

**FORT IRWIN
GENERAL CONFORMITY REQUIREMENTS
LAND ACQUISITION PROJECT**

Prepared for

Charis Corporation

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LIST OF ABBREVIATIONS

Act	Clean Air Act
alt	Alternative
base camp	Division Support Area
BLM	Bureau of Land Management
BLUFOR	Blue Force (training force)
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CO	Carbon monoxide
eng.	Engineering
EPA	US Environmental Protection Agency
equip	Equipment
Fort Irwin	Fort Irwin National Training Center
FORTRAN	Formula translator
GVW	Gross vehicle weight
HC	Hydrocarbons
HDDV	Heavy heavy-duty diesel vehicle
HMMWV	High mobility multipurpose wheeled vehicle
HR	Heavy rotation
HT	Heavy tracked
HW	Heavy wheeled
lb	Pound
LDDT	Light-duty diesel-powered trucks
LR	Light rotation
LT	Light tracked
LW	Light wheeled
MDAQMD	Mojave Desert Air Quality Management District
NAAQS	National Ambient Air Quality Standards
NO _x	Oxides of nitrogen
NTC	National Training Center
O ₃	Ozone
OHV	Off-highway vehicles
OPFOR	Opposition Force (practice force)
OPSGRP	Observation Group
PM-10	Particulate matter of less than 10 microns in diameter
RSOI	Reception, Staging, Onward Movement, and Integration
SIP	State Implementation Plan
SO ₂	Sulfur dioxide
UTM	Universal transverse mercator
VMT	Vehicle miles traveled
VOC	Volatile organic compounds

EXECUTIVE SUMMARY

Fort Irwin acquired approximately 134,592 acres of land from the Bureau of Land Management (BLM) and other entities, which adds approximately five kilometers of width and eight kilometers of length to its maneuverable area. As a federal action, the land acquisition and subsequent operations were potentially subject to the General conformity requirements of the Clean Air Act Amendments of 1990 (Title 1). This report details the procedure that Fort Irwin National Training Center (Fort Irwin) followed to address the General conformity issue.

The US Environmental Protection Agency (EPA) issued General Conformity Guidance in November 1993 with further clarification in July 1994. The guidance document described methods for federal agencies to follow to either demonstrate conformity or to show that the federal action is exempt from the conformity demonstration requirement.

Based on EPA guidance:

- The Fort Irwin land acquisition itself is exempt from conformity requirements [§51.853(c)(2)(xx)]. §51.853(c)(2)(xx) exempts from conformity determinations transfers of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity for subsequent deeding as long as those actions do not result in an increase in emissions or have an increase in emissions that is clearly de minimis.
- Operations occurring after the land acquisition are also exempt [§51.853(c)(1)]. §51.853(c)(1) exempts conformity determinations for actions where the total of direct and indirect emissions are below the emissions levels specified.

As indicated above, section §51.853(c)(1) exempts actions where the total of direct and indirect criteria emissions are below the specified threshold. All of the Mojave Desert area is in non-attainment for state and federal particulate matter less than 10 microns in diameter (PM-10) ambient air quality standards. The region below the 90 Universal Transverse Mercator (UTM) gridline south of the current Fort Irwin maneuverable acres is non-attainment for ozone (O₃). The expansion includes a limited amount of land and operations below the 90 UTM gridline. Ozone is not generated directly by operations at Fort Irwin, but formed from the precursors, oxides of nitrogen (NO_x) and volatile organic compounds (VOCs). General Conformity Guidance thresholds for criteria pollutants are 100 tons/year for PM-10 and 25 tons/year of NO_x and 25 tons/year of VOC for the area specific to Fort Irwin. Estimates of particulate emissions from vehicle exhaust, fugitive dust caused by vehicle travel, and wind erosion after the land acquisition action, are below the PM-10 threshold. Additionally, the projected VOC and NO_x emission estimates are below the O₃ precursor thresholds. Therefore, the action is exempt from demonstrating conformity. This report presents the calculations and conclusions.

SECTION 1

INTRODUCTION

1.1 Legislative Background

The Clean Air Act (Act) requires EPA to promulgate rules that ensure federal actions conform to the appropriate State Implementation Plan (SIP). These rules are codified in 40 CFR parts 6, 51, and 93. Conformity is defined as being consistent with the SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of such standards.

The Federal agency responsible for the proposed action is required to determine if its actions conform to the applicable SIP. If the action involves the Federal Highway Administration or Federal Transit Authority, it falls under Transportation Conformity rules. All other federal actions, such as the Fort Irwin land acquisition project, fall under General Conformity rules.

In the case of Fort Irwin, conformity with the SIP demonstrates that the land acquisition project will not impede the progress of the Mojave Desert Air Quality Management District's (MDAQMD) plan to achieve ozone (O₃) or particulate matter less than 10 microns in diameter (PM-10) attainment. In the attainment areas, it is not necessary to demonstrate conformity unless the area is within 85 percent of the NAAQS or designated as a "maintenance area." In discussions with the MDAQMD, MDAQMD stated that there were no designated "maintenance areas" within their jurisdiction. Therefore, only PM-10 and ozone were of concern.

Exclusion of Fort Irwin from the non-attainment area is contingent upon two actions: (1) perimeter PM-10 monitoring around each facility to demonstrate that each facility does not cause or contribute to NAAQS exceedances, and (2) coarse PM-10 dispersion modeling to demonstrate that each facility cannot cause or contribute to PM-10 NAAQS exceedances under worst-case meteorological conditions.

PM-10 monitoring is ongoing at Fort Irwin. A monitoring network began operation in October 1994 with three sites (central, southern, and western). Since that time, several northern and eastern sites have been added to the network for a total of ten sites.

1.2 Description of Operations

Parsons worked with Charis Corporation staff at Fort Irwin to determine the order of magnitude change in emissions of current versus post-land acquisition activities. The Army conducts a 14-day rotational training schedule including five days of preparation; ten times throughout the year. This training schedule includes tracked and wheeled vehicles and armored and mechanized forces.

1.3 Existing Operations

Under existing operations, the 14-day rotation is split between force-on-force operations (eight days) and live-fire operations (six days). Prior to training exercises, a Division Support Area (base camp) is established over a five day period in the vicinity of the rotational activity. By establishing the base camp in the vicinity of the rotational activity instead of the cantonment area, repeated trips to the cantonment area will be eliminated. Establishing the base camp is represented by the Reception, Staging, Onward Movement, and Integration (RSOI) days 1 through 5. Operations are on a “brigade” level. These operations are initiated at the cantonment area and operated in the center of the reservation (see Figure 1). Supply convoys travel back and forth to the cantonment area periodically throughout the rotational schedule for supplies.

1.4 Land Acquisition

Under the land acquisition, brigade operations will take place all 14 days with force-on-force occurring on days 1 to 8 and live-fire on days 9 to 14. Each rotation will included the 5 day RSOI.

1.5 Report Objectives

The objective of this report is to determine the effect on PM-10 and O₃, as determined by the O₃ precursors volatile organic compounds (VOC) and oxides of nitrogen (NO_x) emissions in the non-attainment area after the land acquisition is complete. If post-land acquisition emissions are below the specified threshold (100 tons/year for PM-10; 25 tons/year for VOC's and NO_x for O₃), then a conformity determination is not required.

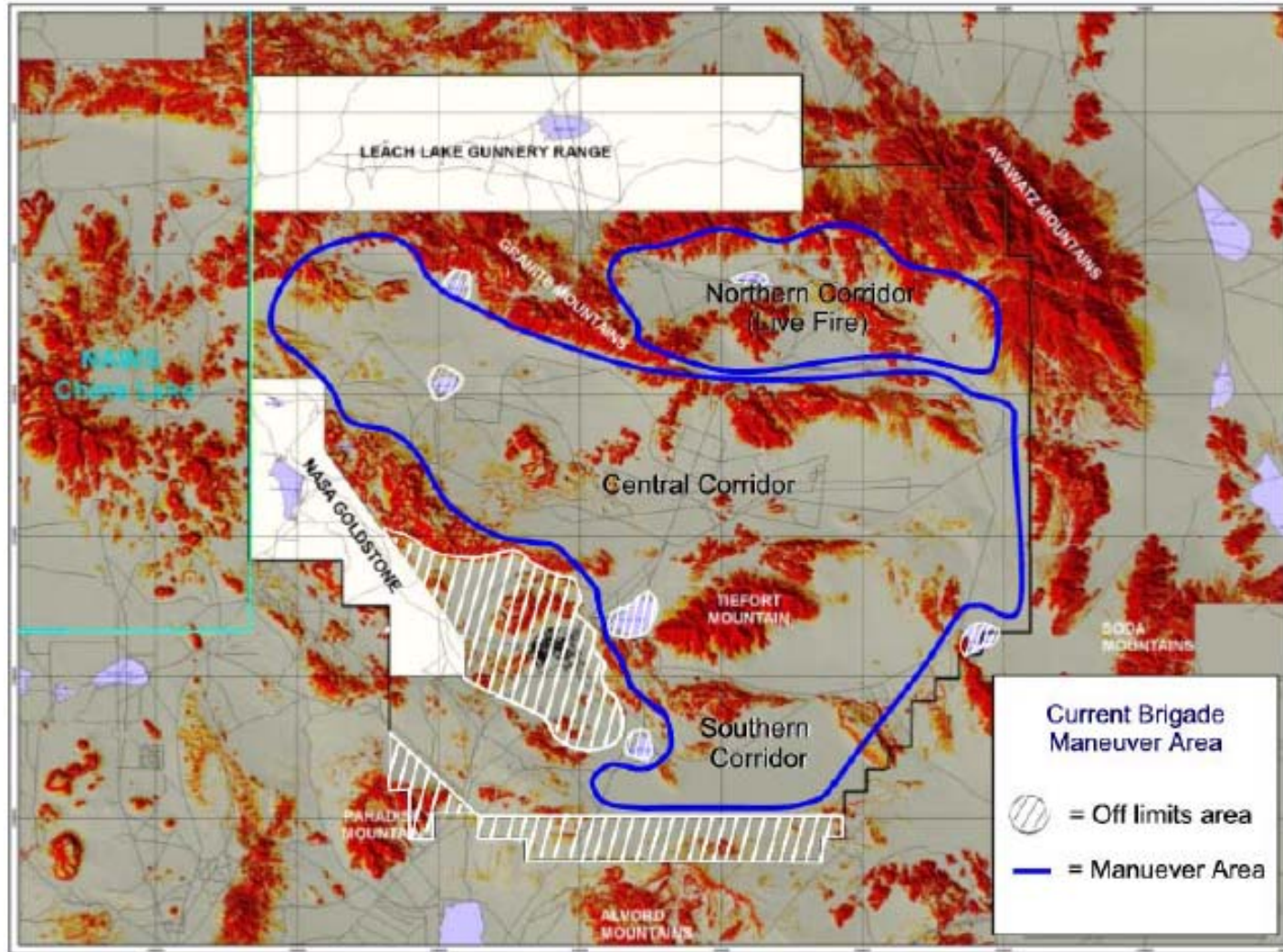


Figure 1
Cantonment and Operation Area

SECTION 2

GENERAL CONFORMITY REQUIREMENTS

2.1 Conformity Demonstrations

Unless a federal action is exempt from the conformity process, it must demonstrate that its actions conform to the applicable SIP. This conformity determination procedure is detailed in §51.859 (40 CFR Part 51). The requirements are:

- Required analyses must be based on the latest planning assumptions.
- Required analyses must be based on the latest emission estimation techniques.
- The air quality analyses must be based on the applicable air quality models, databases, and other requirements of the “Guideline on Air Quality Models (Revised)”.
- Required analyses must be based on the total of direct and indirect emissions from the action.

In addition, actions required to issue a conformity determination must list mitigation measures and go through the public notice process. Exempt actions are not required to go through this process.

2.2 Exemptions from Conformity Requirements

Federal actions are not subject to a conformity determination as defined in §51.853 if they meet the requirements of paragraphs (c)(1) and (c)(2).

Paragraph (c)(1) states that the requirements of subpart §51.853 do not apply to actions where the total of direct and indirect emissions are below the emissions levels specified in paragraph (b). Paragraph (b) lists the maximum increase in PM-10 emissions at 100 tons/year for moderate non-attainment areas. For severe O₃ nonattainment areas, the maximum increase in emissions for both NO_x and VOC is 25 tons/year.

Paragraph (c)(2) states that the requirements of subpart §51.853 do not apply to actions that would not result in either an emissions increase or in an emissions increase that is clearly de minimis.

Examples of these types of exempt actions are:

- Transfers of real property from one federal entity to another. [§51.853(c)(2)(xx)]
- Routine operation of facilities, mobile assets, and equipment. [§51.853(c)(2)(xiii)]
- Continuing and recurring activities where such activities will be similar in scope and operation to activities currently being conducted. [§51.853(c)(2)(ii)]

- Projects subject to non-attainment new source review (NSR) or prevention of significant deterioration. [§51.853(c)(4)(d)(1)]

2.3 Below Certain Threshold Levels

Even though these exemptions exist and apply to Fort Irwin (e.g., land transfer, continuing and recurring activities, routine operation of facilities), EPA has the authority to evaluate whether the activity should indeed be exempt. Therefore, Fort Irwin decided to proceed as if there were no exemptions and determine if the projected emissions increase (if any) was de minimis.

SECTION 3

EMISSION CALCULATIONS

3.1 Methodology

Three major sources generate PM-10 emissions at Fort Irwin. These sources include dust generated by vehicle miles traveled (VMT) by equipment (e.g., tanks, trucks, etc.) over desert and road surfaces for the purpose of military training and maneuvering, exhaust emissions associated with the vehicles, and wind erosion of desert surfaces disturbed by the vehicles. To understand overall PM-10 emissions, discussion of each of the PM-10 emissions sources will be described in depth in the latter part of this section. The discussion includes:

- Calculation methods
- Total calculated emissions
- Impact of these emissions relative to the conformity determination threshold
- A comparison between existing deployment activities and post-land acquisition activities

Indirect emissions were not calculated because no increase in equipment or personnel is expected after the land acquisition. In addition, aviation and earthmoving emissions were not calculated, because no change in takeoffs, landings, number of aircraft, number of earthmoving equipment or earth moved would be anticipated after the land acquisition.

Direct emissions were calculated, even though equipment or personnel did not increase, because parts of rotation maneuver locations changed.

3.2 Vehicle Fugitive Dust PM-10 Emissions

The post-land acquisition area originally belonged primarily to the Bureau of Land Management (BLM). The acquired land is likely to be disturbed, based on the information in the MDAQMD *Final Mojave Desert Planning Area Federal Particulate Matter (PM-10) Attainment Plan* (MDAQMD, PM-10 Attainment Plan, 1995). The plan states that vehicle activity on BLM lands in 1990 generated 10 percent of the total PM-10 emissions for the entire MDAQMD planning area. The emissions were estimated from vehicle miles traveled on BLM land, which included casual vehicle use and specific vehicle use, such as racecars, and off-highway vehicle (OHV) area use. Even though the plan forecasts activity on BLM lands to increase proportionally with the planning area population, lands previously owned by the BLM in the acquisition area will no longer be available for public use.

Vehicles miles traveled over paved and unpaved surfaces contribute a substantial amount of PM-10 emissions at Fort Irwin. The Strategic Planning Office (SPO) at Fort Irwin provided information to quantitatively estimate the VMT per rotation by training type, training day, unit type and equipment type (SPO, Excel, 2001a-1). The SPO provided two training types: heavy rotation and light rotation. Large volumes of vehicles and large ratios of heavy vehicles to lighter vehicles characterize heavy rotations. Fewer vehicles, a higher proportion of light vehicles to heavy vehicles, and a larger number of foot soldiers characterize light rotations. For conformity

purposes all analyses were assumed to be heavy rotations, because larger vehicle volume and size would generate more emissions. As described before, each rotation consists of 14 training days with a five day RSOI, and includes three units of BLUEFOR, OPFOR and OPSGRP. BLUEFOR identifies the unit trained. OPFOR represents the enemy during training exercises. OPSGRP identifies the soldiers that observe and control the training exercise. Both BLUEFOR and OPFOR units comprise a maneuver and a support group. The maneuver group involves vehicles actively engaging the opposing unit, and the support group involves vehicles required to sustain soldiers in the maneuver group (i.e., move personnel, ammunitions, repair parts). The SPO defined vehicle types by four weight classes: heavy tracked, heavy wheeled, light tracked, and light wheeled.

- Heavy tracked – tracked vehicles weighing at least 16 tons
- Heavy wheeled – wheeled vehicles weighing more than 4 tons
- Light tracked – tracked vehicles weighing less than 16 tons
- Light wheeled - wheeled vehicles weighing less than 4 tons

Each training day starts at midnight and lasts for a time period of 24 hours.

Since the weight classes comprise multiple vehicle types, specific vehicle weights for each vehicle type were determined. Vehicle descriptions provided by the SPO were compared with vehicle descriptions and vehicle weights used in the 1996 Conformity Report issued by AVES (AVES, General Conformity, 1996). As a result, an average vehicle weight for each weight class was developed. Table 1 presents AVES vehicle list with corresponding vehicle weights and Charis vehicle descriptions. Table 2 presents the average vehicle weights estimated for each vehicle category.

Table 1
1996 Fort Irwin General Conformity Vehicle List

1996 Fort Irwin General Conformity Report Description	SPO Description	1996 Fort Irwin General Conformity Report Vehicle Weight, tons
Tracked (M113 FOV)	Light Tracked (LT) < 15 tons	13
Tracked (Eng. Equip.)	Light Tracked (LT) < 15 tons	13
Tracked (M109)	Heavy Tracked (HT) > 16 tons	32
Tracked (M2AO)	Heavy Tracked (HT) > 16 tons	33
Tracked (M578/M88)	Heavy Tracked (HT) > 16 tons	37
Tracked (M1A1)	Heavy Tracked (HT) > 16 tons	67
Wheeled (M998)	Light Wheeled (LW) < 4 tons	2
Wheeled (2.5 ton)	Heavy Wheeled (HW) > HMMV	7
Tractor (10 ton)	Heavy Wheeled > HMMWV	10
Wheeled (5 ton)	Heavy Wheeled > HMMWV	11
Wheeled (HEMTT)	Heavy Wheeled > HMMWV	19

Sources: AVES, General Conformity Requirements Land Acquisition Project, Fort Irwin National Training Center, Fort Irwin California, 1996

Charis, Glossary, HR Alternative 1.ppt, 2002

Table 2
Average Vehicle Weight by Vehicle Category

SPO Description	Average Weight Based on 1996 Fort Irwin General Conformity Report Weights, tons
Light Tracked (LT) < 15 tons	13
Heavy Tracked (HT) > 16 tons	42
Light Wheeled (LW) < 4 tons	2
Heavy Wheeled > HMMV	12

Table 3
1996 Fort Irwin General Conformity Report Silt Content

Road Type	Silt Content (%)
Dirt Road	16
Desert	6

Road types were developed from information provided by the SPO (SPO, PowerPoint, 2001a-l). Where data were unclear or unavailable, default road types were used. Paved roads were the default road type for support groups; desert was set as the default road type for maneuver groups and OPSGRP (Charis, Re: Roads vs. Desert, 2002). Average silt content for dirt roads and desert are listed in Table 3 (AVES, *General Conformity*, 1996).

3.2.1 Existing Operations

Figure 2 illustrates the travel routes currently used for deployment activities. The base camp (not shown) is approximately 20 square kilometers. From this base camp, deployment activities would branch out and extend generally along the routes outlined on Figure 1. BLUFOR, OPFOR and OPSGRP operations can travel anywhere in this area except those areas that are off-limits to military maneuvers, which include dry lake beds, slopes greater than 20 percent, and areas occupied by endangered habitats.

Existing total VMT (sum of BLUFOR, OPFOR and OPSGRP) during deployment activities are 1,010,381 vehicle-miles per a 14-day rotation with a five day RSOI. VMT per day for the existing rotation is illustrated in Table 4.

To calculate the fugitive emissions associated with travel during deployment activity, Parsons used the tables and equations in EPA, AP-42, Section 13.2.2 for unpaved roads. Table 5 presents the total emissions from existing maneuvering activities. For a more detailed explanation of emissions per day per type of equipment, refer to Appendix A. The existing operation (sum of BLUFOR, OPFOR, and OPSGRP) generates 3,471,204 pounds of PM-10 per rotation, or 1,736 tons of PM-10 per rotation.

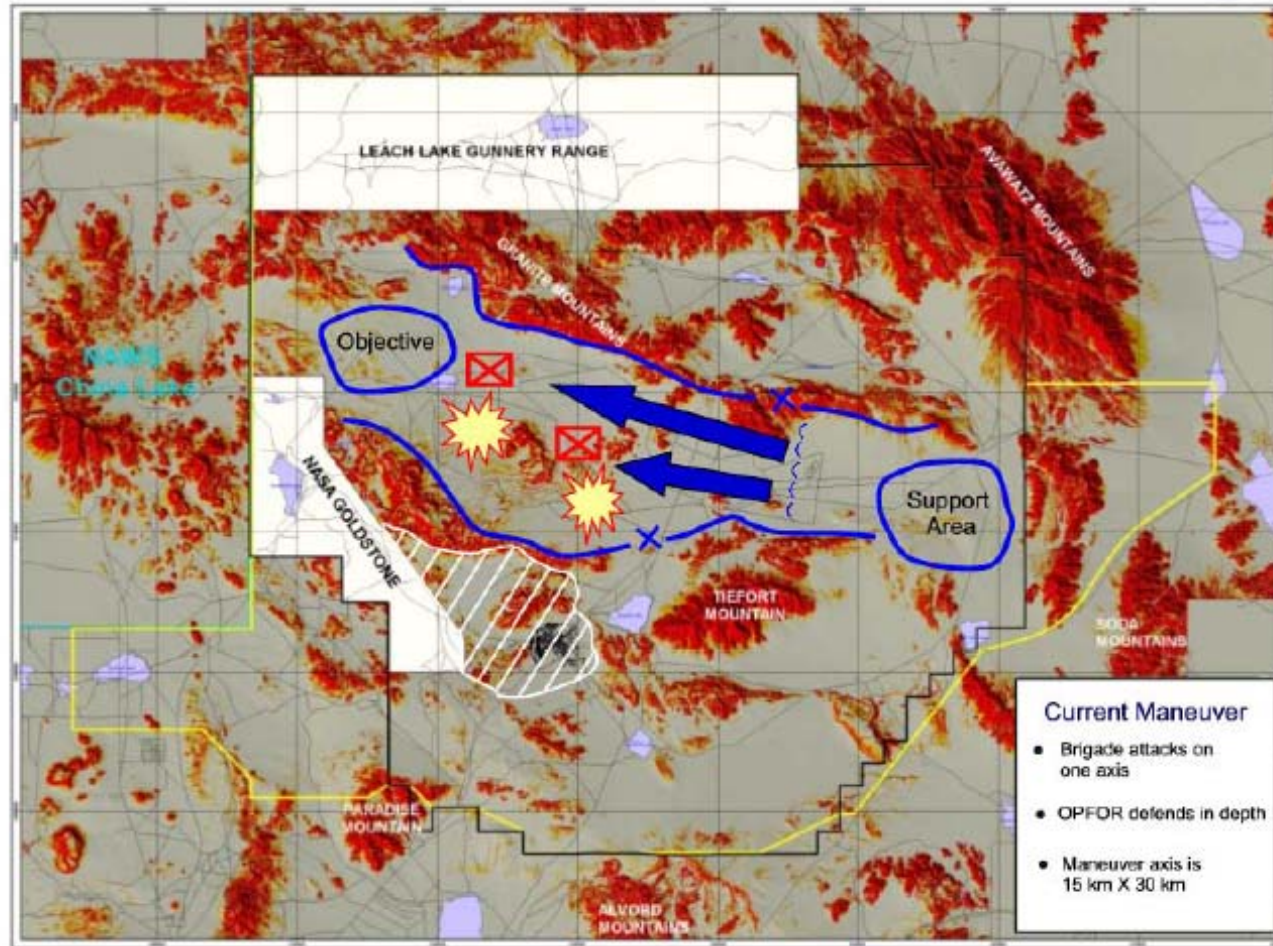


Figure 2
Current Travel Routes

Table 4
Current Rotation Vehicle Miles Traveled (VMT)

Day	BLUFOR, VMT	OPFOR, VMT	OPSGRP, VMT
RSOI 1-5	26,128	14,368	10,199
Day 1	31,572	11,475	4,660
Day 2	24,113	11,996	30,663
Day 3	47,211	11,864	2,731
Day 4	51,666	15,124	30,663
Day 5	45,495	11,830	30,663
Day 6	34,146	7,909	20,464
Day 7	41,058	11,864	2,512
Day 8	56,016	19,117	40,928
Day 9	45,945	14,926	30,663
Day 10	30,270	0	3,452
Day 11	42,619	0	2,295
Day 12	45,384	0	20,464
Day 13	41,058	0	18,598
Day 14	45,945	0	22,330
Rotational Total	608,625	130,473	271,284

Table 5
**Current Rotation Daily Particulate Emissions from
BLUFOR, OPFOR, and OPSGRP Activities**

Day	BLUFOR, lbs PM-10	OPFOR, lbs PM-10	OPSGRP, lbs PM-10
RSOI	98,919	79,131	12,341
Day 1	154,548	39,354	12,349
Day 2	104,877	41,281	37,102
Day 3	196,730	41,291	4,376
Day 4	223,098	57,836	37,102
Day 5	199,246	46,815	37,102
Day 6	81,936	44,485	24,761
Day 7	178,787	41,291	3,843
Day 8	229,475	63,200	49,522
Day 9	199,791	53,201	37,102
Day 10	130,260	0	4,980
Day 11	222,693	0	7,258
Day 12	199,111	0	27,261
Day 13	196,936	0	22,503
Day 14	199,791	0	29,519
Rotational Total	2,616,198	507,885	347,121

3.2.2 Post-Land Acquisition Operations

The travel routes proposed for post-land acquisition activities are illustrated in Figure 3. Deployment activities will start out in the cantonment area as before (not shown). The post-land acquisition activities would eliminate unnecessary trips back to the cantonment area by establishing the base camp on the acquired land. The total VMT for post-land acquisition would be less than the existing conditions. From this new base camp, deployment activities would branch out in the same fashion as under existing conditions.

