	1,551
Lake	8,069	8,300	-231
Evans	---	13,380	-13,380
Morrill	515	300	215
Sutro	12,051	12,900	-849
TOTAL	121,064	140,180	-19,116

Source: MMA, 1997; STB, 1997d: Table 6.2.1-2

PMP Text Quote #30: page 6 - 6, ¶ 1, line 1: *Public, at-grade rail crossings are located at 16 streets including: Woodland, Stagg, Del Curto, Keystone, Vine, Washington, Ralston, Arlington, West, Sierra, Virginia, Center, Lake, Morrill, Sutro, and Sage. Figure 6.2.1-1 illustrates the estimated vehicular delay for each of these streets for pre-merger conditions of 12.7 daily freight trains in the Year 2000. Figure 6.2.1-2 illustrates projected post-merger delay for 24.0 trains per day in the Year 2000. A shown, the total daily pre-merger vehicle delay is estimated at 189 hours for these 16 crossings, while the total post-merger vehicle delay is projected to be 373 hours -- an increase of 184 hours.*

Comment #30.1: The PMP has analyzed 16 crossings in the downtown area. Those crossings included: Woodland, Stagg, Del Curto, Keystone, Vine, Washington, Ralston, Arlington, West, Sierra, Virginia, Center, Lake, Morrill, Sutro, and Sage. The proposed at-grade crossing at Evans which will be constructed before year 2000 has not been included. Vehicles using this roadway will also be subjected to vehicular delay as a result of train crossing. Traffic volumes on Woodland, Stag, Del Curto and Sage are low and projected to be low at year 2000.

The methodology used, in general, is not quite clear. However, it seems that the delay methodology calculates only the following two components of vehicular delay:

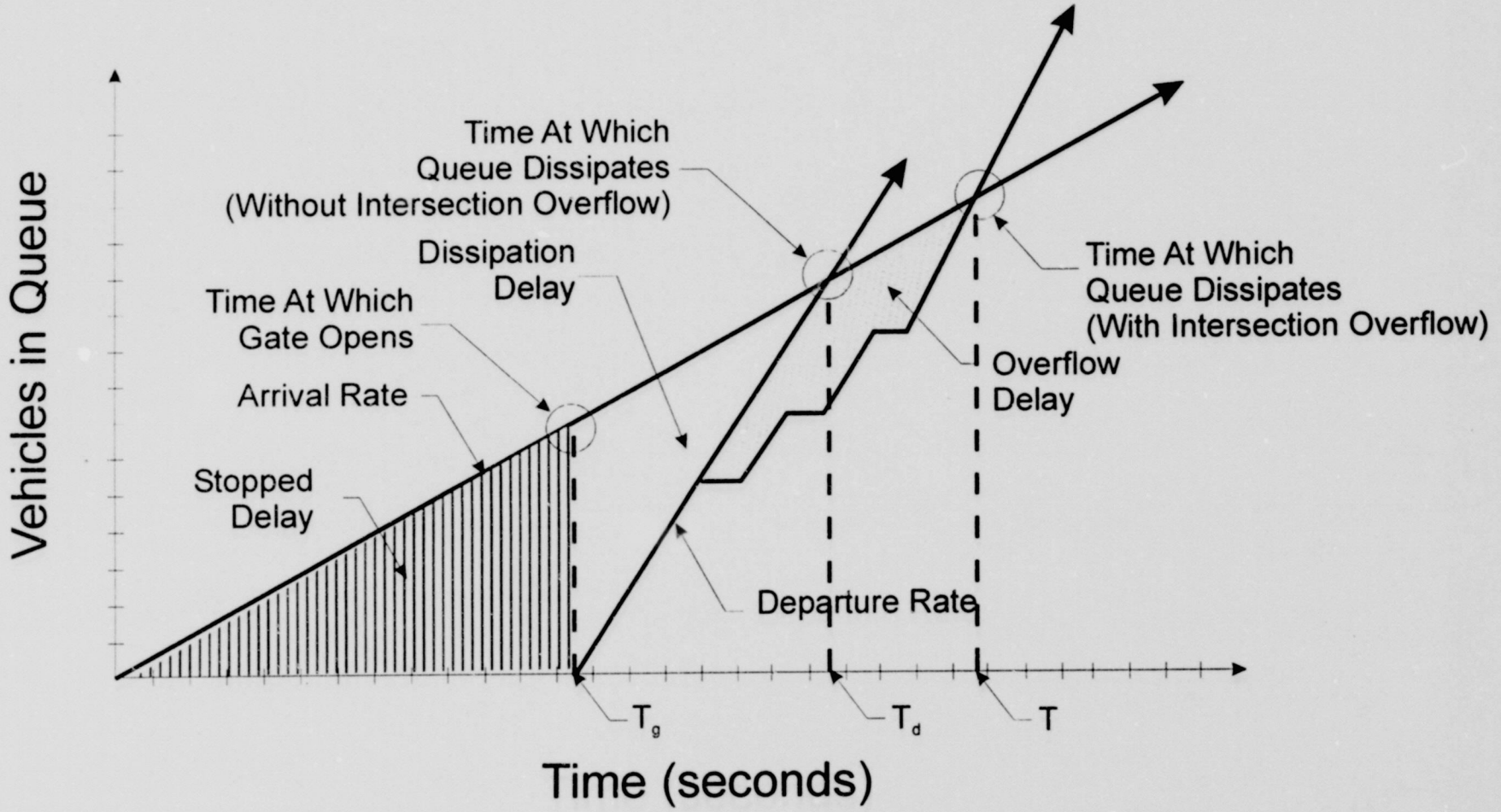
- Delay during the blockage of grade crossing by train (down time of the gate) and
- Delay during the dissipation time.

However, there is a third component of the delay that the report has not included in its delay calculation methodology. This component is the delay as a result of overflow of the stopped vehicles into adjacent signalized intersections (see Figure 2, for a graphical representation of delay components). This added delay will be developed while vehicles are waiting for the queue to clear the intersection. MMA's analysis indicated that the overflow would occur for the following intersections:

- 2nd Street / Virginia Street;
- 2nd Street / Center Street;
- Commercial Row / Sutro Street;
- 4th Street / Sierra Street; and
- 4th Street / Virginia Street.

MMA's analysis showed that the sum of total delay for Virginia, Center, Sutro and Sierra crossings, as a result of this overflow component increased by approximately 30 percent for 1995 (12.7 trains) and 40 percent and 49 percent for 2000 (12.7 trains) and 2000 (24 trains), respectively.

Figure 2



Meyer, Mohaddes Associates, Inc.
Traffic Engineering • Transportation Planning

UP/SP RAILROAD DELAY STUDY
COMPONENTS OF TOTAL DELAY

October 7, 1997

A comparison of delay measures between the PMP findings and MMA's analysis is shown below in Table 6.

Table 6

Comparison of Delay Measures

Delay Measures	1995 Traffic		2000 Traffic			
	12.7 Trains		PMP		MMA	
	PMP	MMA	12.7 Trains	24.0 Trains	12.7 Trains	24.0 Trains
Total daily number of vehicles crossing tracks at-grade:						
• PMP has assumed 16 locations	113,700		124,400			
• MMA has assumed 13 locations		115,200			140,200	
Total daily hours of delay	**166**	**188**	**189**	**373**	**250**	**473**
Total number of vehicles delayed by trains (cars in queue)		4,542	5,740	11,130	5,574	10,534

Source: MMA, 1997; STB, 1997d: Table 7.2.1-1

As shown by SEA, the total daily pre-merger vehicle delay (year 1995 not year 2000) is estimated at 166 hours, while the total post-merger vehicle delay is projected to be 373 hours — an increase of 207 hours of delay. MMA indicates a higher increase between pre-merger and post-merger of 307 hours of delay with the inclusion of the overflow component.

It should be noted that the PMP also reports the misleading calculation of average delay per vehicles [across all vehicles], resulting in an absurdly low delay in all cases (see Table 7 below). This has been easily explained by the City, as in the case where one car arrives exactly as the gates begin to come down and the other car arrives just before the gates begin to go up. The first car waits for 5 minutes and the second car waits for 1 minute, yet the "average delay per vehicle" is 3 minutes. Clearly the citizens of Reno realize this is not a true picture of the delay in Reno. Only total daily hours of delay are meaningful.

The PMP has ignored the analysis of levels of service under various scenarios. Level of service for roadways that cross the railroad track is an indication of the operating condition of the facility at pre-merger and post-merger conditions. This index could be later used in establishing a threshold for implementation of the mitigation measures, such as grade separation improvements.

Table 7

Simplified Delay Statistics for 16 Grade Crossings in Reno

	Pre-merger	Unmitigated Post-merger	Increased Speed 30 mph Post-merger
Gate down time	3.38	3.45	2.28
Delay per vehicle	1.98	2.01	1.27

Source: STB, 1997d: 7 - 7, Table 7.2.1-1

3.2 SAFETY - PEDESTRIANS

PMP Text Quote #31: page 6 - 9, ¶ 4, line 3: *As the number of trains increases, so does the exposure of pedestrians to trains. Pedestrian exposure to trains also varies based on the concentration of pedestrians at each crossing. Table 6.2.2-1 lists the numbers of pedestrians crossing the tracks immediately after freight trains pass on the five primary downtown streets surveyed during the week of February 3, 1997.*

page 6 - 11, ¶ 7, line 2: *Automobile and pedestrian traffic is heavy year-round, and during the high summer tourist season, the crowds are reported to increase considerably.*

Comment #31.1: It is unclear from this general explanation of pedestrian counts in February 1997 how SEA complied with Decision No. 44, Condition 22c "It shall include a final mitigation plan based on a further study of the railway, highway, and **pedestrian** traffic flows and associated environmental effects on the City of Reno" [emphasis added] (STB, 1997d:Appendix A, p. 16). An explanation how this data was interpolated into pedestrian counts for an entire year in Reno in needed in the FMP.

PMP Text Quote #32: page 2 - 17, ¶ 5, line 7: *State transportation officials have also noted a number of violations of pedestrian crossing gates.*

page 6 - 9, ¶ 3, line 1: *A number of pedestrian behavior patterns may result in accidents between pedestrians and trains...The SEA study team reviewed available literature and regulations (e.g., from FRA), but did not find methods for quantitatively measuring pedestrian behavior at rail crossings in statistically valid ways.*

Comment #32.1: As a scheduled agenda item at the Reno Mitigation Task Force Meeting #5 held May 14, 1997, Anita Boucher, State of Nevada Railroad Safety Coordinator (Safety Engineering Division, Nevada Department of Transportation [NDOT]) conducted a presentation to the entire task force on pedestrian behavior at at-grade crossings to emphasize the necessity of train horns in downtown Reno, she stated "if there is a problem at a crossing, the engineer must blow his horn,

regardless [of any whistle ban which may be in place]". NDOT studied the City's Virginia Street crossing video tapes for a period of one week of events in February 1997. Ms. Boucher found that in 121 times out of 165 train events, a train horn would have to be blown (73.3 percent of the time) due to intrusions onto the right-of-way, a total of 1,350 pedestrian intrusions in the week studied. The City would offer that these results clearly indicate more than "a number of violations of pedestrian crossing gates" or as Ms. Boucher notes in her data:

pedestrians lift gate arms;
pedestrians stand on opposing tracks;
pedestrian walk down the middle of the roadway;
pedestrians in roadway on wrong side of gate arm;
pedestrians walk around gate arm after it is down;
pedestrian lift gate arms;
pedestrians run to get across tracks;
pedestrians run in front of train (2nd closest call); and
pedestrians walk under gate arm (closest call).

Comment #32.2: At the same Reno Mitigation Task Force Meeting #5 held May 14, 1997, Anita Boucher, State of Nevada Railroad Safety Coordinator (Safety Engineering Division, Nevada Department of Transportation [NDOT]) while making her presentation to the entire task force, noted a total of 144 vehicular intrusions in the week studied, including "a gate arm resting on roof of car". There is no discussion of this data in the PMP nor is there any quantification of these numbers versus pre-merger. The City would like to thank Ms. Boucher and her staff for their work on this study, as it is the only known survey of pedestrian behavior in downtown Reno which should and must be fully evaluated by SEA as part of their "hard look".

3.3 SAFETY - EMERGENCY VEHICLE ACCESS

PMP Text Quote #33: page 6 - 10, section 6.2.3, Measure: *Average daily gate down time per crossing on major crossings.*

page 6 - 11, ¶ 3, line 1: *The calculation of crossing blockage time uses the same techniques and information as was used to calculate traffic delay (see Section 6.2.1). Mitigation measures that are implemented that result in reduced gate down times would reduce the likelihood of emergency vehicle blockages.*

Comment #33.1: SEA uses the measure of impact of an average daily gate down time per crossing on major crossings. The City does not consider this appropriate. If the existing potential for blocked emergency response vehicles is 12 times a day under current conditions, then the post-merger 24 times a day is a 100 percent increase in blockage. The fact that the current 12 blockages total 42.9 minutes per day compared to the mitigated 24 blockages totaling 54.8 minutes or 27 percent

increase is not comparable, as each emergency response which is blocked must be either re-assigned or re-routed - emergency vehicles do not wait at crossings during an emergency response.

PMP Text Quote #34: page 6 - 11, ¶ 2, line 1: *The SEA study team determined that the gate down time analysis does not completely or accurately reflect actual emergency vehicle delays in Reno for several reasons. First, emergency facilities exist on both sides of the UP tracks, so some emergency runs do not cross the tracks. Second, emergency runs occur at random times, and every rail crossing blockage does not necessarily delay emergency vehicles that must cross the tracks. Third, emergency vehicle drivers are likely to be aggressive in seeking unblocked rail crossings, avoiding or passing traffic congestion (e.g., using oncoming traffic lanes), and not being hampered by traffic restrictions such as one-way streets and traffic signals. Given the possible effects on health and safety related to even one blockage of an emergency vehicle, however, SEA is concerned with potential impairment of emergency vehicle access resulting from merger-related train traffic increases.*

The calculation of crossing blockage time uses the same techniques and information as was used to calculate traffic delay...Mitigation measures that are implemented that result in reduced gate down times would reduce the likelihood of emergency vehicle blockages.

Comment #34.1: SEA uses a measure of impact of average daily gate down time per crossing on major crossings. The City does not consider this appropriate. If the existing potential for blocked emergency response vehicles is 12 times a day under current conditions, then the post-merger 24 times a day is a 100 percent increase in blockage. The fact that the current 12 blockages total 42.9 minutes per day compared to the mitigated 24 blockages totaling 54.8 minutes or 27 percent increase is not a comparable, as each emergency response which is blocked must be either re-assigned or re-routed - **emergency vehicles do not and will not wait at crossings during responses or transports**.

Comment #34.2: SEA concludes the gate down time analysis does not accurately reflect actual emergency delays based upon several reasons. The City believes that because the analysis does not accurately reflect actual emergency delays, the impacts are even greater and must be analyzed and additional mitigation offered.

SEA concludes in the PMP that due to emergency facilities being located on both sides of the tracks and some emergency runs not even crossing the tracks, the impact is less than the delay time. The information on the facilities is partially accurate, the PMP fails to indicate that five of the fire station districts are bisected by the railroad tracks, as well all downtown fires require assistance from fire stations located on both sides of the tracks. For example, on September 30, 1997, a 3-alarm fire broke out at the Eldorado casino / hotel which is located immediately north of the railroad tracks (see the Reno Gazette-Journal newspaper articles about the fire contained in Appendix E of this comment document). Six fire stations (three of the stations are located on the south side of the tracks) were required to

respond. In addition, the Reno Fire Department (RFD) had to contact the UP to prohibit any trains from entering the downtown area for the remainder of the evening because fire trucks were parked within the UP right-of-way and fire hoses were draped across the tracks because of a fire hydrant located on the south side of the tracks. The RFD could not have contained the blaze without the assistance from all six fire stations. If the Eldorado casino / hotel fire started while a train was blocking traffic, equipment and fire fighters from three of the fire stations located on the south side of the tracks would of experienced 3 to 5 minute response delays which would have caused possibly a loss of life and additional property damage at the Eldorado casino / hotel.

Second, SEA concludes the gate down time analysis does not accurately reflect actual emergency delays because emergency runs are at random times and every rail crossing blockage does not necessarily delay emergency vehicles. According to a survey conducted in February of 1997 by the City, emergency delays occurred 70 times in 28 days[4]. Table 8 and Figure 3 below indicates the number of delays experienced by each emergency service provider during February 1997:

Table 8

Summary of Emergency Calls Delayed

Emergency Service Provider	Number of Calls
Reno Police Department	47
REMSA	14
Reno Fire Department	9

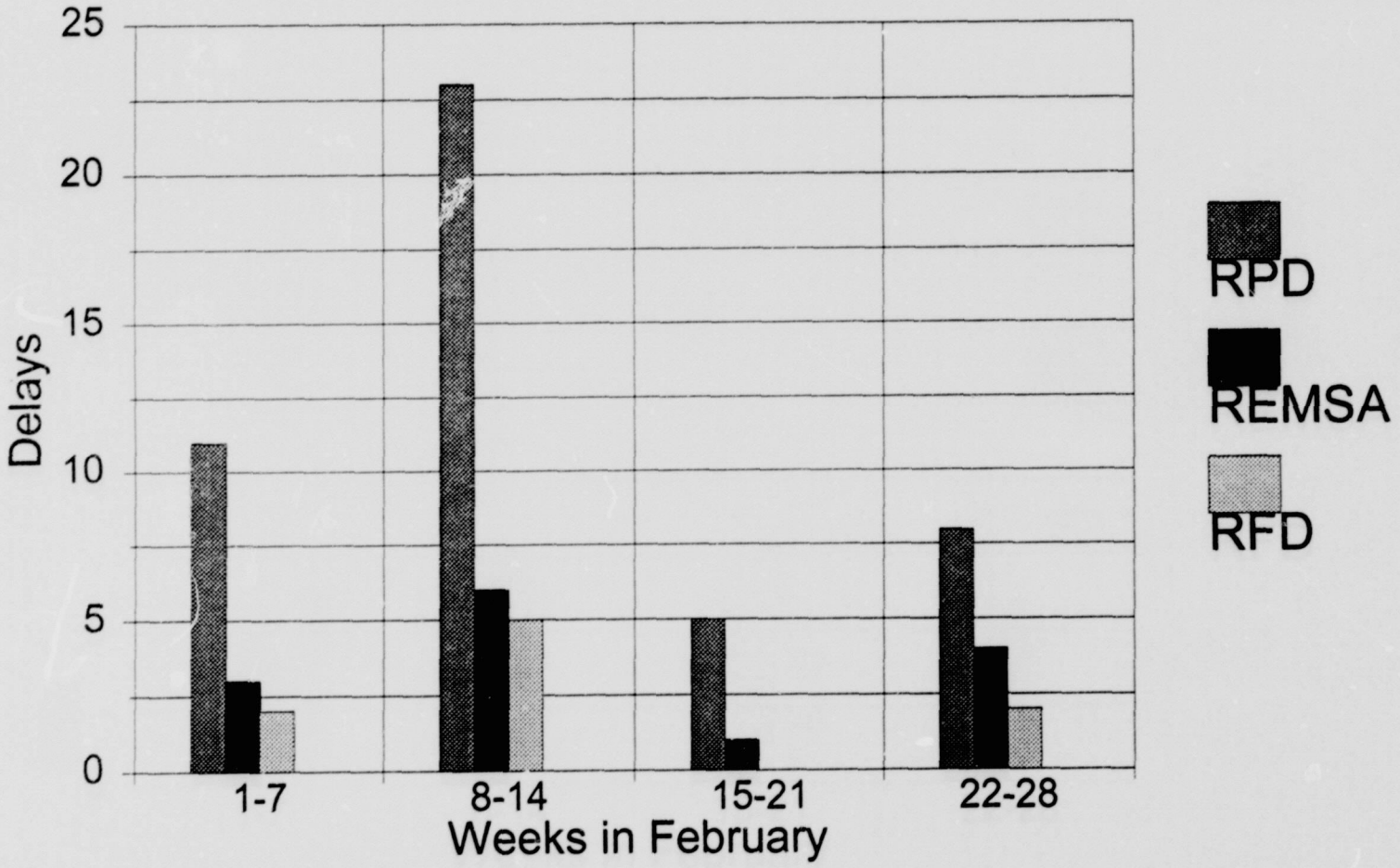
Source: City of Reno, 1997

The third reason that SEA concludes the gate down time analysis does not accurately reflect actual emergency delays is that emergency vehicle drivers are likely to be "aggressive" in seeking unblocked rail crossings and not being hampered by traffic (and train) restrictions. This does not acknowledge that most fire equipment cannot maneuver out of traffic at a blocked rail crossing. SEA must acknowledge this fact and recommend mitigation measures to mitigate these impacts.

[4]In a memo dated January 7, 1997, from Charles McNeely, City Manager, City of Reno to Reno Police Department (RPD), Reno Fire Department (RD), REMSA, and Regional Transportation Commission as well as others agency, the City asked each agency to maintain records of delays of day-to-day delivery of services during the month of February. The RPD and RFD data was collected by the emergency dispatchers when a call was re-assigned due to a blockage at a crossing which was judged to delay the call.

Figure 3

Emergency Vehicle Delays - Feb 1997



3.4 SAFETY - TRAIN/VEHICLE ACCIDENTS

PMP Text Quote #35: page 6 - 21, ¶ 1, line 2: *FRA currently is conducting an in-depth safety review of the UP/SP, including the rail line through Reno and Washoe County, to assess any merger-related safety issues.*

Comment #35.1: SEA states that the FRA is conducting a safety review which includes the rail line through both the Reno / Sparks / Truckee Meadows area and the larger Washoe County area. The City is unaware of the scope and extent of this safety review because SEA addresses this critical issue with only one line of text in the PMP without any explanation. SEA does not mention or address any of the serious safety issues and problems that caused the safety review in the first place. This is another example of how SEA and its environmental consultants are bias towards the UP and do not provide an adequate analysis of this issue. The City has directly requested the FRA to include the Reno / Sparks / Truckee Meadows area in its in-depth study of UP operations. To date, the City has not received a response.

