7.5 AIR QUALITY

7.5.1 Affected Environment

There are no air quality monitoring stations close to KTA or KLOA. The closest air quality monitoring stations are on the south side of O'ahu. Vehicle traffic, aircraft flight operations (mostly helicopters), and training munitions represent the majority of Army emission sources that are present intermittently at KTA and KLOA. Vehicle operations at KLOA are very limited and consist primarily of vehicle traffic between Schofield Barracks and KTA or KLOA. Most training at KLOA involves dismounted troop maneuvers and helicopter activity.

The Army has a remote weather station at KTA. Data from that station are used primarily in a real-time context for fire management. Consequently, comprehensive data summaries are not available. Maximum wind speeds at KTA exceed the 15 mph (24 kph) threshold commonly associated with wind erosion processes about 40 percent of the time.

7.5.2 Environmental Consequences

Summary of Impacts

Two significant air quality impacts have been identified at KTA under the Proposed Action or the RLA Alternative. Fugitive dust PM_{10} emissions from military vehicle use on unpaved roadways and off-road areas would increase by 315 tons (286 metric tons) per year compared to No Action conditions. Visible dust is a clear indication of airborne PM_{10} concentrations that are typically in the range of several thousand micrograms per cubic meter. It takes only a few hours of such concentrations to produce a 24-hour average that exceeds the state and federal 24-hour average PM_{10} standard of 150 micrograms per cubic meter. PM_{10} emissions are important because they are easily airborne and are small enough to be inhaled deep into the lungs creating potential adverse health effects. The substantial increase in fugitive PM_{10} emissions from military vehicle use at KTA, the likelihood of exceeding the federal 24-hour standard, and the potential impacts to quality of life quality of life for those using recreational facilities in the KTA vicinity combined may result in a significant air quality impact at KTA under the Proposed Action and the RLA

Wind erosion from areas disturbed by vehicle maneuver activity would increase by about 163 tons (148 metric tons) per year compared to No Action. The substantial increase in fugitive PM_{10} emissions from wind erosion at KTA, the likelihood of exceeding the federal 24-hour standard, and the potential impacts to quality of life quality of life for those using recreational facilities in the KTA vicinity combined may result in a significant air quality impact at KTA under the Proposed Action and the RLA

Construction associated with KTA under the Proposed Action or Reduced Land Acquisition would include two FTI antennas, a tactical vehicle wash, and the CACTF. Maximum annual emissions from construction would create too small a net increase in ozone precursor emissions to have a measurable effect on ozone levels and would not affect the attainment status of the area. Nitrogen oxide emissions from construction equipment would be 21.5 tons (19.6 metric tons) in 2005, and less than 12 tons (11 metric tons) per year for the

remainder of the construction period (through 2008). Nitrogen oxide emissions are of concern primarily as an ozone precursor. Emissions of ozone precursors from construction activities associated with the Proposed Action or the RLA Alternative would be too small to have a measurable effect on ozone levels, and would not change the attainment status of the area.

Ordnance use at KTA would decrease under the Proposed Action or Reduced Land Acquisition. Most ordnance would be blank ammunition or SRTA, with some smoke devices, flares, and simulators used at KTA. Because emission quantities from ordnance use are very small and include only trace quantities of hazardous components, no significant air quality impacts would occur and the attainment status of the area would not change.

SBCT transformation would add the Stryker armored vehicle to the tactical and support vehicle inventory used at KTA. As a result, vehicle use and resulting vehicle engine emissions would increase at KTA under the Proposed Action or Reduced Land Acquisition. The net increase in military vehicle engine emissions would be 1.3 tons (1.2 metric tons) per year for reactive organic compounds, 12.4 tons (11.3 metric tons) per year for nitrogen oxides, 3.9 tons (3.5 metric tons) per year for carbon monoxide, 0.14 ton (0.13 metric ton) per year for sulfur oxides, and 1.1 tons (1 metric ton) per year for PM_{10}. These increases in military vehicle engine emissions would be too small to have meaningful effects on ambient air quality conditions or to affect the attainment status of the project area. Consequently, the increase in military vehicle engine emissions would have a less than significant impact on air quality.