Post-land acquisition VMT per rotation (sum of BLUFOR, OPFOR and OPSGRP) would be 1,010,382. VMT per day are illustrated in Table 6.

To calculate the fugitive dust emissions associated with travel during military maneuvering, Parsons used the tables and equations in EPA, AP-42, Section 13.2.2 Unpaved Roads. The same silt values were used as in the “existing” emission calculations.

Total emissions from post-land acquisition maneuvering activities are illustrated in Table 7. For a more detailed explanation of emissions per day (per rotation) per type of equipment, refer to Appendix A.

The post-land acquisition rotation would generate 3,471,204 pounds of PM-10 emissions, or 1,736 tons per rotation. The 1,736 tons per rotation is essentially the same as the existing conditions, the primary difference is the locations where the activities will occur. No credit was calculated for displacing fugitive dust PM-10 emissions on existing BLM land from OHV use.

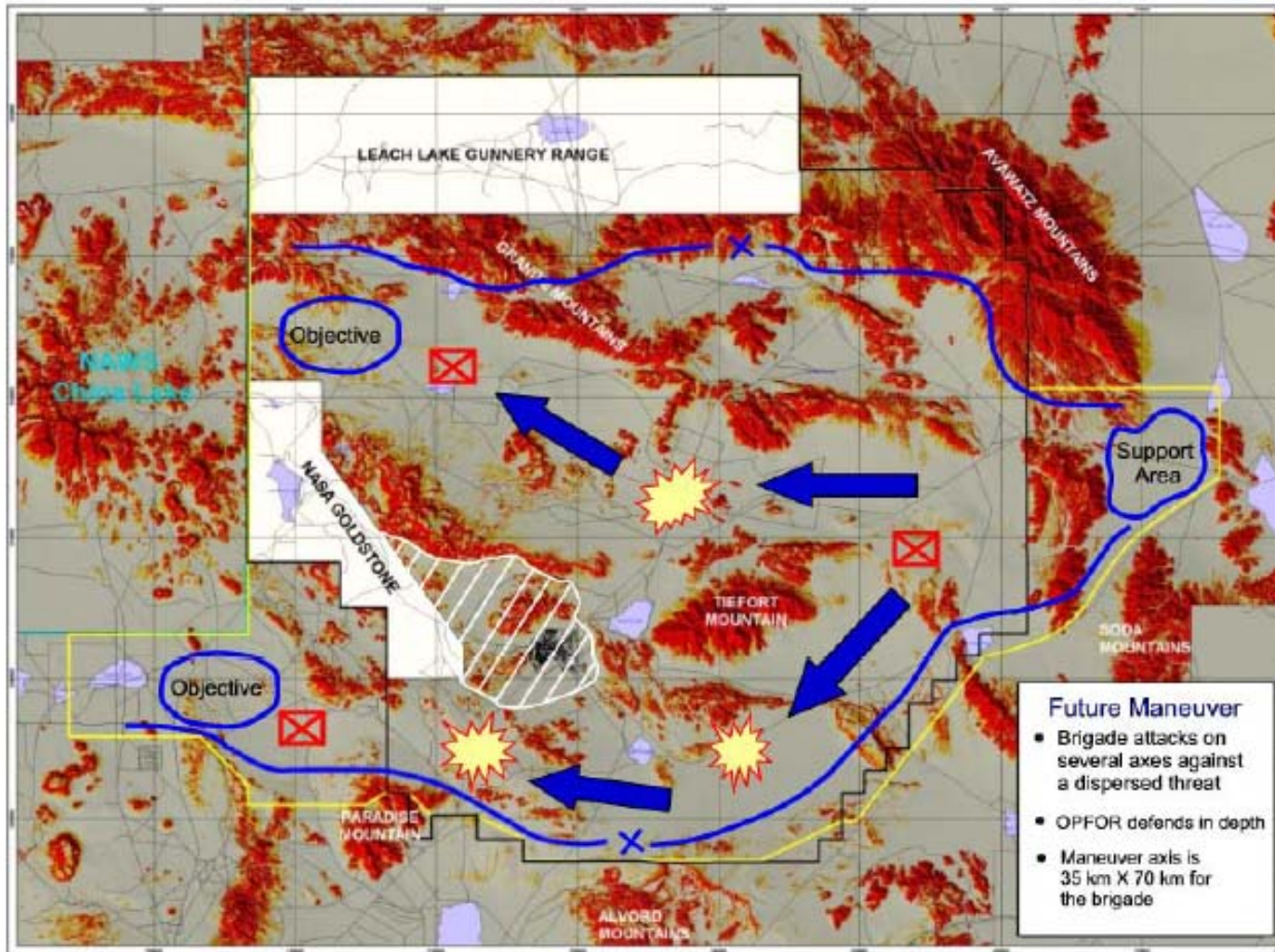


Figure 3
Post-Land Acquisition

Table 6
Post-Land Acquisition Vehicle Miles Traveled (VMT)

Day	BLUFOR, VMT	OPFOR, VMT	OPSGRP, VMT
RSOI	26,128	14,368	10,199
Day 1	31,572	11,475	4,660
Day 2	24,113	11,996	30,663
Day 3	47,211	11,864	2,731
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Day 5	45,495	11,830	30,663
Day 6	34,146	7,909	20,464
Day 7	41,058	11,864	2,512
Day 8	56,016	19,117	40,928
Day 9	45,945	14,926	30,663
Day 10	30,270	0	3,452
Day 11	42,619	0	2,295
Day 12	45,384	0	20,464
Day 13	41,058	0	18,598
Day 14	45,945	0	22,330
Rotational Total	608,625	130,473	271,284

Table 7
**Post-Land Acquisition Particulate Emissions from
BLUFOR, OPFOR, and OPSGRP Activities**

Day	BLUFOR, lbs PM-10	OPFOR, lbs PM-10	OPSGRP, lbs PM-10
RSOI	98,919	79,131	12,341
Day 1	154,548	39,354	12,349
Day 2	104,877	41,281	37,102
Day 3	196,730	41,291	4,376
Day 4	223,098	57,836	37,102
Day 5	199,246	46,815	37,102
Day 6	81,936	44,485	24,761
Day 7	178,787	41,291	3,843
Day 8	229,475	63,200	49,522
Day 9	199,791	53,201	37,102
Day 10	130,260	0	4,980
Day 11	222,693	0	7,258
Day 12	199,111	0	27,261
Day 13	196,936	0	22,503
Day 14	199,791	0	29,519
Rotational Total	2,616,198	507,885	347,121

3.3 Vehicle Tailpipe Criteria Emissions

Internal combustion engines produce criteria emissions as part of the combustion process. This is especially true of diesel engines. In the case of Fort Irwin, vehicle exhaust PM-10 emissions are much lower in magnitude relative to the VMT fugitive dust emissions. However, it is still important to understand their contribution.

NOx and VOCs are O₃ precursors. Currently, all existing maneuver training area is within attainment for all federal and state standards for criteria pollutants, except for state PM-10 standards. Alternative 1 will open land below the UTM 90 gridline. The area below the UTM 90 gridline is in non-attainment for O₃. NOx and VOC emission estimates were completed for the area below the UTM 90 gridline in Alternative 1. 40 CFR Section 51.853 (b)(1) presents the severe non-attainment threshold levels for NOx and VOC as 25 tons per year per pollutant.

Exhaust emission estimates are calculated using VMT results from the fugitive dust VMT exercise.

3.3.1 Existing Operations

PM-10 exhaust emissions for existing operations were calculated using emission factors developed with EPA's PART5 Particulate Emission Factor Model. PART5 is a FORTRAN program designed for particulate air pollution impact of in-use gasoline-fueled and diesel-fueled motor vehicles. Existing PM-10 exhaust emissions would be 1,330 pounds per rotation or 6.65 tons per year with 10 rotations per year. Table 8 presents particulate emission factors developed with PART5. Table 9 presents existing operation estimated particulate emissions.

Table 8
Exhaust Emission Factors

Description	Vehicle Weight lb	PART5 Emission Factors
		Exhaust PM-10 g/mi
HT	84,500	1.023
LT	26,000	0.881
HW	23,260	0.881
LW	4,000	0.264

Gross vehicle weight (GVW)

PART5 1997 Emission Factors at 25 mph

HT = heavy heavy-duty diesel vehicle (HHDDV), Class 8B; > 33,000 lb GVW

LT and HW = medium heavy-duty diesel vehicle (MHDDV); Class 6,7,8A; 19,501 - 33,000 lb GVW

LW = light-duty diesel truck (LDDV); Class 4, < 4,000 lb GVW

Table 9
Current Rotation Exhaust Emissions from BLUFOR, OPFOR, and OPSGRP
Activities per Heavy Rotation

Group	Vehicle Type	Total Exhaust PM-10 lb/rotation
BLUFOR	HT	153
	LT	141
	HW	539
	LW	111
	Total	944
OPFOR	HT	49
	LT	128
	HW	26
	LW	17
	Total	220
OPSGRP	HT	0
	LT	7
	HW	5
	LW	154
	Total	166
TOTAL	HT	202
	LT	276
	HW	570
	LW	282
	Total	1,330

3.3.2 Post-Land Acquisition Operations

PM-10 exhaust emissions for post-land acquisition operations were calculated using the same emission factors developed with EPA's PART5 Particulate Emission Factor Model. Table 10 presents criteria emission factors developed with MOBILE5b and PART5. MOBILE5 is a computer program developed by EPA that estimates hydrocarbon (HC), carbon monoxide (CO), and NOx emission factors for gasoline-fueled and diesel highway motor vehicles. Table 11 presents estimated exhaust PM-10 emissions for post-land acquisition operations and VOC and NOx emissions in the non-attainment area. Post-land acquisition PM-10 exhaust emissions would be 1,330 pounds per rotation, or 6.65 tons per year.

On a per-rotation basis, existing operations PM-10 emissions are the same as the post-land acquisition operations.

O₃ is formed in the atmosphere from NOx and VOC through a catalytic reaction with sunlight. O₃ impacts are estimated from NOx and VOC emissions. 40 CFR Section 51.853 (b)(1) presents the severe non-attainment threshold levels for NOx and VOC as 25 tons per year per pollutant. NOx and VOC exhaust emission for existing operations were calculated using the emission factors developed with EPA's MOBILE5b Mobile Emission Factor Model. The post-land acquisition contains a small non-attainment area. Based on the ratio of the non-attainment area versus the entire post-land area, the non-attainment area is less than 10 percent of the overall area. It is then assumed that a maximum of 10 percent criteria pollutant emissions would be emitted in the non-attainment area. The non-attainment emissions for NOx and VOC are estimated to be 8.1 and 1.6 tons per year. Both are below the 25-ton per year per pollutant threshold limit. NOx and VOC emissions were not estimated for current rotation operations because no activities occur in an O₃ nonattainment area.

Table 10
Exhaust Emission Factors for Criteria Pollutants

Description	Vehicle Weight lb	MOBILE5b Emission Factors			PART5 Emission Factors	
		Exhaust Running VOC g/mi	Exhaust CO g/mi	Exhaust NOx g/mi	Exhaust SO ₂ g/mi	Exhaust PM-10 g/mi
HT	84,500	1.98	9.29	12.46	0.519	1.023
LT	26,000	1.98	9.29	12.46	0.427	0.881
HW	23,260	1.98	9.29	12.46	0.427	0.881
LW	4,000	0.89	1.54	1.67	0.111	0.264

Gross vehicle weight (GVW)

MOBILE5b 1997 Emission Factors at 25 mph

HT and HW = heavy-duty diesel-powered vehicles (HDDV), 8501+ lb GVW)

LW = light-duty diesel-powered trucks (LDDT), 8500 lb GVW

PART5 1997 Emission Factors at 25 mph

HT = heavy heavy-duty diesel vehicle (HDDV), Class 8B, > 33,000 lb GVW

LT and HW = medium heavy-duty diesel vehicle (MHDDV), Class 6,7,8A, 19,501 - 33,000 lb GVW

LW = light-duty diesel truck (LDDV); Class 4, < 4,000 lb GVW

Table 11
Post Land Acquisition Exhaust Emissions from BLUFOR, OPFOR, and OPSGRP
Activities per Heavy Rotation

Group	Vehicle Type	VOC Emission in non-attainment area lb/rotation	NOx Emission in non-attainment area lb/rotation	Total Exhaust PM-10 lb/rotation
BLUFOR	HT	29.7	186.6	153
	LT	31.6	198.7	141
	HW	121.2	762.7	539
	LW	37.3	70.0	111
	Total	219.7	1218.0	944
OPFOR	HT	9.5	59.5	49
	LT	28.8	181.2	128
	HW	5.8	36.2	26
	LW	5.8	10.9	17
	Total	49.8	287.7	220
OPSGRP	HT	0.0	0.0	0
	LT	1.6	10.2	7
	HW	1.1	7.2	5
	LW	51.9	97.5	154
	Total	54.7	114.9	166
TOTAL	HT	39.1	246.1	202
	LT	62.0	390.2	276
	HW	128.1	806.0	570
	LW	95.1	178.4	282
	Total	324.2	1,620.6	1,330

3.4 Wind Erosion PM-10 Emissions

Wind gusts passing over disturbed desert areas generate significant amounts of fugitive dust PM-10 emissions. Typical parameters impacting erosion include type of soil, silt content, evapo-transpiration ratio, surface roughness, surface area, wind speed, and frequency over a threshold velocity, frequency of disturbance, and erosion potential.

A quantitative estimate of wind erosion PM-10 emissions for the existing and post-land acquisition operations is difficult for many reasons (estimating disturbed surface area, frequency of disturbance, etc.). The following is a qualitative discussion and comparison of wind erosion PM-10 emissions for existing versus post-land acquisition operations.

At Fort Irwin, non-homogeneous surfaces impregnated with nonerodible elements (stones, vegetation) are characterized by a limited reservoir of erodible material. Such surfaces have high threshold wind speeds for wind erosion. The particulate emission rates tend to decay rapidly during an erosion event. The Fort Irwin region is subject to wind speeds that often exceed 30 miles per hour. Although the desert surface in the confines of Fort Irwin is characterized by

nonhomogeneous surfaces, it is substantially disturbed. Disturbance caused by military maneuvering has generated Aeolian erosion and subsequently high PM-10 levels within the confines of Fort Irwin (AVES, General Conformity, 1996).

Emissions generated by wind erosion are also dependent on the frequency of disturbance. Each time a surface is disturbed, its erosion potential is restored. A disturbance is defined as an action which results in the exposure of fresh material. Because the region is nonhomogeneous, it was assumed that one substantial gust would deplete the majority of the "limited reservoir" of erodible material. Thus, this area would be "stabilized" until the next disturbance.

3.4.1 Existing Operations

BLM unpaved wind erosion is a significant windblown fugitive dust category, generating two percent of the total planning area inventory and remaining levels through the year 2000. This category comprises the emissions from wind erosion of unpaved roads on BLM (and state) property. The vast majority of these roads lie in unpopulated areas north and east of the MDAQMD planning area (MDAQMD, PM-10 Attainment Plan, 1995).

Under existing conditions, the land acquisition area is disturbed by OHV activities and would account for part of the PM-10 wind erosion emissions produced by BLM lands. The degree of disturbance created by OHV activities is unknown and it is uncertain whether there would be a substantial increase in disturbance by Fort Irwin equipment after the land acquisition.

3.4.2 Post-Land Acquisition Operations

Under post-land acquisition operations, the BLM OHV activities would cease and this land would eventually return to its natural state. However, military staging and support camps would now cause soil disturbance that would cause PM-10 erosion emissions during wind gusts.

The areas used under existing operations for staging and support camps would generally be abandoned after the land acquisition and actively revegetated. Fort Irwin has instituted a program in which areas that are not frequently used are revegetated with native plants. These areas are watered regularly. Under these conditions, the revegetated areas grow much faster than under normal desert conditions.

The existing Fort Irwin reservation has a significant amount of soil disturbance. While the available amount of land for military activities would increase as a result of the land acquisition, the total disturbed area is likely to remain approximately equivalent because the total number of vehicles would remain the same.

To summarize, the total amount of disturbed area, via military activities, at any given time will not vary substantially and will possibly be less because of the stoppage of BLM OHV activities. Therefore, the difference in wind erosion PM-10 emissions between existing and post-land acquisition operations would be minimal.

3.5 Emission Calculation Summary

Table 12 presents a summary of emission calculations for vehicle fugitive dust PM-10, vehicle tailpipe PM-10 and wind erosion PM-10 for existing and post-land acquisition operations. No existing operations occur within the O₃ nonattainment area, therefore no NO_x or VOC emissions are reported. Table 13 presents the O₃-precursors (NO_x and VOC) exhaust pollutants emitted in the O₃ non-attainment area for existing and post-land acquisition operations.

**Table 12
Particulate Emission Summary**

Type of Emission	Existing Operations tons/yr	Post-Land Acquisition tons/yr Operations	PM-10 Emission Difference tons/yr
Vehicle Fugitive Dust	17,360	17,360	0
Vehicle Exhaust	6.65	6.65	0
Wind Erosion	-	-	-
Totals	17,366	17,366	0

**Table 13
Ozone Precursor Emission in Nonattainment Area Summary**

Type of Emission	Existing Operations* tons/yr	Post-Land Acquisition tons/yr Operations	Pollutant Emission Difference tons/yr
NO _x Exhaust	0	8.1	8.1
VOC Exhaust	0	1.6	1.6

* No existing operation occur within the O₃ nonattainment area (below the 90 UTM gridline).

SECTION 4**CONCLUSIONS**

The land acquisition itself is exempt from the conformity demonstration process. Based on the PM—10 emission calculations for the existing and post-land acquisition operations shown in this report, the emission are approximately equivalent.

Many of the round trips from the existing maneuver area to the cantonment would be eliminated under the proposed operations scenario with less VMT generated. Appendix A provides detailed calculations.

As listed in Table 12, the overall PM-10 emission for the post-land acquisition is the same as the existing operation. Table 13 demonstrates that the NOx and VOC emissions estimated in the nonattainment area are below the federal conformity thresholds. Thus, the land acquisition itself is exempt from the conformity determination process.

SECTION 5

REFERENCES

1. AeroVironment Environmental Services, Inc., General Conformity Requirements Land Acquisition Project, Fort Irwin National Training Center, Fort Irwin California, Prepared for Chambers Group, Inc., under contract to US Army Corps of Engineers, September 1996.
2. Strategic Planning Office (SPO) at Fort Irwin, Excel files, October 2002. Provided in 12 folders with 15 files in each folder via -e-mail.
 - a. HRalt1Excell Spreadsheets
 - b. HRalt2Excell Spreadsheets
 - c. HRalt3Excell Spreadsheets
 - d. HRalt4Excell Spreadsheets
 - e. HRalt5Excell Spreadsheets
 - f. HRalt6Excell Spreadsheets
 - g. LRalt1Excell Spreadsheets
 - h. LRalt2Excell Spreadsheets
 - i. LRalt3Excell Spreadsheets
 - j. LRalt4Excell Spreadsheets
 - k. LRalt5Excell Spreadsheets
 - l. LRalt6Excell Spreadsheets

Excel File	Corresponding Training Day
RSOI 1-5.xls	RSOI 1-5
Move to Assembly Areas.xls	Day 1
Prep for Attack.xls	Day 2
Attack.xls	Day 3
Continue the attack.xls	Day 4
Prep for Defense.xls	Day 5
Defend.xls	Day 6
Prep for Movement to Contact.xls	Day 7
Movement to Contact.xls	Day 8
Hasty Attack.xls	Day 9
Transition to Live Fire.xls	Day 10
Prep for Live Attack.xls	Day 11
Live Fire Attack.xls	Day 12
Prep for Live Fire Defense.xls	Day 13
Live Fire Defense.xls	Day 14

3. Strategic Planning Office (SPO) at Fort Irwin, PowerPoint files, July 2002.
 - a. HR Alternative 1.ppt
 - b. HR Alternative 2.ppt
 - c. HR Alternative 3.ppt
 - d. HR Alternative 4.ppt
 - e. HR Alternative 5.ppt
 - f. HR Alternative 6.ppt
 - g. LR Alternative 1.ppt
 - h. LR Alternative 2.ppt
 - i. LR Alternative 3.ppt
 - j. LR Alternative 4.ppt
 - k. LR Alternative 5.ppt
 - l. LR Alternative 6.ppt
4. Charis Corporation, “RE: Road vs. Desert” e-mail from David Granger to Paul Tranquill of Parsons from, dated June 23, 2002.
5. Mojave Desert Air Quality Management District, *Final Mojave Desert Planning Area Federal Particulate Matter (PM-10) Attainment Plan*, July 31,1995.

