APPENDIX F: AIR QUALITY

SANTA ANA RIVER WATER RIGHT APPLICATIONS FOR SUPPLEMENTAL WATER SUPPLY DRAFT ENVIRONMENTAL IMPACT REPORT

October 2004

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT • 1954 •

WESTERN MUNICIPAL WATER DISTRICT

Appendix F contains a series of tables presenting information used in the sequential steps of the air quality impact analysis performed for the Project. The tables fall into eight classes:

1. Inventory of equipment by construction segments. For each type of equipment the following characteristics are identified:
    a. Fuel type (diesel or gasoline)
    b. Horsepower rating
    c. Percent of full throttle
    d. Number of active pieces of equipment
    e. Number of hours active per day
    f. Daily horsepower hours
2. Inventory of vehicles by construction segment. For each type of vehicle the following characteristics are identified:
    a. Fuel type (diesel or gasoline)
    b. Number of active vehicles
    c. Daily trips
    d. Miles per roundtrip
    e. Daily miles
    f. Total days
    g. Total miles
3. Emission factors for equipment and vehicles.
4. Daily equipment emissions.
5. Daily vehicle emissions.
6. Total daily emissions.
7. Total emissions.
8. Quarterly emissions.

In this appendix, the following acronyms are used:

- carbon monoxide (CO)
- nitrogen oxides (NOx)
- particulate matter (PM)
- particulate matter less than 10 microns in diameter (PM_{10})
- reactive organic gases (ROG)
- sulfur oxide (SOx)

1. Inventory of Equipment by Construction Segments

Table F-1. Equipment Data for Construction of Seven Oaks Dam and Reservoir.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	3	12	298,080
Compactors	D	220	25	2	6	66,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	1	8	49,200
Excavator	D	125	60	2	12	180,000
Generators	G	7	80	2	8	8,960
Grader	D	215	50	2	12	258,000
Loaders	D	110	60	3	12	237,600
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	2	6	195,000
Welders	D	38	60	5	12	136,800

Table F-2. Equipment Data for Construction of Plunge Pool Pipeline - Phase I.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	2	12	198,720
Compactors	D	220	25	2	6	66,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavators	D	430	60	2	12	619,200
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	1	4	68,000
Loaders	D	310	60	2	12	446,400
Pavement Breaker	D	60	75	1	6	27,000
Portable Rock Screener	D	161	62	1	10	99,820
Pump	G	22	60	4	6	31,680
Street Sweeper	D	97	68	1	6	39,576
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	2	6	195,000
Welders	D	38	60	9	12	246,240

Table F-3. Equipment Data for Construction of Plunge Pool Pipeline - Phase II.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	2	12	198,720
Compactors	D	220	25	2	6	66,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavators	D	430	60	2	12	619,200
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	1	4	68,000
Loaders	D	310	60	2	12	446,400
Pavement Breaker	D	60	75	1	6	27,000
Portable Rock Screener	D	161	62	1	10	99,820
Pump	G	22	60	4	6	31,680
Street Sweeper	D	97	68	1	6	39,576
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	2	6	195,000
Welders	D	38	60	9	12	246,240

Table F-4. Equipment Data for Construction of Suspended Portion of Low Flow Connector - Phase III.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	2	12	198,720
Compactors	D	220	25	2	6	66,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavator	D	125	60	1	12	90,000
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	1	4	68,000
Loaders	D	110	60	2	12	158,400
Pavement Breaker	D	60	75	1	6	27,000
Portable Rock Screener	D	161	62	1	10	99,820
Pump	G	22	60	1	6	7,920
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	1	6	97,500
Welders	D	38	60	2	12	54,720

Table F-5. Equipment Data for Construction of Portion 1 of Low Flow Connector - Phase III.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	2	12	198,720
Compactors	D	220	25	2	6	66,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavators	D	430	60	2	12	619,200
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	1	4	68,000
Loaders	D	310	60	2	12	446,400
Pavement Breaker	D	60	75	1	6	27,000
Portable Rock Screener	D	161	62	1	10	99,820
Pump	G	22	60	1	6	7,920
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	1	6	97,500
Welders	D	38	60	6	12	164,160

Table F-6. Equipment Data for Construction of Portion 2 of Low Flow Connector - Phase III.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	2	12	198,720
Compactors	D	220	25	2	6	66,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavator	D	125	60	1	12	90,000
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	1	4	68,000
Loaders	D	110	60	2	12	158,400
Pavement Breaker	D	60	75	1	6	27,000
Portable Rock Screener	D	161	62	1	10	99,820
Pump	G	22	60	1	6	7,920
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	1	6	97,500
Welders	D	38	60	2	12	54,720

Table F-7. Equipment Data for Construction of Plunge Pool Pipeline Intake Structure - Phase III.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoe	D	138	60	1	12	99,360
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Crane	D	205	30	1	8	49,200
Excavator	D	125	60	1	12	90,000
Generator	G	7	80	1	8	4,480
Water Truck	D	325	50	1	6	97,500
Welders	D	38	60	2	12	54,720

Table F-8. Equipment Data for Construction of Morton Canyon Connector II.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	2	12	198,720
Compactors	D	220	25	2	6	66,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavator	D	125	60	1	12	90,000
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	1	4	68,000
Loaders	D	110	60	2	12	158,400
Pavement Breaker	D	60	75	1	6	27,000
Portable Rock Screener	D	161	62	1	10	99,820
Pump	G	22	60	1	6	7,920
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	1	6	97,500
Welders	D	38	60	2	12	54,720

Table F-9. Equipment Data for Construction of Devil Canyon Bypass.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	1	12	99,360
Compactors	D	220	25	1	6	33,000
Compressor	D	62	60	1	9	33,480
Cranes	D	205	30	1	8	49,200
Excavator	D	125	60	1	12	90,000
Generators	G	7	80	1	8	4,480
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	1	4	68,000
Loaders	D	110	60	1	12	79,200
Pump	G	22	60	1	6	7,920
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	1	6	97,500
Welders	D	38	60	2	12	54,720

Table F-10. Equipment Data for Construction of Lytle Creek Pipeline.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	1	12	99,360
Compactors	D	220	25	1	6	33,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavator	D	125	60	2	12	180,000
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	2	4	136,000
Loaders	D	110	60	1	12	79,200
Pavement Breaker	D	60	75	1	6	27,000
Pump	G	22	60	2	6	15,840
Street Sweeper	D	97	68	3	6	118,728
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	3	6	292,500
Welders	D	38	60	4	12	109,440

Table F-11. Equipment Data for Construction of Cactus Basins Pipeline.