3.5 SAFETY - HAZARDOUS COMMODITIES

PMP Text Quote #36: page 6 - 24, ¶ 5, line 1: *The SEA study team independently estimated the likelihood of a hazardous materials release (pre- and post-merger) associated with a derailment on the portion of the UP rail line (formerly SP line) from Truckee, California east through Reno to Fernley, Nevada. SEA chose to analyze this segment given that a portion of the rail line in this segment is near the Truckee River. The length of the Truckee River from Lake Tahoe to Pyramid Lake, is approximately 115 miles. The UP mainline is generally within 200 feet of the river for approximately 25 miles of the river's length, or about 22 percent.*

page 6 - 24 & 6 - 27, ¶ 6, line 4: *(Appendix N [of the PMP] describes the methodology used to develop these statistics.) As part of this analysis, the SEA study team reviewed other reports prepared on this subject, including:*

- *Arthur D. Little, Inc., "Assessment of Risks and Risk Control Options Associated with Liquefied Natural Gas Trucking Operations from Distrigas Terminal, Everett, MA.," June 1979.*
- *Arthur D. Little, Inc. For U.S. DOT, Safety of High Speed Guided Ground Transportation Systems, Volume 1, Appendix A "U.S. Serious Railroad Accident Data," March 1993.*
- *Carr, James R., "Development of an Integrated Computer Platform for the Evaluation of Contamination Mitigation Scenarios along the Truckee River-Risk of Transporting Hazardous Substances Adjacent to the Truckee River," November 22, 1996.*
- *FRA Guide For Preparing Accidents/Incidents Reports, DOT/FRA/FFS-22, January 22, 1993.*
- *Geffen, C.A., and Franklin, A.L., "An Assessment of the Risk of Transporting Propane by Truck and Train," Department of Energy Environmental Control Symposium, Reston, VA., March 1980.*

PMP Text Quote #37: page 6 - 28, ¶ 1, line 1: *The SEA study team also estimated the likelihood of hazardous materials spills into the Truckee River resulting from incidents on the mainline. Factors used to make these calculations included the hazardous materials release estimates in Table 6.5-1, the distance between the rail line and the Truckee River over this rail segment, the amount of the rail line that passes over the river on a bridge, assumptions regarding the distance that a derailed train car could travel, the types of hazardous materials being transported, the associated likelihood that these materials would flow into the river, and the probable severity of the release. Appendix N [of the PMP] describes the methodology used to develop the likelihood of River contamination from hazardous materials on a UP freight train.*

Table 6.2.5-2 shows the expected probability of contamination of the Truckee River for the rail line segment. As shown, contamination is expected to occur every 112.2 years for pre-merger conditions, and every 77.3 years for post-merger trains and hazardous materials levels.

Thus, while the likelihood of a spill or river contamination is increased for post-merger conditions, the probabilities are still remote. Notwithstanding the low probabilities, SEA has reviewed possible mitigation measures for hazardous materials spills.

Comment #37.1: The City would question the scientific independence of the SEA study team performing the above referenced "likelihood" study as DCCo admittedly has worked for UP and other railroads prior to this "third party independent study". The City, on the other hand, has no financial relationship with the author of the above referenced unpublished study *Development of an Integrated Computer Platform for the Evaluation of Contaminant Mitigation Scenarios along the Truckee River: Risk of Transporting Hazardous Substances Adjacent to the Truckee River* by University of Nevada, Reno, Geological Engineering Professor and statistician James R. Carr, Ph.D., P.E. (commissioned by **and independently completed** for Sierra Pacific Power Company) estimated that a rail accident that spilled hazardous substances into the Truckee River could happen once every 53.1 years[5] (Carr, 1996:26). The study was based the 1996 rail traffic of 14 trains per day; however, based on the UP's proposed 25 trains per day or the City estimate of

[5]The reported noted that the likelihood of a toxic spill was once every 80.8 years along the Truckee River above the California-Nevada border and once ever 154.75 years below the border. With respect to interpreting the probability of occurrence, the author noted that "There are people who have lived on the Mississippi River for 30 years who have been through five 100-year floods." The most likely substances in a spill, listed in decreasing order included: (1) sulfuric acid; (2) phosphoric acid, diesel fuel, ammonium nitrate; (3) anhydrous ammonia; (4) sodium hydroxide; and (5) butyl ether. Other likely substances of equal but lesser likelihood included butane, calcium carbide, carbon disulfide, methyl alcohol, methyl ether, naphtha, potassium, hydroxide and propane. In a related incident, on July 14, 1991, seven cars of a slow Southern Pacific Railroad train derailed near Dunsmuir, California, dumping 19,000 gallons of a fungicide and herbicide (Vapam or metam sodium) into the Upper Sacramento River. The river carried the chemicals into Lake Shasta, located nearly 40 miles downstream. According to the California Department of Fish and Game, that spill virtually killed all aquatic animals and thousands of plants along the river's 37-mile course. More than 1 million fish were killed, including 275,000 wild trout. Also killed along the river were as many as 250,000 willows and 300,000 cottonwoods, which would not regrow for 14-16 years.

approximately 35 trains per, thereby increasing the statistical certainty of contaminating the Truckee River every 29.4 years and 21.0 years respectively (Carr, 1996:19, 29, 30) (see Table 9 below for a complete summary of Carr's [1996] findings). Risks of accidents increased with steeper grades, stronger curves, and higher trains speeds. All these factors are most prevalent in the upper Truckee River canyon between Truckee, California, and Verdi, Nevada, where the probability of a spill is therefore greatest (Carr, 1996:18, 19, 21).

Initially when Carr's report was released, UP embraced the report claiming the railroad industry's superior safety in transporting hazardous materials, as evidenced by the July 28, 1996, Reno Gazette-Journal article entitled *Rail study: River spill odds fairly low*: "'There is no accepted method that we are aware of to accurately predict any future event, certainly including the possibility of toxic spill into the Truckee River,' said Mike Furtney, Southern Pacific spokesman. 'But having said that, we are impressed by the positive nature of UNR's statistics.'" (July 28, 1996:C1).

3.6 TRAIN OPERATIONS

PMP Text Quote #38: page 6 - 23 to 6 - 24, ¶ 2, line 1: *Railroad Accident Prevention Equipment: In addition to reviewing current Federal hazardous materials controls and regulations and current UP practices, the SEA study team reviewed UP's specialized equipment along the rail line in the Reno and Washoe County area for detection of potential train-related defects. Railroads use a number of devices to enhance operational safety, including track-side detectors that are designed to identify various types of potential trouble. The detectors are automated, and when unsafe conditions are sensed, the detector equipment alerts either the train engineer or the dispatcher, and the engineer stops the train. Common types of detectors include:*

- *Hot box detectors -- These detect hot locomotive and car wheel bearings. An overheated wheel bearing can melt the wheel-bearing assembly causing a derailment.*
- *Dragging equipment detectors -- These detect equipment or other objects hanging from the bottom of a locomotive or car...It can damage rail, ties, switches, and become lodged between a wheel and the rail causing a derailment...*

Table 9

Summary of Findings from *Risk of Transporting Hazardous Substances Adjacent to the Truckee River* (Carr, 1996)

TYPE OF RISK/ No. of Trains per Day	Truckee River upstream of CA/NV border from MP 106-228	Truckee River downstream of CA/NV border form MP 229-257
	Truckee River entirety from MP 106-257	
Maximum Absolute Risk (minimum) = rail cars carrying hazardous substances (for N freight trains per day) have a statistical certainty of an accident/event every		
N = **14 freight trains**/day (Carr, 1996:19-20)	**2.6 years**[6] or 944 days	**3.5 years**[6] or 1,300 days
	1.5 years[7]	
N = **25 freight trains**/day (Carr, 1996:29-30; Tables A-1 & A-2)	**1.4 years**[8] or 523 days	**2.0 years**[8] or 723 days
	304 days[7]	
N = **35 freight trains**/day (Carr, 1996:19, 30; Table A.2)	**374 days**	**1.4 years**[7] or 516 days
	217 days[7]	

6 1 event in 944 days ÷ 365 days/year = 1 event in 2.6 yrs.
1 event in 1,300 days ÷ 365 days/year = 1 event in 3.5 yrs.

7 The probability (actual risk) to the Truckee River upstream of CA/NV border OR probability (risk actual) to the Truckee River downstream of CA/NV border EQUALS the total probability (total risk) to the entire Truckee river LESS the probability (actual risk) of the outcomes common to both events. In this case the two events are mutually exclusive and equal zero.

$P(A \cup B) = P(A) + P(B) - P(A \cap B) = P(A) + P(B) - 0 = P(A) + P(B)$
$P_{(\text{entire Truckee River})} = P_{(\text{upstream})} + P_{(\text{downstream})}$ = 1/(944 days) + 1/(1,300 days) = 1/547 days or 1 event in 547 days ÷ 365 days/year = 1 event in 1.5 yrs.

1/(523 days) + 1/(723 days) = 1/304 days or 1 event in 304 days
1/(374 days) + 1/(516 days) = 1/217 days or 1 event in 217 days
1/(80.8 yrs.) + 1/(154.75 yrs.) = 1/53.1 yrs. or 1 event in 53.1 yrs.
1/(44.7 yrs.) + 1/(86.1 yrs.) = 1/29.4 yrs. or 1 event in 29.4 yrs.
1/(32.0 yrs.) + 1/(61.4 yrs.) = 1/21.0 yrs. or 1 event in 21.0 yrs.
[1/(80.8 yrs.) + 1/(45.2 yrs.)] + [1/(154.75 yrs.) + 1/(93.0 yrs.) + 1/(383.5 yrs.)] = 1/18.4 yrs. or 1 event in 18.4 yrs.
[1/(44.7 yrs.) + 1/(45.2 yrs.)] + [1/(86.1 yrs.) + 1/(93.0 yrs.) + 1/(383.5 yrs.)] = 1/14.4 yrs. or 1 event in 14.4 yrs.
[1/(32.0 yrs.) + 1/(45.2 yrs.)] + [1/(61.4 yrs.) + 1/(93.0 yrs.) + 1/(383.5 yrs.)] = 1/11.0 yrs. or 1 event in 12.0 yrs.

8 1 ÷ P(.0019118) = 1 event in 523 days ÷ 365 days/year = 1 event in 1.4 yrs.
1 ÷ P(.0013833) = 1 event in 723 days ÷ 365 days/year = 1 event in 2.0 yrs.
1 ÷ P(.0019367) = 1 event in 516 days ÷ 365 days/year = 1 event in 1.4 yrs.

Table 9

Summary of Findings from *Risk of Transporting Hazardous Substances Adjacent to the Truckee River* (Carr, 1996)

TYPE OF RISK/ No. of Trains per Day	Truckee River upstream of CA/NV border from MP 106-228	Truckee River downstream of CA/NV border form MP 229-257
	Truckee River entirety from MP 106-257	
Actual Values of Risk or **Relative Risk** (maximum) = rail cars carrying hazardous substances (for N freight trains per day) (base upon the probability of breach could be 3.2% (CA) and 2.3% (NV) of the accidents/events) have a statistical certainty of contaminating the Truckee River (including location and severity) every		
N = **14 freight trains**/day (Carr, 1996:26)	**80.8 years** or 29,500 days	**154.75 years** or 56,522 days
	53.1 years[7]	
N = **25 freight trains**/day (Carr, 1996:29-30; Tables A-1 & A-2)	**44.7 years**[9] or 16,344 days	**86.1 years**[9] or 31,435 days
	29.4 years[6]	
N = **35 freight trains**/day (Carr, 1996:19, 30; Table A.2)	**32.0 years**[9] or 11,688 days	**61.4 years**[9] or 22,435 days
	21.0 years[7]	
Actual Values of Risk or **Relative Risk** (maximum) = trucks carrying hazardous substances by highway (base upon the probability of breach could be 1.4% of the accidents/events) have a statistical certainty of contaminating the Truckee River (including location and severity) every		
Interstate 80 (I-80) (Carr, 1996:28)	45.2 years or 16,492 days	93.0 years or 33,982.7 days
U.S. Hwy 395 (US-395) (Carr, 1996:28)		383.5 years or 140,058.8 days

[9] 1 event in 532 days ÷ 0.032 = 1 event in 16,344 days ÷ 365 days/year = 1 event in 44.7 yrs.
1 event in 723 days ÷ 0.023 = 1 event in 31,435 days ÷ 365 days/year = 1 event in 86.1 yrs.
1 event in 374 days ÷ 0.032 = 1 event in 11,688 days ÷ 365 days/year = 1 event in 32.0 yrs.
1 event in 516 days ÷ 0.023 = 1 event in 22,435 days ÷ 365 days/year = 1 event in 61.4 yrs.

Table 9

Summary of Findings from *Risk of Transporting Hazardous Substances Adjacent to the Truckee River* (Carr, 1996)

TYPE OF RISK/ No. of Trains per Day	Truckee River upstream of CA/NV border from MP 106-228	Truckee River downstream of CA/NV border form MP 229-257
	Truckee River entirety from MP 106-257	
Total Risk (cumulative) = rail cars carrying hazardous substances (for N freight trains per day) (based upon the probability [actual risk] of rail [P(A)]) OR trucks carrying hazardous substances on I-80 (based upon the probability [actual risk] of I-80 [P(B)]) OR trucks carrying hazardous substances on US-395 (based upon the probability [actual risk] of US-395 [P(C)]) have a statistical certainty of contaminating the Truckee River (including location and severity) every		
N = **14 freight trains**/day (Carr, 1996:39)	**29.0 years**[10]	**50.5 years**[10]
	18.4 years[7]	
N = **25 freight trains**/day	**22.5 years**[10]	**40.0 years**[10]
	14.4 years[7]	
N = **35 freight trains**/day	**18.7 years**[10]	**33.7 years**[10]
	12.0 years[7]	

Source: Adapted from Carr, 1996

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[10] The probability (actual risk) to the Truckee River upstream of CA/NV border from rail OR probability (actual risk) to the Truckee River upstream of CA/NV border from trucks on I-80 EQUALS the total probability (total risk) to the entire Truckee river LESS the probability (actual risk) of outcomes common to both. In this case the two events are mutually exclusive and equal zero.

$P(A \cup B) = P(A) + P(B) - P(A \cap B) = P(A) + P(B) - 0 = P(A) + P(B)$
$P(\text{entire Truckee River}) = P(\text{upstream}) + P(\text{I-80}) = 1/(80.8 \text{ yrs.}) + 1/(45.2 \text{ yrs.}) = 1/29.0 \text{ yrs.}$ or 1 event in 29.0 yrs.

1/(44.7 yrs.) + 1/(45.2 yrs.) = 1/22.5 yrs. or 1 event in 22.5 yrs.
1/(32.0 yrs.) + 1/(45.2 yrs.) = 1/18.7 yrs. or 1 event in 18.7 yrs.

The probability (actual risk) to the Truckee River upstream of CA/NV border from rail OR probability (actual risk) to the Truckee River upstream of CA/NV border from trucks on I-80 OR probability (actual risk) to the Truckee River upstream of CA/NV border from trucks on US-395 EQUALS the total probability (total risk) to the entire Truckee river LESS the probability (actual risk) of outcomes common to any events. In this case the three events are mutually exclusive and equal zero.

$P(\text{entire Truckee River}) = P(\text{downstream}) + P(\text{I-80}) + P(\text{US-395}) = 1/(154.75 \text{ yrs.}) + 1/(93.0 \text{ yrs.}) + 1/(383.5 \text{ yrs.}) = 1/50.5 \text{ yrs.}$ or 1 event in 50.5 yrs.

1/(86.1 yrs.) + 1/(93.0 yrs.) + 1/(383.5 yrs.) = 1/40.0 yrs. or 1 event in 40.0 yrs.
1/(61.4 yrs.) + 1/(93.0 yrs.) + 1/(383.5 yrs.) = 1/33.7 yrs. or 1 event in 33.7 yrs.

- *High, wide, shifted load detectors -- these detect loads or other items that protrude from the top and side of a train. This situation is dangerous because protruding loads can strike trains on adjacent tracks, tunnel walls, bridges, bridge supports, etc.*

Based on a review of UP's track diagrams, the UP/SP mainline tracks through Washoe County have multiple detectors. For both the eastbound and westbound tracks west of Reno, dragging equipment detectors exist at Mile Posts (MP) 206 (Truckee, CA.), 212.5, 220, 224 (about 19 miles west of Reno), 235 and 240 (about three miles west of Reno). For the single track east of Reno, dragging equipment detectors exist at MP 251.6 and 270.5. Intervals between dragging equipment detectors on either side of the Sparks Yard therefore range from five to ten miles.

Hot box detectors exist at MP 270.5 and 251.6 for the single-track rail line east of the Sparks Yard. For the double-track rail line west of Reno, hot box detectors exist on the eastbound track at MP 206 (Truckee, CA.), MP 224 (about 19 miles west of Reno), and MP 240 (about three miles west of Reno). For the westbound track, hot box detectors exist at MP 206 (Truckee), and MP 223.9. Thus, hot box detectors exist for eastbound trains at intervals of less than 20 miles. Except for the 27.7-mile interval between MP 251.6 and 223.9, hot box intervals for westbound trains are also less than 20 miles.

High, wide, shifted load detectors exist on both tracks at MP 231 8 and on the single track at MP 260.5 Given that all trains stop at the Sparks Yard to change crews, the proximity of the stopped trains to yard personnel, supervision, and mechanical forces increases the probability of discovering train defects.

Comment #38.1: The PMP documents the location of the existing railroad accident prevention equipment, including hot box detectors, high wide shift load detectors and dragging equipment detectors. The discussion of "existing" railroad accident prevention equipment is not appropriate in Section 6 (Evaluation of Potential Environmental Impacts) of the PMP and provides no meaningful analysis of potential environmental impacts. The City requests that the applicability of this information be substantiated, or the referenced statement removed from the FMP.

PMP Text Quote #39: page 4 - 8, ¶ 3, line 1: *As a part of the review process for the EA and Post EA, SEA's study team interviewed UP officials regarding the methodology and databases that were used to develop the train projections. To further verify the data, SEA's study team performed reasonableness checks on rail line segments to confirm continuous traffic flows. During the course of the pre-merger proceedings, traffic density figures were supplemented twice in verified statements from UP to reflect changes resulting from the BN/SF settlement agreement and the Chemical Manufacturers' Association settlement agreement. The new figures were also tested for reasonableness by the SEA study team. Based on this independent review, SEA has accepted the UP projections.*

Comment #39.1: It is unclear from an overly simplified explanation of the UP's train traffic projection how SEA complied with Decision No. 44, Condition 22c:

"It shall include a final mitigation plan based on a **further study of the railway**, highway, and pedestrian traffic flows and associated environmental effects on the City of Reno" [emphasis added] (STB, 1997d:Appendix A, p. 16).

PMP Text Quote #40: page 4 - 9, ¶ 2, line 1: *The City of Reno requested that variations in the number of projected trains in the future be identified. Given that future numbers are more speculative, the most reasonable way to identify possible variations in average daily train counts appeared to be a review of train count variations in the recent past. SEA therefore requested from UP actual counts of the number of freight trains passing through Reno on a daily basis for a sample period in the year 1996. UP provided such data for the months of January through February and April through September 1996. Other months for that year were not available.*

Based on an analysis of these eight months of data, freight trains passing through Reno illustrated the following characteristics:

- *Average number of freight trains = 10.8 per day.*
- *Median number of freight trains = 11 per day.*
- *Minimum number of freight trains =2 per day.*
- *Maximum number of freight trains = 17 per day.*
- *Standard deviation [S.D.] of daily freight trains = 2.09.*

Comment #40.1: The PMP attempts to provide information on daily freight train data through the City, based on 1996 UP operational data. Four months, or 30 percent of the baseline data has not been provided by UP, making the information suspect and statistically invalid. The four months of missing train data could easily skew the information on the number of trains per day, making the documented data meaningless. The City requests that the missing daily train data be provided by UP and incorporated into the FMP, or a disclaimer inserted indicating that the data is incomplete and that UP is unable to accurately keep track of its own train counts.

PMP Text Quote #41: page 4 - 8, ¶ 2, line 1: *Based on the model results, the number of UP/SP freight trains passing through Reno is not expected to increase immediately. Rather the increase is expected to be gradual between 1995 and the projection Year 2000. Projected increases would depend on changes to the Roseville Rail Yard (in California) and increased tunnel clearances in the mountains west of Reno.*

Comment #41.1: Current information pertaining to construction activities associated with the Roseville rail yard (California) and Sierra Nevada tunnel expansion is not documented in the PMP. Without this information, the "gradual rate of increase" statement is unreasonable and made without any basis. The City requests that this information be provided in the FMP.

PMP Text Quote #42: page 5 - 7, ¶ 2, line 7: *The average freight train length for the survey week was 4,600 feet.*

Comment #42.1: Section 5.3.1 (Methodology) of the PMP attempts to summarize the methodology employed to conduct the train and traffic survey, with the summary on Page 5 - 7, paragraph 5 indicating an average train length of 4,600 feet. The survey data actually indicates a mean length in feet of 4,600 with a S.D. of ± 1,283 feet and a ± 1 S.D. range of 3,317 feet to 5,883 feet, a minimum of 420 feet, and a maximum of 6,698. This range of lengths should be included and analyzed in the PMP. Figure 4 indicates the differences in distribution of the UP's projected average as indicated on the PMP's Table 4.4.1-1 and the actual distribution of the survey data trains.