Appendix A
Fort Irwin Draft Conformity Report
Air Quality

Raw Data Charis Corporation Vehicle Miles Traveled

Silt Content

Group	Vehicle Type	RSOI	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	
		Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	Content Silt %	
	type	silt	silt	silt	silt	silt	silt	silt	silt	silt	silt	silt	silt	silt	silt	silt	
GRP 1 BLUEFOR MANEUVER	HT	6	16	6	6	6	6	6	6	6	6	6	6	16	6	16	6
	LT	6	16	6	6	6	6	6	6	6	6	6	6	16	6	16	6
	HW	6	16	6	6	6	6	6	6	6	6	6	6	16	6	16	6
	LW	6	16	6	6	6	6	6	6	6	6	6	6	16	6	16	6
GRP 2 BLUEFOR SUPPORT	HT	16	16	16	16	16	16	6	16	16	16	16	16	16	16	16	16
	LT	16	16	16	16	16	16	6	16	16	16	16	16	16	16	16	16
	HW	16	16	16	16	16	16	6	16	16	16	16	16	16	16	16	16
	LW	16	16	16	16	16	16	6	16	16	16	16	16	16	16	16	16
GRP 3 OPFOR MANEUVER	HT	16	6	6	6	6	6	16	6	6	6	6	6	16	6	6	6
	LT	16	6	6	6	6	6	16	6	6	6	6	6	16	6	6	6
	HW	16	6	6	6	6	6	16	6	6	6	6	6	16	6	6	6
	LW	16	6	6	6	6	6	16	6	6	6	6	6	16	6	6	6
GRP 4 OPFOR SUPPORT	HT	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
	LT	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
	HW	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
	LW	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
OPSGRP	HT	6	16	6	6	6	6	6	6	6	6	6	6	16	6	6	6
	LT	6	16	6	6	6	6	6	6	6	6	6	6	16	6	6	6
	HW	6	16	6	6	6	6	6	6	6	6	6	6	16	6	6	6
	LW	6	16	6	6	6	6	6	6	6	6	6	6	16	6	6	6

Heavy Rotation

Fort Irwin
Heavy Rotation Alternative 1 Raw Data from Charis

Group	RSOI 1-5		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13		Day 14		Summary	
	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation
	RSOI V	RSOI D	Day 1 V	Day 1 D	Day 2 V	Day 2 D	Day 3 V	Day 3 D	Day 4 V	Day 4 D	Day 5 V	Day 5 D	Day 6 V	Day 6 D	Day 7 V	Day 7 D	Day 8 V	Day 8 D	Day 9 V	Day 9 D	Day 10 V	Day 10 D	Day 11 V	Day 11 D	Day 12 V	Day 12 D	Day 13 V	Day 13 D	Day 14 V	Day 14 D	Sum V	Sum D
GRP 1 BLUEFOR MANEUVER	171	30	171	25	171	25	171	50	171	50	171	50	171	50	171	30	171	70	171	50	171	30	171	50	171	50	171	30	171	50	2,565	640
	30	30	30	25	30	25	30	50	30	50	30	50	30	50	30	30	80	30	50	30	30	75	30	50	30	30	50	30	30	50	450	675
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	36	25	36	50	36	25	36	30	36	15	36	30	36	25	36	30	36	50	36	50	36	50	36	100	36	25	36	30	36	50	540	585
GRP 2 BLUEFOR SUPPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	154	10	154	50	154	25	154	25	154	75	154	50	154	50	154	30	154	50	154	50	154	30	154	50	154	50	154	30	154	50	2,310	625
	461	30	461	50	461	40	461	75	461	75	461	75	461	50	461	75	461	75	461	75	461	75	461	75	461	75	461	75	461	75	6,915	970
	264	75	264	50	264	40	264	100	264	100	264	75	264	50	264	75	264	120	264	75	264	45	264	75	264	75	264	75	264	75	3,960	1,080
GRP 3 OPFOR MANEUVER	84	50	84	40	84	40	84	30	84	50	84	25	84	30	84	30	84	70	84	50	0	0	0	0	0	0	0	0	0	0	840	415
	156	50	156	40	156	50	156	30	156	50	156	25	156	30	156	30	156	80	156	50	0	0	0	0	0	0	0	0	0	0	1,560	435
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	36	50	36	60	36	40	36	75	36	30	36	50	36	50	36	75	36	70	36	50	0	0	0	0	0	0	0	0	0	0	360	550
GRP 4 OPFOR SUPPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	76	50	76	40	76	40	76	50	76	75	76	75	76	25	76	50	76	50	76	50	0	0	0	0	0	0	0	0	0	0	760	505
	40	50	40	40	40	40	40	50	40	75	40	75	40	25	40	50	40	50	40	75	0	0	0	0	0	0	0	0	0	0	400	530
	70	50	70	60	70	60	70	100	70	34	75	34	75	34	25	70	100	34	120	34	100	0	0	0	0	0	0	0	0	0	376	765
OPSGRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	658	25	100	75	658	75	100	30	658	75	658	75	658	50	100	30	658	100	658	75	100	45	100	30	598	50	598	50	658	50	6,960	835

Summary of Raw Data by Group

Group	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW
GRP 1 BLUEFOR MANEUVER	237	85	237	100	237	75	237	130	237	115	237	130	237	125	237	90	237	200	237	150	237	110	237	225
GRP 2 BLUEFOR SUPPORT	1537	140	979	225	1537	180	993	330	1537	325	1537	275	1537	200	993	285	1537	345	1537	275	993	250	993	250
GRP 3 OPFOR MANEUVER	276	150	276	140	276	130	276	135	276	130	276	110	276	135	276	220	276	150	0	0	0	0	0	0
GRP 4 OPFOR SUPPORT	186	150	150	140	150	140	150	200	150	225	150	75	150	200	150	220	150	225	0	0	0	0	0	0
Total	2236	525	1642	605	2200	525	1656	795	2200	795	2200	730	2200	510	1656	710	2200	985	2200	800	1230	360	1230	475

Raw Data in Charis Format

	GRP 1 BLUEFOR MANEUVER				GRP 2 BLUEFOR SUPPORT				GRP 3 OPFOR MANEUVER				GRP 4 OPFOR SUPPORT				OPSGRP																							
	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW																
RSOI	171	30	30	0	36	25	0	0	154	10	461	30	264	75	84	50	156	50	0	0	36	50	0	0	76	50	40	50	70	50	0	0	0	0	14	0	658	25		
Day 1	171	25	30	25	0	0	36	50	0	0	154	50	461	50	84	40	156	40	0	0	36	60	0	0	76	40	40	40	34	60	0	0	0	0	14	0	100	75		
Day 2	171	25	30	25	0	0	36	25	0	0	154	25	461	40	84	40	156	50	0	0	36	40	0	0	76	40	40	40	34	60	0	0	0	0	14	0	658	75		
Day 3	171	50	30	50	0	0	36	30	0	0	154	25	461	75	264	100	84	30	156	30	0	0	0	36	75	0	0	76	50	40	50	34	100	0	0	0	14	100	100	30
Day 4	171	50	30	50	0	0	36	15	0	0	154	75	461	75	264	100	84	50	156	50	0	0	36	30	0	0	76	75	40	75	34	75	0	0	0	14	0	658	75	
Day 5	171	50	30	50	0	0	36	30	0	0	154	50	461	75	264	75	84	25	156	25	0	0	36	50	0	0	76	75	40	75	34	75	0	0	0	14	0	658	75	
Day 6	171	50	30	50	0	0	36	25	0	0	154	50	461	50	84	30	156	30	0	0	36	50	0	0	76	25	40	25	34	25	0	0	0	14	0	658	50			
Day 7	171	30	30	30	0	0	36	30	0	0	154	30	461	75	264	75	84	30	156	30	0	0	36	75	0	0	76	50	40	50	34	100	0	0	0	14	75	100	30	
Day 8	171	70	30	80	0	0	36	50	0	0	154	50	461	75	264	120	84	70	156	80	0	0	36	70	0	0	76	50	40	50	34	120	0	0	0	14	0	658	100	
Day 9	171	50	30	50	0	0	36	50	0	0	154	50	461	75	264	75	84	50	156	50	0	0	36	50	0	0	76	50	40	75	34	100	0	0	0	14	0	658	75	
Day 10	171	30	30	30	0	0	36	50	0	0	154	30	461	50	264	50	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	60	0	736	817	
Day 11	171	50	30	75	0	0	36	100	0	0	154	50	461	75	264	45	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	60	0	598	50	
Day 12	171	50	30	50	0	0	36	25	0	0	154	50	461	75	264	75	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	60	50	14	0	598	50
Day 13	171	30	30	30	0	0	36	30	0	0	154	30	461	75	264	75	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	60	0	598	50		
Day 14	171	50	30	50	0	0	36	50	0	0																														

Fort Irwin
Heavy Rotation Alternative 6 Raw Data from Charis

Group	RSOI 1-5		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13		Day 14		Summary	
	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	Sum V	Sum D
	RSOI V	RSOI D	Day 1 V	Day 1 D	Day 2 V	Day 2 D	Day 3 V	Day 3 D	Day 4 V	Day 4 D	Day 5 V	Day 5 D	Day 6 V	Day 6 D	Day 7 V	Day 7 D	Day 8 V	Day 8 D	Day 9 V	Day 9 D	Day 10 V	Day 10 D	Day 11 V	Day 11 D	Day 12 V	Day 12 D	Day 13 V	Day 13 D	Day 14 V	Day 14 D	Sum V	Sum D
GRP 1 BLUEFOR MANEUVER	171	30	171	25	171	25	171	50	171	50	171	50	171	50	171	30	171	70	171	50	171	30	171	50	171	50	171	30	171	50	2,565	640
	30	30	30	25	30	25	30	50	30	50	30	50	30	50	30	30	80	30	50	30	30	75	30	50	30	50	30	30	50	450	675	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	36	25	36	50	36	25	36	30	36	15	36	30	36	25	36	30	36	50	36	50	36	50	36	100	36	25	36	30	36	50	540	585
GRP 2 BLUEFOR SUPPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	154	10	154	50	154	25	154	25	154	75	154	50	154	50	154	30	154	50	154	50	154	30	154	50	154	50	154	30	154	50	2,310	625
	461	30	461	50	461	40	461	75	461	75	461	75	461	50	461	75	461	75	461	75	461	75	461	75	461	75	461	75	461	75	6,915	970
	264	75	264	50	264	40	264	100	264	100	264	75	264	50	264	75	264	120	264	75	264	45	264	75	264	75	264	75	264	75	3,960	1,080
GRP 3 OPFOR MANEUVER	84	50	84	40	84	40	84	30	84	50	84	25	84	30	84	30	84	70	84	50	0	0	0	0	0	0	0	0	0	0	840	415
	156	50	156	40	156	50	156	30	156	50	156	25	156	30	156	30	156	80	156	50	0	0	0	0	0	0	0	0	0	0	1,560	435
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	36	50	36	60	36	40	36	75	36	30	36	50	36	50	36	75	36	70	36	50	0	0	0	0	0	0	0	0	0	0	360	550
GRP 4 OPFOR SUPPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	76	50	76	40	76	40	76	50	76	75	76	75	76	25	76	50	76	50	76	50	0	0	0	0	0	0	0	0	0	0	760	505
	40	50	40	40	40	40	40	50	40	75	40	75	40	25	40	50	40	50	40	75	0	0	0	0	0	0	0	0	0	0	400	530
	70	50	34	60	34	60	34	100	34	75	34	75	34	25	34	100	34	120	34	100	0	0	0	0	0	0	0	0	0	0	376	765
OPSGRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	50	0	0	0	60	50	120	100	
	0	0	0	0	0	0	14	100	0	0	0	0	0	0	14	75	0	0	0	14	75	14	50	0	0	0	0	0	56	300		
	658	25	100	75	658	75	100	30	658	75	658	75	658	50	100	30	658	100	658	75	100	45	100	30	598	50	598	50	658	50	6,960	835

Summary of Raw Data by Group

	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW
GRP 1 BLUEFOR MANEUVER	237	85	237	100	237	75	237	130	237	115	237	130	237	125	237	90	237	200	237	150	237	110	237	225
GRP 2 BLUEFOR SUPPORT	1537	140	979	225	1537	180	993	330	1537	325	1537	275	1537	200	993	285	1537	345	1537	275	993	250	993	250
GRP 3 OPFOR MANEUVER	276	150	276	140	276	130	276	135	276	130	276	110	276	135	276	220	276	150	0	0	0	0	0	0
GRP 4 OPFOR SUPPORT	186	150	150	140	150	140	150	200	150	225	150	75	150	200	150	220	150	225	0	0	0	0	0	0
Total	2236	525	1642	605	2200	525	1656	795	2200	795	2200	730	2200	510	1656	710	2200	985	2200	800	1230	360	1230	475

Raw Data in Charis Format

	GRP 1 BLUEFOR MANEUVER				GRP 2 BLUEFOR SUPPORT				GRP 3 OPFOR MANEUVER				GRP 4 OPFOR SUPPORT				OPSGRP																										
	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW																			
RSOI	171	30	30	0	0	36	25	0	0	154	10	461	30	264	75	84	50	156	50	0	0	36	50	0	0	76	50	40	50	70	50	0	0	0	0	14	0	658	25				
Day 1	171	25	30	25	0	0	36	50	0	0	154	50	461	50	264	50	84	40	156	40	0	0	36	60	0	0	76	40	40	40	34	60	0	0	0	0	14	0	100	75			
Day 2	171	25	30	25	0	0	36	25	0	0	154	25	461	40	264	40	84	40	156	50	0	0	36	40	0	0	76	40	40	40	34	60	0	0	0	0	14	0	658	75			
Day 3	171	50	30	50	0	0	36	30	0	0	154	25	461	75	264	100	84	30	156	30	0	0	36	75	0	0	76	50	40	50	34	100	0	0	0	0	14	100	100	30			
Day 4	171	50	30	50	0	0	36	15	0	0	154	75	461	75	264	100	84	50	156	50	0	0	36	30	0	0	76	75	40	75	34	75	0	0	0	0	14	0	658	75			
Day 5	171	50	30	50	0	0	36	30	0	0	154	50	461	75	264	75	84	25	156	25	0	0	36	50	0	0	76	75	40	75	34	75	0	0	0	0	14	0	658	75			
Day 6	171	50	30	50	0	0	36	25	0	0	154	50	461	50	264	50	84	30	156	30	0	0	36	50	0	0	76	25	40	25	34	25	0	0	0	0	14	0	658	50			
Day 7	171	30	30	30	0	0	36	30	0	0	154	30	461	75	264	75	84	30	156	30	0	0	36	75	0	0	76	50	40	50	34	100	0	0	0	0	14	75	100	30			
Day 8	171	70	30	80	0	0	36	50	0	0	154	50	461	75	264	120	84	70	156	80	0	0	36	70	0	0	76	50	40	50	34	120	0	0	0	0	14	0	658	100			
Day 9	171	50	30	50	0	0	36	50	0	0	154	50	461	75	264	75	84	50	156	50	0	0	36	50	0	0	76	50	40	75	34	100	0	0	0	0	14	0	658	75			
Day 10	171	30	30	30	0	0	36	50	0	0	154	30	461	50	264	50	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	75	100	45		
Day 11	171	50	30	75	0	0	36	100	0	0	154	50	461	75	264	45	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	50	100	30		
Day 12	171	50	30	50	0	0	36	25	0	0	154	50	461	75	264	75	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	50	14	0	598	50
Day 13	171	30																																									

Light Rotation

Fort Irwin
Light Rotation Alternative 1 Raw Data from Charis

Group	RSOI 1-5		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13		Day 14		Summary	
	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation	No of Vehicles per Rotation	Distance, km/rotation
	RSOI V	RSOI D	Day 1 V	Day 1 D	Day 2 V	Day 2 D	Day 3 V	Day 3 D	Day 4 V	Day 4 D	Day 5 V	Day 5 D	Day 6 V	Day 6 D	Day 7 V	Day 7 D	Day 8 V	Day 8 D	Day 9 V	Day 9 D	Day 10 V	Day 10 D	Day 11 V	Day 11 D	Day 12 V	Day 12 D	Day 13 V	Day 13 D	Day 14 V	Day 14 D	Sum V	Sum D
GRP 1 BLUEFOR MANEUVER	57	30	57	25	57	25	57	50	57	40	57	40	57	50	57	30	57	50	57	50	57	30	57	50	57	50	57	30	57	50	855	600
	17	30	17	25	17	25	17	50	17	40	17	40	17	50	17	30	17	50	17	50	17	30	17	50	17	50	17	50	17	50	255	625
	12	30	12	25	12	25	12	30	12	15	12	15	12	15	12	30	12	50	12	30	12	50	12	50	12	30	12	0	180	405		
	36	25	36	50	36	20	36	30	36	15	36	15	36	25	36	30	36	50	36	50	36	100	36	25	36	30	36	50	540	565		
GRP 2 BLUEFOR SUPPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	68	10	68	50	68	25	68	25	68	75	68	75	68	50	68	30	68	50	68	50	68	30	68	50	68	50	68	30	68	50	1,020	650
	161	30	161	50	161	40	161	75	161	75	161	75	161	50	161	75	161	75	161	75	161	75	161	75	161	75	161	75	161	75	2,415	970
	295	75	295	50	295	40	295	100	295	75	295	75	295	50	295	75	295	75	295	75	295	50	295	45	295	75	295	75	295	75	4,425	1,010
GRP 3 OPFOR MANEUVER	84	50	84	40	84	40	84	30	62	50	62	50	84	30	84	30	84	30	84	50	0	0	0	0	0	0	0	0	0	0	796	440
	156	50	156	40	156	50	156	30	156	50	156	50	132	30	156	30	156	80	156	50	0	0	0	0	0	0	0	0	0	0	1,536	460
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	36	50	36	60	36	40	36	75	36	30	36	30	36	50	36	75	36	70	36	50	0	0	0	0	0	0	0	0	0	0	360	530
GRP 4 OPFOR SUPPORT	0	0	0	0	0	0	0	0	22	60	22	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	120
	76	50	76	40	76	40	76	50	76	75	76	75	100	25	76	50	76	50	76	50	0	0	0	0	0	0	0	0	0	0	784	505
	40	50	40	40	40	40	40	50	40	75	40	75	40	25	40	50	40	50	40	75	0	0	0	0	0	0	0	0	0	0	400	530
	70	50	70	60	70	60	34	100	34	75	34	75	34	25	34	100	34	120	34	100	0	0	0	0	0	0	0	0	0	0	376	765
OPSGRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	14	100	0	0	0	0	0	0	14	75	0	0	0	14	75	14	50	0	0	0	0	0	0	56	300	
	658	25	100	75	658	75	100	30	658	75	658	75	658	50	100	30	658	100	658	75	100	45	100	30	598	50	598	50	658	50	6,960	835

Summary by Group

	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW		
GRP 1 BLUEFOR MANEUVER	122	115	122	125	122	95	122	160	122	110	122	110	122	125	122	120	122	200	122	180	122	160	122	275	122	150	122	120	122	150
GRP 2 BLUEFOR SUPPORT	1182	140	624	225	1182	180	638	330	1182	300	1182	300	1182	200	638	285	1182	300	1182	275	638	250	638	250	1182	300	1122	230	1242	300
GRP 3 OPFOR MANEUVER	276	150	276	140	276	130	276	135	254	130	254	130	252	110	276	135	276	220	276	150	0	0	0	0	0	0	0	0	0	0
GRP 4 OPFOR SUPPORT	186	150	150	140	150	140	150	200	172	285	174	75	150	200	150	220	150	225	0	0	0	0	0	0	0	0	0	0	0	0
Total	1766	555	1172	630	1730	545	1186	825	1730	825	1730	825	1730	510	1186	740	1730	940	1730	830	760	410	760	525	1304	450	1244	350	1364	450

Summary of Raw Data by Group

	GRP 1 BLUEFOR MANEUVER								GRP 2 BLUEFOR SUPPORT								GRP 3 OPFOR MANEUVER								GRP 4 OPFOR SUPPORT								OPSGRP								
	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW									
RSOI	57	30	17	30	12	30	36	25	0	0	68	10	161	30	295	75	84	50	156	50	0	0	36	50	0	0	76	50	40	50	70	50	0	0	14	0	658	25			
Day 1	57	25	17	25	12	25	36	50	0	0	68	50	161	50	295	50	84	40	156	40	0	0	36	60	0	0	76	40	40	40	34	60	0	0	14	0	100	75			
Day 2	57	25	17	25	12	25	36	20	0	0	68	25	161	40	295	40	84	40	156	50	0	0	36	40	0	0	76	40	40	40	34	60	0	0	14	0	658	75			
Day 3	57	50	17	50	12	30	36	30	0	0	68	25	161	75	295	100	84	30	156	30	0	0	36	75	0	0	76	50	40	50	34	100	0	0	14	100	100	30			
Day 4	57	40	17	40	12	15	36	15	0	0	68	75	161	75	295	75	62	50	156	50	0	0	36	30	22	60	76	75	40	75	34	75	0	0	14	0	658	75			
Day 5	57	40	17	40	12	15	36	15	0	0	68	75	161	75	295	75	62	50	156	50	0	0	36	30	22	60	76	75	40	75	34	75	0	0	14	0	658	75			
Day 6	57	50	17	50	12	0	36	25	0	0	68	50	161	50	295	50	84	30	132	30	0	0	36	50	0	0	100	25	40	25	34	25	0	0	14	0	658	50			
Day 7	57	30	17	30	12	30	36	30	0	0	68	30	161	75	295	75	84	30	156	30	0	0	36	75	0	0	76	50	40	50	34	100	0	0	14	75	100	30			
Day 8	57	50	17	50	12	50	36	50	0	0	68	50	161	75	295	75	84	70	156	80	0	0	36	70	0	0	76	50	40	50	34	120	0	0	14	0	658	100			
Day 9	57	50	17	50	12	30	36	50	0	0	68	50	161	75	295	75	84	50	156	50	0	0	36	50	0	0	76	50	40	75	34	100	0	0	14	0	658	75			
Day 10	57	30	17	30	12	50	36	50	0	0	68	30	161	50	295	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	75	100	45		
Day 11	57	50	17	75	12	50	36	100	0	0	68	50	161	75	295	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	50	100	30		
Day 12	57	50	17	50	12	25	36	25	0	0	68	50	161	75	295	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	50	14	0	598	50
Day 13	57	30	17	30	12	30	36	30	0	0	68	30	161	75	295	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	598	50	
Day 14	57	50	17	50	12	0	36	50	0	0	68	50	161	75	295	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	50	0	0	658	50	

Summary of Raw Data by Force

Group	Vehicle Type	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles
BLUEFOR	HT	57	18.6	57	15.5	57	15.5	57	31.1	57	24.9	57	24.9	57	31.1	57	18.6	57	31.1	57	31.1	57	31.1	57											

Fort Irwin
Light Rotation Alternative 6 Raw Data from Charis

Group	RSOI 1-5		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Day 8		Day 9		Day 10		Day 11		Day 12		Day 13		Day 14		Summary	
	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation	No of Vehicles per Rotation	Distance, km/ rotation
	RSOI V	RSOI D	Day 1 V	Day 1 D	Day 2 V	Day 2 D	Day 3 V	Day 3 D	Day 4 V	Day 4 D	Day 5 V	Day 5 D	Day 6 V	Day 6 D	Day 7 V	Day 7 D	Day 8 V	Day 8 D	Day 9 V	Day 9 D	Day 10 V	Day 10 D	Day 11 V	Day 11 D	Day 12 V	Day 12 D	Day 13 V	Day 13 D	Day 14 V	Day 14 D	Sum V	Sum D
GRP 1 BLUEFOR MANEUVER	57	30	57	60	57	30	57	50	57	40	57	25	57	30	57	30	57	45	57	50	57	30	57	50	57	50	57	30	57	50	855	600
GRP 2 BLUEFOR SUPPORT	17	30	17	60	17	30	17	50	17	40	17	25	17	50	17	45	17	50	17	50	17	30	17	75	17	50	17	50	17	50	255	645
GRP 3 OPFOR MANEUVER	12	30	12	60	12	30	12	30	12	25	12	0	12	25	12	30	12	25	12	30	12	50	12	50	12	25	12	30	12	0	180	440
GRP 4 OPFOR SUPPORT	36	25	36	60	36	55	36	30	36	25	36	30	36	25	36	30	36	50	36	50	36	100	36	100	36	25	36	30	36	50	540	635
OPSGRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	68	10	68	60	68	25	68	25	68	75	68	50	68	50	68	30	68	50	68	50	68	30	68	50	68	50	68	30	68	50	1,020	635
	161	30	161	60	161	40	161	75	161	75	161	75	161	75	161	50	161	75	161	75	161	50	161	75	161	75	161	75	161	75	2,415	955
	295	75	295	75	295	40	295	100	295	75	295	75	295	50	295	75	295	75	295	75	295	50	295	45	295	75	295	75	295	75	4,425	1,035
	84	50	84	25	84	40	84	30	84	30	84	45	84	50	84	30	84	70	84	25	0	0	0	0	0	0	0	0	0	0	818	415
	156	50	156	25	156	50	156	30	156	50	156	45	132	50	156	30	156	80	156	25	0	0	0	0	0	0	0	0	0	0	1,536	435
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	36	50	36	60	36	40	36	75	36	50	36	50	36	75	36	75	36	70	36	50	0	0	0	0	0	0	0	0	0	0	360	595
	0	0	0	0	0	0	0	0	22	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	45
	76	50	76	40	76	40	76	50	76	50	76	75	100	25	76	50	76	50	76	50	0	0	0	0	0	0	0	0	0	0	784	480
	40	50	40	40	40	40	40	50	40	50	40	75	40	25	40	50	40	50	40	50	0	0	0	0	0	0	0	0	0	0	400	480
	70	50	34	60	34	60	34	100	34	75	34	75	34	25	34	75	34	120	34	75	0	0	0	0	0	0	0	0	0	0	376	715
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	14	100	0	0	0	0	0	0	14	75	0	0	0	0	14	75	14	50	0	0	0	0	0	56	300	
	658	25	100	75	658	75	100	30	658	75	658	75	658	50	100	30	658	100	658	75	100	45	100	30	598	50	598	50	658	50	6,960	835