Equipment Type	*Fuel Type*	*Hp Rating*	*% of Full Throttle*	*Number Active*	*Hours/ Day*	*Daily Hp-Hrs*
Backhoes	D	138	60	1	12	99,360
Compactors	D	220	25	1	6	33,000
Compressor	D	62	60	1	9	33,480
Concrete Mixer	D	97	20	1	6	11,640
Cranes	D	205	30	2	8	98,400
Excavator	D	430	60	2	12	619,200
Generators	G	7	80	2	8	8,960
Grader	D	215	50	1	12	129,000
Hydraulic Ram	D	340	50	2	4	136,000
Loaders	D	310	60	1	12	223,200
Pavement Breaker	D	60	75	1	6	27,000
Pump	G	22	60	2	6	15,840
Street Sweeper	D	97	68	3	6	118,728
Vertical Auger Drill	D	164	60	1	6	59,040
Water Truck	D	325	50	3	6	292,500
Welders	D	38	60	4	12	109,440

2. Inventory of Vehicles by Construction Segment

Table F-12. Vehicle Data for Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas.

(page 1 of 2)

Construction Activity/Vehicle Type	*Fuel Type*	*Number Active*	*Daily Trips*	*Miles/ Roundtrip*	*Daily Miles*	*Total Days*	*Total Miles*
Seven Oaks - Dam and Access Roads							
Dump Trucks (offsite)	D	4	50	4.0	200	25	5,000
Employee Vehicles	G	31	31	40.0	1,240	348	431,520
Pickup Trucks	G	7	NA	NA	175	348	60,900
Delivery Trucks	D	2	2	80.0	160	10	1,600
SAR - PPP Phase I							
Dump Trucks (onsite)	D	8	39	1.8	70	9	632
Dump Trucks (offsite) (1)	D	1	16	4.0	64	13	832
Employee Vehicles	G	32	32	40.0	1,280	288	368,640
Pickup Trucks	G	6	NA	NA	150	288	43,200
Delivery Trucks	D	2	2	80.0	160	2	320
SAR - PPP Phase II							
Dump Trucks (onsite)	D	8	55	1.8	99	156	15,444
Dump Trucks (offsite) (1)	D	2	22	4.0	88	236	20,768
Employee Vehicles	G	41	41	40.0	1,640	456	747,840
Pickup Trucks	G	7	NA	NA	175	456	79,800
Delivery Trucks	D	2	2	80.0	160	30	4,800
SAR - Suspended Portion of Low Flow							
Dump Trucks (onsite)	D	5	147	2.1	309	3	926
Dump Trucks (offsite) (1)	D	1	12	4.0	48	5	240
Employee Vehicles	G	18	18	40.0	720	48	34,560
Pickup Trucks	G	5	NA	NA	125	48	6,000
Delivery Trucks	D	2	2	80.0	160	1	160
SAR - Part 1 of Low Flow/PPP Phase III							
Dump Trucks (onsite)	D	5	156	1.4	218	62	13,541
Dump Trucks (offsite) (1)	D	1	10	4.0	40	97	3,880
Employee Vehicles	G	29	29	40.0	1,160	144	167,040
Pickup Trucks	G	6	NA	NA	150	144	21,600
Delivery Trucks	D	2	2	80.0	160	4	640
SAR - Part 2 of Low Flow/PPP Phase III							
Dump Trucks (onsite)	D	5	148	1.0	154	7	1,077
Dump Trucks (offsite) (1)	D	1	4	4.0	16	11	176
Employee Vehicles	G	18	18	40.0	720	24	17,280
Pickup Trucks	G	5	NA	NA	125	24	3,000
Delivery Trucks	D	2	2	80.0	160	1	160

Table F-12. Vehicle Data for Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas.

Construction Activity/Vehicle Type	*Fuel Type*	*Number Active*	*Daily Trips*	*Miles/ Roundtrip*	*Daily Miles*	*Total Days*	*Total Miles*
SAR - PPP Intake Structure							
Employee Vehicles	G	13	13	40.0	520	168	87,360
Pickup Trucks	G	5	NA	NA	125	168	21,000
Delivery Trucks	D	2	2	80.0	160	4	640
SAR - Morton Canyon Connector II							
Dump Trucks (onsite)	D	6	34	0.4	13	21	271
Dump Trucks (offsite) (1)	D	1	4	4.0	16	34	544
Employee Vehicles	G	22	22	40.0	880	72	63,360
Pickup Trucks	G	5	NA	NA	125	72	9,000
Delivery Trucks	D	2	2	80.0	160	3	480
Devil Canyon Bypass							
Dump Trucks (onsite)	D	4	27	0.3	8	9	68
Dump Trucks (offsite) (1)	D	1	18	4.0	72	15	1,080
Employee Vehicles	G	15	15	40.0	600	96	57,600
Pickup Trucks	G	4	NA	NA	100	96	9,600
Delivery Trucks	D	2	2	80.0	160	1	160
Lower Lytle Creek Pipeline							
Dump Trucks (onsite)	D	4	27	0.4	11	32	346
Dump Trucks (offsite) (1)	D	1	18	4.0	72	52	3,744
Employee Vehicles	G	15	15	40.0	600	120	72,000
Pickup Trucks	G	4	NA	NA	100	120	12,000
Delivery Trucks	D	2	2	80.0	160	4	640
Cactus Basins Pipeline							
Dump Trucks (onsite)	D	4	141	1.2	172	147	25,287
Dump Trucks (offsite) (1)	D	1	10	4.0	40	238	9,520
Employee Vehicles	G	24	24	40.0	960	480	460,800
Pickup Trucks	G	4	NA	NA	100	480	48,000
Delivery Trucks	D	2	2	80.0	160	12	1,920

Notes: (1) These trips required only if onsite rock is insufficient or unsuitable in size.