The addition of UAV flight operations at KTA and KLOA under the Proposed Action or the RLA Alternative would result in a less than significant increase in overall aircraft emissions associated with use of these areas.

There would be a slight increase in the risk of wildfires at KTA under the Proposed Action or the RLA Alternative, but emissions associated with wildfires at KTA would remain a less than significant impact. No personnel are based at KTA or KLOA, so there would be no air quality impacts at KTA or KLOA from changes in personnel numbers under the Proposed Action or the RLA Alternative.

Table 7-12 summarizes the significance of air quality impacts at KTA and KLOA under the Proposed Action, RLA, and No Action.

Proposed Action

Significant Impacts

Impact 1: Fugitive dust from military vehicle use. Vehicle travel on unpaved roads and other unpaved areas at KTA and KLOA would increase by 77 percent under the Proposed Action. As many as 241 vehicles could participate in a single exercise, with up to 173 of those vehicles traveling to KTA along Helemanō Trail and Drum Road. Resulting PM_{10} emissions would be approximately 476 tons (432 metric tons) per year, an increase of about 315 tons (286 metric tons) per year compared to No Action conditions. Approximately 20 percent of

Table 7-12
Summary of Potential Air Quality Impacts at KTA/KLOA

Impact Issues	Proposed Action	Reduced Land Acquisition	No Action
Emissions from construction activities	⊙	⊙	○
Emissions from ordnance use	⊙	⊙	⊙
Engine emissions from military vehicle use	⊙	⊙	⊙
Fugitive dust from military vehicle use	⊗	⊗	⊙
Wind erosion from areas disturbed by military vehicle use	⊗	⊗	⊙
Emissions from increased aircraft operations	⊙	⊙	⊙
Emissions from wildfires	⊙	⊙	⊙
Other emissions from personnel increases	○	○	○

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

⊗ = Significant
⊘ = Significant but mitigable to less than significant
⊙ = Less than significant
○ = No impact
\+ = Beneficial impact
N/A = Not applicable

the net increase in fugitive PM_{10} emissions would be associated with vehicle travel on unpaved roads, while the remaining 80 percent represents potential emissions from off-road vehicle maneuver activity.

Fugitive dust generated by military vehicle maneuver traffic inside KTA poses the greatest potential for creating either nuisance conditions at nearby off-post locations or localized violations of the state or federal 24-hour average PM_{10} standards. Off road use will remove vegetation and expose bare soil to wind erosion creating reoccurring exposure to high PM_{10} levels during high winds. PM_{10} emissions are important because they are easily airborne and are small enough to be inhaled deep into the lungs creating potential adverse health effects. The substantial increase in fugitive PM_{10} emissions from military vehicle use at KTA, the likelihood of exceeding the federal 24-hour standard, and the potential impacts to quality of life quality of life for those using recreational facilities in the KTA vicinity combined may result in a significant air quality impact at KTA under the Proposed Action and the RLA. Feasible mitigation measures are available to reduce the magnitude of this impact, but it is unlikely that the impact could be reduced to a less than significant level.

Convoy traffic on military vehicle trails between KTA and SBMR would be relatively sporadic in nature, with convoy traffic on any particular trail segment lasting for periods much shorter than the time frame of the relevant state and federal PM_{10} standards. Consequently, dust from vehicle convoy traffic on military vehicle trails would be unlikely to produce high fugitive dust concentrations lasting long enough to create any violations of the 24-hour average PM_{10} standards. Fugitive dust caused by convoy traffic on military vehicle

trails between installations would be a relatively small component of overall fugitive dust generation by military vehicle use.

Regulatory and Administrative Mitigation 1. No regulatory or administrative mitigations have been identified.

Additional Mitigation 1. As discussed in Chapter 5, Section 5.5.2, potential mitigation measures for this impact include using gravel, paving, spraying water, and applying dust control treatments to unpaved roads, and rotating and reseeding on maneuver areas. These mitigation measures, if implemented, would reduce the quantity of fugitive dust emissions, but are unlikely to reduce the quantity to a less than significant level.