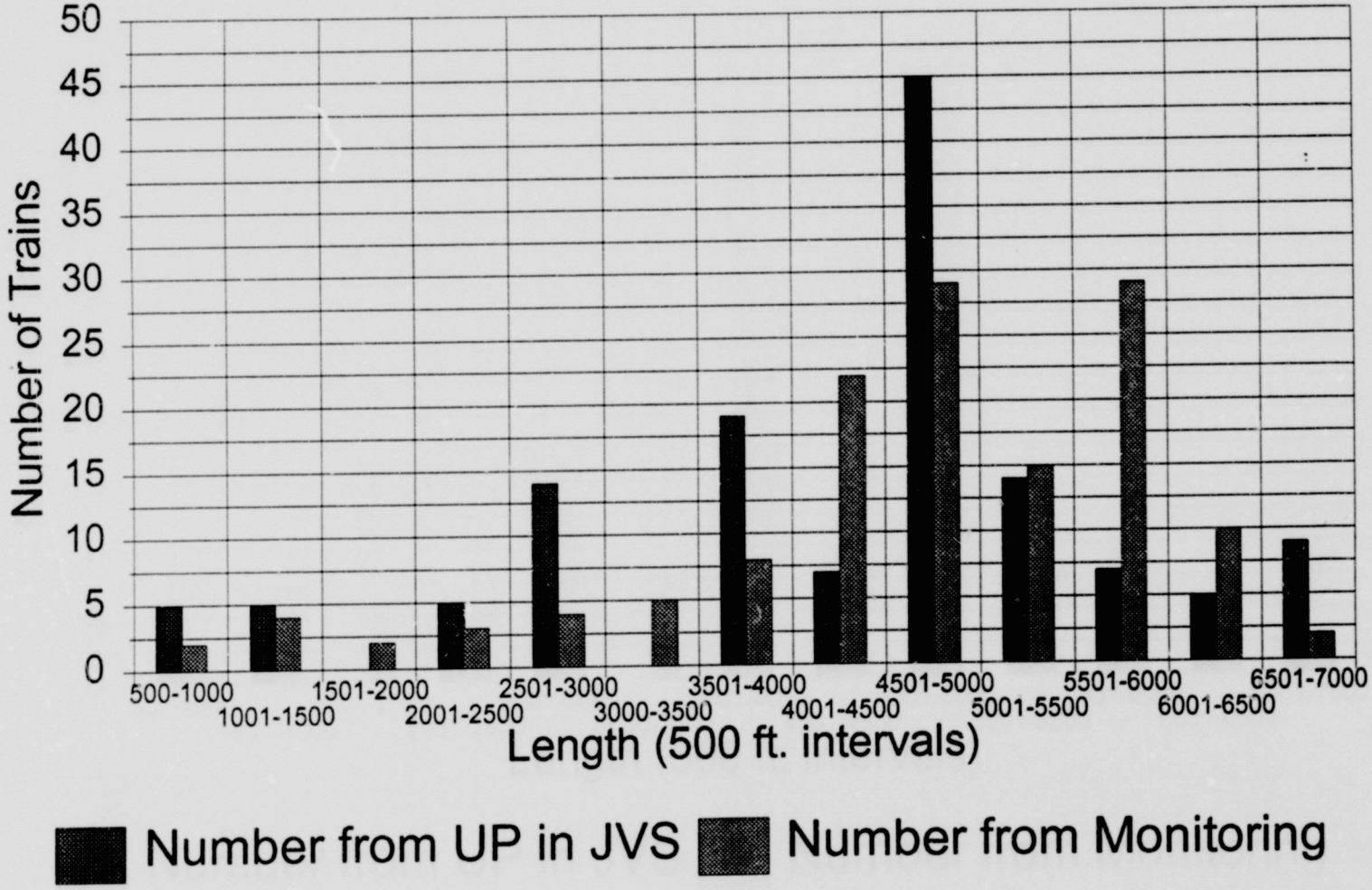
PMP Text Quote #43: page 4 - 9, ¶ 1, line 1: *In light of these factors, major expansion at the Port of Oakland plans appears to be beyond the reasonably foreseeable Year 2000 train projection horizon. UP train-traffic projections accounted for merger-related growth and the BN/SF intermodal traffic share at Oakland. UP did not modify its train traffic projections in anticipation of the proposed new Oakland intermodal facilities, which are clearly not merger-related. Last year, international container traffic at the Port of Oakland actually declined by 13 percent.*

Comment #43.1: The Port of Oakland (the "Port"), California is proposing to develop a major new intermodal transportation center on bayfront land formerly owned by the U.S. Navy, Navy Supply Center. Summit/Lynch Consulting Engineers formed a team in July 1994 and started work on the *Oakland Joint Intermodal Terminal (JIT) Operational Analysis Report* which was issued in January 1995. Team members included Frederic R. Harris, Inc. and F. E. Jordan Assoc., Inc. The report was cooperatively produced by the Port, UP, SP, and shipping lines and their agents. This UP supported document indicates that provides "projects of intermodal volumes to the year 2002 and beyond [2020]" (Summit, 1995:10).

This internationally significant project will have a major effect on the future freight train traffic traveling through Reno. This facility, known as the Joint Intermodal Facility (JIT) will combine existing UP and SP intermodal operations in a modern 200 acre state-of-the-art intermodal facility including several maritime berths which will accommodate deep draft container ships, and a multi-facility rail yard with capabilities to process 42 double stack trains over 8 miles of loading tracks with a 1.6 million annual container capacity, when it is completed in 2005 (Journal of Commerce, April 30, 1997. *Waterfront Facelift Gives the Port a New Look.* p. 1). In fact, a memorandum of understanding was executed in April 1994 between the Port and both the UP and SP railroads to facilitate construction of the $80 million joint intermodal terminal (San Francisco Chronicle, April 6, 1994. *Oakland Port Project.* p. C2).

Figure 4

Freight Train Lengths - Feb 1997



Completion of the Port expansion will more than triple the Port's capacity to handle maritime cargo. The Port is aggressively pursuing the construction of these facilities to maintain it's position as one of the major west coast port faculties, along with Los Angeles/Long Beach and Seattle, to accommodate the exponential growth in Pacific rim shipping traffic.

To further document the significance of the Port's expansion project, the State of California Employment Development Department, Labor Market Information Division has projected that 5,000 new transportation jobs, primarily attributable to the Port expansion plans, will be added to Alameda County by the year 2001 (EDD, 1994). The majority of these jobs will be in container repair and leasing, trucking, warehousing, freight forwarding and container crane operations.

The JIT project is to be constructed in three phases, with phase I, which is currently ongoing, to include dredging of the bay from 38 feet to 42 feet deep to accommodate deep draft container ships. A majority of this dredging has been completed, with the entire project scheduled to be completed in 2005 (42 feet to 50 feet). It is clear that the project is on fast track, in order to maximize the Port's competitive edge against other west coast facilities (Len Cardoa, personal communication, March 5, 1997).

Chief Executive Officer Dick Davidson has stated that the UP-SP merger was the "only way UP can fill gaps in our system between Texas and California, Los Angeles and Oakland - or improve the efficiency between the California ports and the Mississippi River gateways" (official UP World Wide Web Site - Union Pacific 1996 Annual Report - The Merger of Union Pacific & Southern Pacific).

Reno requests that the Port expansion project be given a fully evaluated "hard look" by SEA, and factored into the model that calculated system-wide rail traffic distribution, to establish a realistic future rail traffic project for daily through trains in Reno.

PMP Text Quote #44: page 4 - 7, ¶ 2, line 1: *In assessing rail traffic projections, the Board generally looks at projections of three years in railroad mergers. Here, UP provided five-year projections, stating that this represents UP's projections for its reasonably foreseeable future for a combined UP/SP system.*

Comment #44.1: The STB does not provide the basis of the statement they generally look at projections of 3 years in railroad mergers. A 3-year or 5-year projection period is completely inadequate to provide a basis for meaningful impact assessment based on a merger projected to breathe life into a failing SP system for years to come. The City requests that 10-year and 20-year projection periods be analyzed in the FMP, which is representative of sound business practice of any major corporation in the U.S. today.

PMP Text Quote #45: page 4 - 6, ¶ 2, line 1: *The City of Reno has stated that the projected number should be 38 trains per day. This number uses 22 (rather than 13.8) trains per day as the baseline and projects train levels to the Year 2015 (rather than 2000).*

Comment #45.1: The City continues to believe a realistic number of through freight trains per day, which should have been used for the analysis on the PMP and the EA is thirty eight (38), based on current levels of operations reported by Barton Aschman et al., 1996; Nolte et al., 1996, and is apportioned as follows:

22.0 historical freight trains per day assumed to be an accurate baseline condition;
6.0 Feather River Route Freight Trains per day;
6.0 Burlington Northern/Santa Fe (BN/SF) settlement agreement trains per day;
2.0 Amtrak Trains per day (especially if Amtrak begins to carry freight); and
2.0 Local movement trains per day.

This represents an increase of 24.2 trains per day (175 percent increase in the number of trains over existing train traffic).

3.7 NATIVE AMERICAN ISSUES

3.7.1 NATIVE AMERICAN CONSULTATION

PMP Text Quote #46: page 6 - 31, ¶ 3, line 1: *During preparation of this PMP, SEA conducted site visits in the Reno area, including meeting with Paula Berkley, representing the Reno-Sparks Indian Colony in October 1996. In December 1996, SEA established the advisory Reno Mitigation task force, which included Paula Berkley as a representative of Native Americans. Ms. Berkley attended most task force meetings. Arlan D. Melendez, Chair of the Reno-Sparks Colony was Ms. Berkley's alternate on the task force. Both Mr. Melendez and Ms. Berkley, received all materials distributed to task force members.*

In May 1997, SEA sent letters to the chairs of the Native American councils (Reno-Sparks Indian Colony, Pyramid Lake Paiute, and Washo Tribal) in the Reno area offering an opportunity to consult regarding Native American issues (see Appendix O [of the PMP]). In addition, SEA added to its study team a subcontractor, Mary Rusco, from the Reno area to address Native American issues.

Comment #46.1: SEA indicates that they have consulted with all potentially affected Native American representatives as part of preparation of the PMP. Required consultation was never conducted during the EA and Post EA NEPA process, and as evidenced in the PMP, has not been completed during the preparation of the PMP. All attempts to conduct Native American consultation were initiated following completion of the EA NEPA process which is a violation of NEPA. It is the City's understanding that only one meeting was held with Reno-Sparks Indian Colony and no direct meetings or contacts have been completed with the Washoe or Paiute Nations. The City requests that SEA officially start the

Native American consultation process and complete the process like all other Federal, state, and local agencies are required to do.

PMP Text Quote #47: page 6 - 33, ¶ 4, line 1: *During consultations, Native American representatives raised a number of environmental and other issues. On July 10, 1997, Arlan D. Melendez (Chairman, Reno-Sparks Indian Colony Tribal Council) Paula Berkeley (Consultant to local Native American interests), Pat Smith (Attorney representing local Native American interests), and Merri Belaustegui-Traficanti (Deputy City Attorney for the City of Reno) met with Dave Mansen and Mary Rusco of the SEA study team.*

Comment #47.1: The referenced July 10, 1997 consultation with the Reno-Sparks Indian Colony, was not "formal" consultation, and was conducted many months after the completion of the NEPA process which is a violation of NEPA.

3.7.2 CULTURAL RESOURCES

PMP Text Quote #48: page 6 - 33, ¶ 2, line 1: *A mitigation measure that would involve construction along the railroad right-of-way through Washoe County (e.g., highway/rail grade separation(s) or a depressed railway) can be expected to have potential adverse impacts on significant cultural properties. As noted above, both Washo and Northern Paiute people made use of the Truckee River. They lived on terraces above the river, where they trapped, hunted, and fished and made use of edible and medicinal plants.*

Comment #48.1: SEA states grade separations or a depressed railway have adverse impacts on historic and cultural resources and if these options are used, more consultation is required with Native Americans. This statement is entirely without basis. Only upon survey of cultural resources and completion of the Section 106 consultation provision of the National Historic Preservation Act (NHPA)[11], would a determination of significance be completed and resources determined eligible to the National Register of Historic Places (NRHP)[12]. If disturbance was unavoidable, the resource could require mitigation upon

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[11]NHPA established the President's Advisory Council on Historic Preservation and the National Register of Historic Places (80 Stat. 915). Under these provisions, Indian Tribes are guaranteed a role in the Section 106 consultation provisions, which require the review of federal undertakings on non-Indian lands.

[12]The significance of a cultural resource is an assessment of the importance of a cultural resource to the citizens of the United States and indicates that a site has attributes that qualify it for inclusion on the NRHP. In order to be considered eligible for inclusion in the NRHP a cultural resource must retain integrity and satisfy at least one of the four significance criteria as defined in 36 CFR part 60.4. The resource must contain one of these qualities:

36 CFR 60.4a that are associated with events significant to broad patterns of history; or
36 CFR 60.4b that are associated with the lives of persons significant in the past; or
36 CFR 60.4c that embody distinctive characteristics of a type, period or method of construction; represent the work of a master; possess high artistic values; or represent a distinguishable entity whose components lack individual distinction; or
36 CFR 60.4d that have yielded or may yield information important to history or prehistory.

completion of the 106 consultation process. The likelihood of encountering cultural materials associated with construction, can not be determined at this time, and should not be used as a factor to discount the feasibility of this or any mitigation option.

3.8 BIOLOGICAL RESOURCES

PMP Text Quote #49: page 6 - 27, ¶ 2, line 2: *As shown in the table, the likelihood of a hazardous materials release between Truckee, California and Fernley, Nevada is once every 39.8 years for pre-merger conditions. The estimated number of years between hazardous materials spill events for post-merger trains (with the increased number of hazardous materials cars) is once every 27.4 years, a reduction of 12.4 years. The table also provides these estimates for the California and Nevada portions of this rail line segment.*

page 8 - 14, ¶ 6, line 1: *Based on SEA's independent estimate, the likelihood of a hazardous materials release between Truckee, California and Fernley, Nevada is once every 39.8 years for pre-merger conditions. The estimated number of years between hazardous materials spill events for post-merger trains (with the increased number of hazardous materials cars) is once every 27.4 years, a reduction of 12.4 years.*

page 6 - 38, ¶ 4, line 1: *Based on the history of spill events along the Truckee River (see Section 6.2.5) and the infrequency of derailments, SEA has concluded that it is unlikely that the above-referenced endangered and threatened species will be affected by the merger-related increase in train traffic given the low likelihood that an accidental upstream spill from a UP freight train will occur (see Section 6.2.5). In addition, UP plans to improve tracks and rail beds, improvements which should further reduce the risk of rail spills along the Truckee River. UP has also developed an emergency response plan to respond to spill events, in cooperation with local emergency service agencies.*

page 6 - 39, ¶ 1, line 1: *In conclusion, it appears that the merger-related train traffic increases through Reno and Washoe County would have a negligible impact on the cui-ui and Lahontan cutthroat trout for the following reasons:*

- *Appropriate mitigation measures imposed in Decision No. 44.*
- *Pyramid Lake, the major habitat for cui-ui, is 15 miles from the UP (formerly SP) tracks.*
- *There is no history of major derailment spills along the Truckee River, which feeds into Pyramid Lake.*
- *UP has an emergency response program in place, and in the event that a spill occurs, UP can respond quickly with appropriate remediation measures.*
- *The Washoe County Environmental Health Department and other local agencies have emergency response plans and staff to respond to emergencies.*
- *UP is improving the tracks along the Truckee River, which will further reduce the potential for a spill event. (These planned improvements will not occur in proximity to either species' habitats and would not affect the fish or their habitats.)*

On June 17, 1997, SEA transmitted letters discussing these initial conclusions to USFWS staff in the Sacramento Field office, the Nevada State office, and the Region 1 office. SEA's proposed additional mitigation measures for the protection of the Truckee River and the endangered and threatened species are provided in Section 8. With the issuance of the PMP and its preliminary recommendations, SEA will continue consultation with the USFWS on both the initial conclusions and the PMP with its proposed additional mitigation measures.

Comment #49.1: SEA concludes that the likelihood of a hazardous materials release between Truckee, California and Fernley, Nevada is once every 39.8 years (pre-merger) and once every 27.4 years (post-merger), a increase in likelihood of 12.7 years not a reduction. In other words what might have only happened once every 40 years before is now likely to happen once every 30 years — **an increase in risk**.

The City does not subscribe to these conclusions and refers to the numerous accidents, derailments, and collisions that are documented in the newspaper articles contained in Appendix E of this comment document. The most recent train derailment located in close proximity to, and in a similar ecological environment to the Truckee River involves the Upper Sacramento River near Dunsmuir, California which involved a SP train transporting Vapam or metam sodium which resulted in the sterilization of nearly 42 miles of stream environment.

Comment #49.2: It would appear that the public who has indicated this is a priority environmental concern for the community will have no opportunity to evaluate that consultation process prior to the end of the comment period. This is unacceptable to the citizens of Reno and the City. The adequacy of the proposed "mitigation" can not be evaluated without the complete consultation process of the USFWS.

Comment #49.3: Throughout the Reno Mitigation Study process, the City requested that SEA put the issue of endangered species inhabiting the Truckee River (the endangered cui-ui and the threatened Lahontan cutthroat trout [LCT]) on the Reno Mitigation Task Force agenda so that this critical issue could be publicly studied and reasonable mitigation solutions could be discussed. SEA failed to honor this request.

Nonetheless, on June 17, 1997 (prior to SEA's abrupt cancellation of the August and September Task Force meetings) SEA sent a letter request to the Nevada office of the U.S. Fish and Wildlife Service (USFWS) seeking their concurrence in SEA's conclusion that "The UP/SP railroad merger-related train traffic increases through Reno and Washoe County would have a negligible impact on the cui-ui or the Lahontan cutthroat trout..." SEA did not invite the public, including the Native Americans, to participate in this process. Please refer to the June 17, 1997 letter from Elaine Kaiser, Chief Section of Environmental Analysis to the USFWS, as

well as all other correspondence related to this matter placed in the record by the City, as set forth in Appendix F of this comment document.

The USFWS agreed with SEA via its July 9, 1997 informal consultation process (File No. 1-5-97-1-281). This informal consultation finding was not forwarded by SEA to the City until August 18, 1997. In their informal consultation, the USFWS concluded:

> *Based upon the information provided in* [SEA's] *letter, UP/SP Progress reports..., and the discussions with Harold McNoulty* [sic] *of the Section Environmental Analysis the [Fish and Wildlife] Service concurs that the increased traffic from the UP/SP merger is not likely to adversely affect the cui-ui and LCT as long as the train safety improvements are continued and the emergency response plan is implemented in needed. Therefore, formal consultation pursuant to section 7 of the* [Endangered Species] *Act is not required.*

A review of SEA's request to the USFWS reveals that certain misleading information was given to the USFWS to consider. This misleading information was in the form of an incomplete summary of a study conducted by James Carr, Ph.D., P.E. of the University of Nevada, Reno. SEA reported that based upon Dr. Carr's findings, the probability (risk) of a contamination event in the Truckee River was once in every 154.15 [sic] years. This finding was **not** based on the **increased** train traffic (post merger 24 trains per day per UP), but rather it was based upon **existing baseline train traffic** (14.7 trains per day) and only the Nevada portion of the Truckee River. In a September 2, 1997 letter to the City, **Dr. Carr verified that the summary information from his report provided by SEA to the USFWS was in fact misleading** (see Appendix F of this comment document for a complete copy of Dr. Carr's letter).

The City met with the USFWS - Nevada office on August 26, 1997 to discuss these concerns. The City provided the USFWS with the full text of Dr. Carr's report (not previously provided by SEA) and asked the USFWS to request that SEA authorize a formal consultation under Section 7 of the Endangered Species Act (ESA). On August 29, 1997 the Reno-Sparks Indian Colony forwarded a similar request to the USFWS.

On September 8, 1997, the City Attorney's Office was copied with a letter from USFWS to SEA reiterating that the City had provided information to them which had not previously been provided by SEA. Further, the USFWS pointed out the discrepancies in the statistics provided the by SEA. The USFWS concluded "[b]ased on our receipt of Dr. Carr's report, our conversation with your staff, and the impending report that you will provide to explain your assessment of the likelihood of a hazardous spill occurring, we recommend an exchange of information detailing your interpretation of this additional information and how

that interpretation coincides with earlier information present and our "not likely to adversely affect" determination.

On October 7, 1997, the City Attorney's Office was copied with a letter to USFWS from SEA requesting re-initiation of the informal consultation process based upon information not previously provided to USFWS.

The City also informed U.S. Secretary of Transportation Rodney Slater, Senators Reid and Bryan and Representatives Gibbons and Ensign of these serious environmental concerns. Senators Reid and Bryan have sent letters to the STB and to CEQ expressly requesting their oversight on these important environmental issues in the Truckee Meadows. All correspondence referenced in this comment appears in Appendix F of this comment document.

3.9 NOISE/VIBRATION

The City has been provided a copy of a recently completed railroad noise / vibration assessment completed by Brown-Buntin Associates, Inc. of Fair Oaks, California entitled *Railroad Noise / Vibration Assessment: UP/SP Merger* (BBA, 1997). The following comments were taken in part from that report, which appears in its entirety as Appendix G of this comment document.

PMP Text Quote #50: page 2 - 19, ¶ 1, line 1: *Local officials have asked the Board to review its standards for what are considered "noise receptors" (schools, hospitals, retirement homes), suggesting that commercial property and hotels be included. It was also suggested by the City that the night-weighted noise averages for calculating potential noise impacts may not apply in this study, because Reno operates as a 24-hour town. The noise descriptor used in the analysis is Ldn, which is the time-average of the noise levels obtained over a 24-hour period, with a 10-decibel penalty added to the nighttime levels (10:00 p.m. to 7:00 a.m.). This adjustment is intended to account for the increased sensitivity to nighttime noise events.*

page 6 - 40, ¶ 4, line 1: *Board regulations require identification of sensitive receptors within areas that would experience increases in noise under these criteria. The following examples of sensitive receptors are provided in the Board's regulations: "schools, libraries, hospitals, residences, retirement communities, and nursing homes" (49 CFR 1105.7(e)(6)(ii)(1996)).*

page 6 - 42 to 6 - 43, ¶ 8, line 1: *Three dBA Increase Criterion: Based on an increase in the number of trains from pre- to post-merger levels, the potential increase in train noise is projected to be 2.7 dBA Ldn. Consequently, no exceedance of the Board's criterion of a three dBA or greater noise increase is projected for Reno and Washoe County.*

Comment #50.1: SEA notes definition of sensitive noise receptions but no hotels are listed as requested by the City (Appendix E of the PMP says this was addressed, but it is not). SEA offers no explanation why hotels are not included and in fact never raise the issue except in Appendix E of the PMP.