3. Emission Factors for Equipment and Vehicles

Table F-13. Emission Factors for Construction Equipment.

Equipment Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)						References
		ROG	CO	NOx	SOx	PM	PM10	
Off-Road Equipment - 25-50 Hp	D	1.84	5.00	6.90	0.18	0.76	0.76	(1)
Off-Road Equipment - 51-120 Hp	D	1.44	4.80	13.00	0.18	0.84	0.84	(1)
Off-Road Equipment - 121-175 Hp	D	0.88	4.20	11.00	0.18	0.55	0.55	(1)
Off-Road Equipment - 176-250 Hp	D	0.88	4.20	11.00	0.18	0.55	0.55	(1)
Off-Road Equipment - 251-500 Hp	D	0.84	4.10	11.00	0.18	0.53	0.53	(1)
Equipment <250 Hp	G	9.12	199.00	4.99	0.27	0.33	0.33	(2)
Fugitive Dust (Lbs/acre/day)	---	---	---	---	---	---	60.00	30.00	(3)

Notes: (1) California Air Resources Board (ARB) OFFROAD emissions model (1999). Data are emission factors for year 1987 equipment.

(2) Compilation of Air Pollutant Emission Factors, AP-42, Volume I, Section 3.3 (EPA 1996).

(3) Compilation of Air Pollutant Emission Factors, AP-42, Volume I, Section 13.2.3 (EPA 1995). Units in pounds per acre-day.

Table F-14. Year 2002 Vehicle Mix Emission Factors.

Equipment Type	Fuel Type	Emission Factors (grams/mile)					References
		ROG	CO	NOx	SOx	PM10	
Light-duty auto - 15 mph	G	0.678	9.635	0.997	0.008	0.045	(1)
Light-duty auto - 35 mph	G	0.271	6.329	0.762	0.004	0.031	(1)
Light-duty auto - 65 mph	G	0.299	6.528	0.927	0.005	0.031	(1)
Light-duty auto - composite	G	0.349	6.944	0.896	0.005	0.033	(2)
Light-duty truck - 15 mph	G	0.767	12.752	1.479	0.010	0.054	(1)
Light-duty truck - 35 mph	G	0.322	8.182	1.131	0.005	0.034	(1)
Light-duty truck - 65 mph	G	0.366	9.527	1.422	0.007	0.035	(1)
Light-duty truck - composite	G	0.415	9.675	1.358	0.007	0.038	(2)
Heavy-duty truck - idle (grams/hour)	D	18.995	221.210	109.840	0.685	6.375	(1)
Heavy-duty truck - 5 mph	D	3.799	44.242	21.968	0.137	0.986	(1)
Heavy-duty truck - 15 mph	D	1.971	20.983	16.088	0.133	0.633	(1)
Heavy-duty truck - 25 mph	D	1.188	12.297	13.547	0.132	0.446	(1)
Heavy-duty truck - 55 mph	D	0.569	8.799	17.576	0.131	0.263	(1)
Heavy-duty truck - composite	D	1.208	14.990	17.228	0.132	0.417	(3)

Notes: (1) From EMFAC2002 (ARB 2002) for South Coast Air Basin. Units in grams/mile for annual average year 2002 vehicle mix at 60 degrees F and 50% humidity.

(2) Composite factor based on a typical round trip of 60% at 65 mph, 25% at 35 mph, and 15% at 15 mph.

(3) Composite factor based on a typical round trip of 60% at 55 mph, 25% at 25 mph, and 15% at 5 mph.

4. Daily Equipment Emissions

Table F-15. Daily Equipment Emissions from Construction of Seven Oaks Dam and Reservoir.

	Pounds Per Day					
Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	5.78	27.60	72.29	1.18	3.61	3.61
Compactors	1.28	6.11	16.01	0.26	0.80	0.80
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	0.95	4.56	11.93	0.20	0.60	0.60
Excavators	3.49	16.67	43.65	0.71	2.18	2.18
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	5.01	23.89	62.57	1.02	3.13	3.13
Loaders	7.54	25.14	68.10	0.94	4.40	4.40
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	3.61	17.63	47.29	0.77	2.28	2.28
Welders	5.55	15.08	20.81	0.54	2.29	2.29
Total	37.60	186.22	370.87	6.10	20.91	20.91
Total - Mitigated (1)	37.60	186.22	319.08	6.10	7.80	7.80

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-16. Daily Equipment Emissions from Construction of Plunge Pool Pipeline - Phase I.

	Pounds Per Day					
Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	3.86	18.40	48.19	0.79	2.41	2.41
Compactors	1.28	6.11	16.01	0.26	0.80	0.80
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavators	12.01	57.33	150.16	2.46	7.51	7.51
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	1.26	6.15	16.49	0.27	0.79	0.79
Loaders	14.17	47.24	127.94	1.77	8.27	8.27
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Portable Rock Screener	1.85	9.02	24.21	0.40	1.17	1.17
Pump	6.37	138.98	3.49	0.19	0.23	0.23
Street Sweeper	0.77	3.66	9.60	0.16	0.48	0.48
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	3.61	17.63	47.29	0.77	2.28	2.28
Welders	9.99	27.14	37.46	0.98	4.13	4.13
Total	64.81	405.13	571.93	9.52	32.93	32.93
Total - Mitigated (1)	64.81	405.13	492.49	9.52	12.40	12.40

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-17. Daily Equipment Emissions from Construction of Plunge Pool Pipeline - Phase II.