Summary by Group

	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW							
GRP 1 BLUEFOR MANEUVER	122	115	122	240	122	145	122	160	122	130	122	80	122	130	122	120	122	165	122	180	122	160	122	275	122	150	122	120	122	150	
GRP 2 BLUEFOR SUPPORT	1182	140	624	270	1182	180	638	330	1182	300	1182	275	1182	200	638	285	1182	275	1182	275	638	250	638	250	1182	300	1122	230	1242	300	
GRP 3 OPFOR MANEUVER	276	150	276	110	276	130	276	135	254	150	276	140	252	175	276	135	276	220	276	100	0	0	0	0	0	0	0	0	0	0	0
GRP 4 OPFOR SUPPORT	186	150	150	140	150	140	150	200	172	220	150	225	174	75	150	175	150	220	150	175	0	0	0	0	0	0	0	0	0	0	0
Total	1766	555	1172	760	1730	595	1186	825	1730	800	1730	720	1730	580	1186	715	1730	880	1730	730	760	410	760	525	1304	450	1244	350	1364	450	

Summary of Raw Data by Group

	GRP 1 BLUEFOR MANEUVER								GRP 2 BLUEFOR SUPPORT								GRP 3 OPFOR MANEUVER								GRP 4 OPFOR SUPPORT								OPSGRP							
	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW	HT	LT	HW	LW								
RSOI	57	30	17	30	12	30	36	25	0	0	68	10	161	30	295	75	84	50	156	50	0	0	36	50	0	0	76	50	40	50	70	50	0	0	0	14	0	658	25	
Day 1	57	60	17	60	12	60	36	60	0	0	68	60	161	60	295	75	84	25	156	25	0	0	36	60	0	0	76	40	40	40	34	60	0	0	0	14	0	100	75	
Day 2	57	30	17	30	12	30	36	55	0	0	68	25	161	40	295	40	84	40	156	50	0	0	36	40	0	0	76	40	40	40	34	60	0	0	0	14	0	658	75	
Day 3	57	50	17	50	12	30	36	30	0	0	68	25	161	75	295	100	84	30	156	30	0	0	36	75	0	0	76	50	40	50	34	100	0	0	0	14	100	100	30	
Day 4	57	40	17	40	12	25	36	25	0	0	68	75	161	75	295	75	84	50	156	50	0	0	36	50	22	45	76	50	40	50	34	75	0	0	0	14	0	658	75	
Day 5	57	25	17	25	12	0	36	30	0	0	68	50	161	75	295	75	84	45	156	45	0	0	36	50	0	0	76	75	40	75	34	75	0	0	0	14	0	658	75	
Day 6	57	30	17	50	12	25	36	25	0	0	68	50	161	50	295	50	84	50	132	50	0	0	36	75	0	0	100	25	40	25	34	25	0	0	0	14	0	658	50	
Day 7	57	30	17	30	12	30	36	30	0	0	68	30	161	75	295	75	84	30	156	30	0	0	36	75	0	0	76	50	40	50	34	75	0	0	0	14	75	100	30	
Day 8	57	45	17	45	12	25	36	50	0	0	68	50	161	50	295	75	84	70	156	80	0	0	36	70	0	0	76	50	40	50	34	120	0	0	0	14	0	658	100	
Day 9	57	50	17	50	12	30	36	50	0	0	68	50	161	75	295	75	84	25	156	25	0	0	36	50	0	0	76	50	40	50	34	75	0	0	0	14	0	658	75	
Day 10	57	30	17	30	12	50	36	50	0	0	68	30	161	50	295	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	14	75	100	45
Day 11	57	50	17	75	12	50	36	100	0	0	68	50	161	75	295	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	14	50	100	30
Day 12	57	50	17	50	12	25	36	25	0	0	68	50	161	75	295	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	50	14	0	598	50	
Day 13	57	30	17	30	12	30	36	30	0	0	68	30	161	75	295	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	598	50	
Day 14	57	50	17	50	12	0	36	50	0	0	68	50	161	75	295	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	50	0	0	658	50		

Summary of Raw Data by Force

Group	Vehicle Type	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles	Distance, miles	No of Vehicles
BLUEFOR	HT	57	18.6	57	37.3	57	18.6	57	31.1																															

Appendix B
Fort Irwin Draft Conformity Report
Air Quality

Fugitive Dust Particulate Emission Estimates

Heavy Rotation

**Fort Irwin
Particulate Emission Calculations Summary - Alternative 1 - Heavy Rotation**

Day	Emissions, lb/d	Emissions, t/d
RSOI 1-5	190,391	95.2
Day 1	206,251	103.1
Day 2	183,260	91.6
Day 3	242,397	121.2
Day 4	318,036	159.0
Day 5	283,163	141.6
Day 6	151,182	75.6
Day 7	223,921	112.0
Day 8	342,197	171.1
Day 9	290,094	145.0
Day 10	135,240	67.6
Day 11	229,951	115.0
Day 12	226,372	113.2
Day 13	219,439	109.7
Day 14	229,310	114.7
Total	3,471,204	1,735.6

**Fort Irwin
Vehicle Miles Traveled Summary - Alternative 1 - Heavy Rotation**

Group	Vehicle Type	VMT, vehicle-mile/ rotation
BLUEFOR	HT	68,007
	LT	72,396
	HW	277,891
	LW	190,332
	Total	608,626
OPFOR	HT	21,664
	LT	66,031
	HW	13,180
	LW	29,598
	Total	130,473
OPSGRP	HT	0
	LT	3,732
	HW	2,611
	LW	264,941
	Total	271,284
TOTAL	HT	89,670
	LT	142,158
	HW	293,682
	LW	484,871
	Total	1,010,381

VMT, miles = Number of Vehicles by Type x Distance, miles.

Note: The calculation will not work on the number of vehicles and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day RSOI 1-5**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	6	18	4.09	13,009
	LT	13	0.2	30	30	18.6	558.0	6	18	2.55	1,423
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	10	6.2	954.8	16	18	5.59	5,337
	HW	11.63	0.2	461	30	18.6	8,574.6	16	18	5.35	45,874
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	50	31.1	2,612.4	16	18	8.96	23,407
	LT	13	0.2	156	50	31.1	4,851.6	16	18	5.59	27,120
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	70	50	31.1	2,177.0	16	18	2.65	5,769
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	25	15.5	10,199.0	6	18	1.21	12,341
				2236		326.2	50,695.6				190,391

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	24.8	1,512.8
	HW	461	18.6	8,574.6
	LW	300	62.1	12,860.4
	Total	1116	124.1	26,128.4
OPFOR	HT	84	31.1	2,612.4
	LT	232	62.2	7,215.2
	HW	40	31.1	1,244.0
	LW	106	62.2	3,296.6
	Total	462	186.6	14,368.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	15.5	10,199.0
	Total	658	15.5	10,199.0
TOTAL	HT	255	49.7	5,793.0
	LT	416	87.0	8,728.0
	HW	501	49.7	9,818.6
	LW	1064	139.8	26,356.0
	Total	2236	326.2	50,695.6

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 1**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	25	15.5	2,650.5	16	18	8.96	23,748
	LT	13	0.2	30	25	15.5	465.0	16	18	5.59	2,599
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	50	31.1	14,337.1	16	18	5.35	76,703
	LW	2	0.2	264	50	31.1	8,210.4	16	18	2.65	21,758
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	40	24.9	2,091.6	6	18	4.09	8,555
	LT	13	0.2	156	40	24.9	3,884.4	6	18	2.55	9,905
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	60	37.3	1,342.8	6	18	1.21	1,625
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	100	75	46.6	4,660.0	16	18	2.65	12,349
				1642			376.2			47,707.4	206,251

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	15.5	2,650.5
	LT	184	46.6	5,254.4
	HW	461	31.1	14,337.1
	LW	300	62.2	9,330.0
	Total	1116	155.4	31,572.0
OPFOR	HT	84	24.9	2,091.6
	LT	232	49.8	5,776.8
	HW	40	24.9	996.0
	LW	70	74.6	2,611.0
	Total	426	174.2	11,475.4
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	100	46.6	4,660.0
	Total	100	46.6	4,660.0
TOTAL	HT	255	40.4	4,742.1
	LT	416	96.4	11,031.2
	HW	501	56.0	15,333.1
	LW	470	183.4	16,601.0
	Total	1642	376.2	47,707.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
EF, lb/VMT = 2.6 x [Silt Content/12]^{0.8} x [Vehicle Weight/3]^{0.4} x [Moisture Content/0.2]^{0.3} x [(365 - Avg Precipitation)/365]
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 2**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	25	15.5	2,650.5	6	18	4.09	10,841
	LT	13	0.2	30	25	15.5	465.0	6	18	2.55	1,186
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	25	15.5	2,387.0	16	18	5.59	13,343
	HW	11.63	0.2	461	40	24.9	11,478.9	16	18	5.35	61,412
	LW	2	0.2	264	40	24.9	6,573.6	16	18	2.65	17,420
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	40	24.9	2,091.6	6	18	4.09	8,555
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	40	24.9	896.4	6	18	1.21	1,085
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2200		326.4	66,772.0				183,260

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	15.5	2,650.5
	LT	184	31.0	2,852.0
	HW	461	24.9	11,478.9
	LW	300	40.4	7,131.6
	Total	1116	111.8	24,113.0
OPFOR	HT	84	24.9	2,091.6
	LT	232	56.0	6,744.0
	HW	40	24.9	996.0
	LW	70	62.2	2,164.6
	Total	426	168.0	11,996.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	40.4	4,742.1
	LT	416	87.0	9,596.0
	HW	501	49.8	12,474.9
	LW	1028	149.2	39,959.0
	Total	2200	326.4	66,772.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 3**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day	
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions	
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751	
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379	
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0	
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810	
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0	
	LT	13	0.2	154	25	15.5	2,387.0	16	18	5.59	13,343	
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932	
	LW	2	0.2	264	100	62.2	16,420.8	16	18	2.65	43,515	
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390	
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399	
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0	
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030	
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0	
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213	
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655	
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604	
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0	
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0	
	HW	11.63	0.2	14	100	62.2	870.8	6	18	2.44	2,125	
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251	
				1656			494.1	61,805.9				242,397

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	46.6	3,320.0
	HW	461	46.6	21,482.6
	LW	300	80.8	17,090.4
	Total	1116	205.1	47,211.1
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	108.8	3,792.4
	Total	426	208.2	11,864.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	62.2	870.8
	LW	100	18.6	1,860.0
	Total	114	80.8	2,730.8
TOTAL	HT	255	49.7	6,880.5
	LT	416	96.3	8,585.2
	HW	515	139.9	23,597.4
	LW	470	208.2	22,742.8
	Total	1656	494.1	61,805.9

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 4**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	15	9.3	334.8	6	18	1.21	405
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	75	46.6	7,176.4	16	18	5.59	40,116
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	100	62.2	16,420.8	16	18	2.65	43,515
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	50	31.1	2,612.4	6	18	4.09	10,685
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	75	46.6	3,541.6	16	18	5.59	19,798
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2,200			494.1			97,452.1	318,036

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	77.7	8,109.4
	HW	461	46.6	21,482.6
	LW	300	71.5	16,755.6
	Total	1116	226.9	51,665.7
OPFOR	HT	84	31.1	2,612.4
	LT	232	77.7	8,393.2
	HW	40	46.6	1,864.0
	LW	70	65.2	2,254.0
	Total	426	220.6	15,123.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	62.2	7,930.5
	LT	416	155.4	16,502.6
	HW	501	93.2	23,346.6
	LW	1028	183.3	49,672.4
	Total	2200	494.1	97,452.1

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 5**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	25	15.5	1,302.0	6	18	4.09	5,325
	LT	13	0.2	156	25	15.5	2,418.0	6	18	2.55	6,166
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	75	46.6	3,541.6	16	18	5.59	19,798
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2200			453.6			87,987.5	283,163

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	65.2	12,972.0
	Total	1116	205.1	45,495.1
OPFOR	HT	84	15.5	1,302.0
	LT	232	62.1	5,959.6
	HW	40	46.6	1,864.0
	LW	70	77.7	2,704.0
	Total	426	201.9	11,829.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	46.6	6,620.1
	LT	416	124.3	11,682.0
	HW	501	93.2	23,346.6
	LW	1028	189.5	46,338.8
	Total	2200	453.6	87,987.5

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 6**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	154	50	31.1	4,789.4	6	18	2.55	12,213
	HW	11.63	0.2	461	50	31.1	14,337.1	6	18	2.44	34,983
	LW	2	0.2	264	50	31.1	8,210.4	6	18	1.21	9,935
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	30	18.6	1,562.4	16	18	8.96	13,999
	LT	13	0.2	156	30	18.6	2,901.6	16	18	5.59	16,220
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	25	15.5	1,178.0	16	18	5.59	6,585
	HW	11.63	0.2	40	25	15.5	620.0	16	18	5.35	3,317
	LW	2	0.2	34	25	15.5	527.0	16	18	2.65	1,397
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	50	31.1	20,463.8	6	18	1.21	24,761
				2200			316.9			62,518.4	151,182

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	31.1	14,337.1
	LW	300	46.6	8,768.4
	Total	1116	171.0	34,146.0
OPFOR	HT	84	18.6	1,562.4
	LT	232	34.1	4,079.6
	HW	40	15.5	620.0
	LW	70	46.6	1,646.6
	Total	426	114.8	7,908.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	658	31.1	20,463.8
TOTAL	HT	255	49.7	6,880.5
	LT	416	96.3	9,802.0
	HW	501	46.6	14,957.1
	LW	1028	124.3	30,878.8
	Total	2200	316.9	62,518.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 7**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	6	18	4.09	13,009
	LT	13	0.2	30	30	18.6	558.0	6	18	2.55	1,423
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	30	18.6	2,864.4	16	18	5.59	16,012
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	75	46.6	652.4	6	18	2.44	1,592
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251
				1656			441.0			55,434.0	223,921

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	46.6	21,482.6
	LW	300	65.2	12,972.0
	Total	1116	167.6	41,057.6
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	108.8	3,792.4
	Total	426	208.2	11,864.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	18.6	1,860.0
	Total	114	65.2	2,512.4
TOTAL	HT	255	37.2	4,743.0
	LT	416	86.9	8,687.6
	HW	515	124.3	23,379.0
	LW	470	192.6	18,624.4
	Total	1656	441.0	55,434.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 8**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day	
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions	
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	70	43.5	7,438.5	6	18	4.09	30,423	
	LT	13	0.2	30	80	49.7	1,491.0	6	18	2.55	3,802	
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0	
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355	
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0	
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773	
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932	
	LW	2	0.2	264	120	74.6	19,694.4	16	18	2.65	52,190	
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	70	43.5	3,654.0	6	18	4.09	14,945	
	LT	13	0.2	156	80	49.7	7,753.2	6	18	2.55	19,771	
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0	
	LW	2	0.2	36	70	43.5	1,566.0	6	18	1.21	1,895	
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0	
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213	
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655	
	LW	2	0.2	34	120	74.6	2,536.4	16	18	2.65	6,721	
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0	
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0	
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0	
	LW	2	0.2	658	100	62.2	40,927.6	6	18	1.21	49,522	
				2200			612.3	116,060.3				342,197

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	43.5	7,438.5
	LT	184	80.8	6,280.4
	HW	461	46.6	21,482.6
	LW	300	105.7	20,814.0
	Total	1116	276.6	56,015.5
OPFOR	HT	84	43.5	3,654.0
	LT	232	80.8	10,116.8
	HW	40	31.1	1,244.0
	LW	70	118.1	4,102.4
	Total	426	273.5	19,117.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	62.2	40,927.6
	Total	658	62.2	40,927.6
TOTAL	HT	255	87.0	11,092.5
	LT	416	161.6	16,397.2
	HW	501	77.7	22,726.6
	LW	1028	286.0	65,844.0
	Total	2200	612.3	116,060.3

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 9**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	50	31.1	2,612.4	6	18	4.09	10,685
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2200			497.4			91,533.9	290,094

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	77.7	13,422.0
	Total	1116	217.6	45,945.1
OPFOR	HT	84	31.1	2,612.4
	LT	232	62.2	7,215.2
	HW	40	46.6	1,864.0
	LW	70	93.3	3,234.4
	Total	426	233.2	14,926.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	62.2	7,930.5
	LT	416	124.4	12,937.6
	HW	501	93.2	23,346.6
	LW	1028	217.6	47,319.2
	Total	2200	497.4	91,533.9

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 10**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	6	18	4.09	13,009
	LT	13	0.2	30	30	18.6	558.0	6	18	2.55	1,423
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	30	18.6	2,864.4	16	18	5.59	16,012
	HW	11.63	0.2	461	50	31.1	14,337.1	16	18	5.35	76,703
	LW	2	0.2	264	50	31.1	8,210.4	16	18	2.65	21,758
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	75	46.6	652.4	6	18	2.44	1,592
	LW	2	0.2	100	45	28.0	2,800.0	6	18	1.21	3,388
				1230			223.7	33,722.5			

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	31.1	14,337.1
	LW	300	62.2	9,330.0
	Total	1116	149.1	30,270.1
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	28.0	2,800.0
	Total	114	74.6	3,452.4
TOTAL	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	475	77.7	14,989.5
	LW	400	90.2	12,130.0
	Total	1230	223.7	33,722.5

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
EF, lb/VMT = 2.6 x [Silt Content/12]^{0.8} x [Vehicle Weight/3]^{0.4} x [Moisture Content/0.2]^{0.3} x [(365 - Avg Precipitation)/365]
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 11**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	16	18	8.96	47,650
	LT	13	0.2	30	75	46.6	1,398.0	16	18	5.59	7,815
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	100	62.2	2,239.2	16	18	2.65	5,934
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	45	28.0	7,392.0	16	18	2.65	19,589
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	14	50	31.1	435.4	16	18	5.35	2,329
	LW	2	0.2	100	30	18.6	1,860.0	16	18	2.65	4,929
				1230			295.3			44,914.7	229,951

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	77.7	6,187.4
	HW	461	46.6	21,482.6
	LW	300	90.2	9,631.2
	Total	1116	245.6	42,619.3
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	31.1	435.4
	LW	100	18.6	1,860.0
	Total	114	49.7	2,295.4
TOTAL	HT	171	31.1	5,318.1
	LT	184	77.7	6,187.4
	HW	475	77.7	21,918.0
	LW	400	108.8	11,491.2
	Total	1230	295.3	44,914.7

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 12**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	60	50	31.1	1,866.0	6	18	2.55	4,758
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	598	50	31.1	18,597.8	6	18	1.21	22,503
				1774			264.2			65,847.3	226,372

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	62.1	12,860.4
	Total	1116	202.0	45,383.5
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	658	62.2	20,463.8
TOTAL	HT	171	31.1	5,318.1
	LT	244	93.3	7,588.4
	HW	461	46.6	21,482.6
	LW	898	93.2	31,458.2
	Total	1774	264.2	65,847.3

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 13**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	16	18	8.96	28,498
	LT	13	0.2	30	30	18.6	558.0	16	18	5.59	3,119
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	30	18.6	669.6	16	18	2.65	1,774
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	30	18.6	2,864.4	16	18	5.59	16,012
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	598	50	31.1	18,597.8	6	18	1.21	22,503
				1714			198.7			59,655.4	219,439

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	46.6	21,482.6
	LW	300	65.2	12,972.0
	Total	1116	167.6	41,057.6
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	598	31.1	18,597.8
TOTAL	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	46.6	21,482.6
	LW	898	96.3	31,569.8
	Total	1714	198.7	59,655.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
EF, lb/VMT = 2.6 x [Silt Content/12]^{0.8} x [Vehicle Weight/3]^{0.4} x [Moisture Content/0.2]^{0.3} x [(365 - Avg Precipitation)/365]
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Heavy Rotation - Day 14**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	60	50	31.1	1,866.0	6	18	2.55	4,758
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	50	31.1	20,463.8	6	18	1.21	24,761
				1834			279.8			68,274.9	229,310

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	77.7	13,422.0
	Total	1116	217.6	45,945.1
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	718	62.2	22,329.8
TOTAL	HT	171	31.1	5,318.1
	LT	244	93.3	7,588.4
	HW	461	46.6	21,482.6
	LW	958	108.8	33,885.8
	Total	1834	279.8	68,274.9

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
EF, lb/VMT = 2.6 x [Silt Content/12]^{0.8} x [Vehicle Weight/3]^{0.4} x [Moisture Content/0.2]^{0.3} x [(365 - Avg Precipitation)/365]
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Summary - Alternative 6 - Heavy Rotation**

Day	Emissions, lb/d	Emissions, t/d
RSOI 1-5	190,391	95.2
Day 1	206,251	103.1
Day 2	183,260	91.6
Day 3	242,397	121.2
Day 4	318,036	159.0
Day 5	283,163	141.6
Day 6	151,182	75.6
Day 7	223,921	112.0
Day 8	342,197	171.1
Day 9	290,094	145.0
Day 10	135,240	67.6
Day 11	229,951	115.0
Day 12	226,372	113.2
Day 13	219,439	109.7
Day 14	229,310	114.7
Total	3,471,204	1735.6

**Fort Irwin
Vehicle Miles Traveled Summary - Alternative 6 - Heavy Rotation**

Group	Vehicle Type	VMT, vehicle-mile/ rotation
BLUEFOR	HT	68,007
	LT	72,396
	HW	277,891
	LW	190,332
	Total	608,626
OPFOR	HT	21,664
	LT	66,031
	HW	13,180
	LW	29,598
	Total	130,473
OPSGRP	HT	0
	LT	3,732
	HW	2,611
	LW	264,941
	Total	271,284
TOTAL	HT	89,670
	LT	142,158
	HW	293,682
	LW	484,871
	Total	1,010,381

VMT, miles = Number of Vehicles by Type x Distance, miles.

Note: The calculation will not work on the number of vehicles and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.

Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day RSOI 1-5

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	6	18	4.09	13,009
	LT	13	0.2	30	30	18.6	558.0	6	18	2.55	1,423
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	10	6.2	954.8	16	18	5.59	5,337
	HW	11.63	0.2	461	30	18.6	8,574.6	16	18	5.35	45,874
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	50	31.1	2,612.4	16	18	8.96	23,407
	LT	13	0.2	156	50	31.1	4,851.6	16	18	5.59	27,120
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	70	50	31.1	2,177.0	16	18	2.65	5,769
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	25	15.5	10,199.0	6	18	1.21	12,341
				2236		326.2	50,695.6			190,391	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	24.8	1,512.8
	HW	461	18.6	8,574.6
	LW	300	62.1	12,860.4
	Total	1116	124.1	26,128.4
OPFOR	HT	84	31.1	2,612.4
	LT	232	62.2	7,215.2
	HW	40	31.1	1,244.0
	LW	106	62.2	3,296.6
	Total	462	186.6	14,368.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	15.5	10,199.0
	Total	658	15.5	10,199.0
TOTAL	HT	255	49.7	5,793.0
	LT	416	87.0	8,728.0
	HW	501	49.7	9,818.6
	LW	1064	139.8	26,356.0
	Total	2236	326.2	50,695.6

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 1

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	25	15.5	2,650.5	16	18	8.96	23,748
	LT	13	0.2	30	25	15.5	465.0	16	18	5.59	2,599
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	50	31.1	14,337.1	16	18	5.35	76,703
	LW	2	0.2	264	50	31.1	8,210.4	16	18	2.65	21,758
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	40	24.9	2,091.6	6	18	4.09	8,555
	LT	13	0.2	156	40	24.9	3,884.4	6	18	2.55	9,905
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	60	37.3	1,342.8	6	18	1.21	1,625
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	100	75	46.6	4,660.0	16	18	2.65	12,349
				1642		376.2	47,707.4				206,251

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	15.5	2,650.5
	LT	184	46.6	5,254.4
	HW	461	31.1	14,337.1
	LW	300	62.2	9,330.0
	Total	1116	155.4	31,572.0
OPFOR	HT	84	24.9	2,091.6
	LT	232	49.8	5,776.8
	HW	40	24.9	996.0
	LW	70	74.6	2,611.0
	Total	426	174.2	11,475.4
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	100	46.6	4,660.0
	Total	100	46.6	4,660.0
TOTAL	HT	255	40.4	4,742.1
	LT	416	96.4	11,031.2
	HW	501	56.0	15,333.1
	LW	470	183.4	16,601.0
	Total	1642	376.2	47,707.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 2**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	25	15.5	2,650.5	6	18	4.09	10,841
	LT	13	0.2	30	25	15.5	465.0	6	18	2.55	1,186
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	25	15.5	2,387.0	16	18	5.59	13,343
	HW	11.63	0.2	461	40	24.9	11,478.9	16	18	5.35	61,412
	LW	2	0.2	264	40	24.9	6,573.6	16	18	2.65	17,420
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	40	24.9	2,091.6	6	18	4.09	8,555
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	40	24.9	896.4	6	18	1.21	1,085
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2200		326.4	66,772.0				183,260

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	15.5	2,650.5
	LT	184	31.0	2,852.0
	HW	461	24.9	11,478.9
	LW	300	40.4	7,131.6
	Total	1116	111.8	24,113.0
OPFOR	HT	84	24.9	2,091.6
	LT	232	56.0	6,744.0
	HW	40	24.9	996.0
	LW	70	62.2	2,164.6
	Total	426	168.0	11,996.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	40.4	4,742.1
	LT	416	87.0	9,596.0
	HW	501	49.8	12,474.9
	LW	1028	149.2	39,959.0
	Total	2200	326.4	66,772.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 3**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	25	15.5	2,387.0	16	18	5.59	13,343
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	100	62.2	16,420.8	16	18	2.65	43,515
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	100	62.2	870.8	6	18	2.44	2,125
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251
				1656		494.1	61,805.9			242,397	

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	46.6	3,320.0
	HW	461	46.6	21,482.6
	LW	300	80.8	17,090.4
	Total	1116	205.1	47,211.1
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	108.8	3,792.4
	Total	426	208.2	11,864.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	62.2	870.8
	LW	100	18.6	1,860.0
	Total	114	80.8	2,730.8
TOTAL	HT	255	49.7	6,880.5
	LT	416	96.3	8,585.2
	HW	515	139.9	23,597.4
	LW	470	208.2	22,742.8
	Total	1656	494.1	61,805.9

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 4

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	15	9.3	334.8	6	18	1.21	405
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	75	46.6	7,176.4	16	18	5.59	40,116
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	100	62.2	16,420.8	16	18	2.65	43,515
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	50	31.1	2,612.4	6	18	4.09	10,685
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	75	46.6	3,541.6	16	18	5.59	19,798
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2200		494.1	97,452.1			318,036	

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	77.7	8,109.4
	HW	461	46.6	21,482.6
	LW	300	71.5	16,755.6
	Total	1116	226.9	51,665.7
OPFOR	HT	84	31.1	2,612.4
	LT	232	77.7	8,393.2
	HW	40	46.6	1,864.0
	LW	70	65.2	2,254.0
	Total	426	220.6	15,123.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	62.2	7,930.5
	LT	416	155.4	16,502.6
	HW	501	93.2	23,346.6
	LW	1028	183.3	49,672.4
	Total	2200	494.1	97,452.1

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 5**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	25	15.5	1,302.0	6	18	4.09	5,325
	LT	13	0.2	156	25	15.5	2,418.0	6	18	2.55	6,166
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	75	46.6	3,541.6	16	18	5.59	19,798
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2200		453.6	87,987.5				283,163

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	65.2	12,972.0
	Total	1116	205.1	45,495.1
OPFOR	HT	84	15.5	1,302.0
	LT	232	62.1	5,959.6
	HW	40	46.6	1,864.0
	LW	70	77.7	2,704.0
	Total	426	201.9	11,829.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	46.6	6,620.1
	LT	416	124.3	11,682.0
	HW	501	93.2	23,346.6
	LW	1028	189.5	46,338.8
	Total	2200	453.6	87,987.5

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 6**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	154	50	31.1	4,789.4	6	18	2.55	12,213
	HW	11.63	0.2	461	50	31.1	14,337.1	6	18	2.44	34,983
	LW	2	0.2	264	50	31.1	8,210.4	6	18	1.21	9,935
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	30	18.6	1,562.4	16	18	8.96	13,999
	LT	13	0.2	156	30	18.6	2,901.6	16	18	5.59	16,220
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	25	15.5	1,178.0	16	18	5.59	6,585
	HW	11.63	0.2	40	25	15.5	620.0	16	18	5.35	3,317
	LW	2	0.2	34	25	15.5	527.0	16	18	2.65	1,397
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	50	31.1	20,463.8	6	18	1.21	24,761
				2200		316.9	62,518.4				151,182

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	31.1	14,337.1
	LW	300	46.6	8,768.4
	Total	1116	171.0	34,146.0
OPFOR	HT	84	18.6	1,562.4
	LT	232	34.1	4,079.6
	HW	40	15.5	620.0
	LW	70	46.6	1,646.6
	Total	426	114.8	7,908.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	658	31.1	20,463.8
TOTAL	HT	255	49.7	6,880.5
	LT	416	96.3	9,802.0
	HW	501	46.6	14,957.1
	LW	1028	124.3	30,878.8
	Total	2200	316.9	62,518.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 7**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	6	18	4.09	13,009
	LT	13	0.2	30	30	18.6	558.0	6	18	2.55	1,423
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	30	18.6	2,864.4	16	18	5.59	16,012
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	75	46.6	652.4	6	18	2.44	1,592
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251
				1656		441.0	55,434.0			223,921	

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	46.6	21,482.6
	LW	300	65.2	12,972.0
	Total	1116	167.6	41,057.6
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	108.8	3,792.4
	Total	426	208.2	11,864.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	18.6	1,860.0
	Total	114	65.2	2,512.4
TOTAL	HT	255	37.2	4,743.0
	LT	416	86.9	8,687.6
	HW	515	124.3	23,379.0
	LW	470	192.6	18,624.4
	Total	1656	441.0	55,434.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 8**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	70	43.5	7,438.5	6	18	4.09	30,423
	LT	13	0.2	30	80	49.7	1,491.0	6	18	2.55	3,802
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	120	74.6	19,694.4	16	18	2.65	52,190
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	70	43.5	3,654.0	6	18	4.09	14,945
	LT	13	0.2	156	80	49.7	7,753.2	6	18	2.55	19,771
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	70	43.5	1,566.0	6	18	1.21	1,895
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	120	74.6	2,536.4	16	18	2.65	6,721
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	100	62.2	40,927.6	6	18	1.21	49,522
				2200		612.3	116,060.3			342,197	

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	43.5	7,438.5
	LT	184	80.8	6,280.4
	HW	461	46.6	21,482.6
	LW	300	105.7	20,814.0
	Total	1116	276.6	56,015.5
OPFOR	HT	84	43.5	3,654.0
	LT	232	80.8	10,116.8
	HW	40	31.1	1,244.0
	LW	70	118.1	4,102.4
	Total	426	273.5	19,117.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	62.2	40,927.6
	Total	658	62.2	40,927.6
TOTAL	HT	255	87.0	11,092.5
	LT	416	161.6	16,397.2
	HW	501	77.7	22,726.6
	LW	1028	286.0	65,844.0
	Total	2200	612.3	116,060.3

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 9

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	50	31.1	2,612.4	6	18	4.09	10,685
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				2200		497.4	91,533.9			290,094	

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	77.7	13,422.0
	Total	1116	217.6	45,945.1
OPFOR	HT	84	31.1	2,612.4
	LT	232	62.2	7,215.2
	HW	40	46.6	1,864.0
	LW	70	93.3	3,234.4
	Total	426	233.2	14,926.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	255	62.2	7,930.5
	LT	416	124.4	12,937.6
	HW	501	93.2	23,346.6
	LW	1028	217.6	47,319.2
	Total	2200	497.4	91,533.9

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 10**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	6	18	4.09	13,009
	LT	13	0.2	30	30	18.6	558.0	6	18	2.55	1,423
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	30	18.6	2,864.4	16	18	5.59	16,012
	HW	11.63	0.2	461	50	31.1	14,337.1	16	18	5.35	76,703
	LW	2	0.2	264	50	31.1	8,210.4	16	18	2.65	21,758
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	75	46.6	652.4	6	18	2.44	1,592
	LW	2	0.2	100	45	28.0	2,800.0	6	18	1.21	3,388
				1230		223.7	33,722.5				135,240

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	31.1	14,337.1
	LW	300	62.2	9,330.0
	Total	1116	149.1	30,270.1
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	28.0	2,800.0
	Total	114	74.6	3,452.4
TOTAL	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	475	77.7	14,989.5
	LW	400	90.2	12,130.0
	Total	1230	223.7	33,722.5

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 11**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	16	18	8.96	47,650
	LT	13	0.2	30	75	46.6	1,398.0	16	18	5.59	7,815
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	100	62.2	2,239.2	16	18	2.65	5,934
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	45	28.0	7,392.0	16	18	2.65	19,589
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	14	50	31.1	435.4	16	18	5.35	2,329
	LW	2	0.2	100	30	18.6	1,860.0	16	18	2.65	4,929
				1230			295.3			44,914.7	229,951

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	77.7	6,187.4
	HW	461	46.6	21,482.6
	LW	300	90.2	9,631.2
	Total	1116	245.6	42,619.3
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	31.1	435.4
	LW	100	18.6	1,860.0
	Total	114	49.7	2,295.4
TOTAL	HT	171	31.1	5,318.1
	LT	184	77.7	6,187.4
	HW	475	77.7	21,918.0
	LW	400	108.8	11,491.2
	Total	1230	295.3	44,914.7

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 12**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	60	50	31.1	1,866.0	6	18	2.55	4,758
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	598	50	31.1	18,597.8	6	18	1.21	22,503
				1774		264.2	65,847.3			226,372	

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	62.1	12,860.4
	Total	1116	202.0	45,383.5
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	658	62.2	20,463.8
TOTAL	HT	171	31.1	5,318.1
	LT	244	93.3	7,588.4
	HW	461	46.6	21,482.6
	LW	898	93.2	31,458.2
	Total	1774	264.2	65,847.3

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 13**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	30	18.6	3,180.6	16	18	8.96	28,498
	LT	13	0.2	30	30	18.6	558.0	16	18	5.59	3,119
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	30	18.6	669.6	16	18	2.65	1,774
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	30	18.6	2,864.4	16	18	5.59	16,012
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	598	50	31.1	18,597.8	6	18	1.21	22,503
				1714		198.7	59,655.4				219,439

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	46.6	21,482.6
	LW	300	65.2	12,972.0
	Total	1116	167.6	41,057.6
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	598	31.1	18,597.8
TOTAL	HT	171	18.6	3,180.6
	LT	184	37.2	3,422.4
	HW	461	46.6	21,482.6
	LW	898	96.3	31,569.8
	Total	1714	198.7	59,655.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

Particulate Emission Calculations Alternative 6 - Heavy Rotation - Day 14

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	171	50	31.1	5,318.1	6	18	4.09	21,751
	LT	13	0.2	30	50	31.1	933.0	6	18	2.55	2,379
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	154	50	31.1	4,789.4	16	18	5.59	26,773
	HW	11.63	0.2	461	75	46.6	21,482.6	16	18	5.35	114,932
	LW	2	0.2	264	75	46.6	12,302.4	16	18	2.65	32,601
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	60	50	31.1	1,866.0	6	18	2.55	4,758
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	50	31.1	20,463.8	6	18	1.21	24,761

1834

279.8

68,274.9

229,310

Group	Vehicle Type	No of Vehicles per Rotation	Distance, miles/ rotation	VMT, mile/ rotation
BLUEFOR	HT	171	31.1	5,318.1
	LT	184	62.2	5,722.4
	HW	461	46.6	21,482.6
	LW	300	77.7	13,422.0
	Total	1116	217.6	45,945.1
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	718	62.2	22,329.8
TOTAL	HT	171	31.1	5,318.1
	LT	244	93.3	7,588.4
	HW	461	46.6	21,482.6
	LW	958	108.8	33,885.8
	Total	1834	279.8	68,274.9

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt6Excell Spreadsheets received on October 1, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of HR Alternative 6.ppt.

Light Rotation

**Fort Irwin
Particulate Emission Calculations Summary - Alternative 1 - Light Rotation**

Day	Emissions, lb/d	Emissions, t/d
RSOI 1-5	152,642	76.3
Day 1	127,976	64.0
Day 2	130,469	65.2
Day 3	150,276	75.1
Day 4	201,336	100.7
Day 5	201,336	100.7
Day 6	106,815	53.4
Day 7	135,270	67.6
Day 8	211,977	106.0
Day 9	189,192	94.6
Day 10	70,558	35.3
Day 11	109,350	54.7
Day 12	125,379	62.7
Day 13	120,377	60.2
Day 14	127,863	63.9
Total	2,160,816	1,080.4

**Fort Irwin
Vehicle Miles Traveled Summary - Alternative 1 - Light Rotation**

Group	Vehicle Type	VMT, vehicle-mile/ rotation
BLUEFOR	HT	21,255
	LT	34,068
	HW	100,068
	LW	197,837
	Total	353,228
OPFOR	HT	23,247
	LT	68,390
	HW	13,180
	LW	29,148
	Total	133,965
OPSGRP	HT	0
	LT	3,732
	HW	2,611
	LW	264,941
	Total	271,284
TOTAL	HT	44,502
	LT	106,190
	HW	115,859
	LW	491,926
	Total	758,477

VMT, miles = Number of Vehicles by Type x Distance, miles.

Note: The calculation will not work on the number of vehicles and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.

Particulate Emission Calculations Alternative 1 - Light Rotation - Day RSOI 1-5

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	30	18.6	316.2	6	18	2.55	806
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	10	6.2	421.6	16	18	5.59	2,357
	HW	11.63	0.2	161	30	18.6	2,994.6	16	18	5.35	16,021
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	84	50	31.1	2,612.4	16	18	8.96	23,407
	LT	13	0.2	156	50	31.1	4,851.6	16	18	5.59	27,120
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	70	50	31.1	2,177.0	16	18	2.65	5,769
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	25	15.5	10,199.0	6	18	1.21	12,341
				1766		344.8	43,888.0				152,642

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	24.8	737.8
	HW	173	37.2	3,217.8
	LW	331	62.1	14,305.0
	Total	646	142.7	19,320.8
OPFOR	HT	84	31.1	2,612.4
	LT	232	62.2	7,215.2
	HW	40	31.1	1,244.0
	LW	106	62.2	3,296.6
	Total	462	186.6	14,368.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	15.5	10,199.0
	Total	658	15.5	10,199.0
TOTAL	HT	141	49.7	3,672.6
	LT	317	87.0	7,953.0
	HW	213	68.3	4,461.8
	LW	1095	139.8	27,800.6
	Total	1766	344.8	43,888.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, \text{lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 1**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	25	15.5	883.5	16	18	8.96	7,916
	LT	13	0.2	17	25	15.5	263.5	16	18	5.59	1,473
	HW	11.63	0.2	12	25	15.5	186.0	16	18	5.35	995
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	50	31.1	5,007.1	16	18	5.35	26,788
	LW	2	0.2	295	50	31.1	9,174.5	16	18	2.65	24,312
GRP 3 OPFOR	HT	42.25	0.2	84	40	24.9	2,091.6	6	18	4.09	8,555
	LT	13	0.2	156	40	24.9	3,884.4	6	18	2.55	9,905
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	60	37.3	1,342.8	6	18	1.21	1,625
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	100	75	46.6	4,660.0	16	18	2.65	12,349
				1172		391.7	34,884.4			127,976	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	15.5	883.5
	LT	85	46.6	2,378.3
	HW	173	46.6	5,193.1
	LW	331	62.2	10,294.1
	Total	646	170.9	18,749.0
OPFOR	HT	84	24.9	2,091.6
	LT	232	49.8	5,776.8
	HW	40	24.9	996.0
	LW	70	74.6	2,611.0
	Total	426	174.2	11,475.4
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	100	46.6	4,660.0
	Total	100	46.6	4,660.0
TOTAL	HT	141	40.4	2,975.1
	LT	317	96.4	8,155.1
	HW	213	71.5	6,189.1
	LW	501	183.4	17,565.1
	Total	1172	391.7	34,884.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 2**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	25	15.5	883.5	6	18	4.09	3,614
	LT	13	0.2	17	25	15.5	263.5	6	18	2.55	672
	HW	11.63	0.2	12	25	15.5	186.0	6	18	2.44	454
	LW	2	0.2	36	20	12.4	446.4	6	18	1.21	540
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	25	15.5	1,054.0	16	18	5.59	5,892
	HW	11.63	0.2	161	40	24.9	4,008.9	16	18	5.35	21,448
	LW	2	0.2	295	40	24.9	7,345.5	16	18	2.65	19,466
GRP 3 OPFOR	HT	42.25	0.2	84	40	24.9	2,091.6	6	18	4.09	8,555
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	40	24.9	896.4	6	18	1.21	1,085
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				1730		338.8	56,846.8				130,469

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	15.5	883.5
	LT	85	31.0	1,317.5
	HW	173	40.4	4,194.9
	LW	331	37.3	7,791.9
	Total	646	124.2	14,187.8
OPFOR	HT	84	24.9	2,091.6
	LT	232	56.0	6,744.0
	HW	40	24.9	996.0
	LW	70	62.2	2,164.6
	Total	426	168.0	11,996.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	40.4	2,975.1
	LT	317	87.0	8,061.5
	HW	213	65.3	5,190.9
	LW	1059	146.1	40,619.3
	Total	1730	338.8	56,846.8

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 3**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	25	15.5	1,054.0	16	18	5.59	5,892
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	100	62.2	18,349.0	16	18	2.65	48,625
GRP 3 OPFOR	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	100	62.2	870.8	6	18	2.44	2,125
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251
				1186		512.7	44,694.6			150,276	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	46.6	1,582.7
	HW	173	65.2	7,725.8
	LW	331	80.8	19,018.6
	Total	646	223.7	30,099.8
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	108.8	3,792.4
	Total	426	208.2	11,864.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	62.2	870.8
	LW	100	18.6	1,860.0
	Total	114	80.8	2,730.8
TOTAL	HT	141	49.7	3,335.1
	LT	317	96.3	6,847.9
	HW	227	158.5	9,840.6
	LW	501	208.2	24,671.0
	Total	1186	512.7	44,694.6

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 4**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	40	24.9	1,419.3	6	18	4.09	5,805
	LT	13	0.2	17	40	24.9	423.3	6	18	2.55	1,079
	HW	11.63	0.2	12	15	9.3	111.6	6	18	2.44	272
	LW	2	0.2	36	15	9.3	334.8	6	18	1.21	405
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	75	46.6	3,168.8	16	18	5.59	17,714
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	62	50	31.1	1,928.2	6	18	4.09	7,886
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 4 OPFOR	HT	42.25	0.2	22	60	37.3	820.6	16	18	8.96	7,353
	LT	13	0.2	76	75	46.6	3,541.6	16	18	5.59	19,798
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				1,730		512.7	72,630.2			201,336	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	24.9	1,419.3
	LT	85	71.5	3,592.1
	HW	173	55.9	7,614.2
	LW	331	55.9	14,081.8
	Total	646	208.2	26,707.4
OPFOR	HT	84	68.4	2,748.8
	LT	232	77.7	8,393.2
	HW	40	46.6	1,864.0
	LW	70	65.2	2,254.0
	Total	426	257.9	15,260.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	93.3	4,168.1
	LT	317	149.2	11,985.3
	HW	213	102.5	9,478.2
	LW	1059	167.7	46,998.6
	Total	1730	512.7	72,630.2

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 5**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	40	24.9	1,419.3	6	18	4.09	5,805
	LT	13	0.2	17	40	24.9	423.3	6	18	2.55	1,079
	HW	11.63	0.2	12	15	9.3	111.6	6	18	2.44	272
	LW	2	0.2	36	15	9.3	334.8	6	18	1.21	405
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	75	46.6	3,168.8	16	18	5.59	17,714
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	62	50	31.1	1,928.2	6	18	4.09	7,886
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 4 OPFOR	HT	42.25	0.2	22	60	37.3	820.6	16	18	8.96	7,353
	LT	13	0.2	76	75	46.6	3,541.6	16	18	5.59	19,798
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				1730		512.7	72,630.2			201,336	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	24.9	1,419.3
	LT	85	71.5	3,592.1
	HW	173	55.9	7,614.2
	LW	331	55.9	14,081.8
	Total	646	208.2	26,707.4
OPFOR	HT	84	68.4	2,748.8
	LT	232	77.7	8,393.2
	HW	40	46.6	1,864.0
	LW	70	65.2	2,254.0
	Total	426	257.9	15,260.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	93.3	4,168.1
	LT	317	149.2	11,985.3
	HW	213	102.5	9,478.2
	LW	1059	167.7	46,998.6
	Total	1730	512.7	72,630.2

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 6**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	68	50	31.1	2,114.8	6	18	2.55	5,393
	HW	11.63	0.2	161	50	31.1	5,007.1	6	18	2.44	12,217
	LW	2	0.2	295	50	31.1	9,174.5	6	18	1.21	11,101
GRP 3 OPFOR	HT	42.25	0.2	84	30	18.6	1,562.4	16	18	8.96	13,999
	LT	13	0.2	132	30	18.6	2,455.2	16	18	5.59	13,725
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	100	25	15.5	1,550.0	16	18	5.59	8,665
	HW	11.63	0.2	40	25	15.5	620.0	16	18	5.35	3,317
	LW	2	0.2	34	25	15.5	527.0	16	18	2.65	1,397
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	50	31.1	20,463.8	6	18	1.21	24,761
				1730			316.9			47,453.8	106,815

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	31.1	5,007.1
	LW	331	46.6	9,732.5
	Total	646	171.0	19,155.8
OPFOR	HT	84	18.6	1,562.4
	LT	232	34.1	4,005.2
	HW	40	15.5	620.0
	LW	70	46.6	1,646.6
	Total	426	114.8	7,834.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	658	31.1	20,463.8
TOTAL	HT	141	49.7	3,335.1
	LT	317	96.3	6,648.7
	HW	213	46.6	5,627.1
	LW	1059	124.3	31,842.9
	Total	1730	316.9	47,453.8

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 7**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	30	18.6	316.2	6	18	2.55	806
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	30	18.6	1,264.8	16	18	5.59	7,070
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	75	46.6	652.4	6	18	2.44	1,592
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251
				1186			459.6			39,160.0	135,270

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	65.2	7,725.8
	LW	331	65.2	14,416.6
	Total	646	186.2	24,783.6
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	108.8	3,792.4
	Total	426	208.2	11,864.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	18.6	1,860.0
	Total	114	65.2	2,512.4
TOTAL	HT	141	37.2	2,622.6
	LT	317	86.9	6,846.2
	HW	227	142.9	9,622.2
	LW	501	192.6	20,069.0
	Total	1186	459.6	39,160.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 8**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	50	31.1	373.2	6	18	2.44	911
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	84	70	43.5	3,654.0	6	18	4.09	14,945
	LT	13	0.2	156	80	49.7	7,753.2	6	18	2.55	19,771
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	70	43.5	1,566.0	6	18	1.21	1,895
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	120	74.6	2,536.4	16	18	2.65	6,721
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	100	62.2	40,927.6	6	18	1.21	49,522
				1730		584.4	87,203.4			211,977	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	77.7	7,875.8
	LW	331	77.7	14,866.6
	Total	646	248.7	27,158.6
OPFOR	HT	84	43.5	3,654.0
	LT	232	80.8	10,116.8
	HW	40	31.1	1,244.0
	LW	70	118.1	4,102.4
	Total	426	273.5	19,117.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	62.2	40,927.6
	Total	658	62.2	40,927.6
TOTAL	HT	141	74.6	5,426.7
	LT	317	143.0	12,760.3
	HW	213	108.8	9,119.8
	LW	1059	258.0	59,896.6
	Total	1730	584.4	87,203.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 9**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	84	50	31.1	2,612.4	6	18	4.09	10,685
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				1730		516.0	72,597.4			189,192	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	65.2	7,725.8
	LW	331	77.7	14,866.6
	Total	646	236.2	27,008.6
OPFOR	HT	84	31.1	2,612.4
	LT	232	62.2	7,215.2
	HW	40	46.6	1,864.0
	LW	70	93.3	3,234.4
	Total	426	233.2	14,926.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	62.2	4,385.1
	LT	317	124.4	9,858.7
	HW	213	111.8	9,589.8
	LW	1059	217.6	48,763.8
	Total	1730	516.0	72,597.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 10**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	30	18.6	316.2	6	18	2.55	806
	HW	11.63	0.2	12	50	31.1	373.2	6	18	2.44	911
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	30	18.6	1,264.8	16	18	5.59	7,070
	HW	11.63	0.2	161	50	31.1	5,007.1	16	18	5.35	26,788
	LW	2	0.2	295	50	31.1	9,174.5	16	18	2.65	24,312
GRP 3 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	75	46.6	652.4	6	18	2.44	1,592
	LW	2	0.2	100	45	28.0	2,800.0	6	18	1.21	3,388
				760		254.8	21,768.0				70,558

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	62.2	5,380.3
	LW	331	62.2	10,294.1
	Total	646	180.2	18,315.6
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	28.0	2,800.0
	Total	114	74.6	3,452.4
TOTAL	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	187	108.8	6,032.7
	LW	431	90.2	13,094.1
	Total	760	254.8	21,768.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 11**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	50	31.1	1,772.7	16	18	8.96	15,883
	LT	13	0.2	17	75	46.6	792.2	16	18	5.59	4,428
	HW	11.63	0.2	12	50	31.1	373.2	16	18	5.35	1,997
	LW	2	0.2	36	100	62.2	2,239.2	16	18	2.65	5,934
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	45	28.0	8,260.0	16	18	2.65	21,889
GRP 3 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	14	50	31.1	435.4	16	18	5.35	2,329
	LW	2	0.2	100	30	18.6	1,860.0	16	18	2.65	4,929
				760		326.4	25,350.1			109,350	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	77.7	2,907.0
	HW	173	77.7	7,875.8
	LW	331	90.2	10,499.2
	Total	646	276.7	23,054.7
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	31.1	435.4
	LW	100	18.6	1,860.0
	Total	114	49.7	2,295.4
TOTAL	HT	57	31.1	1,772.7
	LT	85	77.7	2,907.0
	HW	187	108.8	8,311.2
	LW	431	108.8	12,359.2
	Total	760	326.4	25,350.1

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 12**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	25	15.5	186.0	6	18	2.44	454
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	60	50	31.1	1,866.0	6	18	2.55	4,758
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	598	50	31.1	18,597.8	6	18	1.21	22,503
				1304		279.7	46,873.6			125,379	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	62.1	7,688.6
	LW	331	62.1	14,305.0
	Total	646	217.5	26,409.8
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	658	62.2	20,463.8
TOTAL	HT	57	31.1	1,772.7
	LT	145	93.3	4,509.5
	HW	173	62.1	7,688.6
	LW	929	93.2	32,902.8
	Total	1304	279.7	46,873.6

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 1 - Light Rotation - Day 13**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEF	HT	42.25	0.2	57	30	18.6	1,060.2	16	18	8.96	9,499
	LT	13	0.2	17	30	18.6	316.2	16	18	5.59	1,768
	HW	11.63	0.2	12	30	18.6	223.2	16	18	5.35	1,194
	LW	2	0.2	36	30	18.6	669.6	16	18	2.65	1,774
GRP 2 BLUEF	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	30	18.6	1,264.8	16	18	5.59	7,070
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	598	50	31.1	18,597.8	6	18	1.21	22,503
				1244		217.3	43,381.4				120,377

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	65.2	7,725.8
	LW	331	65.2	14,416.6
	Total	646	186.2	24,783.6
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	598	31.1	18,597.8
TOTAL	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	65.2	7,725.8
	LW	929	96.3	33,014.4
	Total	1244	217.3	43,381.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

Particulate Emission Calculations Alternative 1 - Light Rotation - Day 14

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
GRP 4 OPFOR	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	60	50	31.1	1,866.0	6	18	2.55	4,758
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	50	31.1	20,463.8	6	18	1.21	24,761
				1364		279.8	49,115.2				127,863

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	46.6	7,502.6
	LW	331	77.7	14,866.6
	Total	646	217.6	26,785.4
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	718	62.2	22,329.8
TOTAL	HT	57	31.1	1,772.7
	LT	145	93.3	4,509.5
	HW	173	46.6	7,502.6
	LW	989	108.8	35,330.4
	Total	1364	279.8	49,115.2

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt1ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, \text{lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 1.ppt.