PMP Text Quote #51: page 6 - 41, ¶ 2, line 1 (see also Figure 7.2.6-1 page 7-50): *Single-event Sound Exposure Level (SEL) data for each train noise event were used to determine how train noise decreases (i.e., the drop-off rate) with distance for each location identified in Table 6.2.9-1. SEL is a noise descriptor that normalizes all of the sound energy of a noise event to a one-second duration and provides a meaningful way to compare noise levels of two different noise events of different durations. SEL is useful for calculating the drop-off rate, because it accounts for propagation of sound from the train to the measurement position for the entire train noise event, not just for the loudest portion of the noise event. In addition, SEL, in conjunction with the number of daytime and nighttime train noise events, can be used to calculate directly the Ldn.*

Comment #51.1: The distances to the noise contours shown by SEA (see Figure 7.2.6-1 page 7 - 50 of the PMP) are significantly less than those reported in the BBA report (BBA, 1997). The noise levels and attenuation rate results which were previously published by Acentech (see Appendix B of this comment document, May 14, 1997 - Task Force #5 Meeting Summary and May 14, 1997 Agenda Item No. 3, Noise and Train Speed Survey Results Handouts), have been reevaluated and it has shown while the reported SEL values were of similar magnitude, the distances to the contours were dramatically less, especially for the post-merger condition. These distances are calculated in a simple manner, using the SEL value, the number of operations (weighted for day / night split) and an assumed attenuation (drop-off) rate. Referring to the two sites where shielding is not a significant factor, a rural crossing and a rural wayside (without horn use), and assuming that the reference SEL values used by SEA are similar to those reported by Acentech and BBA, and that they both use SEA day / night split, the only significant difference between the calculation methods will be the attenuation rate.

The BBA report assumed a noise attenuation factor of 15 times the logarithm of the relative change in distance, which is consistent with the methods and theoretical approach used by Wilson, Ihrig & Associates, Inc. (WIA) in the EA, as well as by others (SEA, 1996a; BBA, 1997). Acentech reported attenuation factors at the rural crossing ranging from 2 to 40.9. The higher values were all ascribed to "shielding", and presumably were discounted. At the rural wayside, Acentech reported attenuation factors ranging from 5.4 to 11.6. If attenuation factors less than 15 were used by Acentech, the contour distances would have been greater than those which BBA calculated. Instead, the distances are less, so a higher attenuation factor must have been used. No data has been found in the PMP describing the assumed attenuation factor or the rationale for its selection.

Comment #51.2: SEA noise contours (see Figure 7.2.6-1 page 7 - 50 of the PMP) also fail to account specifically for the presence or lack of shielding. It appears that the contours in the downtown area are generalized, representing primarily areas where tall buildings block line of sight to train noise. Field observations and aerial photos reveal, however, that this is not a universal condition, nor is it the dominant condition outside of a small area. The City believes that the approach which BBA

employed, where the Environmental Noise Model (ENM)[13] was used to calculate shielding due to tall buildings, based on aerial photos, is more definitive.

PMP Text Quote #52: page 6 - 41, ¶ 3, line 1: *The rates of noise decrease with distance were calculated for the locations identified in Table 6.2.9-1 for every measured train noise event and were used to determine the distance from the tracks to the 65 dBA Ldn contour. These distances were calculated to determine the average distance to the 65 dBA contour for an urban grade crossing, rural grade crossing, and no-horn condition. The results of this analysis are shown in Table 6.2.9-2.*

Comment #52.1: Both the PMP and Acentech' report (see Appendix B of this comment document, May 14, 1997 - Task Force #5 Meeting Summary and May 14, 1997 Agenda Item No. 3, Noise and Train Speed Survey Results Handouts) are silent on the assumed day / night split. SEA must provide this information along with the rationale for the factors.

PMP Text Quote #53: page 6 - 43, ¶ 3, line 1: *Table 6.2.9-3 shows the number of existing sensitive receptor properties (parcels) that potentially fall between or are intersected by the pre- and post-merger 65 dBA L_{dn} noise contours. As shown in the table, the increase in the number of sensitive receptors from pre- to post-merger train levels is 40, which includes 27 hotels/casinos and 13 other properties. The parcel locations are shown on maps in Appendix Q [of the PMP].*

Using actual noise measurements and noise models, the SEA study team has taken a "harder look" at the potential noise impacts in Reno. The Board has the authority to determine the significance or insignificance of these potential environmental impacts, and SEA recommends that the Board find these potential noise impacts to be insignificant, which is consistent with the EA, Post EA, and Decision No. 44. As noted in the Board's Decision No. 44, the intensity of the train horns is not expected to increase, only the frequency. Moreover, this is not a new type of noise that will be experienced, and the effects are on properties that developed over the years next to the rail line. Most importantly, safety, which is of paramount importance, requires the blowing of the train horns as noted in the Board's Decision No. 44, and as recognized in the recently passed Federal Swift Act.

Comment #53.1: These statements and the corresponding table appear to be in conflict. The PMP text acknowledges that motel and hotels are sensitive receptors in the increase from pre-merger and post-merger contours, yet the table specifically lists "Number of Affected Noise-Sensitive Receptors" as compared to "Number of Affected Casinos and Hotels" indicating that "Casinos and Hotels" are not "Noise-Sensitive Receptors".

[13]The ENM has been developed by RTA Technology Pty Ltd, and incorporates accepted methods of modeling outdoor noise exposures, accounting for ground and air absorption of sound, as well as shielding by building or barriers.

Comment #53.2: While acknowledging hotels and motels as sensitive receptors in one paragraph, SEA "recommends that the Board find these potential noise impacts to be insignificant, which is consistent with the EA, Post EA, and Decision No. 44." As summarized in BBA's report and indicated in Table 10 below, the proposed merger is expected to result in addition of approximately 34 residences, 261 hotel rooms, and one church to the area within the DNL 65 dB railroad noise contour. SEA must consider and evaluate this data as a significant adverse noise impact.

Table 10

Comparison of Noise Sensitive Receptors

	Existing[14] (1997)		Post-merger		Difference	
	12.7 Trains		24.0 Trains		11.3 Trains	
Receptors	PMP	BBA	PMP	BBA	PMP	BBA
Residences	31	84	44	118	13	34
Apartment Units		185		185		0
Churches				1		1
Hotels	34[15]	18	61[15]	27	27[15]	9
Hotel		875		1,136		261
TOTAL	65	1,144	105	1,440	40	296

Source: BBA, 1997: Table IV; STB, 1997d: Table 6.2.9-3

3.10 AIR QUALITY - TRAINS

The City has been provided a copy of a recently completed air emissions analysis completed by Air Sciences Inc. of Lakewood, Colorado entitled *Analysis of Air Emission Increases Resulting From the Union Pacific and Southern Pacific Railroad Merger and Effects on the Management of the Air Resource of the Truckee Meadows Nonattainment Area* (ASI, 1997). The following comments were taken in part from that report, which appears in its entirety as Appendix H of this comment document.

[14]Both the PMP and BBA's report indicate existing (1997) measurement data as no data was available for the pre-merger (ca. 1995) period.

[15]The PMP in Table 6.2.9-3 indicates "number of affected casinos and hotels" with no indication of the number of rooms.

PMP Text Quote #54: page 6 - 51, ¶ 4, line 1: *Contribution of Locomotives to the Emission Inventory in Washoe County: As part of the emissions inventory preparation and updating process, the Washoe County District Health Department has estimated emissions resulting from current railroad operations within the County. These values help place into context the relative impact of the increased train levels associated with the merger on locomotive emissions. Inventory numbers are shown in Table 6.2.11-3. They do not include emissions from idling on-road vehicles, but do include emissions from locomotives operating on the Pyramid Lake/Feather River route north of Reno. They also include switching operations as well as line-haul operations, which are not associated with the merger. For three pollutants, the contribution to the total inventory is insignificant. The percentage of railroad NO, as compared to the County inventory, is small but not negligible.*

Comment #54.1: Current diesel emissions of NO_x in Washoe County are 929 tons per year. In the PMP this quantity is incorrectly compared to a total of 27,261 tons per year. The correct number (subtracting out the Storey County "Buffer Zone Sources" of 13,351 tons per year, as shown in WCAQMD-b, Table 1-2) is 13,910 tons per year (also see WCAQMD, 1996a: "Maintenance Plan", Table 3, Total NO_x). The county-wide locomotive emissions are 6.7 percent of the county total. This is a significant contribution to the county inventory.

Comment #54.2: The PMP states that the Sparks switchyard operations are not associated with the merger. In fact, if the increase in freight trains through the Reno / Sparks / Truckee Meadows area increases the switchyard activity levels, then the increase in switchyard activities and associated air emissions are an effect of the merger, just as the increase in emissions due to vehicle delays is an effect of the merger. The Sparks rail yard impacts from increased traffic must be given a "hard look" in the FMP.

PMP Text Quote #55: page 6 - 53, ¶ 1, line 1: *In addition, the analysis excludes freight trains on other rail lines in Washoe County, specifically the Pyramid Lake/Feather River UP/SP line north of Reno. This line is within Washoe County and activity on this line is expected to decrease as a result of the UP/SP merger. However, emissions related to this line do not have an appreciable effect on peak levels of ozone and other pollutants in Washoe County, due to its distance from Reno.*

Comment #55.1: The PMP notes that the freight traffic on the existing UP Feather River route, passing through northern Washoe County will decrease, but the emissions from these trains will not affect the location where ozone violations were measured, in the Reno / Sparks / Truckee Meadows area.

SEA's statement provides the proper logic for focusing attention regarding the NO_x emissions increases caused by the merger on the Truckee Meadows basin rather than the entire county. This statement makes the conclusion in page 6 - 55, paragraph 3 of the PMP irrelevant. That conclusion states that since county-wide NO_x emissions increases are about 1.5 percent of the inventory, "...the SEA study

team believes that the NO_x increase resulting from the increased levels of through train traffic due to the merger is unlikely, by itself, to result in a change from attainment to nonattainment..."

In fact, the NO_x emissions increase in the Truckee Meadows relative to the total inventory is provided in Air Sciences Inc. (ASI), recently released report in Table 3.10 (ASI, 1997) summarized in Table 11 below.

Table 11

Net NO_x Emissions Increase (tons per year)

Trains / Day	1995	2000	2007	2015
12.7	0	—	—	—
24.0	—	390	390	68
36.0	—	805	805	320

Source: ASI, 1997: Table 3.10

These tables demonstrate that at 24 trains per day through Truckee Meadows there is an expected 5 percent increase in Truckee Meadows NO_x inventory and with a 36 trains per day there is an expected 10 percent increase in the inventory. These are significant emissions increases in the basin where the ozone violations were measured.

PMP Text Quote #56: page 6 - 56, Table 6.2.11-5: *Locomotive NO_x emissions pre-merger = 443.4 tons per year. Locomotive NO_x emissions post-merger = 838.0 tons per year.*

Comment #56.1: The table title indicates these are Washoe County emissions. However, they appear as Truckee Meadows emissions. The pre-merger locomotive NO_x emissions of 443.4 tons per year in this table appear to be representative of the Truckee Meadows locomotive emissions (see WCAQMD, 1996b:Table 4-19, Southern Pacific Transportation Freight Train emissions of 449 tons per year). Furthermore, the county-wide NO_x emissions have already been listed in the PMP, Table 6.2.11-3 as 929 tons per year. The post-merger emissions of 838 tons per year are similar to those in ASI's Table 3.9 at 829 tons NO_x per year for Truckee Meadows (ASI, 1997).

PMP Text Quote #57: page 6 - 57, Table 6.2.11-6: *Locomotive CO emissions pre-merger = 16.1 tons per year. Locomotive CO emissions post-merger = 30.4 tons per year.*

Comment #57.1: The pre-merger Truckee Meadows locomotive CO emissions (16.1 tons per year) are low by a factor of at least 3. For a comparison (see Table 4-19 of WCAQMD, 1996b) where Truckee Meadows CO emissions from freight trains are 57 tons per year. Alternatively, note from the PMP table 6.2.11-4 that the ratio of CO to NO_x emissions per unit of fuel consumed is 0.13. This same ratio must hold for the annual emissions of the two pollutants as both are based on the same amount of fuel burned. Thirteen percent (13 percent) of 443.4 tons per year of NO_x is equal to 56 tons per year of CO. With this error corrected, the Table 6.2.11-6 CO total resulting from the merger will be larger by about 40 tons per year (a total of 77 tons per year).

PMP Text Quote #58: page 6 - 58, ¶ 1, line 1: *General Conformity: SEA has concluded that the proposed merger is not subject to EPA's air quality regulations entitled "Determining Conformity of General Federal Actions to State of Federal Implementation Plans" (General Conformity). The proposed merger does not meet the definitions set forth in the General Conformity regulations at 40 CFR 51.852, because as a regulatory agency the Board does not maintain program control over railroad emissions as part of its continuing responsibilities.*

Comment #58.1: Contrary to the PMP, the STB is subject to general conformity as discussed in ASI's recently released report (ASI, 1997:Sect. 5). The STB's ability to limit freight train traffic through Truckee Meadows during the mitigation study period (see STB, 1996c:222) is evidence of the STB's program control over railroad emissions.

3.11 AIR QUALITY - VEHICLES

PMP Text Quote #59: page 6 - 58, ¶ 1, line 1: *Vehicle air emissions were calculated for queuing vehicles at the grade crossings reviewed in Section 6.2.1 for traffic delay. At each crossing, the average daily total hours of delay for vehicles was multiplied by an emission factor in grams of pollutant per hour. These scenario-specific emission factors were generated by using the EPA's mobile source emissions models, MOBILE5a and PART5.*

Comment #59.1: The City has reviewed SEA methodology for estimating emission from vehicles and concurs with the methodology. Unfortunately, since the emissions calculations are dependent upon the average daily total hours of delay, total daily delay hours, and the number of vehicles delayed, the City would dispute the results of the vehicle emissions studied based upon substandard delay data as discussed in the City's Traffic Delay Resource Evaluation comments beginning at Comment #27.1 on page 3 - 1 of this document.

The City would submit the following CO emissions increases in the Truckee Meadows relative to the total inventory as provided in Air Sciences Inc. (ASI), recently released report in Table 3.8 (ASI, 1997) summarized in Table 12 below.

Table 12 Net CO Emissions Increase (tons per year)				
Trains / Day	**1995**	**2000**	**2007**	**2015**
12.7	0	—	—	—
24.0	—	68	66	72
36.0	—	144	138	147

Source: ASI, 1997: Table 3.8

3.12 PROPERTY IMPACTS/LAND USE

PMP Text Quote #60: page 4 - 2, ¶ 7, line 1: *The number of trains passing through Reno has varied over the years. For example, an SP dispatcher's train sheet for Reno/Sparks Line, June 5, 1947, shows 40 daily freight and passenger trains. From that period to the 1980s, traffic declined to about 24 daily trains. During this period, UP acquired the Western Pacific Railroad, providing the UP with its own route between Ogden-Salt Lake City and California. Thus, SP lost a major source of interchange traffic at Ogden. This, in connection with the declining financial position of SP, led to a further decline in traffic levels. By 1994, the average daily through freight train count in Reno was 12.7 freight trains. Because of traffic reroutes, traffic in 1996 declined further to an average of approximately 11.0 trains a day. Section 4.4 presents projected freight train levels in the future under the merger.*

Comment #60.1: SEA notes the financial decline of the SP Railroad in the 1980s, even though it completely ignores the SP's aggressive marketing and profitable sale of excess right-of-way to the private sector for development purposes. Please refer to a document entitled the "Comments on Union Pacific's *Downtown Reno & the Railroad*" by Stewart M. Peters, Ph.D., Principal Planner for the City, for a complete discussion of the historical development of downtown Reno (see Appendix 1 of this comment document). Please also refer to the May 14, 1997 letter to Elaine Kaiser, Chief Section of Environmental Analysis from Merri Belaustegui-Traficanti, Deputy City Attorney, providing detailed right-of-way development information including a parcel map in Response to SEA's November 4, 1996 letter, placed in the record by the City on August 8, 1997 as set forth in Appendix A of this comment document.

3.13 ECONOMIC ISSUES

SEA failed to conduct an economic analysis outlining decreased performances of the entire downtown area which will occur even after implementation of the mitigation measures identified in the PMP. Some of these impacts will occur due to restricted access and impaired utilization which will financially affect the downtown casinos and businesses. SEA does not

address the fact that downtown casinos and businesses represent a major source of funding for cultural activities, parks, schools, police and fire protection, and other services offered by the City and if casinos and businesses located downtown are financially affected, so are the financial resources that help to fund those services. The City requests that SEA address the implications if all of the mitigation measures are not complied with due to the fact that many of the measures are self regulating. The City requests that the FMP address these economic issues.

A farce ... If this report stands unaltered ... Reno will be shafted. It is that basic ... citizens have only 28 days to comment on this travesty in hopes of changing it. They need to do so in large numbers and with the utmost urgency ... Otherwise we will be left at the mercy of a federal agency that doesn't give a damn about Reno and a railroad whose actions say it doesn't give a damn about safety.

Editorial, The Reno Gazette-Journal, September 17, 1997

Reducing grade crossing blockage would reduce possible adverse impacts to emergency vehicle access. The SEA study team determined that, with increased train speed, emergency vehicles would be delayed at crossings for a shorter length of time if they were stopped by a train.

Section of Environmental Analysis, Reno Preliminary Mitigation Plan

MITIGATION EVALUATION

4.0 MITIGATION EVALUATION

The PMP provides some discussion of the mitigation and secondary impacts of the primary mitigation measure recommended by SEA to the STB. Underpasses and overpasses are provided a cursory discussion ("soft look") emphasizing the property acquisition costs as the main impact of the mitigation and actually when justly compensated, land used in a project is typically not considered an impact. The depressed railway receives only the most basic of evaluations (another "soft look") and multiple criticisms for its cost[16], then it is summarily dismissed. Table 13 below provides a comparison of each mitigation option and the degree to which the mitigation measure would reduce potential environmental impacts (decreased) and introduce potential environmental impacts (increased) from post-merger increase in freight train traffic.

PMP Text Quote #61: page 2 - 4, ¶ 5, line 1: *As pertinent here, SEA had conducted site visits to the Reno and Sparks area, during which concerns such as noise levels, grade crossing activity, and safety were evaluated. Thus, SEA recommended numerous general and regional mitigation measures addressing safety, hazardous materials transport, air quality, and noise that pertain to Reno and other areas potentially affected by increased rail traffic as a result of the merger.*

> **Comment #61.1:** SEA says they recommend "numerous general and regional mitigation measures" addressing safety, hazardous materials, air quality and noise that pertains to Reno. The City requests specific mitigation measures to mitigate specific merger related impacts in Reno.

PMP Text Quote #62: page 2 - 5, ¶ 4, line 1: *The Board rejected the argument of various parties that a full EIS should have been prepared, noting that the environmental mitigation measures imposed in this case are far-reaching and comprehensive.*

page 8 - 22, ¶ 2, line 3: *The Tier 2 measures that SEA has identified are expected to offer more far-reaching, long-term benefits by reducing conflicts and impacts resulting from existing land uses and pre-merger train traffic.*

> **Comment #62.1:** SEA notes that no EIS is needed for the Reno / Sparks / Truckee Meadows area because mitigation measures imposed are "far reaching and comprehensive". Yet the entire PMP reiterates that only Tier 2 mitigation is "far-reaching" (which is not mandatory nor recommended for Board approval), as indicated above by merely 2 of the nearly 15 references to Tier 2 mitigation's "far-reaching and comprehensive" benefits. Either the EIS is not needed because mitigation is "far-reaching" or its is needed because this PMP does not provide those "far-reaching and comprehensive" mitigation measures.

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[16]Please note that SEA has indicated "economic" factors (ostensibly cost) are not part of the mitigation study as mandated under Decision No. 44.

Table 13

Mitigation Measures which would Reduce Environmental Impacts (↓ decreased) and Introduce Potential Environmental Impacts (↑ increased) from Post-merger Increase in Freight Train Traffic

Resources Impacts ↓ decreased or Impacts ↑ increased	Post-merger			
	Unmitigated	Increased Speed 30 mph	Grade Separation(s)	Depressed Railway
Traffic Delay	↑ delay	↓delay	↓delay	↓delay
Safety - Pedestrians	↑ frequency	↑ frequency	↓frequency	↓frequency
Safety - Emergency Vehicle Access	↑ blockages	↑ blockages[17]	↓blockages	↓blockages
Safety - Train/Vehicle Accidents	↑ frequency	↑ frequency ↑ severity	↓frequency	↓frequency
Safety - Derailment/Spills	↑ frequency	↑ frequency ↑ severity	↑ frequency	↑ frequency
Biological Resources	↑ risk	↑ risk	↑ risk	↑ risk
Noise/vibration	↑ noise ↑ vibration	↑ noise ↑ vibration	↓noise	↓noise
Air Quality - Trains	↑ NO_x (+395 tons)	↑ NO_x (+388 tons)	↓NO_x	↓NO_x (+394 tons)
Air Quality - Vehicles	↑ CO (+33.5 tons)	↑ CO (+10.8 tons)	↓CO	↓CO (-1.5 tons)
Property/Land Use	NA	NA	none if compensated	none if compensated

Source: Adapted from STB, 1997d

[17]SEA uses a measure of impact of average daily gate down time per crossing on major crossings. Please see Section 3.1 of this comment document. The City of Reno does not consider this measure appropriate, when dealing with public health and safety.