Equipment Type	*Pounds Per Day*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	3.86	18.40	48.19	0.79	2.41	2.41
Compactors	1.28	6.11	16.01	0.26	0.80	0.80
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavators	12.01	57.33	150.16	2.46	7.51	7.51
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	1.26	6.15	16.49	0.27	0.79	0.79
Loaders	14.17	47.24	127.94	1.77	8.27	8.27
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Portable Rock Screener	1.85	9.02	24.21	0.40	1.17	1.17
Pump	6.37	138.98	3.49	0.19	0.23	0.23
Street Sweeper	0.77	3.66	9.60	0.16	0.48	0.48
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	3.61	17.63	47.29	0.77	2.28	2.28
Welders	9.99	27.14	37.46	0.98	4.13	4.13
Total	64.81	405.13	571.93	9.52	32.93	32.93
Total - Mitigated (1)	64.81	405.13	492.49	9.52	12.40	12.40

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-18. Daily Equipment Emissions from Construction of Suspended Portion of Low Flow Connector - Phase III.

Equipment Type	*Pounds Per Day*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	3.86	18.40	48.19	0.79	2.41	2.41
Compactors	1.28	6.11	16.01	0.26	0.80	0.80
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavator	1.75	8.33	21.83	0.36	1.09	1.09
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	1.26	6.15	16.49	0.27	0.79	0.79
Loaders	5.03	16.76	45.40	0.63	2.93	2.93
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Portable Rock Screener	1.85	9.02	24.21	0.40	1.17	1.17
Pump	1.59	34.75	0.87	0.05	0.06	0.06
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	1.81	8.81	23.64	0.39	1.14	1.14
Welders	2.22	6.03	8.32	0.22	0.92	0.92
Total	30.28	187.83	296.07	4.83	16.18	16.18
Total - Mitigated (1)	30.28	187.83	254.88	4.83	6.08	6.08

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar 62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-19. Daily Equipment Emissions from Construction of Part 1 of Low Flow Connector - Phase III of Plunge Pool Pipeline.

Equipment Type	*Pounds Per Day*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	3.86	18.40	48.19	0.79	2.41	2.41
Compactors	1.28	6.11	16.01	0.26	0.80	0.80
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavators	12.01	57.33	150.16	2.46	7.51	7.51
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	1.26	6.15	16.49	0.27	0.79	0.79
Loaders	14.17	47.24	127.94	1.77	8.27	8.27
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Portable Rock Screener	1.85	9.02	24.21	0.40	1.17	1.17
Pump	1.59	34.75	0.87	0.05	0.06	0.06
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	1.81	8.81	23.64	0.39	1.14	1.14
Welders	6.66	18.10	24.97	0.65	2.75	2.75
Total	54.13	279.37	523.59	8.51	29.77	29.77
Total - Mitigated (1)	54.13	279.37	450.55	8.51	11.12	11.12

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar 62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-20. Daily Equipment Emissions from Construction of Part 2 of Low Flow Connector - Phase III of Plunge Pool Pipeline.

	Pounds Per Day					
Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	3.86	18.40	48.19	0.79	2.41	2.41
Compactors	1.28	6.11	16.01	0.26	0.80	0.80
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavators	1.75	8.33	21.83	0.36	1.09	1.09
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	1.26	6.15	16.49	0.27	0.79	0.79
Loaders	5.03	16.76	45.40	0.63	2.93	2.93
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Portable Rock Screener	1.85	9.02	24.21	0.40	1.17	1.17
Pump	1.59	34.75	0.87	0.05	0.06	0.06
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	1.81	8.81	23.64	0.39	1.14	1.14
Welders	2.22	6.03	8.32	0.22	0.92	0.92
Total	30.28	187.83	296.07	4.83	16.18	16.18
Total - Mitigated (1)	30.28	187.83	254.88	4.83	6.08	6.08

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-21. Daily Equipment Emissions from Construction of Plunge Pool Pipeline Intake Structure - Phase III.

	Pounds Per Day					
Equipment Type	*ROG*	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoe	1.93	9.20	24.10	0.39	1.20	1.20
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Crane	0.95	4.56	11.93	0.20	0.60	0.60
Excavator	1.75	8.33	21.83	0.36	1.09	1.09
Generator	0.90	19.65	0.49	0.03	0.03	0.03
Water Truck	1.81	8.81	23.64	0.39	1.14	1.14
Welders	2.22	6.03	8.32	0.22	0.92	0.92
Total	10.99	61.36	103.24	1.76	5.82	5.82
Total - Mitigated (1)	10.99	61.36	88.86	1.76	2.18	2.18

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-22. Daily Equipment Emissions from Construction of Morton Canyon Connector II.

Equipment Type	*Pounds Per Day*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	3.86	18.40	48.19	0.79	2.41	2.41
Compactors	1.28	6.11	16.01	0.26	0.80	0.80
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavators	1.75	8.33	21.83	0.36	1.09	1.09
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	1.26	6.15	16.49	0.27	0.79	0.79
Loaders	5.03	16.76	45.40	0.63	2.93	2.93
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Portable Rock Screener	1.85	9.02	24.21	0.40	1.17	1.17
Pump	1.59	34.75	0.87	0.05	0.06	0.06
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	1.81	8.81	23.64	0.39	1.14	1.14
Welders	2.22	6.03	8.32	0.22	0.92	0.92
Total	30.28	187.83	296.07	4.83	16.18	16.18
Total - Mitigated (1)	30.28	187.83	254.88	4.83	6.08	6.08

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-23. Daily Equipment Emissions from Construction of Devil Canyon Bypass.