**Fort Irwin
Particulate Emission Calculations Summary - Alternative 6 - Light Rotation**

Day	Emissions, lb/d	Emissions, t/d
RSOI 1-5	152,642	76.3
Day 1	156,018	78.0
Day 2	132,366	66.2
Day 3	150,276	75.1
Day 4	190,597	95.3
Day 5	186,671	93.3
Day 6	124,465	62.2
Day 7	133,865	66.9
Day 8	197,313	98.7
Day 9	172,904	86.5
Day 10	70,558	35.3
Day 11	109,350	54.7
Day 12	125,379	62.7
Day 13	120,377	60.2
Day 14	127,863	63.9
Total	2,150,644	1,075.3

**Fort Irwin
Vehicle Miles Traveled Summary - Alternative 6 - Light Rotation**

Group	Vehicle Type	VMT, vehicle- mile/ rotation
BLUEFOR	HT	21,250
	LT	33,646
	HW	98,831
	LW	203,976
	Total	357,703
OPFOR	HT	21,595
	LT	64,478
	HW	11,940
	LW	29,546
	Total	127,559
OPSGRP	HT	0
	LT	3,732
	HW	2,611
	LW	264,941
	Total	271,284
TOTAL	HT	42,845
	LT	101,857
	HW	113,382
	LW	498,462
	Total	756,546

VMT, miles = Number of Vehicles by Type x Distance, miles.

Note: The calculation will not work on the number of vehicles and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.

Particulate Emission Calculations Alternative 6 - Light Rotation - Day RSOI 1-5

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	30	18.6	316.2	6	18	2.55	806
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	10	6.2	421.6	16	18	5.59	2,357
	HW	11.63	0.2	161	30	18.6	2,994.6	16	18	5.35	16,021
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	50	31.1	2,612.4	16	18	8.96	23,407
	LT	13	0.2	156	50	31.1	4,851.6	16	18	5.59	27,120
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	50	31.1	1,119.6	16	18	2.65	2,967
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	70	50	31.1	2,177.0	16	18	2.65	5,769
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	25	15.5	10,199.0	6	18	1.21	12,341
				1766		344.8	43,888.0				152,642

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	24.8	737.8
	HW	173	37.2	3,217.8
	LW	331	62.1	14,305.0
	Total	646	142.7	19,320.8
OPFOR	HT	84	31.1	2,612.4
	LT	232	62.2	7,215.2
	HW	40	31.1	1,244.0
	LW	106	62.2	3,296.6
	Total	462	186.6	14,368.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	15.5	10,199.0
	Total	658	15.5	10,199.0
TOTAL	HT	141	49.7	3,672.6
	LT	317	87.0	7,953.0
	HW	213	68.3	4,461.8
	LW	1095	139.8	27,800.6
	Total	1766	344.8	43,888.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

Particulate Emission Calculations Alternative 6 - Light Rotation - Day 1

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	60	37.3	2,126.1	16	18	8.96	19,050
	LT	13	0.2	17	60	37.3	634.1	16	18	5.59	3,545
	HW	11.63	0.2	12	60	37.3	447.6	16	18	5.35	2,395
	LW	2	0.2	36	60	37.3	1,342.8	16	18	2.65	3,558
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	60	37.3	2,536.4	16	18	5.59	14,178
	HW	11.63	0.2	161	60	37.3	6,005.3	16	18	5.35	32,128
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	25	15.5	1,302.0	6	18	4.09	5,325
	LT	13	0.2	156	25	15.5	2,418.0	6	18	2.55	6,166
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	60	37.3	1,342.8	6	18	1.21	1,625
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	100	75	46.6	4,660.0	16	18	2.65	12,349
				1172			472.4			40,718.7	156,018

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	37.3	2,126.1
	LT	85	74.6	3,170.5
	HW	173	74.6	6,452.9
	LW	331	83.9	15,089.8
	Total	646	270.4	26,839.3
OPFOR	HT	84	15.5	1,302.0
	LT	232	40.4	4,310.4
	HW	40	24.9	996.0
	LW	70	74.6	2,611.0
	Total	426	155.4	9,219.4
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	100	46.6	4,660.0
	Total	100	46.6	4,660.0
TOTAL	HT	141	52.8	3,428.1
	LT	317	115.0	7,480.9
	HW	213	99.5	7,448.9
	LW	501	205.1	22,360.8
	Total	1172	472.4	40,718.7

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRalt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.

$$EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 2**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	30	18.6	316.2	6	18	2.55	806
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	55	34.2	1,231.2	6	18	1.21	1,490
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	25	15.5	1,054.0	16	18	5.59	5,892
	HW	11.63	0.2	161	40	24.9	4,008.9	16	18	5.35	21,448
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	40	24.9	7,345.5	16	18	2.65	19,466
	HT	42.25	0.2	84	40	24.9	2,091.6	6	18	4.09	8,555
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	40	24.9	896.4	6	18	1.21	1,085
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	76	40	24.9	1,892.4	16	18	5.59	10,579
	HW	11.63	0.2	40	40	24.9	996.0	16	18	5.35	5,329
	LW	2	0.2	34	60	37.3	1,268.2	16	18	2.65	3,361
TOTAL	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				1730		369.9	57,898.2				132,366

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	34.1	1,370.2
	HW	173	43.5	4,232.1
	LW	331	59.1	8,576.7
	Total	646	155.3	15,239.2
OPFOR	HT	84	24.9	2,091.6
	LT	232	56.0	6,744.0
	HW	40	24.9	996.0
	LW	70	62.2	2,164.6
	Total	426	168.0	11,996.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	43.5	3,151.8
	LT	317	90.1	8,114.2
	HW	213	68.4	5,228.1
	LW	1059	167.9	41,404.1
	Total	1730	369.9	57,898.2

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 3**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	25	15.5	1,054.0	16	18	5.59	5,892
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	100	62.2	18,349.0	16	18	2.65	48,625
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	100	62.2	2,114.8	16	18	2.65	5,604
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	100	62.2	870.8	6	18	2.44	2,125
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251
				1186		512.7	44,694.6			150,276	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	46.6	1,582.7
	HW	173	65.2	7,725.8
	LW	331	80.8	19,018.6
	Total	646	223.7	30,099.8
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	108.8	3,792.4
	Total	426	208.2	11,864.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	62.2	870.8
	LW	100	18.6	1,860.0
	Total	114	80.8	2,730.8
TOTAL	HT	141	49.7	3,335.1
	LT	317	96.3	6,847.9
	HW	227	158.5	9,840.6
	LW	501	208.2	24,671.0
	Total	1186	512.7	44,694.6

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 4**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	40	24.9	1,419.3	6	18	4.09	5,805
	LT	13	0.2	17	40	24.9	423.3	6	18	2.55	1,079
	HW	11.63	0.2	12	25	15.5	186.0	6	18	2.44	454
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	75	46.6	3,168.8	16	18	5.59	17,714
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	62	50	31.1	1,928.2	6	18	4.09	7,886
	LT	13	0.2	156	50	31.1	4,851.6	6	18	2.55	12,372
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	22	45	28.0	616.0	16	18	8.96	5,519
	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				1,730		497.3	71,375.2				190,597

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	24.9	1,419.3
	LT	85	71.5	3,592.1
	HW	173	62.1	7,688.6
	LW	331	62.1	14,305.0
	Total	646	220.6	27,005.0
OPFOR	HT	84	59.1	2,544.2
	LT	232	62.2	7,215.2
	HW	40	31.1	1,244.0
	LW	70	77.7	2,704.0
	Total	426	230.1	13,707.4
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	84.0	3,963.5
	LT	317	133.7	10,807.3
	HW	213	93.2	8,932.6
	LW	1059	186.4	47,671.8
	Total	1730	497.3	71,375.2

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 5**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	25	15.5	883.5	6	18	4.09	3,614
	LT	13	0.2	17	25	15.5	263.5	6	18	2.55	672
	HW	11.63	0.2	12	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
	HT	42.25	0.2	84	45	28.0	2,352.0	6	18	4.09	9,620
	LT	13	0.2	156	45	28.0	4,368.0	6	18	2.55	11,138
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
GRP 4 OPFOR SUPPORT	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	76	75	46.6	3,541.6	16	18	5.59	19,798
	HW	11.63	0.2	40	75	46.6	1,864.0	16	18	5.35	9,972
OPSGRP	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
				658	46.6	30,662.8	6	18	1.21	37,102	
				1730		447.4	70,673.4				186,671

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	15.5	883.5
	LT	85	46.6	2,378.3
	HW	173	46.6	7,502.6
	LW	331	65.2	14,416.6
	Total	646	173.9	25,181.0
OPFOR	HT	84	28.0	2,352.0
	LT	232	74.6	7,909.6
	HW	40	46.6	1,864.0
	LW	70	77.7	2,704.0
	Total	426	226.9	14,829.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	43.5	3,235.5
	LT	317	121.2	10,287.9
	HW	213	93.2	9,366.6
	LW	1059	189.5	47,783.4
	Total	1730	447.4	70,673.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
- Used mandatory default moisture content.
- $EF, \text{ lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 6**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	25	15.5	186.0	6	18	2.44	454
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	68	50	31.1	2,114.8	6	18	2.55	5,393
	HW	11.63	0.2	161	50	31.1	5,007.1	6	18	2.44	12,217
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	50	31.1	9,174.5	6	18	1.21	11,101
	HT	42.25	0.2	84	50	31.1	2,612.4	16	18	8.96	23,407
	LT	13	0.2	132	50	31.1	4,105.2	16	18	5.59	22,948
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	36	75	46.6	1,677.6	16	18	2.65	4,446
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	100	25	15.5	1,550.0	16	18	5.59	8,665
	HW	11.63	0.2	40	25	15.5	620.0	16	18	5.35	3,317
	LW	2	0.2	34	25	15.5	527.0	16	18	2.65	1,397
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	50	31.1	20,463.8	6	18	1.21	24,761
				1730	580	360.4	50,185.3				124,465

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	62.2	2,643.5
	HW	173	46.6	5,193.1
	LW	331	46.6	9,732.5
	Total	646	174.0	18,629.3
OPFOR	HT	84	31.1	2,612.4
	LT	232	46.6	5,655.2
	HW	40	15.5	620.0
	LW	70	62.1	2,204.6
	Total	426	155.3	11,092.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	658	31.1	20,463.8
TOTAL	HT	141	49.7	3,672.6
	LT	317	108.8	8,298.7
	HW	213	62.1	5,813.1
	LW	1059	139.8	32,400.9
	Total	1730	360.4	50,185.3

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 7**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	30	18.6	316.2	6	18	2.55	806
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	30	18.6	669.6	6	18	1.21	810
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	30	18.6	1,264.8	16	18	5.59	7,070
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
	HT	42.25	0.2	84	30	18.6	1,562.4	6	18	4.09	6,390
	LT	13	0.2	156	30	18.6	2,901.6	6	18	2.55	7,399
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	75	46.6	1,677.6	6	18	1.21	2,030
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	14	75	46.6	652.4	6	18	2.44	1,592
	LW	2	0.2	100	30	18.6	1,860.0	6	18	1.21	2,251
				1186		444.0	38,629.6			133,865	

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	65.2	7,725.8
	LW	331	65.2	14,416.6
	Total	646	186.2	24,783.6
OPFOR	HT	84	18.6	1,562.4
	LT	232	49.7	5,265.2
	HW	40	31.1	1,244.0
	LW	70	93.2	3,262.0
	Total	426	192.6	11,333.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	18.6	1,860.0
	Total	114	65.2	2,512.4
TOTAL	HT	141	37.2	2,622.6
	LT	317	86.9	6,846.2
	HW	227	142.9	9,622.2
	LW	501	177.0	19,538.6
	Total	1186	444.0	38,629.6

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
- Used mandatory default moisture content.
- $EF, \text{lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 8**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	45	28.0	1,596.0	6	18	4.09	6,528
	LT	13	0.2	17	45	28.0	476.0	6	18	2.55	1,214
	HW	11.63	0.2	12	25	15.5	186.0	6	18	2.44	454
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	50	31.1	5,007.1	16	18	5.35	26,788
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
	HT	42.25	0.2	84	70	43.5	3,654.0	6	18	4.09	14,945
	LT	13	0.2	156	80	49.7	7,753.2	6	18	2.55	19,771
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	70	43.5	1,566.0	6	18	1.21	1,895
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	120	74.6	2,536.4	16	18	2.65	6,721
TOTAL	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	100	62.2	40,927.6	6	18	1.21	49,522
				1730		547.1	84,291.3				

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	28.0	1,596.0
	LT	85	59.1	2,590.8
	HW	173	46.6	5,193.1
	LW	331	77.7	14,866.6
	Total	646	211.4	24,246.5
OPFOR	HT	84	43.5	3,654.0
	LT	232	80.8	10,116.8
	HW	40	31.1	1,244.0
	LW	70	118.1	4,102.4
	Total	426	273.5	19,117.2
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	62.2	40,927.6
	Total	658	62.2	40,927.6
TOTAL	HT	141	71.5	5,250.0
	LT	317	139.9	12,707.6
	HW	213	77.7	6,437.1
	LW	1059	258.0	59,896.6
	Total	1730	547.1	84,291.3

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, \text{lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 9**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	30	18.6	223.2	6	18	2.44	545
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
	HT	42.25	0.2	84	25	15.5	1,302.0	6	18	4.09	5,325
	LT	13	0.2	156	25	15.5	2,418.0	6	18	2.55	6,166
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	76	50	31.1	2,363.6	16	18	5.59	13,213
	HW	11.63	0.2	40	50	31.1	1,244.0	16	18	5.35	6,655
	LW	2	0.2	34	75	46.6	1,584.4	16	18	2.65	4,199
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	658	75	46.6	30,662.8	6	18	1.21	37,102
				1730			453.7			67,703.0	172,904

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	65.2	7,725.8
	LW	331	77.7	14,866.6
	Total	646	236.2	27,008.6
OPFOR	HT	84	15.5	1,302.0
	LT	232	46.6	4,781.6
	HW	40	31.1	1,244.0
	LW	70	77.7	2,704.0
	Total	426	170.9	10,031.6
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	658	46.6	30,662.8
	Total	658	46.6	30,662.8
TOTAL	HT	141	46.6	3,074.7
	LT	317	108.8	7,425.1
	HW	213	96.3	8,969.8
	LW	1059	202.0	48,233.4
	Total	1730	453.7	67,703.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 10**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	30	18.6	1,060.2	6	18	4.09	4,336
	LT	13	0.2	17	30	18.6	316.2	6	18	2.55	806
	HW	11.63	0.2	12	50	31.1	373.2	6	18	2.44	911
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	30	18.6	1,264.8	16	18	5.59	7,070
	HW	11.63	0.2	161	50	31.1	5,007.1	16	18	5.35	26,788
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	50	31.1	9,174.5	16	18	2.65	24,312
	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
				100	45	28.0	2,800.0	6	18	2.44	1,592
				760		254.8	21,768.0	6	18	1.21	3,388
											70,558

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	62.2	5,380.3
	LW	331	62.2	10,294.1
	Total	646	180.2	18,315.6
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	46.6	652.4
	LW	100	28.0	2,800.0
	Total	114	74.6	3,452.4
TOTAL	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	187	108.8	6,032.7
	LW	431	90.2	13,094.1
	Total	760	254.8	21,768.0

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, \text{lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 11**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	50	31.1	1,772.7	16	18	8.96	15,883
	LT	13	0.2	17	75	46.6	792.2	16	18	5.59	4,428
	HW	11.63	0.2	12	50	31.1	373.2	16	18	5.35	1,997
	LW	2	0.2	36	100	62.2	2,239.2	16	18	2.65	5,934
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	45	28.0	8,260.0	16	18	2.65	21,889
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	14	50	31.1	435.4	16	18	5.35	2,329
	LW	2	0.2	100	30	18.6	1,860.0	16	18	2.65	4,929
					760		326.4	25,350.1			

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	77.7	2,907.0
	HW	173	77.7	7,875.8
	LW	331	90.2	10,499.2
	Total	646	276.7	23,054.7
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	14	31.1	435.4
	LW	100	18.6	1,860.0
	Total	114	49.7	2,295.4
TOTAL	HT	57	31.1	1,772.7
	LT	85	77.7	2,907.0
	HW	187	108.8	8,311.2
	LW	431	108.8	12,359.2
	Total	760	326.4	25,350.1

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 12**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	25	15.5	186.0	6	18	2.44	454
	LW	2	0.2	36	25	15.5	558.0	6	18	1.21	675
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
	LT	13	0.2	0	0	0.0	0.0	6	18	4.09	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
GRP 4 OPFOR SUPPORT	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
OPSGRP	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	60	50	31.1	1,866.0	6	18	2.55	4,758
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	598	50	31.1	18,597.8	6	18	1.21	22,503
				1304		279.7	46,873.6				125,379

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	62.1	7,688.6
	LW	331	62.1	14,305.0
	Total	646	217.5	26,409.8
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	658	62.2	20,463.8
TOTAL	HT	57	31.1	1,772.7
	LT	145	93.3	4,509.5
	HW	173	62.1	7,688.6
	LW	929	93.2	32,902.8
	Total	1304	279.7	46,873.6

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

**Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 13**

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	30	18.6	1,060.2	16	18	8.96	9,499
	LT	13	0.2	17	30	18.6	316.2	16	18	5.59	1,768
	HW	11.63	0.2	12	30	18.6	223.2	16	18	5.35	1,194
	LW	2	0.2	36	30	18.6	669.6	16	18	2.65	1,774
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	30	18.6	1,264.8	16	18	5.59	7,070
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
GRP 3 OPFOR MANEUVER	HT	42.25	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
	LT	13	0.2	0	0	0.0	0.0	6	18	4.09	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
GRP 4 OPFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	6	18	1.21	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	5.35	0
OPSGRP	HT	42.25	0.2	0	0	0.0	0.0	16	18	2.65	0
	LT	13	0.2	0	0	0.0	0.0	6	18	4.09	0
	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.55	0
	LW	2	0.2	50	31.1	18,597.8	6	18	2.44	0	0
				1244		217.3	43,381.4			1.21	120,377

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	65.2	7,725.8
	LW	331	65.2	14,416.6
	Total	646	186.2	24,783.6
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	598	31.1	18,597.8
	Total	598	31.1	18,597.8
TOTAL	HT	57	18.6	1,060.2
	LT	85	37.2	1,581.0
	HW	173	65.2	7,725.8
	LW	929	96.3	33,014.4
	Total	1244	217.3	43,381.4

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, lb/VMT = 2.6 \times [Silt\ Content/12]^{0.8} \times [Vehicle\ Weight/3]^{0.4} \times [Moisture\ Content/0.2]^{0.3} \times [(365 - Avg\ Precipitation)/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

Fort Irwin
Particulate Emission Calculations Alternative 6 - Light Rotation - Day 14

Group	Vehicle Type	Vehicle Weight, tons	Moisture Content %	No of Vehicles per Day	Distance, km/day	Distance, mile/day	VMT, vehicle-mile/day	Content Silt %	Avg Precipitation, day/year	Emission Factor, lb/VMT	Emissions, lb/day
	type	weight	moist	vehicles	distancekm	distance	VMT	silt	rain	ef	emissions
GRP 1 BLUEFOR MANEUVER	HT	42.25	0.2	57	50	31.1	1,772.7	6	18	4.09	7,250
	LT	13	0.2	17	50	31.1	528.7	6	18	2.55	1,348
	HW	11.63	0.2	12	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	36	50	31.1	1,119.6	6	18	1.21	1,355
GRP 2 BLUEFOR SUPPORT	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
	LT	13	0.2	68	50	31.1	2,114.8	16	18	5.59	11,822
	HW	11.63	0.2	161	75	46.6	7,502.6	16	18	5.35	40,139
GRP 3 OPFOR MANEUVER	LW	2	0.2	295	75	46.6	13,747.0	16	18	2.65	36,430
	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
	LT	13	0.2	0	0	0.0	0.0	6	18	2.55	0
GRP 4 OPFOR SUPPORT	HW	11.63	0.2	0	0	0.0	0.0	6	18	2.44	0
	LW	2	0.2	0	0	0.0	0.0	6	18	1.21	0
	HT	42.25	0.2	0	0	0.0	0.0	16	18	8.96	0
OPSGRP	LT	13	0.2	0	0	0.0	0.0	16	18	5.59	0
	HW	11.63	0.2	0	0	0.0	0.0	16	18	5.35	0
	LW	2	0.2	0	0	0.0	0.0	16	18	2.65	0
	HT	42.25	0.2	0	0	0.0	0.0	6	18	4.09	0
				1364		279.8	49,115.2				127,863

Group	Vehicle Type	No of Vehicles per Day	Distance, mile/day	VMT, vehicle-mile/day
BLUEFOR	HT	57	31.1	1,772.7
	LT	85	62.2	2,643.5
	HW	173	46.6	7,502.6
	LW	331	77.7	14,866.6
	Total	646	217.6	26,785.4
OPFOR	HT	0	0.0	0.0
	LT	0	0.0	0.0
	HW	0	0.0	0.0
	LW	0	0.0	0.0
	Total	0	0.0	0.0
OPSGRP	HT	0	0.0	0.0
	LT	60	31.1	1,866.0
	HW	0	0.0	0.0
	LW	658	31.1	20,463.8
	Total	718	62.2	22,329.8
TOTAL	HT	57	31.1	1,772.7
	LT	145	93.3	4,509.5
	HW	173	46.6	7,502.6
	LW	989	108.8	35,330.4
	Total	1364	279.8	49,115.2

- Vehicle Weight was estimated by averaging vehicle weights in AVES Conformity Report
- No. of Wheels, Silt Content, Avg. Precipitation were obtained using vehicle weights in AVES Conformity Report
- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6ExcelSpreadsheets received on September 30, 2002.
- VMT - vehicle miles traveled
- Equation 2, EPA, AP-42 13.2.2 with PM10 constants from Table 13.2.2-2
Used mandatory default moisture content.
 $EF, \text{lb/VMT} = 2.6 \times [\text{Silt Content}/12]^{0.8} \times [\text{Vehicle Weight}/3]^{0.4} \times [\text{Moisture Content}/0.2]^{0.3} \times [(365 - \text{Avg Precipitation})/365]$
- Emissions, lb/day = EF, lb/VMT x VMT, vehicle-mile/day
- Assumed desert travel for Groups 1 and 3, and dirt road travel for Groups 3, and 4 per e-mail titled RE: Road vs. Desert, from David Granger to Paul Tranquill, dated Wednesday, June 26, 2002 unless clearly specified by VMT in text of LR Alternative 6.ppt.