4.1 TIER 1 MITIGATION - SPEED

PMP Text Quote #63: page 7 - 10, ¶ 3, line 4: *However, FRA data provided to the SEA study team show that accidents are likely to be more severe with increased train speeds. Specifically, Figure 7.2.1-2 shows that anticipated fatality rates (number of fatalities per accident) increase as train speeds increase.*

> **Comment #63.1:** SEA knowingly acknowledges that severe, increasingly fatal accidents are more likely to occur with increased speed and still has recommended a mitigation measure that increases the speed of trains through the downtown area of the City from 20 mph to 30 mph. The City is outraged by the fact that SEA has recommended a mitigation measure that will have implications to the health, safety, and welfare of Reno's citizens and tourists.

PMP Text Quote #64: page 7 - 1, ¶ 1, line 1: *This section describes physical facilities, train operational changes, and other options that have been evaluated as potential mitigation measures for the increase in through freight train traffic in Reno and the surrounding area.*

> **Comment #64.1:** Of the options SEA reviewed, increased speed is the only "train operational change" listed. There is nothing mentioned about shortening train lengths by 50 percent or reducing the number of trains by 50 percent even though Appendix E of the PMP incorrectly states this is discussed in PMP Section "in 7-1".

PMP Text Quote #65: page 7 - 4, ¶ 1, line 1: *The current UP maximum authorized speed for trains in the downtown Reno area is 20 miles per hour (mph). It appears that this maximum speed could be increased under applicable FRA regulations. SEA requested information from UP regarding the feasibility and practicality of increasing train speeds through Reno, along with the associated costs. UP's response is contained in Appendix R [of the PMP].*

According to UP, it is feasible to increase general train speeds to 30 mph between the east end of the Sparks Rail Yard (Mile Post (MP) 247.1) to just west of Keystone Street (MP 242) on the west side of downtown Reno, if various capital improvements and operating requirements were implemented. These include:

- *Replacement, between Woodland Avenue and Vista (which is east of Sparks Yard) of the current automatic block signal (ABS) system with centralized traffic control (CTC).*
- *Replacement of various turnouts (switches) in the Sparks Yard from size No.10 to a larger size (No. 14) that would be power operated.*
- *Addition of a universal power-operated No.20 crossover west of Reno.*
- *Tie replacement and track surfacing, as needed.*
- *Installation of power-operated or electric lock switches for all main line tracks in the CTC territory.*

According to UP, these changes would enable trains to achieve a timetable speed of 30 mph on a consistent basis through Reno.

page 7 - 12, ¶ 5, line 1: *In the case of Reno, the existing track has been maintained to standards exceeding that required for 20 mph operations, i.e., the tracks are a Class 3 under FRA regulations. Under FRA regulations, if UP increases train speed up to 30 mph, it must continue to meet Class 3 safety standards. FRA Class 3 track permits freight train speeds up to 40 mph, so at 30 mph, the track would be well within its maximum safe limit under FRA regulations. As operating speeds would be relatively low, incident severity in the 30 mph area would be less than that expected for the 40-60 mph mainline operation. The incremental increase in the incident rate that would result from 20 to 30 mph is statistically very low.*

page 8 - 6, ¶ 1, line 1: *UP has informed SEA that, not only is it feasible to increase the speed of each train by 10 mph (which is the basis for the above analysis), UP can consistently maintain train speeds of all trains through downtown Reno at 30 mph with appropriate capital investments. However, to be conservative, SEA assumed for its analysis only that each train would travel at a speed 10 mph greater than observed during the survey week, rather than assume that all trains would travel at 30 mph.*

Comment #65.1: The PMP has introduced "increased train speeds" as the principal mitigation measure. Speed has always been treated as an operational characteristic of the vehicles as well as trains and it is not an appropriate measure of mitigation. Speed by nature is not a constant parameter. It could change due to several factors which are not controllable. Factors such as acceleration, deceleration, horsepower, grade, trailing tonnage, stopping distance, weather, and emergency situations such as right-of-way trespass[18] could affect the speed (Hunter, 1997) (see a memorandum from Gary V. Hunter to Steve Varela in Appendix F of this comment document). It is, therefore, a stochastic factor. The City's field observations, as well as the PMP itself indicates great variation in speed (from 5 mph to over 30 mph) during the video taping and SEA field survey.

Assuming a 30 mph speed as a "required" mitigation measure is therefore not a realistic solution. There is no guarantee that speed will be "...consistently maintain[ed]...[for] all trains through downtown Reno at 30 mph" (STB, 1997d:8 - 6). The City believes that a probabilistic model needs to be developed to identify the speed distribution over time (under various environmental conditions) and establish the randomness of this parameter.

Increasing speed, if it happens, may improve the total delay, but the occurrence of that is not by any means under control. Increased train speed may also have other traffic-related impacts at at-grade crossings that are near signalized intersection and signal preemption are in effect. The PMP needs to consider a comprehensive and detailed analysis of preemption conditions at those locations and include the impact

[18]The right-of-way though fenced is not secured and does allow for trespasser in a poorly illuminated environment where trains pass through a building that forms a tunnel limiting visibility with a mixture or neon lights or no light at all contributing to very poor visibility.

of increased speed on preemption strategies. With increased speed, more time may need to be given to motorists to clear the track environment prior to train arrival.

PMP Text Quote #66: page 8 - 6, ¶ 1, line 1: *UP has informed SEA that, not only is it feasible to increase the speed of each train by 10 mph (which is the basis for the above analysis), UP can consistently maintain train speeds of all trains through downtown Reno at 30 mph with appropriate capital investments. However, to be conservative, SEA assumed for its analysis only that each train would travel at a speed 10 mph greater than observed during the survey week, rather than assume that all trains would travel at 30 mph.*

Comment #66.1: It has certainly been the Reno City Council's, the City Manager's, the staff's, and the citizen's (who spoke out at the October 9, 1997 STB public meetings) position that increasing the speed of trains would exacerbate an existing problem (i.e., create additional impacts) and then by definition[19] would not mitigate impacts of the merger. As with all potential mitigation that would increase one impact to potentially off-set another the City would not consider the proposal mitigation.

4.1.1 TRAFFIC DELAY

PMP Text Quote #67: page 6 - 15, ¶ 3, line 1: *Because gate closed time is primarily determined by train frequency, speed, and length, the downtown crossings between Keystone and Sage (where the train speed limit is 20 mph) generally experience similar amounts of gate closed time per day.*

page 7 - 1, ¶ 1, line 1: *This section describes physical facilities, **train operational changes**, and other options that have been evaluated as potential mitigation measures for the increase in through freight train traffic in Reno and the surrounding area* [emphasis added].

page ES - 1, ¶ 4, line 1: *The Board has broad authority to impose conditions in railroad merger cases, but its power is not limitless. Any conditions imposed by the Board must be reasonable and must address issues directly related to the merger.*

page 2 - 3, ¶ 8, line 1: *The Board has broad authority to impose conditions in railroad merger cases under 49 U.S.C.§l 1324(c). However, the Board's power to impose conditions is not limitless. To survive judicial review, the record must support the imposition of the condition at issue. Moreover, there must be a sufficient nexus between the condition imposed and the proposed merger, and the conditions must be reasonable.*

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[19] *Mitigation includes: (a) Avoiding the impact altogether by not taking a certain action or parts of an action; (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; [and or] (e) Compensating for the impact by replacing or providing substitute resources or environments* [emphasis added] (40 CFR 1508.20).

Comment #67.1: As is clearly demonstrated by the above passages, SEA understands the relationship between train frequency, speed, and length, and increased traffic delay time in Reno. The only question left to ask is: If the STB can order UP to operate at a particular speed, Why won't they order UP to operate less or shorter trains also? (Please refer to the Comments to SEA from Mark A. Demuth, May 14, 1997 and to the July 2, 1997 letter to Elaine Kaiser, Chief Section of Environmental Analysis from Charles McNeely, City Manager, placed in the record by the City on August 8, 1997 as set forth in Appendix A of this comment document). It is easily understood by the City that manipulating any one of the above variables (50 percent less trains [frequency], 50 percent faster trains [speed], or 50 percent shorter trains) can accomplish essentially the same outcome, 50 percent less delay time. SEA must take a "hard look" at these operational change as well as speed.

PMP Text Quote #68: page 6 - 9, ¶ 1, line 4: *There are two types of potential mitigation measures to decrease the amount of time that trains delay motorists waiting at grade crossings -- those that eliminate at-grade crossings entirely and* ***those that reduce the amount of time the trains block the crossings*** [emphasis added].

page 6 - 9, ¶ 1, line 4: *Increasing train speeds would allow trains to pass through Reno faster and would therefore reduce the amount of time that motorists must wait at crossings while trains block at-grade crossings.*

Comment #68.1: As with Comment #67.1 above, SEA notes "those that reduce the amount of time the trains block the crossings" and just two paragraphs later the discussion only addresses speed. The City can offer a suggestion: "those" which were forgotten in SEA analysis are frequency (50 percent less trains) and length (50 percent shorter trains) which can accomplish basically the same outcome, 50 percent less delay time.

4.1.2 SAFETY - PEDESTRIANS

PMP Text Quote #69: page 7 - 46, ¶ 1, line 1: *Under an agreement with UP, Fitzgerald's Hotel has proposed to construct, with financial help from UP, a pedestrian overpass west of Virginia Street. This overpass would pass directly from the second floor of Fitzgerald's Hotel over the tracks to 3rd Street, where it would connect to street level. Thus, the proposed pedestrian overpass would connect to street level only on the north side of the tracks. If Fitzgerald's Hotel agreed, the overpass could also be connected to street level on the south side of the tracks with the addition of stairs, escalators, and elevators.*

Comment #69.1: This is the most undefined of all the Tier 1 proposed mitigation. SEA says if UP can get the Fitzgeralds property to agree to modify the jointly funded overpass to feed pedestrians to the street, then that will suffice (at a cost of $800,000) for Virginia Street. If not, another $2.5 million pedestrian underpass or overpass is required on Virginia. UP must also build a pedestrian underpass or

overpass costing $2.4 million on Sierra Street. Initial reaction from Fitzgerald's management indicate no interest in any type of joint "public access", and for that matter any additional use of their property between Virginia and Sierra for any additional pedestrian overpass.

PMP Text Quote #70: page 7 - 45, ¶ 2, line 1: *SEA considers safety training programs, particularly in the schools, an effective way to help drivers or prospective drivers understand the dangers associated with trains and warning signals. The current "Operation Lifesaver" program is an example of the training that can occur in the community and the schools. Moreover, UP could provide a safety training program for Reno's downtown employees.*

Comment #70.1: SEA suggests a "reasonable" mitigation measure to educate the drivers and prospective drivers in the Reno / Sparks / Truckee Meadows area by recommending enhanced rail safety program which would educate the area's youth (through drivers training programs) and the employees who work in downtown Reno. However, this program would **not** reach out to the hundreds of thousands of tourists who visit downtown Reno (Reno is a major tourist destination) throughout the year. This mitigation measure would not serve to mitigate safety impacts associated with tourists visiting the downtown area and crossing the numerous at-grade intersections that traverse downtown Reno.

PMP Text Quote #71: Appendix A, page 16, Condition 22c, ¶2, bullet 6: *With respect to vehicular and pedestrian safety, mitigation measures that identity the number and location of highway/rail grade separations and rail/pedestrian grade separations in downtown Reno.*

Comment #71.1: On the contrary, SEA has suggested a mitigation (increased speed) which would actually increase accidents and fatalities.

4.1.3 SAFETY - EMERGENCY VEHICLE ACCESS

PMP Text Quote #72: page 7 - 47, ¶ 6, line 2: *The installation of displays and video monitors, depicting the approach or presence of a train in the rail network in Reno could be connected to a Reno emergency central dispatch facility. Such a facility, staffed by trained personnel, would then be in a position to advise emergency response vehicle drivers of the presence or imminent presence of an obstructed train crossing, and to suggest alternate routes, alternative destinations (i.e., health care facilities), or alternative resources for dispatch. Such a mitigation measure is expected to have a beneficial effect on response time for emergency vehicles. Training of personnel, communications connections, and equipment upgrades would be required to implement this mitigation measure.*

Comment #72.1: According to the PMP, UP is required to install, with the concurrence of the City, displays and video monitors in Reno's future central emergency dispatch facility at a cost of $300,000 which depicts the approach or presence of a train. However, this mitigation does not include any provisions to maintain, educate, train, or staff the video monitors. The City does not have the

financial resources to maintain, educate, train, and staff this equipment. In addition, the City does not and will not accept the additional liability of managing the risks associated with monitoring the increase in trains which is a safety mitigation "requirement" to be completed by UP. This is solely the responsibility of the UP and must be addressed by SEA.

PMP Text Quote #73: page 8 - 4, ¶ 2, line 4: *...SEA has concluded that increasing train speed is an effective option for mitigating potential environmental impacts related to traffic delay and crossing blockages. However, additional measures are required to address other potential environmental impacts.*

Comment #73.1: SEA concedes that increasing the speed of trains still leaves the problem of increased numbers of trains going through town which will continue to delay tourists, residents, and emergency vehicles. If the UP doubles the number of trains a day through Reno, then the number of times emergency vehicles would be blocked increases proportionally.

PMP Text Quote #74: page 8 - 8, ¶ 5, line 3: *Mitigation would be costly as it would involve construction of a new road along and possibly through parklands and/or a bridge over the Truckee River. SEA believes that, given the low vehicular traffic levels, no mitigation is warranted, particularly with the possible adverse impacts to parklands and the Truckee River. Therefore, SEA does not recommend that mitigation measures for Del Curto be imposed.*

Comment #74.1: SEA is stating that they are not proposing any mitigation at Del Curto because of issues involving costs and impacts to parkland and/or the Truckee River which must not be factors when mitigating the additional impacts created by the merger. There are other streets constructed through parklands in Reno including roads through Idlewild Park located across the Truckee River from the neighborhood off of Del Curto. In addition, there are several bridges recently constructed over the Truckee River that were constructed without impacts to the River, the most recent example involving the bridge on White Fir Street off of Woodland Avenue. Therefore, the argument involving costs and impacts to parklands and/or the Truckee River are inaccurate or unacceptable. Costs[20] is not an issue. Feasibility is. SEA must evaluate either a secondary access road or a bridge and upgrading the existing at-grade crossing at Del Curto.

PMP Text Quote #75: page 6 - 12, ¶ 1, line 5: *A road that runs parallel to and south of the tracks connects Woodland Avenue with Mayberry Drive, which passes under the railroad. This road between Woodland and Mayberry has recently been widened and paved, and the gate that formerly prohibited its use has been opened. This recent improvement serves to help mitigate emergency access impacts for the Woodland area.*

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[20]Please note that SEA has indicated "economic" factors (ostensibly cost) are not part of the mitigation study as mandated under Decision No. 44.

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page 8 - 8, ¶ 4, line 1: *Another problem in the Woodland area was UP/SP's prior practice of adding "helper" locomotives to trains to provide additional power for the train to travel over Donner Pass.*

Comment #75.1: The fact that UP has chosen to change its operations does eliminate the excessive delays previously anticipated during this train maneuver. SEA concludes that because the City has recently widened and paved the access road that parallels the tracks, there is no need for UP to mitigate the impacts that have been identified in the Woodland Avenue area, which involve providing a secondary emergency access. The road that runs parallel to and south of the tracks connecting Woodland Avenue with Mayberry Drive has recently been paved but is not a public access road, nor has it been constructed to City standards. Only the Fire Department personnel control access and access which is not guaranteed on a permanent basis. SEA must require UP to obtain a permanent access and make necessary improvements to mitigate the freight trains blocking school buses in the morning and residents throughout the day. This impact needs to be addressed in the FMP and mitigation offered to alleviate the impacts.

4.1.4 SAFETY - TRAIN/VEHICLE ACCIDENTS

PMP Text Quote #76: page 7 - 45, ¶ 3, line 1: *Costs of the Mitigation Measure(s): The estimated cost for four-quadrant gates at the seven identified streets is $1.21 million. Median barriers for the seven streets would cost an estimated $700,000. Gate violation enforcement cameras at seven crossings is estimated to cost $1.4 million.*

Comment #76.1: The estimated cost for four-quadrant gates at the seven identified streets is $1.21 million which is the only required mitigation. The median barriers for the seven identified streets is $0.7 million and gate violation enforcement cameras at the seven identified crossings is $1.4 million which are not required mitigation. The PMP needs to consider a comprehensive and detailed analysis of preemption conditions at Virginia and Sutro Streets of the seven locations and include the impact of increased speed and four-quadrant gates on preemption strategies. With increased speed, more time may need to be given to motorists to clear the track environment prior to train arrival.

PMP Text Quote #77: page 6 - 9, ¶ 4, line 3: *As the number of trains increases, so does the exposure of pedestrians to trains.*

Comment #77.1: To mitigate this safety impact, the UP must be responsible for the installation of at-grade safety features at **all** at-grade crossings in the downtown area or eliminate the need for pedestrians to cross the tracks at-grade by constructing the depressed railway option.

4.1.5 SAFETY - HAZARDOUS COMMODITIES

PMP Text Quote #78: page 6 - 30, ¶ 1, line 5: *Additional detection and protection would be offered by the installation of high, wide, shifted load detectors at MP 240. In addition, improved, ongoing communications could be promoted with the establishment of a Community Advisory Panel, consisting of representatives of the community, including Native Americans, who are willing to work with UP management on a regular basis to review safety, environment, and health issues associated with rail operations, particularly as they relate to the transport of hazardous materials.*

Comment #78.1: SEA notes adding a hot box and a high, wide load detector at MP 240 would provide some mitigation. The City would note that MP 240 is 11 miles downstream of the California / Nevada border, 3 miles from the Keystone Avenue crossing. Clearly as indicated from the work of Carr (1996) the greatest risk to the Truckee River exists upstream of the California / Nevada border. It is therefore questionable the true benefit of this mitigation measure.

Comment #78.2: SEA's suggestion that the formation of a "Community Advisory Panel" would some how mitigate the increased risk of contamination to the Truckee River is without basis and appears to be an appeasement policy with little to offer the ecosystem or habitat which could be impacted by the increased number of trains.

4.1.6 TRAIN OPERATIONS

PMP Text Quote #79: page 6 - 6, ¶ 6, line 1: *There are two types of potential mitigation measures to decrease the amount of time that trains delay motorists waiting at grade crossings -- those that eliminate at-grade crossings entirely and those that reduce the amount of time the trains block the crossings.*

Mitigation measures with the potential for entirely eliminating traffic delay involve separating the road from the railroad. Highway/rail grade separations can be made by creating an elevated or depressed train way, or by building underpasses or overpasses for vehicles and pedestrians. Any of these options would mean that vehicular traffic would not have to wait at the highway/rail grade-separated crossings while trains passed through the City of Reno.

Comment #79.1: The PMP text notes that there are two types of mitigation measures which would decrease or eliminate railroad related vehicular and pedestrian delay; 1) elimination of at-grade crossings and 2) reducing the time that at-grade crossings are blocked. Using this rationale, SEA must equally investigate all railroad operational factors that result in delay time, including train speed, train length and the number of trains. SEA chose to evaluate only the potentially mitigating affects of increasing the speed of trains through the downtown core to reduce total vehicular and pedestrian delay time. Manipulation of either of the two other identified operational factors (train length and/or the number of trains) would

result in identical reductions in delay time, while at the same time reducing impacts to public safety, noise and air quality.

The primary measure proposed in the PMP to mitigate vehicular and pedestrian delay, increasing train speed in the downtown core from 20 mph to 30 mph, is an operational change which amends an important component of the proposed action, as evaluated in the EA and Post EA, in accordance with the requirements of NEPA. Part 1502.9(c)(1) of Chapter 40 of the Code of Federal Regulations, requires supplemental NEPA documentation when the lead agency makes substantial changes in the proposed action that are relevant to environmental concerns, and/or there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or it's impacts. Based on these procedural NEPA requirements, the City requests that Post EA be revised to reflect the operational changes recommended for the proposed action and recirculate the Supplemental EA for public review and comment.

PMP Text Quote #80: page 8 - 23, ¶ 5, line 1: *The Board, in its Decision No. 44, directed a review of highway/rail grade separations as possible mitigation measures for potential merger-related impacts in Reno. The Board noted in its decision that SEA had determined in the Post EA that separated grade crossings would be needed to address vehicular safety concerns on the existing rail lines in Reno. However, SEA's determination that separated grade crossings would be required did not take into account the benefits of increasing train speeds in Reno.*

Section 7.2.2 reviews the possible costs, benefits, and potential environmental impacts of seven rail/highway grade separations in Reno. Given the information now available and SEA's further focused analysis in this PMP, SEA now believes that separated grade crossings in Reno are not warranted and would create serious secondary environmental problems. Therefore, SEA does not recommend in the PMP any rail/highway grade separations in the Reno area as Tier 1 mitigation.

However, if the parties could resolve the potential adverse effects of separated crossings and reach agreement regarding costs and other issues, then such mitigation could be appropriate as Tier 2 mitigation.

Comment #80.1: SEA has completely ignored a critical mandate contained in Decision No. 44, which states:

> *The sole purpose of the mitigation studies will be to arrive at specifically tailored mitigation plans that will ensure that localized environmental issues unique to these two communities are effectively addressed. For example, with respect to vehicular and pedestrian safety, SEA has determined that separated grade crossings and pedestrian overpasses and/or underpasses will be needed to address safety concerns on the existing rail lines in Reno and Wichita.*

Accordingly, the studies will identify the appropriate number and precise location of highway/rail grade separations and rail. pedestrian grade separations in Reno and Wichita.

SEA has continued to ignore the aforementioned mandate contained in Decision No. 44, requiring separated grade crossings and pedestrian overpasses / underpasses. Other railroad operational parameters should include length of trains and number of trains, and should be equally evaluated with the proposed increase in speed, to determine the appropriate modifications required to Decision No. 44. Decision No. 44 states that the purpose of the mitigation study is to identify the appropriate number and precise location of highway / rail grade separations, not to randomly change one, but not all railroad operational characteristics to undermine the direct mandates contained in Decision No. 44.