Equipment Type	*Pounds Per Day*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	1.93	9.20	24.10	0.39	1.20	1.20
Compactors	0.64	3.06	8.00	0.13	0.40	0.40
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Cranes	0.95	4.56	11.93	0.20	0.60	0.60
Excavators	1.75	8.33	21.83	0.36	1.09	1.09
Generators	0.90	19.65	0.49	0.03	0.03	0.03
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	1.26	6.15	16.49	0.27	0.79	0.79
Loaders	2.51	8.38	22.70	0.31	1.47	1.47
Pump	1.59	34.75	0.87	0.05	0.06	0.06
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	1.81	8.81	23.64	0.39	1.14	1.14
Welders	2.22	6.03	8.32	0.22	0.92	0.92
Total	20.27	129.87	193.57	3.22	10.60	10.60
Total - Mitigated (1)	20.27	129.87	166.66	3.22	3.99	3.99

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-24. Daily Equipment Emissions from Construction of Lytle Creek Pipeline.

Equipment Type	*Pounds Per Day*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	1.93	9.20	24.10	0.39	1.20	1.20
Compactors	0.64	3.06	8.00	0.13	0.40	0.40
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavators	3.49	16.67	43.65	0.71	2.18	2.18
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	2.52	12.29	32.98	0.54	1.59	1.59
Loaders	2.51	8.38	22.70	0.31	1.47	1.47
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Pump	3.18	69.49	1.74	0.09	0.12	0.12
Street Sweeper	2.30	10.99	28.79	0.47	1.44	1.44
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	5.42	26.44	70.93	1.16	3.42	3.42
Welders	4.44	12.06	16.65	0.43	1.83	1.83
Total	36.08	242.05	340.66	5.73	18.52	18.52
Total - Mitigated (1)	36.08	242.05	293.35	5.73	6.99	6.99

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

Table F-25. Daily Equipment Emissions from Construction of Cactus Basins Pipeline.

Equipment Type	*Pounds Per Day*					
	ROG	*CO*	*NOx*	*SOx*	*PM*	*PM10*
Backhoes	1.93	9.20	24.10	0.39	1.20	1.20
Compactors	0.64	3.06	8.00	0.13	0.40	0.40
Compressor	1.06	3.54	9.60	0.13	0.62	0.62
Concrete Mixer	0.37	1.23	3.34	0.05	0.22	0.22
Cranes	1.91	9.11	23.86	0.39	1.19	1.19
Excavators	12.01	57.33	150.16	2.46	7.51	7.51
Generators	1.80	39.31	0.99	0.05	0.07	0.07
Grader	2.50	11.94	31.28	0.51	1.56	1.56
Hydraulic Ram	2.52	12.29	32.98	0.54	1.59	1.59
Loaders	7.09	23.62	63.97	0.89	4.13	4.13
Pavement Breaker	0.86	2.86	7.74	0.11	0.50	0.50
Pump	3.18	69.49	1.74	0.09	0.12	0.12
Street Sweeper	2.30	10.99	28.79	0.47	1.44	1.44
Vertical Auger Drill	1.15	5.47	14.32	0.23	0.72	0.72
Water Truck	5.42	26.44	70.93	1.16	3.42	3.42
Welders	4.44	12.06	16.65	0.43	1.83	1.83
Total	49.18	297.95	488.44	8.04	26.52	26.52
Total - Mitigated (1)	49.18	297.95	420.44	8.04	9.95	9.95

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent ar
62.9 percent, respectively, from conventional diesel (CARB 2001b).

5. Daily Vehicle Emissions

Table F-26. Daily Vehicle Emissions from Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas. (page 1 of 2)

	Pounds Per Day				
Construction Activity/Vehicle Type	*ROG*	*CO*	*NOx*	*SOx*	*PM10*
Seven Oaks - Dam and Access Roads					
Dump Trucks (offsite)	0.52	5.42	5.97	0.06	0.20
Employee Vehicles	1.04	22.72	3.08	0.02	0.10
Pickup Trucks	0.12	3.16	0.44	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	2.12	36.58	15.57	0.12	0.45
SAR - PPP Phase I					
Dump Trucks (onsite)	0.31	3.25	2.49	0.02	0.10
Dump Trucks (offsite) (1)	0.17	1.74	1.91	0.02	0.06
Employee Vehicles	1.08	23.45	3.18	0.02	0.10
Pickup Trucks	0.11	2.71	0.37	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	2.08	36.42	14.03	0.10	0.42
SAR - PPP Phase II					
Dump Trucks (onsite)	0.43	4.58	3.51	0.03	0.14
Dump Trucks (offsite) (1)	0.23	2.39	2.63	0.03	0.09
Employee Vehicles	1.38	30.04	4.07	0.02	0.13
Pickup Trucks	0.12	3.16	0.44	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	2.59	45.45	16.73	0.13	0.51
SAR - Suspended Portion of Low Flow					
Dump Trucks (onsite)	1.34	14.28	10.95	0.09	0.43
Dump Trucks (offsite) (1)	0.13	1.30	1.43	0.01	0.05
Employee Vehicles	0.61	13.19	1.79	0.01	0.06
Pickup Trucks	0.09	2.25	0.31	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	2.59	36.31	20.56	0.16	0.69
SAR - Part 1 of Low Flow/PPP Phase III					
Dump Trucks (onsite)	0.95	10.10	7.75	0.06	0.30
Dump Trucks (offsite) (1)	0.10	1.08	1.19	0.01	0.04
Employee Vehicles	0.98	21.25	2.88	0.02	0.09
Pickup Trucks	0.11	2.71	0.37	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	2.56	40.43	18.27	0.14	0.59
SAR - Part 2 of Low Flow/PPP Phase III					
Dump Trucks (onsite)	0.67	7.12	5.46	0.05	0.21
Dump Trucks (offsite) (1)	0.04	0.43	0.48	0.00	0.02
Employee Vehicles	0.61	13.19	1.79	0.01	0.06
Pickup Trucks	0.09	2.25	0.31	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	1.83	28.29	14.11	0.11	0.44

Table F-26. Daily Vehicle Emissions from Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas. (page 2 of 2)