Appendix C
Fort Irwin Draft Conformity Report
Air Quality

Fugitive Dust Particulate Emission Estimate Summary

**Fort Irwin
Particulate Emission Summary**

Day	Alternative 6 (No-Action)		Alternative 1 (Preferred)		Increase	
	Emissions, lb/d	Emissions, t/d	Emissions, lb/d	Emissions, t/d	Emissions, lb/d	Emissions, t/d
RSOI 1-5	190,391	95.2	190,391	95.2	0	0
Day 1	206,251	103.1	206,251	103.1	0	0
Day 2	183,260	91.6	183,260	91.6	0	0
Day 3	242,397	121.2	242,397	121.2	0	0
Day 4	318,036	159.0	318,036	159.0	0	0
Day 5	283,163	141.6	283,163	141.6	0	0
Day 6	151,182	75.6	151,182	75.6	0	0
Day 7	223,921	112.0	223,921	112.0	0	0
Day 8	342,197	171.1	342,197	171.1	0	0
Day 9	290,094	145.0	290,094	145.0	0	0
Day 10	135,240	67.6	135,240	67.6	0	0
Day 11	229,951	115.0	229,951	115.0	0	0
Day 12	226,372	113.2	226,372	113.2	0	0
Day 13	219,439	109.7	219,439	109.7	0	0
Day 14	229,310	114.7	229,310	114.7	0	0
Total	3,471,204	1,736	3,471,204	1,736	0	0

- Alternative 6 (No Action) Emissions developed in the spreadsheet Alt 6 within the Excel workbook (EPAFortIrwinAlt6H.xls).
- Alternative 1 (Perferred) Emissions developed in the spreadsheet Alt 1 within theExcel workbook (EPAFortIrwinAlt1H.xls).
- Increase Emissions, ton/yr = (Alternative 1 (Preferred) Emissions, ton/rotation- Alternative 6 (No Action) Emissions, ton/rotation) x 10 rotations/yr

**Fort Irwin
Vehicle Miles Traveled Summary**

Group	Vehicle Type	Alternative 6	Alternative 1	Increase
		VMT	VMT	VMT
BLUEFOR MANEUVER	HT	68,007	68,007	0
	LT	72,396	72,396	0
	HW	277,891	277,891	0
	LW	190,332	190,332	0
	Total	608,626	608,626	0
OPFOR MANEUVER	HT	21,664	21,664	0
	LT	66,031	66,031	0
	HW	13,180	13,180	0
	LW	29,598	29,598	0
	Total	130,473	130,473	0
OPSGRP	HT	0	0	0
	LT	3,732	3,732	0
	HW	2,611	2,611	0
	LW	264,941	264,941	0
	Total	271,284	271,284	0
TOTAL	HT	89,670	89,670	0
	LT	142,158	142,158	0
	HW	293,682	293,682	0
	LW	484,871	484,871	0
	Total	1,010,381	1,010,381	0

- Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRalt1ExcelSpreadsheets and HRalt6ExcelSpreadsheets for Alternative 1 and Alternative 6 respectively, and were received on October 1, 2002.
- VMT, miles = Number of Vehicles by Type x Distance, miles. This was completed in the conformity calculations (EPAFortIrwinAlt1H.xls and EPAFortIrwinAlt6H.xls) developed by Parsons.
Note: The calculation will not work on the number of vehicles and distance provided in this spreadsheet because the number of vehicles and distances are agregreate values not individual distances.
- Increase Number of Vehicles = (Alternative 1 (Preferred) Number of Vehicle - Alternative 6 (No Action) Number of Vehicle) x 10 rotations/yr
- Increase Distance, miles = (Alternative 1 (Preferred) Distance, miles - Alternative 6 (No Action) Distance, miles) x 10 rotations/yr
- Increase Distance, VMT = (Alternative 1 (Preferred) VMT, miles - Alternative 6 (No Action) VMT, miles) x 10 rotations/yr

Appendix D
Fort Irwin Draft Conformity Report
Air Quality

MOBILE5b Input and Output

```

Fort Irwin 1997 HDD Tracked Particulates EFs @ 25 mph
3      :VMFLAG (alternate VMT mixes)
1      :MYMRFG (alternate mileage accumulation rates & registration)
1      :IMFLAG (Inspection and maintenance)
1      :RFGFLG (2 to apply reformulated gasoline effects, 1 not to)
3      :OUTFMT (indicates type of output format)
1      :IDLFLG (2 to print, 1 not to print idle emission factors)
2      :SO2FLG (2 to print Gaseous SO2 emissions, 1 not to print them)
1      :PRTFLG (determines which pollutants to print out)
1      :BUSFLG (determines which alternative bus cycles to print out)
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.0000 1.0000 0.0000
1 1997 1 25.0      : region, year, speed cycle, speed
06.0 74.4 2      : unpaved silt%, ind. silt g/m^2, WHEELFLG
20      : number of precip. days
1997 HDD Tracked 25 mph
10.      : particle size cutoff
84500    : vehicle weight in pounds
06      : number of wheels

```



```

Fort Irwin 1997 LDD Wheeled Particulates EFs @ 25 mph
3      :VMFLAG (alternate VMT mixes)
1      :MYMRFG (alternate mileage accumulation rates & registration)
1      :IMFLAG (Inspection and maintenance)
1      :RFGFLG (2 to apply reformulated gasoline effects, 1 not to)
3      :OUTFMT (indicates type of output format)
1      :IDLFLG (2 to print, 1 not to print idle emission factors)
2      :SO2FLG (2 to print Gaseous SO2 emissions, 1 not to print them)
1      :PRTFLG (determines which pollutants to print out)
1      :BUSFLG (determines which alternative bus cycles to print out)
0.0000 0.0000 0.0000 0.0000 0.0000 1.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
1 1997 1 25.0      : region, year, speed cycle, speed
06.0 74.4  2      : unpaved silt%, ind. silt g/m^2, WHEELFLG
20          : number of precip. days
1997 LDD Wheeled Dirt 25 mph
10.         : particle size cutoff
4000        : vehicle weight in pounds
04          : number of wheels

```

PART5 Revised 02-24-95

Fort Irwin 1997 LDD Wheeled Particulates EFs @ 25 mph

User supplied veh miles traveled mixture .
 1997 LDD Wheeled Dirt 25 mph

Particle Size Cutoff 10.00 Microns

Altitude: 500. Ft.

Driving: Transient RFG:No

Cal. Year: 1997

I/M Program: No

Region: Low

All

Veh. Type:	LDGV	LDGT1	LDGT2	HDGV	MC	LDDV	LDDT	2BHDDV	LHDDV	MHDDV	HHDDV	BUSES	All Veh.
Veh. Speeds:	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
VMT Mix:	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Composite Emission Factors (g/mi)													
Lead:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SOF:	-	-	-	-	-	0.057	0.000	0.000	0.000	0.000	0.000	0.000	-
RCP:	-	-	-	-	-	0.202	0.000	0.000	0.000	0.000	0.000	0.000	-
Direct SO4:	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.006
Exhaust PM:	0.000	0.000	0.000	0.000	0.000	0.264	0.000	0.000	0.000	0.000	0.000	0.000	0.264
.....													
Indir. SO4:	0.000	0.000	0.000	0.000	0.000	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.032
Sulfate PM:	0.000	0.000	0.000	0.000	0.000	0.038	0.000	0.000	0.000	0.000	0.000	0.000	0.038
Brake:	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.013
Tire:	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.008
Total PM:	0.000	0.000	0.000	0.000	0.000	0.317	0.000	0.000	0.000	0.000	0.000	0.000	0.317

Fugitive Dust: Unpaved Roads Fleet Average 285.67 g/mi (as calculated in AP42 Vol 1 9/88)*
 Paved Roads Fleet Average 41.69 g/mi (as calculated in draft AP42 Vol 1 3/93)*
 Unpaved Roads Fleet Average 285.47 g/mi (as calculated in AP42 Vol 1 9/88, minus tailpipe and
 tire-wear emissions)**
 Paved Roads Fleet Average 41.49 g/mi (as calculated in draft AP42 Vol 1 3/93, minus tailpipe
 and tire-wear emissions)**

* Includes fleet average tailpipe, tire-wear and brake-wear emissions.

** Includes fleet average brake-wear emissions.

Paved Road Silt: 74.40 (g/m^2)

Fleet average vehicle weight: 4000

Unpaved Silt: 6.0%

Fleet average number of wheels: 4

Precipitation Days: 20 >0.01 in. (per year)

Veh. Type:	LDGV	LDGT1	LDGT2	HDGV	MC	LDDV	LDDT	2BHDDV	LHDDV	MHDDV	HHDDV	BUSES	All Veh.
Gas. SO2:													
(g/mi) :	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.111

```

Fort Irwin 1997 MDD Tracked Particulates EFs @ 25 mph
3      :VMFLAG (alternate VMT mixes)
1      :MYMRFG (alternate mileage accumulation rates & registration)
1      :IMFLAG (Inspection and maintenance)
1      :RFGFLG (2 to apply reformulated gasoline effects, 1 not to)
3      :OUTFMT (indicates type of output format)
1      :IDLFLG (2 to print, 1 not to print idle emission factors)
2      :SO2FLG (2 to print Gaseous SO2 emissions, 1 not to print them)
1      :PRTFLG (determines which pollutants to print out)
1      :BUSFLG (determines which alternative bus cycles to print out)
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 1.0000 0.0000 0.0000
1 1997 1 25.0      : region, year, speed cycle, speed
06.0 74.4  2      : unpaved silt%, ind. silt g/m^2, WHEELFLG
20          : number of precip. days
1997 MDD Tracked Dirt 25 mph
10.         : particle size cutoff
26000      : vehicle weight in pounds
06         : number of wheels

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PART5 Revised 02-24-95
 Fort Irwin 1997 MDD Tracked Particulates EFs @ 25 mph

User supplied veh miles traveled mixture .
 1997 MDD Tracked Dirt 25 mph
 Particle Size Cutoff 10.00 Microns
 Cal. Year: 1997

Altitude: 500. Ft.
 I/M Program: No
 Driving: Transient RFG:No
 Region: Low All
 Veh. Type: LDGV LDGT1 LDGT2 HDGV MC LDDV LDDT 2BHDDV LHDDV MHDDV HHDDV BUSES Veh.

Veh. Type	LDGV	LDGT1	LDGT2	HDGV	MC	LDDV	LDDT	2BHDDV	LHDDV	MHDDV	HHDDV	BUSES	All Veh.
Veh. Speeds:	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
VMT Mix:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	
Composite Emission Factors (g/mi)													
Lead:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SOF:	-	-	-	-	-	0.000	0.000	0.000	0.000	0.375	0.000	0.000	-
RCP:	-	-	-	-	-	0.000	0.000	0.000	0.000	0.477	0.000	0.000	-
Direct SO4:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.030
Exhaust PM:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.881	0.000	0.000	0.881
.....													
Indir. SO4:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.123	0.000	0.000	0.123
Sulfate PM:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.153	0.000	0.000	0.153
Brake:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.000	0.013
Tire:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.012
Total PM:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.029	0.000	0.000	1.029

Fugitive Dust: Unpaved Roads Fleet Average 1297.05 g/mi (as calculated in AP42 Vol 1 9/88)*
 Paved Roads Fleet Average 690.89 g/mi (as calculated in draft AP42 Vol 1 3/93)*
 Unpaved Roads Fleet Average 1296.84 g/mi (as calculated in AP42 Vol 1 9/88, minus tailpipe and
 tire-wear emissions)**
 Paved Roads Fleet Average 690.69 g/mi (as calculated in draft AP42 Vol 1 3/93, minus tailpipe
 and tire-wear emissions)**

* Includes fleet average tailpipe, tire-wear and brake-wear emissions.
 ** Includes fleet average brake-wear emissions.

Paved Road Silt: 74.40 (g/m^2) Fleet average vehicle weight: 26000
 Unpaved Silt: 6.0% Fleet average number of wheels: 6
 Precipitation Days: 20 >0.01 in. (per year)

Veh. Type	LDGV	LDGT1	LDGT2	HDGV	MC	LDDV	LDDT	2BHDDV	LHDDV	MHDDV	HHDDV	BUSES	All Veh.
Gas. SO2:													
(g/mi) :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.427	0.000	0.000	0.427

```

Fort Irwin 1997 MDD Wheeled Particulates EFs @ 25 mph
3      :VMFLAG (alternate VMT mixes)
1      :MYMRFG (alternate mileage accumulation rates & registration)
1      :IMFLAG (Inspection and maintenance)
1      :RFGFLG (2 to apply reformulated gasoline effects, 1 not to)
3      :OUTFMT (indicates type of output format)
1      :IDLFLG (2 to print, 1 not to print idle emission factors)
2      :SO2FLG (2 to print Gaseous SO2 emissions, 1 not to print them)
1      :PRTFLG (determines which pollutants to print out)
1      :BUSFLG (determines which alternative bus cycles to print out)
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 1.0000 0.0000 0.0000
1 1997 1 25.0      : region, year, speed cycle, speed
06.0 74.4  2      : unpaved silt%, ind. silt g/m^2, WHEELFLG
20          : number of precip. days
1997 MDD Wheeled Dirt 25 mph
10.         : particle size cutoff
23260      : vehicle weight in pounds
04         : number of wheels

```


Appendix E
Fort Irwin Draft Conformity Report
Air Quality

PART5 Input and Output

```

1      PROMPT (Fort Irwin Land Expansion Project)
July 10, 2002 RUN
1      TAMFLG - DEFAULT TAMPERING RATE
1      SPDFLG - USER SUPPLIES ONE VALUE OF AVERAGE SPEEDS
1      VMFLAG - DEFAULT VEHICLE MILES TRAVELED MIX
1      MYMFLG - DEFAULT REGIST. DISTR. BY AGE;  DEFAULT MILEAGE
1      NEWFLG - DEFAULT BASIC EXHAUST RATES
1      IMFLAG - NO I/M PROGRAM
1      ALHFLG - NO ADDITIONAL CORRECTION FACTORS
1      ATPFLG - NO ANTI-TAMPERING PROGRAM MODELED
1      RLFLAG - CALCULATE REFUELING EMISSION FACTORS USING ON BOARD VRS
2      LOCFLG - LAP RECORD APPEARS ONCE, IN ONE-TIME DATA SECTION
2      TEMFLG - CORRECTION FACT. BASED ON AMBIENT TEMPERATURE
3      OUTFMT - 112 COLUMN OUTPUT
4      PRNFLG - PRINT EXHAUST HC, CO, AND NOX RESULTS
1      IDLFLG - NO IDLE EMISSION FACTORS
3      NMHFLG - CALCULATE EMISSIONS FOR VOLATILE ORGANIC HC
3      HCFLAG - PRINT HC TOTALS AND COMPONENTS
SCENARIO 1      B 03.0 112.  7.5  7.5 97 1 1 1      LOCAL AREA PARAMETERS-
WINTER TEMP. AND RVP