4.1.7 NATIVE AMERICAN ISSUES

4.1.7.1 Cultural Resources

PMP Text Quote #81: page 7 - 39, ¶ 1, line 1: *Historic and Pre-Historic: Construction of the depressed railway could have potential adverse impacts on historic and pre-historic resources, particularly given the close proximity of the right-of-way to the Truckee River. Prior to undertaking this mitigation option, an analysis would need to be performed regarding the potential presence of these resources. In addition, monitoring for archeological resources would likely be required during construction. Moreover, additional consultation would need to occur with Native Americans regarding possible impacts to Native American resources.*

Comment #81.1: Please refer to Comment #48.1 on page 3 - 24 of this comment document for a detailed response to this section of the PMP.

PMP Text Quote #82: page 7 - 31, ¶ 1, line 1: *Construction of a highway/rail grade separation would have potential adverse impacts on historic and pre-historic resources, particularly given the close proximity of the right-of-way to the Truckee River.*

Prior to undertaking this mitigation option, an analysis would need to be performed regarding the potential presence of these resources. In addition, monitoring for archeological resources likely would be required during construction. Moreover, additional consultation would need to occur with the Native Americans regarding possible impacts to Native American resources.

Comment #82.1: Please refer to Comment #48.1 on page 3 - 24 of this comment document for a detailed response to this section of the PMP.

4.1.8 NOISE/VIBRATION

PMP Text Quote #83: page 6 - 42, ¶ 3, line 1: *The Board addressed the public safety implications of the train horn in its Decision No. 44. Specifically, the Board noted that "[a]ny*

attempt significantly to reduce noise levels at grade crossings would jeopardize safety, which we consider to be of paramount importance."

Comment #83.1: The PMP's assumption here is that any type of mitigation for noise would be based upon change or reduction of the noise source. The City acknowledges that "to alter noise would jeopardize safety which is of paramount importance", but there are other ways, including other mitigation options, to mitigate the increased number of sensitive receptors exposed to post-merger noise which must be given a "hard look" by SEA.

PMP Text Quote #84: page 7 - 13, ¶ 1, line 1: *Wheel/rail noise from trains is related to train speed. Increases in train speeds in locations where train horns are not the predominant source of train noise are predicted to result in increases in wheel/rail noise (calculated as varying approximately as 30 X Log10 [speed]). For those areas where horns are the major source of train noise, an increase in train speeds from 20 to 30 miles per hour for post-merger train levels is not predicted to increase Ldn noise levels. The portion of the rail line proposed for possible increased train speeds is between Keystone Avenue and the Sparks Yard, and the major source of freight train noise in this area is from train horns. An increase from 20 to 30 mph in freight train speeds in this area is not expected to add to post-merger Ldn noise levels.*

page 7 - 13, ¶ 2, line 1: *The Board environmental regulations do not contain ground-borne vibration level criteria. An increase in train speed will increase vibration levels. Train wheels rolling on the rails create vibration energy that is transmitted through the ground. As the train speed increases, the wheel to rail energy increases and vibration levels at receptors increase.*

A speed increase from 20 to 30 mph could change the vibration velocity levels by 3 dB (with respect to 1 micro in./sec.). Based on human response to residential building vibration, an increase vibration velocity of 3 dB would be barely perceptible.

Comment #84.1: As previously noted, the increase in train speed from below 20 mph to 30 mph would, all other factors being equal, result in a change in Ldn values of ≈ -1.8 dB. However, all factors may not be equal in the downtown Reno area, as it may be necessary, at a higher speed, for the engineer to actuate the horn for a greater proportion of the time to ensure that all crossings are clear. In addition, it may be necessary in either rural or urban situations to activate the horn farther from the crossings, which could increase the noise levels at receivers distant from the crossings. The City reiterates the effects of the increase of train speeds cannot be quantified without more specific information regarding the duration of horn use in the urban area, and regarding the point at which horns would first be activated on approach to crossings which are not provided in the PMP.

However, based upon the noise contours BBA has prepared (BBA, 1997), it appears that the PMP significantly understates the number of people and hotel rooms affected by both pre- and post-merger railroad operation noise exceeding 65 dB Ldn. Thus, the change in

noise level, whatever its magnitude, could still impact a significant number of residents and hotel guests.

4.1.9 AIR QUALITY - VEHICLES

As discussed in the City's Air Quality Resource Evaluation Comment #59.1 on page 3 - 34 of this comment document, relative to Traffic Delay Resource Evaluation Comment #27.1 on page 3 - 1 of this document, the City has reviewed SEA's methodology for estimating emission from vehicles and concurs with the methodology. Unfortunately, since the emissions calculations are dependent upon the average daily total hours of delay, total daily delay hours, and the number of vehicles delayed, the City would dispute the results of the vehicle emissions studied based upon substandard delay data as well as any mitigation gained by the increased speed of trains using the same inferior delay data.

4.1.10 ECONOMIC ISSUES

SEA fails to conduct an economic analysis outlining decreased performances of the entire downtown area which will occur even after implementation of the Tier 1 mitigation measures identified in the PMP. Some of these impacts will occur due to restricted access and impaired utilization which will financially affect the downtown casinos and businesses. SEA does not address the fact that downtown casinos and businesses represent a major source of funding for cultural activities, parks, schools, police and fire protection, and other services offered by the City and if casinos and businesses located downtown are financially affected, so are the financial resources that help to fund those services. The City requests that SEA address the implications if some of the Tier 1 mitigation measures are not complied with due to the fact that many of the measures are self regulating. The City requests that the FMP address these economic issues.

4.2 TIER 2 MITIGATION

4.2.1 GRADE SEPARATIONS

PMP Text Quote #85: page 2 - 16, ¶ 3, line 4: *City staff members have further stated that the City does not consider requiring UP/SP to construct highway/rail grade separations in Reno to be acceptable mitigation...The City of Reno staff have actively participated in the task force meetings, and these views have been restated in the press.*

Comment #85.1: City staff made no such statements. To the contrary, due to UP's January 31, 1997 proposal to provide the depressed railway at no cost to the City, the City Council subsequently (February 18, 1997) directed the City Manager to emphasize the depressed railway as **the City's primary objective**. As is the policy of the City Manager and his staff, when the City Council provides specific

direction, and clearly is silent on other matters[21] (i.e., grade separations[22]), it would be inappropriate for staff to indicate the City's position one way or another, as was the case during the March 12, 1997 task force meeting. The above noted quote must therefore be deleted from any discussion in the FMP.

4.2.1.1 Traffic Delay

PMP Text Quote #86: page 7 - 23, ¶ 1, line 1: *Grade separations would reduce vehicular traffic delay and predicted vehicular accident rates associated with the post-merger increase in through freight trains.*

Comment #86.1: SEA concludes that grade separations would reduce delays and accidents but SEA does not consider or offer grade separations to mitigate the merger-related impacts. Clearly grade separations are by definition mitigation: *...**[m]inimizing** impacts by limiting the degree or magnitude of the action and its implementation...* [emphasis added] (40 CFR 1508.20).

4.2.1.2 Safety - Pedestrians

PMP Text Quote #87: page 7 - 23, ¶ 1, line 1: *Grade separations would reduce vehicular traffic delay and predicted vehicular accident rates associated with the post-merger increase in through freight trains.*

Comment #87.1: SEA concedes that grade separations would reduce vehicular traffic delay and predicted vehicular accident rates associated with post-merger related increases in freight trains which leads the City to believe that pedestrian safety would also be vastly improved with this mitigation, with the caveat that the grade separations were implemented closer to Virginia Street where the majority of the pedestrians cross the tracks. Clearly grade separations are by definition mitigation: *...**[m]inimizing** impacts by limiting the degree or magnitude of the action and its implementation...* [emphasis added] (40 CFR 1508.20).

However, SEA does not offer grade separations at any of the roadways in either Reno or any crossing in Washoe County. The City requests that this option be given equal consideration (i.e., a "hard look").

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[21]Without the benefits of SEA's complete impact analysis, it is impossible for City staff to present any such "required" (as opposed to "negotiated") alternatives to the City Council.

[22]Hereafter collectively referring to any and all combination of underpasses and/or overpasses.

4.2.1.3 Safety - Emergency Vehicle Access

PMP Text Quote #88: page 7 - 23, ¶ 1, line 1: *Grade separations would reduce vehicular traffic delay and predicted vehicular accident rates associated with the post-merger increase in through freight trains.*

Comment #88.1: Even though the City disagrees in the measure used by SEA (traffic delay) in determining the effectiveness of mitigation on emergency vehicle access, the City does acknowledge that additional grade separations should have a positive effect on emergency vehicle access in Reno. SEA concedes that grade separations would reduce vehicular traffic delay and predicted vehicular accident rates associated with post-merger related increases in freight trains. The elimination of blockages at an existing at-grade crossing by replacing it with a grade separation would be mitigation: *...**[m]inimizing** impacts by limiting the degree or magnitude of the action and its implementation...* [emphasis added] (40 CFR 1508.20). Yet again, SEA does not offer this option or any combination of the grade separations at any of the roadways in either Reno or any crossing in Washoe County. The City requests that this option be given equal consideration (i.e., a "hard look").

4.2.1.4 Safety - Train/Vehicle Accidents

PMP Text Quote #89: page 7 - 23, ¶ 1, line 1: *Grade separations would reduce vehicular traffic delay and predicted vehicular accident rates associated with the post-merger increase in through freight trains.*

Comment #89.1: As consistent with Comments #86.1, #87.1, and #88.1, SEA concedes that grade separations would reduce vehicular traffic delay and predicted vehicular accident rates associated with post-merger related increases in freight trains which leads the City to believe that the possibility of post-merger train / vehicle accidents would also be vastly improved with this option. Clearly grade separations are by definition mitigation: *...**[m]inimizing** impacts by limiting the degree or magnitude of the action and its implementation...* [emphasis added] (40 CFR 1508.20).

However, SEA does not offer this option or a combination of the grade separations at any of the roadways in either Reno or any crossing in Washoe County. The City requests that this option be given equal consideration (i.e., a "hard look").

4.2.1.5 Safety - Hazardous Commodities

The issues involving safety with hazardous commodities associated with grade separations was not addressed in the PMP and the City requests that this potential impact on resources be given equal analysis (i.e., a "hard look").

4.2.1.6 Noise/Vibration

PMP Text Quote #90: page 7 - 24, ¶ 1, line 1: *Train horn noise could be eliminated at those grade crossings where highway/rail grade separations are constructed. Of the crossings listed, possible highway/rail grade separations are evaluated in this PMP for Ralston and Lake streets, with 10 and 4 receptors, respectively.*

> **Comment #90.1:** SEA concedes train horns could be eliminated with grade separations due to the elimination of the FRA requirement for horn sounding at that particular grade separated crossing. Unfortunately, SEA does not offer this option or any combination of the grade separations at any of the roadways in either Reno or any crossing in Washoe County. The City requests that this option be given equal consideration (i.e., a "hard look") and analysis in the FMP and recommended as Tier 1 mitigation.

4.2.1.7 Property Impacts/Land Use

PMP Text Quote #91: page 7 - 24, ¶ 2, line 1: *The most critical potential environmental impacts of the possible highway/rail grade separations would be to adjoining properties. Tables 7.2.2-5a, b, and c summarize the full property acquisition, partial acquisitions, and impairment of access associated with each of the highway/rail grade separations.*

> **Comment #91.1:** Grade separations are provided a cursory discussion emphasizing the property acquisition costs as the "most critical potential environmental impact" of the mitigation and actually when justly compensated, land used in a project is typically not considered an impact. Though the City agrees property assemblage would be costly and timely, clearly there is no fatal engineering flaw to many of the possible location for grade separations. Therefore, the argument involving costs and impacts to adjacent properties are inaccurate or unacceptable. Costs[23] is not an issue. Feasibility is.

4.2.1.8 Economic Issues

SEA fails to conduct an economic analysis outlining short-term decreases in performances and long-term increases in performances of the entire downtown area which might occur with implementation of the grade separation option. Some of these short-term impacts will occur due to restricted access and impaired utilization during construction which will financially affect the downtown casinos and businesses. SEA does not address the fact that downtown casinos and businesses represent a major source of funding for cultural activities, parks, schools, police and fire protection, and other services offered by the City and if casinos and businesses located downtown are financially affected, so are the financial resources that help to fund those services. The City requests that the FMP address these economic issues associated with the grade separation option.

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[23]Please note that SEA has indicated "economic" factors (ostensibly cost) are not part of the mitigation study as mandated under Decision No. 44.

4.2.2 DEPRESSED RAILWAY

PMP Text Quote #92: page 2 - 21, ¶ 2, line 1: *Many community members felt that lowering the tracks would be the best solution for all concerned. The Reno City Council has endorsed the depressed railway as a priority for the City and the City's primary objective for downtown. Those in favor of building a depressed railway feel that this option would solve potential noise impacts, facilitate access to local businesses, unite a community split by the railroad, and improve downtown streets such as Lake, Center, Virginia, Sierra, West, Arlington, Ralston, Washington, Vine, and Keystone. Parties who question the viability of the proposed depressed railway fear the trench would create groundwater problems, jeopardize business with noisy construction, not address problems with Arlington and Lake streets, and be subject to flooding and litter. Others state that enclosing the tracks in a tunnel and extending them further west would be a good solution.*

page 8 - 22, ¶ 3, line 1: *The City of Reno has strongly advocated the construction of the depressed railway. In fact, recently the City and UP jointly studied the feasibility of this option as part of their private negotiations (see Section 2.9). The position of the City reflects the historical relationship of downtown Reno and rail operations. The City has stated its views that a depressed railway would substantially alleviate a variety of delay and safety (both pedestrian and vehicular), noise, emergency response, and air quality problems that currently exist in Reno.*

> **Comment #92.1:** The City finds SEA's explanation and history of the depressed railway lacking factual analysis. During the February 13, 1997, STB Public meetings, UP presented a model of the depressed railway and made statements to the public and the media touting the benefits of the depressed railway. Due to UP's January 31, 1997 proposal to provided the depressed railway at no cost to the City, the City Council subsequently (February 18, 1997) directed the City Manager to emphasize the depressed railway as **the City's primary objective**. UP has strongly advocated the construction of depressed railway as demonstrated by UP's lobbying efforts the week of March 17-21, 1997, when UP again presented its model of the depressed train and lobbied state legislators for a week regarding funding options.

PMP Text Quote #93: page 7 - 32, ¶ 2, line 1: *Under the plan considered by UP and the City, tracks would begin to be lowered in the vicinity of Sutro Street east of the downtown area and would rise in elevation to meet the existing grade near the 2nd Street overpass west of Keystone Avenue. For this proposal, major streets would cross over the depressed railway on bridges and minor streets would be closed.*

The depressed railway would be 54-feet wide, the width of the existing UP right-of-way through the downtown area, between the inside faces of the retaining walls. To provide the required 23-foot vertical clearance above the tracks, the top of rail would be about 27 feet below the grade (elevation) of adjacent streets. The track structure would require that the subgrade of the railway be about 30 feet below grade. Ditches or underdrains for the railway would be below subgrade. Based on the profile of the current proposal, the existing grade crossing at Sutro Avenue would be lowered slightly, and the grade crossing at Morrill Avenue would be

closed. The existing underpass at Wells Avenue also would be closed. The profile of Keystone Avenue would be raised more than 12 feet to cross the tracks. The depressed railway would contain two tracks plus a maintenance access road. Some access to the railway may be needed in or near the downtown area.

The depressed railway would eliminate all at-grade crossings in the downtown area, thereby eliminating traffic and pedestrian delays and noise due to whistle blowing and crossing bells. Several potential environmental impacts would relate to the concept, including:

- *Maintenance of vehicular and train traffic during construction.*
- *Noise, dust, vibration, and inconvenience during construction.*
- *Relocation of underground utilities.*
- *Modification of adjacent structures.*
- *Groundwater impacts, both during construction and permanent. Storm water discharge from the depressed railway.*
- *Property impacts and acquisition.*
- *Construction duration.*

Comment #93.1: SEA discusses the temporary "shoo fly" proposed by UP under the heading of maintenance of vehicular and train traffic during construction", but fails to note that re-routing of traffic to the Feather River route is feasible, just as re-routing of traffic from the Feather River route to the central corridor when the Feather River route was closed for repairs.

Comment #93.2: SEA says "several potential environmental impacts" from constructing a depressed railway exist. The City believes this statement is misleading and incorrect - these are not potential environmental impacts, they are normal, temporary construction impacts which are mitigated through existing City permitting processes and required Washoe County Health Department Air Quality Construction Permits. Table 14 below lists generally accepted elements of the human environment as prescribed by law (which must be reviewed to determine if they will be affected).

Others not specifically enumerated in Federal law include, forestry; geologic resources; lands; meteorology; noise; range; recreation; seismic; socioeconomics; soils; traffic; vegetation; visual resource management; wild horse & burro; and wildlife. The FMP must therefore recognize these as normal, temporary construction impacts.

4.2.2.1 Traffic Delay

PMP Text Quote #94: page 7 - 33, ¶ 4, line 1: *Traffic Delay: With Year 2000 traffic, the depressed railway would* ***reduce the projected post-merger total vehicular traffic delay*** *attributable to freight trains from 373 hours per day to 33 hours per day, well below the projected total pre-merger traffic delay of 189 hours per day* [emphasis added].

Table 14

Critical Elements of the Human Environment

Element	Relevant Authority
Air Quality	The Clean Air Act as amended (42 USC 7401 et seq.)
Areas of Critical Environmental Concern	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.)
Cultural Resources including Paleontological Resources	National Historic Preservation Act as amended (16 USC 470)
Farm Lands (prime or unique)	Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)
Floodplains	E.O. 11988, as amended, Floodplain Management, 5/24/77
Native American Religious Concerns	American Indian Religious Freedom Act of 1978 (42 USC 1996)
Threatened or Endangered Species	Endangered Species Act of 1973 as amended (16 USC 1531)
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.) Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended (42 USC 9615)
Water Quality Drinking/Ground	Safe Drinking Water Act as amended (42 USC 300[f] et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)
Wetlands/Riparian Zones	E.O. 11990, Protection of Wetlands, 5/24/77
Wild and Scenic Rivers	Wild and Scenic Rivers Act as amended (16 USC 1271)
Wilderness	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.) Wilderness Act of 1964 (16 USC 1131 et seq.)

Source: City of Reno

Comment #94.1: The depressed railway actually has the potential to offset the impacts of the proposed 24 trains as well as any future increase in freight train traffic, as well as incidental pre-existing traffic. The secondary mitigation effects of the depressed railway do not diminish the fact that the depressed railway is by definition traffic mitigation: *...**[r]educing or eliminating** the impact over time by preservation and maintenance operations during the life of the action...* [emphasis added] (40 CFR 1508.20).

4.2.2.2 Safety - Pedestrians

PMP Text Quote #95: page 7 - 33, ¶ 4, line 1: *Pedestrian Safety: The depressed railway option would **remove the potential conflicts between the trains and pedestrians resulting in a substantial reduction in pedestrian safety concerns*** [emphasis added].

Comment #95.1: SEA concedes that implementation of the depressed railway option would remove the potential conflicts between the trains and pedestrian resulting in a substantial reduction in pedestrian safety concerns. The secondary mitigation effects of the depressed railway do not diminish the fact that the depressed railway is by definition safety mitigation: *...**[r]educing or eliminating** the impact over time by preservation and maintenance operations during the life of the action...* [emphasis added] (40 CFR 1508.20).

4.2.2.3 Safety - Emergency Vehicle Access

PMP Text Quote #96: page 7 - 33, ¶ 4, line 1: *Emergency Vehicle Access: The depressed railway option would also **eliminate any blockage of emergency vehicles** for those streets that would be grade-separated* [emphasis added].

Comment #96.1: SEA concedes that implementation of the depressed railway option would eliminate any blockage of emergency vehicles for those streets that would be grade-separated. This secondary mitigation effect of the depressed railway does not diminish the fact that the depressed railway is by definition emergency vehicle access mitigation: *...**[r]educing or eliminating** the impact over time by preservation and maintenance operations during the life of the action...* [emphasis added] (40 CFR 1508.20).

4.2.2.4 Safety - Train/Vehicle Accidents

PMP Text Quote #97: page 7 - 33, ¶ 4, line 1: *Train/Vehicle Accident: With Year 2000 traffic, a depressed railway would **reduce the projected post-merger total train-vehicle accidents** attributable to freight trains from 0.952 accidents per year to 0.146 accidents per year. The pre-merger accidents were projected to be 0.795 accidents per year* [emphasis added].

Comment #97.1: SEA concedes that with year 2000 traffic, a depressed railway option would reduce the projected post-merger total train-vehicle accidents attributable to freight trains from 0.952 accidents per year to 0.146 accidents per year. This secondary mitigation effects of the depressed railway actually benefits all parties involved: UP (with lessened liability), UP's workers (with lessened exposure to potential derailment), and the City (with less likelihood of fatalities amongst the citizens and visitors of Reno. This secondary mitigation effect does not diminish the fact that the depressed railway is by definition train / vehicle accident mitigation: *...**[r]educing or eliminating** the impact over time by preservation and maintenance operations during the life of the action...* [emphasis added] (40 CFR 1508.20).

4.2.2.5 Noise/Vibration

PMP Text Quote #98: page 7 - 33, ¶ 4, line 1: *Noise: A depressed railway from Keystone to Sutro would **eliminate the need for horn sounding** in that area and would reduce potential noise impacts to 62 noise-sensitive properties (Parcels), including hotels/casinos...All but four of these crossings (Woodland, Del Curto, Stag and Sage) would be grade-separated under the depressed railway option* [emphasis added].

Comment #98.1: This is the only proposed or suggested mitigation which effectively mitigates horn noise on surrounding sensitive receptors, businesses, visitors, pedestrians, and citizens of Reno. The secondary mitigation effects of the depressed railway does not diminish the fact that the depressed railway is by definition noise abatement / mitigation: *...**[r]educing or eliminating** the impact over time by preservation and maintenance operations during the life of the action...* [emphasis added] (40 CFR 1508.20).