	Pounds Per Day				
Construction Activity/Vehicle Type	*ROG*	*CO*	*NOx*	*SOx*	*PM10*
SAR - PPP Intake Structure					
Employee Vehicles	0.44	9.53	1.29	0.01	0.04
Pickup Trucks	0.09	2.25	0.31	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	0.95	17.07	7.68	0.05	0.20
SAR - Morton Canyon Connector II					
Dump Trucks (onsite)	0.06	0.60	0.46	0.00	0.02
Dump Trucks (offsite) (1)	0.04	0.43	0.48	0.00	0.02
Employee Vehicles	0.74	16.12	2.19	0.01	0.07
Pickup Trucks	0.09	2.25	0.31	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	1.35	24.69	9.51	0.07	0.26
Devil Canyon Bypass					
Dump Trucks (onsite)	0.03	0.35	0.27	0.00	0.01
Dump Trucks (offsite) (1)	0.19	1.95	2.15	0.02	0.07
Employee Vehicles	0.51	10.99	1.49	0.01	0.05
Pickup Trucks	0.07	1.80	0.25	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	1.22	20.38	10.24	0.08	0.28
Lower Lytle Creek Pipeline					
Dump Trucks (onsite)	0.05	0.50	0.38	0.00	0.02
Dump Trucks (offsite) (1)	0.19	1.95	2.15	0.02	0.07
Employee Vehicles	0.51	10.99	1.49	0.01	0.05
Pickup Trucks	0.07	1.80	0.25	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	1.24	20.53	10.35	0.08	0.29
Cactus Basins Pipeline					
Dump Trucks (onsite)	0.75	7.96	6.10	0.05	0.24
Dump Trucks (offsite) (1)	0.10	1.08	1.19	0.01	0.04
Employee Vehicles	0.81	17.59	2.39	0.01	0.07
Pickup Trucks	0.07	1.80	0.25	0.00	0.01
Delivery Trucks	0.43	5.29	6.08	0.05	0.15
Total	2.16	33.72	16.01	0.12	0.51

Notes: (1) These trips required only if onsite rock is insufficient or unsuitable in size.

6. Total Daily Emissions

Table F-27. Total Daily Emissions Associated with Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas. (page 1 of 2)

	Pounds Per Day				
Segment/Emissions Source	*ROG*	*CO*	*NOx*	*SOx*	*PM10*
Seven Oaks - Dam and Access Roads					
Pipeline Construction Equipment	37.60	186.22	370.87	6.10	20.91
Vehicles	2.12	36.58	15.57	0.12	0.45
Total	39.72	222.80	386.43	6.23	21.36
SAR - PPP Phase I					
Pipeline Construction Equipment	64.81	405.13	571.93	9.52	32.93
Vehicles	2.08	36.42	14.03	0.10	0.42
Total	66.90	441.55	585.97	9.62	33.35
SAR - PPP Phase II					
Pipeline Construction Equipment	64.81	405.13	571.93	9.52	32.93
Vehicles	2.59	45.45	16.73	0.13	0.51
Total	67.40	450.58	588.66	9.64	33.45
SAR - Suspended Portion of Low Flow					
Pipeline Construction Equipment	30.28	187.83	296.07	4.83	16.18
Vehicles	2.59	36.31	20.56	0.16	0.69
Total	32.87	224.14	316.63	4.99	16.87
SAR - Part 1 of Low Flow/PPP Phase III					
Pipeline Construction Equipment	54.13	279.37	523.59	8.51	29.77
Vehicles	2.56	40.43	18.27	0.14	0.59
Total	56.70	319.80	541.87	8.65	30.36
SAR - Part 2 of Low Flow/PPP Phase III					
Pipeline Construction Equipment	30.28	187.83	296.07	4.83	16.18
Vehicles	1.83	28.29	14.11	0.11	0.44
Total	32.12	216.11	310.19	4.94	16.63

Table F-27. Total Daily Emissions Associated with Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas. (page 2 of 2)

	Pounds Per Day				
Segment/Emissions Source	*ROG*	*CO*	*NOx*	*SOx*	*PM10*
SAR - PPP Intake Structure					
Intake Structure Construction Equip	10.99	61.36	103.24	1.76	5.82
Vehicles	0.95	17.07	7.68	0.05	0.20
Total	11.94	78.43	110.92	1.81	6.01
SAR - Morton Canyon Connector II					
Pipeline Construction Equipment	30.28	187.83	296.07	4.83	16.18
Vehicles	1.35	24.69	9.51	0.07	0.26
Total	31.64	212.52	305.58	4.90	16.44
Devil Canyon Bypass					
Pipeline Construction Equipment	20.27	129.87	193.57	3.22	10.60
Vehicles	1.22	20.38	10.24	0.08	0.28
Total	21.49	150.25	203.81	3.30	10.88
Lower Lytle Creek Pipeline					
Pipeline Construction Equipment	36.08	242.05	340.66	5.73	18.52
Vehicles	1.24	20.53	10.35	0.08	0.29
Total	37.32	262.58	351.01	5.81	18.81
Cactus Basins Pipeline					
Pipeline Construction Equipment	49.18	297.95	488.44	8.04	26.52
Vehicles	2.16	33.72	16.01	0.12	0.51
Total	51.33	331.67	504.45	8.17	27.02
Maximum Daily Emissions (1)	296.11	1,937.87	2,731.25	44.58	150.89
Maximum Daily - Mitigated (2)	296.11	1,937.87	2,363.97	44.58	58.37

Notes: (1) Maximum daily emissions occur in Spring of year 1 during concurrent construction of Intake Tow Access Road, Plunge Pool Pipeline - Phase I, Plunge Pool Pipeline - Phase II, Intake Structure, Devil Canyon Bypass, Lower Lytle Creek Pipeline, and Cactus Basin Pipeline.

(2) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by and 62.9 percent, respectively, from conventional diesel (CARB 2001b).