1 97 13.0 102.  20.6 27.3 20.6  1      SCENERIOS
1 97 20.0 102.  20.6 27.3 20.6  1
1 97 25.0 102.  20.6 27.3 20.6  1
1 97 30.0 102.  20.6 27.3 20.6  1
1 97 35.0 102.  20.6 27.3 20.6  1

```

1July 10, 2002 RUN
 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 98 Warning:
 + Diurnal temperature rise (max temp-min temp=109.0) is > 40F; diurnal evaporative emission factors will be calculated, but may be inaccurate.
 -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.
 -M154 Warning:
 + Refueling emissions for LDGV and LDGT after 1998 model year have been reduced as a result of the Onboard Refueling Vapor Recovery Regulations (1994).

0SCENARIO 1
 Minimum Temp: 3. (F) Maximum Temp: 112. (F)
 Period 1 RVP: 7.5 Period 2 RVP: 7.5 Period 2 Start Yr: 1997

0VOC HC emission factors include all evaporative HC emission factors, except for refueling emissions.
 0

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

0Cal. Year: 1997 I/M Program: No Ambient Temp: 102.0 / 102.0 / 102.0 (F) Region: Low
 Anti-tam. Program: No Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 500. Ft.
 Reformulated Gas: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+ Veh. Speeds:	13.0	13.0	13.0		13.0	13.0	13.0	13.0	13.0	
VMT Mix:	0.626	0.185	0.085		0.031	0.002	0.001	0.064	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	2.17	2.91	4.06	3.27	7.72	0.99	1.41	3.14	2.57	2.702
Exhaust HC:	2.17	2.90	4.04	3.26	7.69	0.99	1.41	3.14	2.57	2.692
Evaporat HC:	0.01	0.01	0.02	0.01	0.02				0.00	0.010
Refuel L HC:	0.20	0.27	0.28	0.27	0.45					0.214
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:	30.52	41.14	56.84	46.08	187.60	2.54	2.92	17.64	49.04	38.779
Exhaust NOX:	1.58	1.77	2.30	1.94	4.69	1.86	2.15	16.04	0.62	2.684

0Evaporative Emissions by Component						Weathered RVP: 6.7	Hot Soak Temp:102.0 (F)
(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr)							Running Loss Temp:102.0 (F)
							Resting Loss Temp:102.0 (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	0.02	0.01	0.02		0.00
Refuel	4.54	4.54	4.54	4.54	4.54		
Resting	0.00	0.00	0.00	0.00	0.00		0.00

-M 98 Warning:

+ Diurnal temperature rise (max temp-min temp=109.0) is > 40F; diurnal evaporative emission factors will be calculated, but may be inaccurate.

-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.

-M154 Warning:

+ Refueling emissions for LDGV and LDGT after 1998 model year have been reduced as a result of the Onboard Refueling Vapor Recovery Regulations (1994).

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

0Cal. Year: 1997 I/M Program: No Ambient Temp:102.0 /102.0 /102.0 (F) Region: Low
 Anti-tam. Program: No Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 500. Ft.
 Reformulated Gas: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+ Veh. Speeds:	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0	
VMT Mix:	0.626	0.185	0.085		0.031	0.002	0.001	0.064	0.007	

0Composite Emission Factors (Gm/Mile)

VOC HC:	1.59	2.14	2.95	2.40	4.75	0.74	1.06	2.36	1.86	1.956
Exhaust HC:	1.59	2.13	2.93	2.38	4.73	0.74	1.06	2.36	1.86	1.946
Evaporat HC:	0.01	0.01	0.02	0.01	0.02				0.00	0.010
Refuel L HC:	0.20	0.27	0.28	0.27	0.45					0.214
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:	22.15	29.57	39.09	32.57	121.80	1.69	1.95	11.76	31.78	27.374
Exhaust NOX:	1.53	1.72	2.24	1.88	4.99	1.57	1.81	13.51	0.69	2.487

0Evaporative Emissions by Component						Weathered RVP: 6.7	Hot Soak Temp:102.0 (F)
-------------------------------------	--	--	--	--	--	--------------------	-------------------------

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr)						Running Loss Temp:102.0 (F)
						Resting Loss Temp:102.0 (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	0.02	0.01	0.02	0.00
Refuel	4.54	4.54	4.54	4.54	4.54	
Resting	0.00	0.00	0.00	0.00	0.00	0.00

-M 98 Warning:

+ Diurnal temperature rise (max temp-min temp=109.0) is > 40F; diurnal evaporative emission factors will be calculated, but may be inaccurate.

-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.

-M154 Warning:

+ Refueling emissions for LDGV and LDGT after 1998 model year have been reduced as a result of the Onboard Refueling Vapor Recovery Regulations (1994).

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

0Cal. Year: 1997 I/M Program: No Ambient Temp:102.0 /102.0 /102.0 (F) Region: Low
 Anti-tam. Program: No Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 500. Ft.
 Reformulated Gas: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDLT	HDDV	MC	All Veh
+ Veh. Speeds:	25.0	25.0	25.0		25.0	25.0	25.0	25.0	25.0	
VMT Mix:	0.626	0.185	0.085		0.031	0.002	0.001	0.064	0.007	
0Composite Emission Factors (Gm/Mile)										
VOC HC:	1.31	1.80	2.48	2.01	3.53	0.62	0.89	1.98	1.60	1.613
Exhaust HC:	1.31	1.78	2.46	2.00	3.51	0.62	0.89	1.98	1.60	1.603
Evaporat HC:	0.01	0.01	0.02	0.01	0.02				0.00	0.010
Refuel L HC:	0.20	0.27	0.28	0.27	0.45					0.214
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:	18.04	24.68	32.90	27.26	95.57	1.34	1.54	9.29	25.34	22.358
Exhaust NOX:	1.57	1.77	2.32	1.94	5.21	1.45	1.67	12.46	0.76	2.469

0Evaporative Emissions by Component

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Weathered RVP: 6.7 Hot Soak Temp:102.0 (F)
 Running Loss Temp:102.0 (F)

						Resting Loss	Temp:102.0 (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	0.02	0.01	0.02		0.00
Refuel	4.54	4.54	4.54	4.54	4.54		
Resting	0.00	0.00	0.00	0.00	0.00		0.00

-M 98 Warning:

+ Diurnal temperature rise (max temp-min temp=109.0) is > 40F; diurnal evaporative emission factors will be calculated, but may be inaccurate.

-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.

-M154 Warning:

+ Refueling emissions for LDGV and LDGT after 1998 model year have been reduced as a result of the Onboard Refueling Vapor Recovery Regulations (1994).

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

0 Cal. Year: 1997 I/M Program: No Ambient Temp:102.0 /102.0 /102.0 (F) Region: Low
 Anti-tam. Program: No Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 500. Ft.
 Reformulated Gas: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+ Veh. Speeds:	30.0	30.0	30.0		30.0	30.0	30.0	30.0	30.0	
VMT Mix:	0.626	0.185	0.085		0.031	0.002	0.001	0.064	0.007	

0 Composite Emission Factors (Gm/Mile)

VOC HC:	1.13	1.55	2.16	1.75	2.74	0.54	0.76	1.70	1.40	1.379
Exhaust HC:	1.12	1.54	2.14	1.73	2.71	0.54	0.76	1.70	1.40	1.369
Evaporat HC:	0.01	0.01	0.02	0.01	0.02				0.00	0.010
Refuel L HC:	0.20	0.27	0.28	0.27	0.45					0.214
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:	15.25	21.21	28.68	23.56	79.23	1.11	1.27	7.69	20.68	18.973
Exhaust NOX:	1.60	1.81	2.37	1.98	5.43	1.38	1.60	11.92	0.83	2.469

0 Evaporative Emissions by Component

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr) Weathered RVP: 6.7 Hot Soak Temp:102.0 (F)
 Running Loss Temp:102.0 (F)
 Resting Loss Temp:102.0 (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	0.00
Crankcase	0.01	0.01	0.02	0.01	0.02	0.00
Refuel	4.54	4.54	4.54	4.54	4.54	0.00
Resting	0.00	0.00	0.00	0.00	0.00	0.00

-M 98 Warning:

+ Diurnal temperature rise (max temp-min temp=109.0) is > 40F; diurnal evaporative emission factors will be calculated, but may be inaccurate.

-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.

-M154 Warning:

+ Refueling emissions for LDGV and LDGT after 1998 model year have been reduced as a result of the Onboard Refueling Vapor Recovery Regulations (1994).

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

0Cal. Year: 1997 I/M Program: No Ambient Temp:102.0 /102.0 /102.0 (F) Region: Low
 Anti-tam. Program: No Operating Mode: 20.6 / 27.3 / 20.6 Altitude: 500. Ft.
 Reformulated Gas: No

0 Veh. Type:	LDGV	LDGT1	LDGT2	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
+ Veh. Speeds:	35.0	35.0	35.0		35.0	35.0	35.0	35.0	35.0	
VMT Mix:	0.626	0.185	0.085		0.031	0.002	0.001	0.064	0.007	

0Composite Emission Factors (Gm/Mile)

VOC HC:	0.99	1.38	1.93	1.55	2.21	0.47	0.67	1.49	1.24	1.212
Exhaust HC:	0.98	1.37	1.91	1.54	2.19	0.47	0.67	1.49	1.24	1.202
Evaporat HC:	0.01	0.01	0.02	0.01	0.02				0.00	0.010
Refuel L HC:	0.20	0.27	0.28	0.27	0.45					0.214
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:	13.25	18.70	25.63	20.88	69.40	0.96	1.10	6.65	17.23	16.606
Exhaust NOX:	1.62	1.83	2.41	2.01	5.65	1.37	1.58	11.81	0.88	2.491

0Evaporative Emissions by Component

(Hot Soak: g/trip, Diurnals: g, Crankcase: g/mi, Refuel: g/gal, Resting: g/hr)

Hot Soak	0.00	0.00	0.00	0.00	0.00				0.00	
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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	0.02	0.01	0.02	0.00
Refuel	4.54	4.54	4.54	4.54	4.54	
Resting	0.00	0.00	0.00	0.00	0.00	0.00

Appendix F
Fort Irwin Draft Conformity Report
Air Quality
Vehicle Exhaust Emission Estimates

Heavy Rotation

**Fort Irwin
Exhaust Emission Calculations - Alternative 1 - Heavy Rotation**

Group	Vehicle Type	VMT miles/rotation	Emission Factors					Emissions											
			Exhaust Running VOC g/mi	Exhaust CO g/mi	Exhaust NOx g/mi	Exhaust SO ₂ g/mi	Exhaust PM g/mi	Exhaust Running VOC lb/rotation	Exhaust CO lb/rotation	Exhaust NOx lb/rotation	Exhaust SO ₂ lb/rotation	Exhaust PM lb/rotation	Exhaust Running VOC ton/rotation	Exhaust CO ton/rotation	Exhaust NOx ton/rotation	Exhaust SO ₂ ton/rotation	Exhaust PM ton/rotation		
BLUEFOR MANEUVER	HT	68,007	1.98	9.29	12.46	0.519	1.023	296.6	1,391.6	1,866.4	77.7	153.2	0.148	0.696	0.933	0.039	0.077	29.7	186.6
	LT	72,396	1.98	9.29	12.46	0.427	0.881	315.7	1,481.4	1,986.9	68.1	140.5	0.158	0.741	0.993	0.034	0.070	31.6	198.7
	HW	277,891	1.98	9.29	12.46	0.427	0.881	1,211.9	5,686.4	7,626.7	261.4	539.3	0.606	2.843	3.813	0.131	0.270	121.2	762.7
	LW	190,332	0.89	1.54	1.67	0.111	0.264	373.1	645.6	700.1	46.5	110.7	0.187	0.323	0.350	0.023	0.055	37.3	70.0
	Total	608,626						2,197.3	9,205.0	12,180.1	453.7	943.7	1.099	4.603	6.089	0.227	0.472	219.7	1,218.0
OPFOR MANEUVER	HT	21,664	1.98	9.29	12.46	0.519	1.023	94.5	443.3	594.6	24.8	48.8	0.047	0.222	0.297	0.012	0.024	9.5	59.5
	LT	66,031	1.98	9.29	12.46	0.427	0.881	288.0	1,351.2	1,812.2	62.1	128.1	0.144	0.676	0.906	0.031	0.064	28.8	181.2
	HW	13,180	1.98	9.29	12.46	0.427	0.881	57.5	269.7	361.7	12.4	25.6	0.029	0.135	0.181	0.006	0.013	5.8	36.2
	LW	29,598	0.89	1.54	1.67	0.111	0.264	58.0	100.4	108.9	7.2	17.2	0.029	0.050	0.054	0.004	0.009	5.8	10.9
	Total	130,473						498.0	2,164.6	2,877.4	106.5	219.7	0.249	1.083	1.438	0.053	0.110	49.8	287.7
OPSGRP	HT	0	1.98	9.29	12.46	0.519	1.023	0	0	0	0	0	0	0	0	0	0	0.0	0.0
	LT	3,732	1.98	9.29	12.46	0.427	0.881	16.3	76.4	102.4	3.5	7.2	0.008	0.038	0.051	0.002	0.004	1.6	10.2
	HW	2,611	1.98	9.29	12.46	0.427	0.881	11.4	53.4	71.7	2.5	5.1	0.006	0.027	0.036	0.001	0.003	1.1	7.2
	LW	264,941	0.89	1.54	1.67	0.111	0.264	519.4	898.7	974.6	64.8	154.1	0.260	0.449	0.487	0.032	0.077	51.9	97.5
	Total	271,284						547.1	1,028.5	1,148.7	70.8	166.4	0.274	0.514	0.574	0.035	0.084	54.7	114.9
TOTAL	HT	89,670	1.98	9.29	12.46	0.519	1.023	391.1	1,834.9	2,461.0	102.5	202.1	0.196	0.917	1.231	0.051	0.101	39.1	246.1
	LT	142,158	1.98	9.29	12.46	0.427	0.881	620.0	2,908.9	3,901.5	133.7	275.9	0.310	1.454	1.951	0.067	0.138	62.0	390.2
	HW	293,682	1.98	9.29	12.46	0.427	0.881	1,280.8	6,009.5	8,060.1	276.2	569.9	0.640	3.005	4.030	0.138	0.285	128.1	806.0
	LW	484,871	0.89	1.54	1.67	0.111	0.264	950.5	1,644.7	1,783.6	118.5	282.0	0.475	0.822	0.892	0.059	0.141	95.1	178.4
	Total	1,010,381						3,242.4	12,398.0	16,206.2	630.9	1,329.9	1.620	6.200	8.100	0.320	0.670	324.2	1,620.6

Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt1Excel Spreadsheets received on October 1, 2002.
 VMT, miles = Number of Vehicles by Type x Distance, miles. This was completed in the conformity calculations (EPAFortIrwinAlt1H.xls) developed by Parsons. Note: The calculation will not work on the number of vehicles and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.
 Emissions, lb = VMT, miles x Emission Factor, g/mi x lb/454 g
 Emissions, ton = Emissions, lb x ton/2,000 lb

VOC Emission @ non-attainment area lb/rotation	NOx Emission @ non-attainment area lb/rotation
29.7	186.6
31.6	198.7
121.2	762.7
37.3	70.0
219.7	1218.0
9.5	59.5
28.8	181.2
5.8	36.2
5.8	10.9
49.8	287.7
0.0	0.0
1.6	10.2
1.1	7.2
51.9	97.5
54.7	114.9
39.1	246.1
62.0	390.2
128.1	806.0
95.1	178.4
324.2	1620.6

**Fort Irwin
Exhaust Emission Calculations - Alternative 6 - Heavy Rotation**

Group	Vehicle Type	VMT miles/ rotation	Emission Factors					Emissions									
			Exhaust Running VOC g/mi	Exhaust CO g/mi	Exhaust NOx g/mi	Exhaust SO ₂ g/mi	Exhaust PM g/mi	Exhaust Running VOC lb/ rotation	Exhaust CO lb/ rotation	Exhaust NOx lb/ rotation	Exhaust SO ₂ lb/ rotation	Exhaust PM lb/ rotation	Exhaust Running VOC ton/ rotation	Exhaust CO ton/ rotation	Exhaust NOx ton/ rotation	Exhaust SO ₂ ton/ rotation	Exhaust PM ton/ rotation
BLUEFOR MANEUVER	HT	68,007	1.98	9.29	12.46	0.519	1.023	296.6	1,391.6	1,866.4	77.7	153.2	0.148	0.696	0.933	0.039	0.077
	LT	72,396	1.98	9.29	12.46	0.427	0.881	315.7	1,481.4	1,986.9	68.1	140.5	0.158	0.741	0.993	0.034	0.070
	HW	277,891	1.98	9.29	12.46	0.427	0.881	1,211.9	5,686.4	7,626.7	261.4	539.3	0.606	2.843	3.813	0.131	0.270
	LW	190,332	0.89	1.54	1.67	0.111	0.264	373.1	645.6	700.1	46.5	110.7	0.187	0.323	0.350	0.023	0.055
	Total	608,626							2,197.3	9,205.0	12,180.1	453.7	943.7	1.099	4.603	6.089	0.227
OPFOR MANEUVER	HT	21,664	1.98	9.29	12.46	0.519	1.023	94.5	443.3	594.6	24.8	48.8	0.047	0.222	0.297	0.012	0.024
	LT	66,031	1.98	9.29	12.46	0.427	0.881	288.0	1,351.2	1,812.2	62.1	128.1	0.144	0.676	0.906	0.031	0.064
	HW	13,180	1.98	9.29	12.46	0.427	0.881	57.5	269.7	361.7	12.4	25.6	0.029	0.135	0.181	0.006	0.013
	LW	29,598	0.89	1.54	1.67	0.111	0.264	58.0	100.4	108.9	7.2	17.2	0.029	0.050	0.054	0.004	0.009
	Total	130,473							498.0	2,164.6	2,877.4	106.5	219.7	0.249	1.083	1.438	0.053
OPSGRP	HT	0	1.98	9.29	12.46	0.519	1.023	0	0	0	0	0	0	0	0	0	0
	LT	3,732	1.98	9.29	12.46	0.427	0.881	16.3	76.4	102.4	3.5	7.2	0.008	0.038	0.051	0.002	0.004
	HW	2,611	1.98	9.29	12.46	0.427	0.881	11.4	53.4	71.7	2.5	5.1	0.006	0.027	0.036	0.001	0.003
	LW	264,941	0.89	1.54	1.67	0.111	0.264	519.4	898.7	974.6	64.8	154.1	0.260	0.449	0.487	0.032	0.077
	Total	271,284							547.1	1,028.5	1,148.7	70.8	166.4	0.274	0.514	0.574	0.035
TOTAL	HT	89,670	1.98	9.29	12.46	0.519	1.023	391.1	1,834.9	2,461.0	102.5	202.1	0.196	0.917	1.231	0.051	0.101
	LT	142,158	1.98	9.29	12.46	0.427	0.881	620.0	2,908.9	3,901.5	133.7	275.9	0.310	1.454	1.951	0.067	0.138
	HW	293,682	1.98	9.29	12.46	0.427	0.881	1,280.8	6,009.5	8,060.1	276.2	569.9	0.640	3.005	4.030	0.138	0.285
	LW	484,871	0.89	1.54	1.67	0.111	0.264	950.5	1,644.7	1,783.6	118.5	282.0	0.475	0.822	0.892	0.059	0.141
	Total	1,010,381							3,242.4	12,398.0	16,206.2	630.9	1,329.9	1.620	6.200	8.100	0.320

Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named HRAlt6Excell Spreadsheets received on October 1, 2002.
VMT, miles = Number of Vehicles by Type x Distance, miles. This was completed in the conformity calculations (EPAFortIrwinAlt6H.xls) developed by Parsons. Note: The calculation will not work on the number of vehicle and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.
Emissions, lb = VMT, miles x Emission Factor, g/mil x lb/454 g
Emissions, ton = Emissions, lb x ton/2,000 lb

Light Rotation

**Fort Irwin
Exhaust Emission Calculations - Alternative 1 - Light Rotation**

Group	Vehicle Type	VMT miles/rotation	Emission Factors					Emissions									
			Exhaust Running VOC g/mi	Exhaust CO g/mi	Exhaust NOx g/mi	Exhaust SO ₂ g/mi	Exhaust PM g/mi	Exhaust Running VOC lb/ rotation	Exhaust CO lb/ rotation	Exhaust NOx lb/ rotation	Exhaust SO ₂ lb/ rotation	Exhaust PM lb/ rotation	Exhaust Running VOC ton/ rotation	Exhaust CO ton/ rotation	Exhaust NOx ton/ rotation	Exhaust SO ₂ ton/ rotation	Exhaust PM ton/ rotation
BLUEFOR MANEUVER	HT	21,255	1.98	9.29	12.46	0.519	1.023	92.7	434.9	583.3	24.3	47.9	0.046	0.217	0.292	0.012	0.024
	LT	34,068	1.98	9.29	12.46	0.427	0.881	148.6	697.1	935.0	32.0	66.1	0.074	0.349	0.468	0.016	0.033
	HW	100,068	1.98	9.29	12.46	0.427	0.881	436.4	2,047.6	2,746.4	94.1	194.2	0.218	1.024	1.373	0.047	0.097
	LW	197,837	0.89	1.54	1.67	0.111	0.264	387.8	671.1	727.7	48.4	115.0	0.194	0.336	0.364	0.024	0.058
	Total	353,228						1,065.5	3,850.7	4,992.4	198.8	423.2	0.532	1.926	2.497	0.099	0.212
OPFOR MANEUVER	HT	23,247	1.98	9.29	12.46	0.519	1.023	101.4	475.7	638.0	26.6	52.4	0.051	0.238	0.319	0.013	0.026
	LT	68,390	1.98	9.29	12.46	0.427	0.881	298.3	1,399.4	1,877.0	64.3	132.7	0.149	0.700	0.939	0.032	0.066
	HW	13,180	1.98	9.29	12.46	0.427	0.881	57.5	269.7	361.7	12.4	25.6	0.029	0.135	0.181	0.006	0.013
	LW	29,148	0.89	1.54	1.67	0.111	0.264	57.1	98.9	107.2	7.1	16.9	0.029	0.049	0.054	0.004	0.008
	Total	133,965						514.3	2,243.7	2,983.9	110.4	227.6	0.258	1.122	1.493	0.055	0.113
OPSGRP	HT	0	1.98	9.29	12.46	0.519	1.023	0	0	0	0	0	0	0	0	0	0
	LT	3,732	1.98	9.29	12.46	0.427	0.881	16.3	76.4	102.4	3.5	7.2	0.008	0.038	0.051	0.002	0.004
	HW	2,611	1.98	9.29	12.46	0.427	0.881	11.4	53.4	71.7	2.5	5.1	0.006	0.027	0.036	0.001	0.003
	LW	264,941	0.89	1.54	1.67	0.111	0.264	519.4	898.7	974.6	64.8	154.1	0.260	0.449	0.487	0.032	0.077
	Total	271,284						547.1	1,028.5	1,148.7	70.8	166.4	0.274	0.514	0.574	0.035	0.084
TOTAL	HT	44,502	1.98	9.29	12.46	0.519	1.023	194.1	910.6	1,221.4	50.9	100.3	0.097	0.455	0.611	0.025	0.050
	LT	106,190	1.98	9.29	12.46	0.427	0.881	463.1	2,172.9	2,914.4	99.9	206.1	0.232	1.086	1.457	0.050	0.103
	HW	115,859	1.98	9.29	12.46	0.427	0.881	505.3	2,370.8	3,179.7	109.0	224.8	0.253	1.185	1.590	0.055	0.112
	LW	491,926	0.89	1.54	1.67	0.111	0.264	964.3	1,668.6	1,809.5	120.3	286.1	0.482	0.834	0.905	0.060	0.143
	Total	758,477						2,126.8	7,122.9	9,125.0	380.1	817.3	1.060	3.560	4.560	0.190	0.410

Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt1Excel Spreadsheets received on September 30, 2002.
VMT, miles = Number of Vehicles by Type x Distance, miles. This was completed in the conformity calculations (EPAFortIrwinAlt1L.xls) developed by Parsons. Note: The calculation will not work on the number of vehicle and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.
Emissions, lb = VMT, miles x Emission Factor, g/mil x lb/454 g
Emissions, ton = Emissions, lb x ton/2,000 lb

**Fort Irwin
Exhaust Emission Calculations - Alternative 6 - Light Rotation**

Group	Vehicle Type	VMT miles/rotation	Emission Factors					Emissions									
			Exhaust Running VOC g/mi	Exhaust CO g/mi	Exhaust NOx g/mi	Exhaust SO ₂ g/mi	Exhaust PM g/mi	Exhaust Running VOC lb/ rotation	Exhaust CO lb/ rotation	Exhaust NOx lb/ rotation	Exhaust SO ₂ lb/ rotation	Exhaust PM lb/ rotation	Exhaust Running VOC ton/ rotation	Exhaust CO ton/ rotation	Exhaust NOx ton/ rotation	Exhaust SO ₂ ton/ rotation	Exhaust PM ton/ rotation
BLUEFOR MANEUVER	HT	21,250	1.98	9.29	12.46	0.519	1.023	92.7	434.8	583.2	24.3	47.9	0.046	0.217	0.292	0.012	0.024
	LT	33,646	1.98	9.29	12.46	0.427	0.881	146.7	688.5	923.4	31.6	65.3	0.073	0.344	0.462	0.016	0.033
	HW	98,831	1.98	9.29	12.46	0.427	0.881	431.0	2,022.3	2,712.4	93.0	191.8	0.216	1.011	1.356	0.047	0.096
	LW	203,976	0.89	1.54	1.67	0.111	0.264	399.9	691.9	750.3	49.9	118.6	0.200	0.346	0.375	0.025	0.059
	Total	357,703						1,070.3	3,837.5	4,969.3	198.8	423.6	0.535	1.918	2.485	0.100	0.212
OPFOR MANEUVER	HT	21,595	1.98	9.29	12.46	0.519	1.023	94.2	441.9	592.7	24.7	48.7	0.047	0.221	0.296	0.012	0.024
	LT	64,478	1.98	9.29	12.46	0.427	0.881	281.2	1,319.4	1,769.6	60.6	125.1	0.141	0.660	0.885	0.030	0.063
	HW	11,940	1.98	9.29	12.46	0.427	0.881	52.1	244.3	327.7	11.2	23.2	0.026	0.122	0.164	0.006	0.012
	LW	29,546	0.89	1.54	1.67	0.111	0.264	57.9	100.2	108.7	7.2	17.2	0.029	0.050	0.054	0.004	0.009
	Total	127,559						485.4	2,105.8	2,798.7	103.7	214.2	0.243	1.053	1.399	0.052	0.108
OPSGRP	HT	0	1.98	9.29	12.46	0.519	1.023	0	0	0	0	0	0	0	0	0	0
	LT	3,732	1.98	9.29	12.46	0.427	0.881	16.3	76.4	102.4	3.5	7.2	0.008	0.038	0.051	0.002	0.004
	HW	2,611	1.98	9.29	12.46	0.427	0.881	11.4	53.4	71.7	2.5	5.1	0.006	0.027	0.036	0.001	0.003
	LW	264,941	0.89	1.54	1.67	0.111	0.264	519.4	898.7	974.6	64.8	154.1	0.260	0.449	0.487	0.032	0.077
	Total	271,284						547.1	1,028.5	1,148.7	70.8	166.4	0.274	0.514	0.574	0.035	0.084
TOTAL	HT	42,845	1.98	9.29	12.46	0.519	1.023	186.9	876.7	1,175.9	49.0	96.5	0.093	0.438	0.588	0.025	0.048
	LT	101,857	1.98	9.29	12.46	0.427	0.881	444.2	2,084.3	2,795.5	95.8	197.7	0.222	1.042	1.398	0.048	0.099
	HW	113,382	1.98	9.29	12.46	0.427	0.881	494.5	2,320.1	3,111.8	106.6	220.0	0.247	1.160	1.556	0.053	0.110
	LW	498,462	0.89	1.54	1.67	0.111	0.264	977.2	1,690.8	1,833.5	121.9	289.9	0.489	0.845	0.917	0.061	0.145
	Total	756,546						2,102.8	6,971.9	8,916.7	373.3	804.1	1.050	3.490	4.460	0.190	0.400

Vehicle type, number of vehicles and distance traveled was provided by Charis via email in Excel files within a directory named LRAlt6Excel Spreadsheets received on September 30, 2002.
VMT, miles = Number of Vehicles by Type x Distance, miles. This was completed in the conformity calculations (EPAFortIrwinAlt6L.xls) developed by Parsons. Note: The calculation will not work on the number of vehicle and distance provided in this spreadsheet because the number of vehicles and distances are aggregate values not individual distances.
Emissions, lb = VMT, miles x Emission Factor, g/mil x lb/454 g
Emissions, ton = Emissions, lb x ton/2,000 lb

Appendix G
Fort Irwin Draft Conformity Report
Air Quality

Vehicle Exhaust Emission Estimate Summary

**Fort Irwin
Exhaust Emission Calculation Summary**

Group	Vehicle Type	Alternate 6 (No Action)			Alternative 1 (Preferred)			Projected Increase				
		Exhaust Running VOC ton/rotation	Exhaust NOx ton/rotation	Exhaust PM ton/rotation	Exhaust Running VOC ton/rotation	Exhaust NOx ton/rotation	Exhaust PM ton/rotation	Exhaust Running VOC ton/yr	Exhaust CO ton/yr	Exhaust NOx ton/yr	Exhaust SO ₂ ton/rotation	Exhaust PM ton/yr
BLUEFOR MANEUVER	HT	0.148	0.933	0.077	0.148	0.933	0.077	0.000	0.000	0.000	0.000	0.000
	LT	0.158	0.993	0.070	0.158	0.993	0.070	0.000	0.000	0.000	0.000	0.000
	HW	0.606	3.813	0.270	0.606	3.813	0.270	0.000	0.000	0.000	0.000	0.000
	LW	0.187	0.350	0.055	0.187	0.350	0.055	0.000	0.000	0.000	0.000	0.000
	Total	1.099	6.089	0.472	1.099	6.089	0.472	0.000	0.000	0.000	0.000	0.000
OPFOR MANEUVER	HT	0.047	0.297	0.024	0.047	0.297	0.024	0.000	0.000	0.000	0.000	0.000
	LT	0.144	0.906	0.064	0.144	0.906	0.064	0.000	0.000	0.000	0.000	0.000
	HW	0.029	0.181	0.013	0.029	0.181	0.013	0.000	0.000	0.000	0.000	0.000
	LW	0.029	0.054	0.009	0.029	0.054	0.009	0.000	0.000	0.000	0.000	0.000
	Total	0.249	1.438	0.110	0.249	1.438	0.110	0.000	0.000	0.000	0.000	0.000
OPSGRP	HT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	LT	0.008	0.051	0.004	0.008	0.051	0.004	0.000	0.000	0.000	0.000	0.000
	HW	0.006	0.036	0.003	0.006	0.036	0.003	0.000	0.000	0.000	0.000	0.000
	LW	0.260	0.487	0.077	0.260	0.487	0.077	0.000	0.000	0.000	0.000	0.000
	Total	0.274	0.574	0.084	0.274	0.574	0.084	0.000	0.000	0.000	0.000	0.000
TOTAL	HT	0.196	1.231	0.101	0.196	1.231	0.101	0.000	0.000	0.000	0.000	0.000
	LT	0.310	1.951	0.138	0.310	1.951	0.138	0.000	0.000	0.000	0.000	0.000
	HW	0.640	4.030	0.285	0.640	4.030	0.285	0.000	0.000	0.000	0.000	0.000
	LW	0.475	0.892	0.141	0.475	0.892	0.141	0.000	0.000	0.000	0.000	0.000
	Total	1.620	8.100	0.670	1.620	8.100	0.670	0.000	0.000	0.000	0.000	0.000

Alternative 6 (No Action) Emissions developed in the spreadsheet HR Alt 6 within this Excel workbook (FortIrwinExhaust.xls).

Alternative 1 (Preferred) Emissions developed in the spreadsheet HR Alt 1 within this Excel workbook (FortIrwinExhaust.xls).

Increase Emissions, ton/yr = (Alternative 1 (Preferred) Emissions, ton/rotation- Alternative 6 (No Action) Emissions, ton/rotation) x 10 rotations/yr