4.2.2.6 Air Quality - Vehicles

PMP Text Quote #99: page 7 - 33, ¶ 4, line 1: *Air Quality: Tables 7.2.3-2, -3, and -4 show the effects on air quality of a depressed railway. Intersections that would become grade-separated as part of the depressed railway option are assumed to **revert to the peak background CO level of 6.0 ppm because queuing-related emissions would be eliminated**...* [emphasis added].

Comment #99.1: The secondary mitigation effects of the depressed railway does not diminish the fact that the depressed railway is by definition air quality mitigation: *...**[r]educing or eliminating** the impact over time by preservation and maintenance operations during the life of the action...* [emphasis added] (40 CFR 1508.20).

4.2.2.7 Property Impacts/Land Use

PMP Text Quote #100: page 7 - 24, ¶ 2, line 1: *The most critical potential environmental impacts of the possible highway/rail grade separations would be to adjoining properties. Tables 7.2.2-5a, b, and c summarize the full property acquisition, partial acquisitions, and impairment of access associated with each of the highway/rail grade separations.*

Comment #100.1: The depressed railway is provided a cursory discussion (a "soft look") emphasizing the property acquisition costs as the main impact of the mitigation. When justly compensated, land used in a project is typically not considered an impact. The depressed railway receives only the most basic of evaluations — then it is summarily dismissed. Table 13 on page 4 - 2 above, provides a comparison of each mitigation option and the degree to which the mitigation measure would reduce potential environmental impacts (decreased) and introduce potential environmental impacts (increased) from post-merger increase in freight train traffic.

4.2.2.8 Economic Issues

SEA fails to conduct an economic analysis outlining short-term decreases in performances and long-term increases in performances of the entire downtown area which might occur with implementation of the depressed railway option. Some of these short-term impacts will occur due to restricted access and impaired utilization during construction which will financially affect the downtown casinos and businesses. SEA does not address the fact that downtown casinos and businesses represent a major source of funding for cultural activities, parks, schools, police and fire protection, and other services offered by the City and if casinos and businesses located downtown are financially affected, so are the financial resources that help to fund those services. The City requests that the FMP address these economic issues associated with the depressed railway option.

4.2.3 I-80 RE-ROUTE

PMP Text Quote #101: page 2 - 1, ¶ 1, line 1: *The merger application included plans covering the rerouting of train traffic within the combined system, the consolidation of yards and terminal facilities, changes in activities at rail yards and intermodal facilities, abandonment of some rail line segments, and construction of new rail line segments.*

page 2 - 21, ¶ 6, line 1: *Early in the study, the City of Reno stated that rerouting trains to a new rail line route parallel to I-80 and bypassing the downtown area would be a viable solution.*

Comment #101.1: When discussing re-routing, SEA only discussed I-80, not the Feather River Route. The issue involving safety with hazardous commodities associated with the I-80 reroute option was not addressed in the PMP and the City requests that this issue be given equal analysis and consideration in the FMP.

Comment #101.2: SEA fails to conduct an economic analysis outlining increases in performances of the entire downtown area which will occur with implementation of the I-80 re-route option. SEA does not address the fact that downtown casinos and businesses represent a major source of funding for cultural activities, parks, schools, police and fire protection, and other services offered by the City and if casinos and businesses located downtown are financially affected, so are the financial resources that help to fund those services. The City requests that the FMP address these economic issues associated with the I-80 re-route option.

4.3 OTHER MITIGATION OPTIONS

PMP Text Quote #102: page 7 - 55, ¶ 2 and line 1: *System-wide and corridor specific mitigation measures (see Section 7.2.7) imposed in Decision No. 44 provide a high level of protection from hazardous materials events in the Reno and surrounding area. Moreover, UP has sophisticated detection equipment (hot box, dragging equipment, and high, wide, shifted load detectors) throughout the Reno area. Section 6.2.5 reviews the detection equipment already present on the UP mainline in Reno, Washoe County, and the surrounding area. Installation of additional detectors could reduce the likelihood of hazardous materials spills.*

In addition, UP could establish a Community Advisory Panel, consisting of representatives of the Reno/Sparks/Washoe County community, including Native Americans, who are willing to work with UP management on a regular basis to review safety, environment, and health issues associated with rail operations, particularly as they relate to the transport of hazardous materials.

Comment #102.1: First, system-wide and corridor specific mitigation measures imposed in Decision No. 44 are measures that are required to be implemented throughout the country and can not be considered as mitigation to offset the specific merger-related impacts in the Reno / Sparks / Truckee Meadows area without absolute quantifiable results. Certain presumed benefits of these system-wide and corridor specific mitigation measures may not produce the offsetting benefits equally throughout the country or corridor, and therefore may actually provide no benefit to Washoe County, the location of the impact.

Watch Out Reno, You're About To Get Railroaded! If you care about your health, safety, and quality of life, you have less than one week to take action!

City of Reno, Community Relations Department

It's a charade.

Harry York, Executive Director, Reno-Sparks Chamber of Commerce

5.0

REFERENCES

5.0 REFERENCES

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APPENDICES

TASK FORCE RECORD AS AUGUST 8, 1997

APPENDIX A

Mitigation Topic/ Resource	Correspondence from City (Letter, Fax, or Comment)	Requested Items/ Information Provided	Letter in Response or Initiated	Response
Mitigation Study Process	Memo to McNulty from McNeely October 16, 1996	Request for addition time with STB on October 23-24, 1996 Meetings	Letter to McNeely from Kaiser October 18, 1996	non-responsive
Mitigation Study Conflict of Interest MOU STB Request for Back-up	Verbal Request from Lamboley to Kaiser October 23-24, 1996 STB Meetings	Request for Conflict of Interest information on Third-Party Consultants	Letter to McNeely from Kaiser November 4, 1996	
Water Quality	Letter of Transmittal from Demuth to Wilson October 30, 1996	Transmitted RGJ article on Truckee River Negotiated Settlement		
Public Participation	Letter of Transmittal from Demuth to Kaiser November 5, 1996	Transmitted City of Reno Interested Party List		
Bibliography	Letter of Transmittal from Demuth to McNulty November 12, 1996	Transmitted City of Reno Railroad Merger Bibliography with all documents		
Water Quality	Letter of Transmittal from Demuth to Wilson November 14, 1996	Transmitted Truckee River Water Quality Settlement Agreement and background		
Response to STB Request for Information	Letter of Transmittal from Demuth to Kaiser November 15, 1996	Transmitted Complete Materials requested in STB's November 4, 1996, letter, Item 5		

Mitigation Topic/ Resource	Correspondence from City (Letter, Fax, or Comment)	Requested Items/ Information Provided	Letter in Response or Initiated	Response
Task Force Make-up	Letter to McNulty from McNeely November 18, 1996	Suggested Task Force Make-up		
Right-of-Way Development	Letter to Wimmer from McNeely November 18, 1996 (see also May 14, 1997 letter to Kaiser from Belaustegui)	Request for ROW development information in Response to STB's November 4, 1996 Letter	Letter to McNeely from Wimmer December 3, 1996	non-responsive
Conflict of Interest	Letter to Kaiser from Lamboley November 22, 1996 (see also June 20, 1997 letter to McNulty from McNeely)	Request for Conflict of Interest information on Third-Party Consultants in Response to STB's November 4, 1996 Letter	Letter to Lamboley from Kaiser January 11, 1997	List of subcontractors
Response to STB Request for Information	Letter to Kaiser from McNeely November 25, 1996	Response to STB's November 4, 1996 Letter		
Conflict of Interest Public Participation Project Schedule Assumptions & Methodologies Endangered Species Native American Consultation	Letter to Kaiser from McNeely December 2, 1996	Request for Information listed in STB's November 4, 1996 Letter	Letter to McNeely from Kaiser January 3, 1997 Letter to McNeely from Kaiser January 24, 1997 Letter to McNeely from McNulty February 3, 1997	non-responsive System-wide Mitigation progress Five year train data from UP

Mitigation Topic/ Resource	Correspondence from City (Letter, Fax, or Comment)	Requested Items/ Information Provided	Letter in Response or Initiated	Response
Task Force Procedures	Letter of Transmittal from Demuth to McNulty December 3, 1996	Transmittal of City of Reno's Environmental Mitigation Study Task Force: Procedures and Protocol		
Data Collection Meeting Follow-up Response to Request for Information	Letter to Mansen & Wilson from Belaustegui December 12, 1996	Transmittal of Sage Street soil trenching results, RMC 18.06, Public Works standards and plans, and Nevada Open Meeting Law in response to request for information at December 4, 1996 Data Gathering Meeting		
Data Collection Meeting Follow-up Response to Request for Information	Letter of Transmittal from Demuth to Mansen January 13, 1997	Transmittal of downtown railroad corridor in AutoCad in response to request for information at December 4, 1996 Data Gathering Meeting		
Data Collection Meeting Follow-up Response to Request for Information	Fax Transmittal from Demuth to Mansen January 17, 1997	Transmittal of Aerial Photo information in response to request for information at December 4, 1996 Data Gathering Meeting		

Mitigation Topic/ Resource	Correspondence from City (Letter, Fax, or Comment)	Requested Items/ Information Provided	Letter in Response or Initiated	Response
Police Patrol Districts Response to Request for Information	Letter of Transmittal from Demuth to Mansen February 12, 1997	Transmittal of Map with police patrol districts in response to request for information at February 4, 1996 Public Safety Data Gathering Meeting		
Monitoring Data	Letter to McNulty from McNeely February 12, 1997 Fax Transmittal from Demuth to Mansen March 27, 1997	Train Data Base request	Letter to McNeely from McNulty March 7, 1997 Letter to Belaustegui-Traficanti from McNulty March 28, 1997	Raw Data in hard copy only Data Base on Disk
UP's Operating Plan: Number of Trains	Letter to McNulty from McNeely February 12, 1997	Request for Verified Statement from UP on Train Numbers	Letter to Demuth from Hemmer February 18, 1997	Copy of Verified Statement and Application Volumes
UP's Operating Plan: Number of Trains	Comments to STB from Demuth February 12, 1997	Issues with UP's number of trains		
Joint Validation of Train Data	Letter to McNulty et al. from Varela February 24, 1997	Joint Validation of Train Data	Letter to McNeely from McNulty March 7, 1997	
Fire Station Locations in Response to Request for Information	Letter of Transmittal from Demuth to Mansen February 27, 1997	Transmittal of Map with fire stations locations in response to request for information at February 4, 1996 Public Safety Data Gathering Meeting		

Mitigation Topic/ Resource	Correspondence from City (Letter, Fax, or Comment)	Requested Items/ Information Provided	Letter in Response or Initiated	Response
Formal Discovery Process	Letter from Lamboley to Hemmer April 9, 1997	Discussion of Formal Discovery Process vs. Task Force		
Depressed Trainway	Letter from Lamboley to Kaiser April 10, 1997	Discussion of UP's Contribution to Depressed Trainway Response to Hemmer's March 25, 1997 Letter		
UP's Operating Plan Air Quality Population Vehicle Traffic BNSF Operating Plan	Letter to McNulty from McNeely April 15, 1997 (see also June 10, 1997 letter to McNulty from Belaustegui)	Request for Agenda topics on UP's Operating Plan, Air Quality, Population, Vehicle Traffic, BNSF Operating Plan	Letter to McNeely from McNulty May 13, 1997	No Population or BNSF Operating plan
Vehicle Traffic Growth	Comments to STB from Demuth April 23, 1997	1980 Reno RR Study Del Leuw Cather 1977 Proposal April 15, 1997 Letter		
UP's Operating Plan: Numbers of Trains, Length of Trains, Speed of Trains Noise	Comments to STB from Demuth May 14, 1997	Number, length, and speed of Trains Noise		
Right-of-Way Development	Letter to Kaiser from Belaustegui May 14, 1997	ROW development information in Response to STB's November 4, 1996 Letter		

Mitigation Topic/ Resource	Correspondence from City (Letter, Fax, or Comment)	Requested Items/ Information Provided	Letter in Response or Initiated	Response
Baseline Mitigation Alternate Mitigation	Letter to Kaiser from McNeely May 22, 1997	Clarification of Decision No. 71		
Noise UP's Operating Plan: Train Speed Air Quality Pedestrian Traffic Public Transportation	Letter to McNulty from McNeely May 29, 1997	Difference between level of disclosure for Wichita and Reno Request for Agenda topics		
Disclosure of Information	Fax Transmittal from Demuth to Mansen and McNulty June 6, 1997	Difference between level of disclosure for Wichita and Reno		
Population	Letter to McNulty from Belaustegui June 10, 1997	Submission of Truckee Meadows Population Data		
Disclosure of Information	Letter to Kaiser from 13 undersigned Task Force Members June 11, 1997	Difference between level of disclosure for Wichita and Reno		
Noise/Vibration	Letter to Kaiser from McNeely June 20, 1997	Definition of Sensitive Noise Receptors	Letter to McNeely from Kaiser July 2, 1997	non-responsive
Extended Task Force Schedule Extended Period for Review of Draft Mitigation Study	Letter to Kaiser from McNeely June 20, 1997	Categories for Evaluation and Future Agenda	Letter to McNeely from Kaiser July 2, 1997	no more task force meetings

Mitigation Topic/ Resource	Correspondence from City (Letter, Fax, or Comment)	Requested Items/ Information Provided	Letter in Response or Initiated	Response
NEPA Process	Letter to Kaiser from McNeely June 20, 1997	Methodologies and NEPA		
Conflict of Interest UP Marketing Port of Oakland Cost-benefit Analysis	Letter to McNulty from McNeely June 20, 1997 Letter to Kaiser from Lamboley July 15, 1997	Future Agenda Conflict of interest UP Marketing Port of Oakland Cost-benefit analysis	Letter to McNeely from Kaiser July 2, 1997	non-responsive
UP's Operating Plan: Train Speed	Letter to Kaiser from McNeely July 2, 1997	Speed of Train or Number of Trains or Length of Trains		
Preferred mitigation	Letter to Kaiser from McNeely July 2, 1997	Request for evaluation of all 15 potential locations for underpasses and overpasses		
Conrail EIS STB's Bias	Comments to STB from McNeely July 9, 1997 Letter to Kaiser from McNeely July 23, 1997	Submission of various Conrail EIS items and comments from McNeely Response to Hemmer Letter of July 21, 1997	Letter to Kaiser from Hemmer July 21, 1997	Negotiations
Previous Agenda Requests	Comments to STB from Demuth July 9, 1997	Discussion of Future Agenda Topics not covered		

CITY OF RENO

P.O. Box 1900
Reno, Nevada 89505

DATE: October 16, 1996

TO: Mr. Harold McNulty, Section of Environmental Analysis

FROM: Charles McNeely, City Manager, City of Reno

RE: UP/SP Railroad Merger Environmental Mitigation Study
Tentative Reno Meeting Schedule for October 23-24, 1996

We have examined the STB's Tentative Reno Meeting Schedule you provided to Barbara McKenzie of my office and have the following concerns and comment -- there appears to be an unwarranted amount of outreach to certain identified public interests, specifically hotel casinos, while the City of Reno (3.5 hours), Washoe County (2.25 hours), State Agencies and legislature (3.5 hours), and representatives of Tribal Councils (1.00 hours) have been given only minimal time to discuss an extensive agenda the City has prepared to define the scientific and analytical environmental process of the *Environmental Mitigation Study* including:

- third party consultant/conflict of interest;
- consultation with the City of Reno;
- schedule/noticing;
- project description/proposed action;
- technical analysis, thresholds, methodology, and scientific accuracy;
- scope (range of mitigation) of *Environmental Mitigation Study*;
- review of existing studies;
- alternatives analysis;
- meaningful and effective mitigation measures (avoiding, minimizing, rectifying, reducing or eliminating, or compensating);
- mitigation plan enforcement/monitoring;
- public review and comment process; and
- a memorandum of understanding to guide the *Environmental Mitigation Study*.

It is our understanding that the STB's written decision #44 of August 12, 1996 stated:

> *The sole purpose of the mitigation studies will be to arrive at specifically tailored mitigation plans that will ensure that localized environmental issues unique to these two communities are effectively addressed* (p. 221, ¶3).

> *The public will be consulted regarding the range of additional mitigation to most effectively address increased rail traffic on the existing rail lines in Reno and Wichita* (p. 222, ¶3).
>
> The written decision continues to say *the studies will focus only on the mitigation of the environmental affects of additional rail traffic through Reno...resulting from the merger. Mitigation of conditions resulting from the preexisting development of hotels, casinos, and other tourist-oriented businesses on both sides of the existing SP rail line in Reno...are not within the scope of the studies. Similarly, the construction of a new rail line now under consideration by Reno is too preliminary to be assessed now.* (p. 223, ¶2). Continuing in the footnote: *Plans for such a line are only in the development stage. SEA indicates that such a project could take up to 10 years to finalize. If the contemplated construction reaches the stage of an actual proposal requiring our approval, SEA would prepare an appropriate environmental document at that point* (p. 223, footnote No. 270).
>
> *This study would tailor mitigation to address environmental effects such as safety, hazardous materials transport, air quality, noise and water quality.* (p. 279, cond. 22c).

The STB's written decision #55 of September 27, 1996 stated:

> *We emphasized that we already know the nature and general parameters of the appropriate mitigation measures for Reno, and that the sole purpose of the Reno study is to arrive at a specifically tailored mitigation plan to address impacts of additional traffic that will eventually move through Reno* (p. 3, ¶3)... *The City of Reno will not be irreparably harmed because it must participate in the administrative process to identify what regulatory relief it will be given (p. 4, ¶ 2) (emphasis added).*

The City of Reno is as equally concerned about mitigation of public health and safety impacts for areas outside of the downtown, as we are for the downtown vehicular and pedestrian traffic. The City is also concerned about impacts to air quality, water quality, and impacts from noise and hazardous materials transport.

We would hope that the input provided by Reno's downtown casinos could be consolidated to a single meeting with all downtown property owners (not just casinos) possibly in conjunction with your meeting with Bill Osgood of the Downtown Improvement Association, thus allowing the City a greater amount of time to represent the issues, concerns, and needs of the citizens of Reno. Regardless the City will have a representative present at each of these scheduled meetings.

I look forward to hearing from you on this matter as soon as possible.

Surface Transportation Board
Washington, D.C. 20423-0001

Mr. Charles McNeely
City Manager of Reno
P. O. Box 1900
Reno, Nevada 89505

Re: Reno Meetings, October 23 & 24, 1996

Dear Mr. McNeely,

This is in response to your letter of October 16, 1996, to Mr. McNulty regarding our planned meetings in Reno. As you requested and as originally planned, we would be glad to extend the time frames to meet with the City. On Thursday, we are already scheduled to meet with you at 8:30 AM, and City staff from 9:30 to 11:00 AM. We would propose to extend that meeting to noon.

The purpose of our informal meetings next week is to provide an opportunity for the study managers to get acquainted with interested parties in the Reno area as a kick-off to beginning the study. We are now developing some informational materials to distribute at the meetings. This material will provide more information on the proposed study process. At this stage, we have only assigned staff members, obtained some of the previously-done studies, and developed a preliminary study approach to be discussed with the City and other interested parties.

These initial meetings are intended to be introductory in nature and to establish lines of communication. Following these meetings, our technical experts will meet throughout the course of the study with their counterparts in City, county, and state agencies and with other interested parties. The purpose of the follow-up meetings will be to discuss technical issues and exchange information.

The objective of our kick-off meetings is to meet informally with various parties and give them an opportunity to freely discuss their ideas and issues before the study progresses. In order to accommodate differing views and interests, SEA will be conducting individual meetings as originally scheduled. We appreciate all the efforts the City has made in making its facilities available to SEA and hope that we will be able to conduct all of our meetings at City Hall. However, since the City will not be attending some of these meetings, SEA would be willing to find an alternate location. Please advise us today if this is necessary.

In conducting this study, we plan to have a full public participation program which includes public meetings, and opportunity for the public to review and comment on both the draft and final mitigation plans. This is, of course, in addition to our planned on-going consultations with the City of Reno. As a result, all interested persons will have the opportunity to have their comments fully considered by the Board before it issues a further decision on mitigation measures for Reno.

We look forward to meeting with you next week. Also, as previously stated, we are glad to extend our meeting time with you on Thursday morning. Mr. McNulty plans to call your office at 9 AM your time today to confirm all of the above arrangements. Thank you again for all of your assistance.

Sincerely,

Elaine K. Kaiser

Elaine K. Kaiser
Chief, Section of Environmental Analysis

LETTER OF TRANSMITTAL

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mark@MADCON.com

DATE & TIME SENT: October 30, 1996

TO: Kay Wilson, Public Affairs Management

JOB: 96281-200

DESCRIPTION: RGJ News Article on Truckee River Negotiated Settlement

RE: UP/SP Railroad Merger *Environmental Mitigation Study*

THESE MATERIALS ARE TRANSMITTED:

- ☐ For your approval
- ☒ For your use
- ☐ As you requested
- ☐ For your review and comment
- ☒ For your information
- ☐ _____

COMMENTS: Please distribute to your team and the SEA.

SIGNED:

Mark A. Demuth
Principal
MADCON Consultation Services

Surface Transportation Board
Washington, DC 20423-0001

Section of Environmental Analysis

November 4, 1996

Mr. Charles McNeely
City Manager
City of Reno
P O Box 1900
Reno, NV 89505

RECEIVED
NOV - 8 1996
CITY ATTORNEY

Re: UP/SP Merger: Reno Mitigation Study

Dear Mr. McNeely:

The purpose of this letter is to address in more detail some of the issues raised in SEA's meeting with City staff on Wednesday and Thursday, October 23 and 24, 1996. As discussed at the meeting, SEA is moving forward with the mitigation study, and looks forward to working with the City and other concerned parties in conducting this study. To that end, I would like to respond to some of the requests and study-specific issues raised by the City.

First, the City has requested further information documenting that SEA's consultants have no conflict of interest. We will provide consultant disclosure statements to Attorney Paul Lamboley, as requested. However, we would like further clarification as to exactly why you believe there may be a potential conflict of interest and what specific issues regarding our independent third-party contractor are of concern to the City.