7. Total Emissions

Table F-28. Total Emissions Associated with Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas (page 1 of 2)

Segment	Total Days	Tons ROG	CO	NOx	SOx	PM10
Seven Oaks - Dam and Access Roads						
Pipeline Construction Equipment	348	6.54	32.40	64.53	1.06	3.64
Dump Trucks (offsite)	25	0.01	0.07	0.07	0.00	0.00
Employee Vehicles	348	0.18	3.95	0.54	0.00	0.02
Pickup Trucks	348	0.02	0.55	0.08	0.00	0.00
Delivery Trucks	10	0.00	0.03	0.03	0.00	0.00
Subtotal		6.75	37.00	65.25	1.07	3.66
Subtotal - Mitigated (1)		6.75	37.00	56.24	1.07	1.38
SAR - PPP Phase I						
Pipeline Construction Equipment	288	9.33	58.34	82.36	1.37	4.74
Dump Trucks (onsite)	9	0.00	0.01	0.01	0.00	0.00
Dump Trucks (offsite)	13	0.00	0.01	0.01	0.00	0.00
Employee Vehicles	288	0.16	3.38	0.46	0.00	0.01
Pickup Trucks	288	0.02	0.39	0.05	0.00	0.00
Delivery Trucks	2	0.00	0.01	0.01	0.00	0.00
Subtotal		9.51	62.14	82.90	1.37	4.76
Subtotal - Mitigated (1)		9.51	62.14	71.46	1.37	1.80
SAR - PPP Phase II						
Pipeline Construction Equipment	456	14.78	92.37	130.40	2.17	7.51
Dump Trucks (onsite)	156	0.03	0.36	0.27	0.00	0.01
Dump Trucks (offsite)	236	0.03	0.28	0.31	0.00	0.01
Employee Vehicles	456	0.31	6.85	0.93	0.01	0.03
Pickup Trucks	456	0.03	0.72	0.10	0.00	0.00
Delivery Trucks	30	0.01	0.08	0.09	0.00	0.00
Subtotal		15.19	100.66	132.10	2.18	7.56
Subtotal - Mitigated (1)		15.19	100.66	113.99	2.18	2.88
SAR - Suspended Portion of Low Flow						
Pipeline Construction Equipment	48	0.73	4.51	7.11	0.12	0.39
Dump Trucks (onsite)	3	0.00	0.02	0.02	0.00	0.00
Dump Trucks (offsite)	5	0.00	0.00	0.00	0.00	0.00
Employee Vehicles	48	0.01	0.32	0.04	0.00	0.00
Pickup Trucks	48	0.00	0.05	0.01	0.00	0.00
Delivery Trucks	1	0.00	0.00	0.00	0.00	0.00
Subtotal		0.75	4.91	7.18	0.12	0.39
Subtotal - Mitigated (1)		0.75	4.91	6.19	0.12	0.15
SAR - Part 1 of Low Flow/PPP Phase III						
Pipeline Construction Equipment	144	3.90	20.11	37.70	0.61	2.14
Dump Trucks (onsite)	62	0.03	0.31	0.24	0.00	0.01
Dump Trucks (offsite)	97	0.01	0.05	0.06	0.00	0.00
Employee Vehicles	144	0.07	1.53	0.21	0.00	0.01
Pickup Trucks	144	0.01	0.19	0.03	0.00	0.00
Delivery Trucks	4	0.00	0.01	0.01	0.00	0.00
Subtotal		4.01	22.22	38.24	0.62	2.16
Subtotal - Mitigated (1)		4.01	22.22	32.98	0.62	0.82
SAR - Part 2 of Low Flow/PPP Phase III						
Pipeline Construction Equipment	24	0.36	2.25	3.55	0.06	0.19
Dump Trucks (onsite)	7	0.00	0.02	0.02	0.00	0.00
Dump Trucks (offsite)	11	0.00	0.00	0.00	0.00	0.00
Employee Vehicles	24	0.01	0.16	0.02	0.00	0.00
Pickup Trucks	24	0.00	0.03	0.00	0.00	0.00
Delivery Trucks	1	0.00	0.00	0.00	0.00	0.00
Subtotal		0.37	2.47	3.60	0.06	0.20
Subtotal - Mitigated (1)		0.37	2.47	3.11	0.06	0.07

Table F-28. Total Emissions Associated with Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas (page 2 of 2)

Segment	Total Days	Tons ROG	CO	NOx	SOx	PM10
SAR - PPP Intake Structure						
Intake Structure Construction Equip	168	0.92	5.15	8.67	0.15	0.49
Employee Vehicles	168	0.04	0.80	0.11	0.00	0.00
Pickup Trucks	168	0.01	0.19	0.03	0.00	0.00
Delivery Trucks	4	0.00	0.01	0.01	0.00	0.00
Subtotal		0.97	85.12	134.80	2.29	6.25
Subtotal - Mitigated (1)		0.97	85.12	133.59	2.29	5.95
SAR - Morton Canyon Connector II						
Pipeline Construction Equipment	72	1.09	6.76	10.66	0.17	0.58
Dump Trucks (onsite)	21	0.00	0.01	0.00	0.00	0.00
Dump Trucks (offsite)	34	0.00	0.01	0.01	0.00	0.00
Employee Vehicles	72	0.03	0.58	0.08	0.00	0.00
Pickup Trucks	72	0.00	0.08	0.01	0.00	0.00
Delivery Trucks	3	0.00	0.01	0.01	0.00	0.00
Subtotal		1.12	7.44	10.77	0.17	0.59
Subtotal - Mitigated (1)		1.12	7.44	9.29	0.17	0.22
Devil Canyon Bypass						
Pipeline Construction Equipment	96	0.97	6.23	9.29	0.15	0.51
Dump Trucks (onsite)	9	0.00	0.00	0.00	0.00	0.00
Dump Trucks (offsite)	15	0.00	0.01	0.02	0.00	0.00
Employee Vehicles	96	0.02	0.53	0.07	0.00	0.00
Pickup Trucks	96	0.00	0.09	0.01	0.00	0.00
Delivery Trucks	1	0.00	0.00	0.00	0.00	0.00
Subtotal		1.00	6.87	9.40	0.16	0.51
Subtotal - Mitigated (1)		1.00	6.87	8.10	0.16	0.19
Lower Lytle Creek Pipeline						
Pipeline Construction Equipment	120	2.17	14.52	20.44	0.34	1.11
Dump Trucks (onsite)	32	0.00	0.01	0.01	0.00	0.00
Dump Trucks (offsite)	52	0.00	0.05	0.06	0.00	0.00
Employee Vehicles	120	0.03	0.66	0.09	0.00	0.00
Pickup Trucks	120	0.00	0.11	0.01	0.00	0.00
Delivery Trucks	4	0.00	0.01	0.01	0.00	0.00
Subtotal		2.21	15.36	20.62	0.35	1.12
Subtotal - Mitigated (1)		2.21	15.36	17.78	0.35	0.42
Cactus Basins Pipeline						
Pipeline Construction Equipment	480	11.80	71.51	117.23	1.93	6.36
Dump Trucks (onsite)	147	0.05	0.58	0.45	0.00	0.02
Dump Trucks (offsite)	238	0.01	0.13	0.14	0.00	0.00
Employee Vehicles	480	0.19	4.22	0.57	0.00	0.02
Pickup Trucks	480	0.02	0.43	0.06	0.00	0.00
Delivery Trucks	12	0.00	0.03	0.04	0.00	0.00
Subtotal		12.08	76.91	118.48	1.94	6.41
Subtotal - Mitigated (1)		12.08	76.91	102.16	1.94	2.43
Total Project Emissions		53.96	421.08	623.34	10.32	33.61
Total Project Emissions - Mitigated (1)		53.96	421.08	554.89	10.32	16.33