Second, the City has asked that SEA enter into a Memorandum of Understanding (MOU) with the City to outline the "ground rules" for the mitigation study. While SEA intends to consult with the City as well as other interested parties during the study, SEA does not believe it would be appropriate to enter into a MOU with the City. SEA intends to conduct the study impartially. Entering into a MOU with one party could compromise the impartiality of the study. However, as we discussed with you, we are committed to working with the City and providing a broad public involvement program. We are planning a range of opportunities for public participation which include ongoing consultations with government interests and affected parties, public information meetings, and opportunities for the public to review and comment on both the draft and final mitigation plans. In addition, we hope the City will work with us to form a mitigation committee which can provide a structure for a working group and extensive information and ideas.

Third, while we emphasized this point in our meetings, we want to reiterate here that the scope of SEA's mitigation study is limited to mitigation pertaining to the existing right-of-way. Consistent with the Surface Transportation Board's decision of August 12, 1996, SEA will not evaluate as part of the mitigation study the construction of a new rail line on new right-of-way; i.e., the suggested I-80 corridor. The City and the Union Pacific Railroad are certainly free to discuss this option as part of private negotiations. If a party were to come forward with a proposal to construct and operate a new rail line involving new right-of-way, it would require a separate application and environmental review by the Board.

Fourth, related to public involvement, we have read the gray and red publication recently released by the City, entitled Are the Railroads on Track? We note on page 2, that the publication reads, "To address impacts of the merger, the UP prepared and submitted an environmental report to STB. The Section of Environmental Analyses (SEA) of the STB used UP's report as the basis for the EA required by NEPA ..." We note that this statement standing alone may be somewhat misleading to the reader. As you know, in preparing the EA, SEA also independently reviewed and verified UP's data; conducted its own technical environmental studies and site visits with the assistance of an independent third-party contractor; and considered all the information received from the various agencies and public.

Fifth, the last page of your publication, called "Tracking the Facts", cites numerous statistics. It would be helpful if you would provide SEA with copies of the detailed source documents from which these quotes were taken.

In conclusion, I would like to thank you again for your expressed willingness to participate in the study. Attached is a summary of the City's requests and action items as discussed in our two days of meetings with the City on October 23 and 24, 1996. These summary items were written down in the meeting by your staff and provided to us for review to facilitate a common understanding of issues to be addressed in moving forward with the study. Upon review, we have added further clarifications and noted certain responsibilities, where appropriate. Please let us know if this concurs with your staff's understanding.

I thank you for your consideration of these matters. I look forward to your early reply regarding your concerns with our independent third-party contractor, the source documents for the statistics cited in your publication, and comments on the attached list of Action Items.

Sincerely yours,

Elaine K. Kaiser
Chief, Section of Environmental Analysis

Enclosure

cc: Paul Lamboley
Michael Halley

November 1996

UP/SP MERGER MITIGATION STUDIES
MEMORANDUM

SUBJECT: Action Items and requests from City of Reno kick-off meetings held on October 23 and 24, 1996 in Reno

- SEA to provide list of subcontractors and signed disclosure statement for each subcontractor.

- Public Meeting:
  - SEA is the sponsor of the proposed public meeting.
  - SEA to define level of presentation and timing of meeting.
  - SEA to consider holding earlier public meetings.
  - SEA and City to discuss presentations prior to meetings.
  - SEA to consider use of SNCAT (local cable televison).
  - City suggested the need to hold each meeting at 3 different times.

- SEA to Provide Specific Review Dates:
  - For production of draft (SEA to provide projected month, e.g. January '97).
  - Review and comment (30 days).
  - City requested SEA to send all documents and notices by certified mail; SEA will consider this.

- SEA to provide reliable train data on:
  - ⇒ Length of trains
  - ⇒ Speed of trains
  - ⇒ Number of trains
  - ⇒ Number of double stack trains
  - City stated high's and low's on numbers are needed.
  - The City expressed its desire that the study focus on long-term solutions and then find short term fixes.

- The City requested SEA to define and establish the study process for the following topics:
  - ⇒ Safety
  - ⇒ Hazardous Materials Transport
  - ⇒ Air Quality
  - ⇒ Noise
  - ⇒ Water Quality

  - City requested SEA indicate where in record this information was provided.
  - SEA to review and refine above data if appropriate.
  - If ground is impacted by proposed mitigation, archeology needs to be addressed.

- City will provide SEA with a bibliography of all sources of information and state location and source to contact; SEA will provide a list of studies it is reviewing.

- Study is to address endangered species issues.
    - SEA is to continue communications with Fish and Wildlife Service.

- Study is to address Appendix G, Condition #10.
    - Police services provided in UP/SP right-of-way.
    - City is concerned about managing the crowds in the railroad corridor.
    - SEA is to facilitate dialogue with UP on this subject (SEA has provided UP with Jim Weston's telephone number).

- For mitigation options, SEA will consider comments and information pertaining to the following issues:
    - ⇒ Traffic
    - ⇒ Land Use
    - ⇒ Water Resources
    - ⇒ Socioeconomic
    - ⇒ Biological Resources
    - ⇒ Cultural Resources
    - Ensure environmental mitigation does not create worse or additional impacts.

- The study should look into financing and taking-of-property issues; the study should address equitable options for funding.

- The City and SEA should keep open discussion of methodology.
    - Reno will submit its methodology for SEA consideration.
    - Reno needs to act on this quickly.

- City to respond to SEA on "local mitigation committee" within 1 to 2 weeks.

- City and SEA to discuss data accuracy standards and find out where the data gaps are, if any.
    - All parties acknowledge that there may still be areas of disagreement.

- Use the mitigation committee to help put all concepts relating to the exisiting right-of-way on the table.

- SEA stated that all mitigation measures must pertain to the existing right-of-way. The City is free to pursue the I-80 corridor bypass through private negotiations with the Railroad. The Board does not have jurisdiction to force an unwilling Railroad to construct a new rail line on new right-of-way.

- City inquired as to whether a mitigation measure could be that the number of trains be limited.

- City inquired as to whether the Board could condition cap limit (extend it) until mitigation is in place.

- City to discuss whether they want UP/SP to explain their operations and numbers at a future meeting.

- City will re-issue a new document ASAP summarizing their prior comments on Methodology and Assumptions.

- City will address history of development around right-of-way and provide SEA with a rationale.

- City will provide all service list addresses to SEA.

- SEA will consider bringing in a local independent contractor to work with Native Americans - City willing to make recommendation.

- SEA to provide input on how systemwide mitigation measures pertain to Reno.

- SEA to review and provide comments (if any) on red & gray publication, "Are the Railroads on Track?"

- SEA to send City copy of the sign-in sheets and copy of the business cards (sign-in sheets were used for larger meetings, not the small meetings).

- SEA is still reviewing and considering all requests; SEA emphasized that since this is a kick-off meeting, SEA still needs time to review and consider all requests.

LETTER OF TRANSMITTAL

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mark@MADCON.com

DATE & TIME SENT: November 5, 1996 9:08am

TO: Elaine Kaiser, Chief
Section of Environmental Analysis
Surface Transportation Board

JOB: 96281-200

DESCRIPTION: City of Reno's *Environmental Mitigation Study* Contact List as of November 5, 1996

RE: UP/SP Railroad Merger *Environmental Mitigation Study*

THESE MATERIALS ARE TRANSMITTED:

- ☐ For your approval
- ☒ For your use
- ☒ As you requested
- ☐ For your review and comment
- ☐ For your information
- ☐ _____

COMMENTS: Per your request of October 23, 1996, attached please find a copy of the City of Reno's Contact List as of November 5, 1996, which may be useful in updating your service list. Please distribute to your study team as appropriate.

SIGNED:

Mark A. Demuth
Principal
MADCON Consultation Services

LETTER OF TRANSMITTAL

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DATE & TIME SENT: November 12, 1996 10:43am

CERTIFIED MAIL #: P 074 714 681

TO: Harold McNulty, Study Director
Section of Environmental Analysis
Surface Transportation Board

JOB: 96281-200

DESCRIPTION: City of Reno's *Railroad Merger Bibliography* as of November 11, 1996

RE: UP/SP Railroad Merger *Environmental Mitigation Study*

THESE MATERIALS ARE TRANSMITTED:

- ☐ For your approval
- ☒ For your use
- ☒ As you requested
- ☐ For your review and comment
- ☐ For your information
- ☐ _____

COMMENTS: Per your request of October 23, 1996, attached please find a copy of the City of Reno's *Railroad Merger Bibliography* as of November 11, 1996 with attached copies of most cited materials. All materials have been provide except: Truckee River Chronology (1996); City of Reno Master Plan (1986); Draft City of Reno Master Plan (1996); and the Reno Municipal Code. Please distribute to your study team as appropriate. Today, under a separate cover, I have transmitted to Kay Wilson (PAM) a duplicate copy of all the print media articles which are enclosed.

SIGNED:

Mark A. Demuth
Principal
MADCON Consultation Services

LETTER OF TRANSMITTAL

FILE COPY

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mark@MADCON.com

DATE & TIME SENT: November 14, 1996 7:45am

TO: Kay Wilson, Public Affairs Management

JOB: 96281-200

DESCRIPTION: Truckee River Water Quality Settlement Agreement Information

RE: UP/SP Railroad Merger *Environmental Mitigation Study*

THESE MATERIALS ARE TRANSMITTED:

- ☐ For your approval
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- ☒ As you requested
- ☐ For your review and comment
- ☒ For your information
- ☐ _____

COMMENTS:

Per the verbal request of Olivia Perrault on November 13, 1996, on your behalf, attached please find a staff report from the City of Reno dated May 12, 1996 which includes: a brief report from City staff; Attachment A - *Water Quality Settlement Agreement - Key Provisions and Terms*; Attachment B - *Benefits of the Water Quality Settlement Agreement to the Truckee Meadows Community*; Attachment C - *Truckee River Water Quality Settlement Agreement* (I have substituted the actual signed Agreement dated October 10, 1996, for the draft agreement which appeared as attachment C); and Attachment D - *Interlocal Agreement Regarding the Purchase of Water Rights Pursuant to the Truckee River Water Quality Settlement Agreement.* Please distribute as needed to your team and the SEA.

SIGNED:

Mark A. Demuth
Principal
MADCON Consultation Services

LETTER OF TRANSMITTAL

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DATE & TIME SENT: November 15, 1996 11:40am

CERTIFIED MAIL #: P 074 714 683

TO: Elaine Kaiser, Chief
Section of Environmental Analysis
Surface Transportation Board

JOB: 96281-200

DESCRIPTION: Response to Fifth Item in STB's November 4, 1996 Letter

RE: UP/SP Railroad Merger *Environmental Mitigation Study*

THESE MATERIALS ARE TRANSMITTED:

- ☐ For your approval
- ☐ For your use
- ☒ As you requested
- ☐ For your review and comment
- ☐ For your information
- ☐ _____

COMMENTS:

In response to your request for information in your letter dated November 4, 1996, to Charles McNeely, specifically you stated on page 2, second paragraph:

> *Fifth, the last page of your public, called "Tracking the Facts", cites numerous statistics. It would be helpful if you would provide SEA with copies of the detailed source documents from which these quotes were taken.*

Below and attached please find the source documents you are not presently in possession of:

1. **City of Reno Fact Finding Report**. This report is an attachment to the City of Reno's *Comments and Verified Statement of the City of Reno*, submitted to the STB, dated March 29, 1996. This was again transmitted to the STB/SEA on November 12, 1996, with the City of Reno's Bibliography.

2. **Regional Emergency Medical Services Authority**. These numbers come from a personal communication from REMSA to Dori Owen, Reno

Redevelopment Agency. Letter dated January 29, 1996, from Jim Gubbels, Director Contract Services. In *Comments and Verified Statement of the City of Reno*, submitted to the STB, dated March 29, 1996. This was again transmitted to the STB/SEA on November 12, 1996, with the City of Reno's Bibliography.

3. **Reno Fire Department**. These numbers come from a personal communication from RFD to Dori Owen, Reno Redevelopment Agency. Letter dated May 1, 1996, from Lee Amestoy, Assistant Fire Chief. In *Comments on Preliminary Draft Environmental Assessment*, submitted to the STB dated May 3, 1996. This was again transmitted to the STB/SEA on November 12, 1996, with the City of Reno's Bibliography.

4. **Survey Research Systems**. Attached please find a copy of Survey Research Systems report entitled *Voters' Perception Railroad Merger Survey* dated April 1996. In summary, Nevadans' for a Fast and Responsible Action (NFRA) contracted with Research Survey Systems of Carson City which completed a balanced public opinion survey of 384 Truckee Meadows registered voters, on April 11-14, 1996.

I hope you find this information useful.

SIGNED:

Mark A. Demuth
Principal
MADCON Consultation Services

CITY
RENO

P.O. Box 1900
Reno, Nevada 89505

November 18, 1996

Certified Mail No. P 074 714 682

Mr. Harold McNulty, Study Director
Surface Transportation Board
Section of Environmental Analysis
12th and Constitution Ave., N.W.
Washington, DC 20423

RE: Railroad Merger Environmental Mitigation Study Task Force

Dear Mr. McNulty:

This letter is in response to the Surface Transportation Board's (STB) suggestion that the City of Reno consider the formation of a Railroad Merger Environmental Task Force to assist the Section of Environmental Analysis (SEA) with preparation of the Environmental Mitigation Study. The City of Reno supports maximizing public participation in any decision or program which will have an effect on the citizens of Reno. In order to facilitate the formation of an effective Task Force, the City has structured a working group composed of a cross section of the community. The structure of this Task Force/Working Group is shown on the attached chart, with the City Manager's office serving as the primary conduit for information flow between the Task Force and the SEA. As shown, the Task Force is composed of ten (10) primary participants representing a broad cross-section of the community and a Union Pacific Railroad representative. Each primary participant on the Task Force/Working Group will have several sub-groups providing important input which will be incorporated into the preparation of an adequate and acceptable full disclosure Environmental Mitigation Study.

The primary focus of the Task Force will be an integrated working group that is solution oriented. The mission of the Task Force/Working Group will be to ensure that all adverse impacts associated with the merger are mitigated to less than significant levels, and that mitigation proposals do not in and of themselves create additional adverse impacts. Technical expertise will be provided to the Task Force/Working Group by the Environmental and Engineering Consulting Teams retained by the City of Reno, which have participated in the

entirety of the merger process.

The City of Reno proposes that the Task Force/Working Group meet a minimum of two times per month due to the proposed scheduling/phasing of the Environmental Mitigation Study. Specific procedures and protocol for the Task Force/Working Group will be developed over the next week and forwarded to the SEA for concurrence. The first meeting of the Task Force/Working Group will be scheduled for late November of this year.

The City of Reno appreciates the opportunity to actively participate in the development of the Environmental Mitigation Study, and looks forward to the implementation of innovative solutions to reduce the merger-related adverse impacts to less than significant levels.

Please contact me at your convenience should you have any questions or comments relating to formation of the Railroad Merger Environmental Task Force.

Sincerely,

Charles McNeely
City Manager

enclosure: Railroad Merger Environmental Task Force Chart

cc: Merri Belaustegui-Traficanti
Barbara McKenzie
Mark A. Demuth

CITY
RENO

P.O. Box 1900
Reno, Nevada 89505

November 18, 1996

Mr. William E. Wimmer
Senior Assistant Vice President
Engineering Management
Union Pacific Railroad
1416 Dodge Street, Room 1030
Omaha, Nebraska 68179-1000

RE: Railroad Right-of-Way Properties within the City of Reno

Dear Mr. Wimmer:

As part of an ongoing environmental investigation in F. D. No. 32760, UP/SP Merger, the Section of Environmental Analysis of the Surface Transportation Board (SEA-STB) has requested the City of Reno to "address history of development around right of way and provide SEA with a rationale."

Obviously, a substantial amount of information relevant to the history and rationale of right-of-way (ROW) development is not within the City's archives or knowledge. However, in order to fully cooperate with the SEA-STB and provide historic information, the City is undertaking to research ROW development and establish rationale.

In this effort, we ask that Southern Pacific (SP) and Union Pacific (UP) provide and/or make available information that would identify the following:

- the parcel of ROW property acquired by SP or UP within the City since the date of SP's or UP's first operations in the City; and

- the parcels or ROW property within the City sold or transferred by SP or UP to any non-railroad party since the date of SP's or UP's first operations in the City.

And with respect to those parcels sold or transferred, the following information would be helpful:

- date of acquisition;

- date of sale/transfer transaction;
- acreage involved;
- selling price or consideration of transaction;
- name of purchaser/transferee;
- purpose or reason for transaction;
- party who initiated transaction;
- land use before sale/transaction;
- land use after sale/transaction.

Also, please include information concerning intra-corporate or internal sales/transfers among existing or new subsections of SP or UP enterprises.

We appreciate the extent of information requested and that the nature of certain information may be proprietary or confidential. We will be happy to establish a secure method to obtain and protect the information.

Without your cooperation, it will be extremely difficult, if not impossible, for the City to accurately inform the SEA-STB regarding the history and rationale of development around the railroads' ROW within City boundaries.

My office is available to answer any questions concerning this request. We look forward to working with you to retrieve information portraying the history and development of TOW and adjacent lands.

Sincerely,

Charles E. McNeely
City Manager

cc: Elaine K. Kaiser, SEA-STB

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WASHINGTON, DC 20004-1200
(202) 637-3601
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KECK, MAHIN & CATE

FILE NUMBER
48189-001

DIRECT DIAL
202-637-3609

November 22, 1996

Ms. Elaine K. Kaiser
Chief, Section of Environmental Analysis
Surface Transportation Board
1201 Constitution Avenue, NW
Washington, DC 20423

Re: F.D. 32760 UP/SP Merger

Dear Ms. Kaiser:

The City of Reno has asked that I respond directly to your November 4 letter seeking clarification of its request for conflict of interest information about third party contractor and sub-contractors relations, if any, with merger applicants, Union Pacific (UP) and/or Southern Pacific (SP) (UP/SP), in F.D. 32760:

The City requests the following information concerning the third party contractor, and each sub-contractor engaged in the environmental investigation process in F.D. 32760:

1. Identity (name or entity and address of principle office).

2. Person in charge.

3. Prior contracts with or engagements for the merger applicants UP/SP or related companies during a period of three (3) years preceding the date of filing of applicants' notice of intent, detailing the date, duration and scope of work, as well as compensation received or expected if still pending.

4. Current contracts with or engagements for the merger applicants UP/SP or related companies during the period following the date of filing of notice of intent, detailing the date, duration and scope of work as well as compensation received or expected if still pending.

NOV 25 '96 06:15PM KECK,MAHIN&CATE IPG P.2

JAN-22-97 WED 13:38 RENO CITY ATTORNEY FAX NO. 7025394420 P.02

5. Whether future contracts or engagements may be anticipated, will be sought or accepted from merger applicants or related companies within three (3) years following completion of the STB environmental investigation in which each is presently engaged for the STB.

6. Details of the present contract or engagement for the STB environmental investigation, including but not limited to:

   (a) date of inception, date of anticipated completion;

   (b) scope of activity/responsibility;

   (c) job description(s) and number(s) of personnel directly engaged in investigation;

   (d) job description(s) and number(s) of personnel indirectly engaged in investigation;

   (e) entity(s) to which billing statements for costs and fees is (are) presented, and frequency or period of each billing;

   (f) compensation received to date.

Any questions concerning this request may be directed to my office or that of the Reno City Attorney. Thank you for your courtesy and cooperation in this matter.

Very truly yours,

Paul H. Lamboley

PHL:fcr

CITY
RENO

P.O. Box 1900
Reno, Nevada 89505

November 25, 1996

Certified Mail P478 567 726

Elaine Kaiser, Chief
Surface Transportation Board
Section of Environmental Analysis
12th and Constitution Ave NW Room 3219
Washington DC 20423

RE: Letter of November 4, 1996

Dear Elaine:

The purpose of this letter is to respond to your letter of November 4, 1996. The City of Reno looks forward to working with the SEA in moving the *Environmental Mitigation Study* forward. To that end, we would respond to your requests for clarification as follows:

Independent Third-party Contractor

Under a separate cover you should be in receipt of a letter from Mr. Paul H. Lamboley, of Keck, Mahin & Cate, in response to the first item of the above referenced letter, where the STB/SEA commented that *...we would like further clarification as to exactly why you believe there may be a potential conflict of interest and what specific issues regarding our independent third-party contractor are of concern to the City.*

Source Documents for Statistics Cited

Under a separate cover you should be in receipt of a transmittal dated November 15, 1996, from Mr. Mark A. Demuth, of MADCON Consultation Services in response to the fifth item of the above referenced letter, where the STB/SEA commented that *it would be helpful if you would provide SEA with copies of the detailed source documents from which these quotes were taken.* As Mr. Demuth explained, most of the source documents are contained within various City of Reno filings with the STB. The results of the survey mentioned have been forwarded directly from Mr. Demuth.

Comments on Action Items

Continuing on to the items listed on the November 4, 1996, letter's attachment entitled *UP/SP Merger Mitigation Studies Memorandum* (pages 1 - 3), the following specific comments are made:

Bullet 5 on page 1. The City of Reno believes the item should read as follows:

- The City requested SEA to define and establish the study process for the following topics:

  Air Quality
  Biological Resources
  Cultural Resources
  Hazardous Materials Transport
  Land Use
  Noise
  Safety
  Socioeconomics
  Traffic
  Water Quality

Bullet 1 on page 2:

Under a separate cover you should be in receipt of a transmittal from Mr. Mark A. Demuth, of MADCON Consultation Services dated November 12, 1996, providing a 10 page bibliography and the complete documents (all materials have been provide except: Truckee River Chronology (1996); City of Reno Master Plan (1986); Draft City of Reno Master Plan (1996); and the Reno Municipal Code, where detailed instruction were proved as to location and source to contact).

Bullet 4 on page 2. The City of Reno believes the item should read as follows:

- For mitigation options, SEA will consider comments and information pertaining the following issues:

  Air Quality
  Biological Resources
  Cultural Resources
  Hazardous Materials Transport