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent and 62.9 percent, respectively, from conventional diesel (CARB 2001b).

8. Quarterly Emissions

Table F-29. Quarterly Emissions Associated with Construction in Seven Oaks, SAR, Devil Canyon, and Lytle Creek Areas (page 2 of 2)

Segment	Total Days	Tons ROG	CO	NOx	SOx	PM10
SAR - PPP Intake Structure						
Intake Structure Construction Equip	72	0.40	2.21	3.72	0.06	0.21
Employee Vehicles	72	0.02	0.34	0.05	0.00	0.00
Pickup Trucks	72	0.00	0.08	0.01	0.00	0.00
Delivery Trucks	4	0.00	0.01	0.01	0.00	0.00
Subtotal		0.42	2.64	3.79	0.06	0.21
Subtotal - Mitigated (1)		0.42	2.64	3.27	0.06	0.08
SAR - Morton Canyon Connector II						
Pipeline Construction Equipment	72	1.09	6.76	10.66	0.17	0.58
Dump Trucks (onsite)	21	0.00	0.01	0.00	0.00	0.00
Dump Trucks (offsite)	34	0.00	0.01	0.01	0.00	0.00
Employee Vehicles	72	0.03	0.58	0.08	0.00	0.00
Pickup Trucks	72	0.00	0.08	0.01	0.00	0.00
Delivery Trucks	3	0.00	0.01	0.01	0.00	0.00
Subtotal		1.12	7.44	10.77	0.17	0.59
Subtotal - Mitigated (1)		1.12	7.44	9.28	0.17	0.22
Devil Canyon Bypass						
Pipeline Construction Equipment	72	0.73	4.68	6.97	0.12	0.38
Dump Trucks (onsite)	9	0.00	0.00	0.00	0.00	0.00
Dump Trucks (offsite)	15	0.00	0.01	0.02	0.00	0.00
Employee Vehicles	72	0.02	0.40	0.05	0.00	0.00
Pickup Trucks	72	0.00	0.06	0.01	0.00	0.00
Delivery Trucks	1	0.00	0.00	0.00	0.00	0.00
Subtotal		0.75	5.15	7.05	0.12	0.38
Subtotal - Mitigated (1)		0.75	5.15	6.08	0.12	0.14
Lower Lytle Creek Pipeline						
Pipeline Construction Equipment	72	1.30	8.71	12.26	0.21	0.67
Dump Trucks (onsite)	32	0.00	0.01	0.01	0.00	0.00
Dump Trucks (offsite)	52	0.00	0.05	0.06	0.00	0.00
Employee Vehicles	72	0.02	0.40	0.05	0.00	0.00
Pickup Trucks	72	0.00	0.06	0.01	0.00	0.00
Delivery Trucks	4	0.00	0.01	0.01	0.00	0.00
Subtotal		1.33	9.24	12.40	0.21	0.67
Subtotal - Mitigated (1)		1.33	9.24	10.68	0.21	0.25
Cactus Basins Pipeline						
Pipeline Construction Equipment	72	1.77	10.73	17.58	0.29	0.95
Dump Trucks (onsite)	72	0.03	0.29	0.22	0.00	0.01
Dump Trucks (offsite)	72	0.00	0.04	0.04	0.00	0.00
Employee Vehicles	72	0.03	0.63	0.09	0.00	0.00
Pickup Trucks	72	0.00	0.06	0.01	0.00	0.00
Delivery Trucks	12	0.00	0.03	0.04	0.00	0.00
Subtotal		1.84	11.78	17.98	0.29	0.97
Subtotal - Mitigated (1)		1.84	11.78	15.52	0.29	0.37
Maximum Quarterly Emissions (2)		9.59	61.70	87.78	1.44	4.91
Maximum Quarterly Emissions - Mitigated (1), (2)		9.59	61.70	75.69	1.44	1.85

Note: (1) Use of alternative diesel fuel in construction equipment would reduce NOx and PM emissions by 14 percent and 62.9 percent, respectively, from conventional diesel (CARB 2001b).

(2) Maximum quarterly emissions would occur during the Spring of construction year 1. The Intake Tower Access Road, Plunge Pool Pipeline - Phase I, Plunge Pool Pipeline - Phase II, Intake Structure, Devil Canyon Bypass (one month only), Lower Lytle Creek Pipeline (two months only), and Cactus Basins Pipeline would be under construction during this period.