Effective mitigation measures are difficult to identify for off-road maneuvering, which would be the major source of fugitive dust under the Proposed Action. Rotating maneuver activities among available areas is effective only when the available area substantially exceeds the area needed for individual exercise events. That may not be the case for KTA, where activity rotations may not provide sufficient time for vegetation to recover between repeated disturbances.

Vegetation reseeding programs normally would be linked with rotating maneuver activities among available areas. The effectiveness of reseeding programs depends on having adequate germination and vegetation establishment periods between repeated disturbances. This may not be possible for the limited off-road maneuver areas available at KTA.

While these proposed mitigations would be implemented in coordination with the ITAM geographic information system and erosion-control and revegetation efforts discussed in sections 7.8, 7.9, and 7.10 of this chapter, these efforts would not reduce the impact of fugitive dust emissions at KTA to less than significant.

Impact 2: Wind erosion from areas disturbed by military vehicle use. Off-road vehicle activity can reduce or eliminate vegetation cover in affected areas, resulting in increased susceptibility to wind erosion. The amount of off-road vehicle activity at KTA would increase by 89 percent under the Proposed Action. This increase in off-road vehicle activity would reduce vegetation cover in the affected maneuver areas. An estimated 257 tons (233 metric tons) per year of PM_{10} would be generated by wind erosion from the affected areas. This would represent a net increase of about 163 tons (148 metric tons) per year compared to No Action. The substantial increase in fugitive PM_{10} emissions from wind erosion at KTA, the likelihood of exceeding the federal 24-hour standard, and the potential impacts to quality of life quality of life for those using recreational facilities in the KTA vicinity combined may result in a significant air quality impact at KTA under the Proposed Action and the RLA Mitigation of this impact would almost certainly require programs to maintain vegetation cover between episodes of off-road vehicle maneuver activity. As noted above under Mitigation 1, it is uncertain if effective vegetation reseeding programs could be implemented at KTA. Consequently, wind erosion from disturbed areas would be a significant and unmitigable impact under the Proposed Action.

Regulatory and Administrative Mitigation 2. No regulatory or administrative mitigations have been identified.

Additional Mitigation 2. Potential mitigation measures for this impact include:

- Rotate use among available areas to maintain reasonably complete vegetation cover or
- Implement a vegetation reseeding program to reestablish vegetation cover between periods of vehicle maneuver activities.

Rotating maneuver activities among available areas is effective only when the available area substantially exceeds the area needed for individual exercise events to allow for various maneuver area rotation patterns or schedules. That may not be the case for KTA. Activity rotations at KTA may not provide sufficient time for vegetation to recover between repeated disturbances.

Vegetation reseeding programs normally would be linked with rotating maneuver activities among available areas. The effectiveness of reseeding programs depends on having adequate germination and vegetation establishment periods between repeated disturbances. For this to happen, the total area available for off-road maneuver activities would need to be large enough to allow for various rotation schedules. This might not be possible for the limited off-road maneuver areas available at KTA.

As noted above for Impact 1, while these proposed mitigations would be implemented in coordination with the ITAM geographic information system and erosion-control and revegetation efforts discussed in sections 7.8, 7.9, and 7.10 of this chapter, these efforts would not reduce the impact of wind erosion at KTA to less than significant.

Less than Significant Impacts

Emissions from construction activities. The Proposed Action would include three construction projects at KTA occurring from 2005 into 2008. Construction projects would include a CACTF, a tactical vehicle wash facility, and two FTI towers. Figure 7-9 summarizes estimated emissions from the three construction projects according to current construction schedules. Nitrogen oxide emissions from construction equipment would be 21.5 tons (19.6 metric tons) in 2005, and less than 12 tons (11 metric tons) per year for the remainder of the construction period (through 2008). Nitrogen oxide emissions are of concern primarily as an ozone precursor. Emissions of ozone precursors from construction activities associated with the Proposed Action would be too small to have a measurable effect on ozone levels, and would not change the attainment status of the area. Consequently, construction activities at KTA would have a less than significant air quality impact under the Proposed Action.

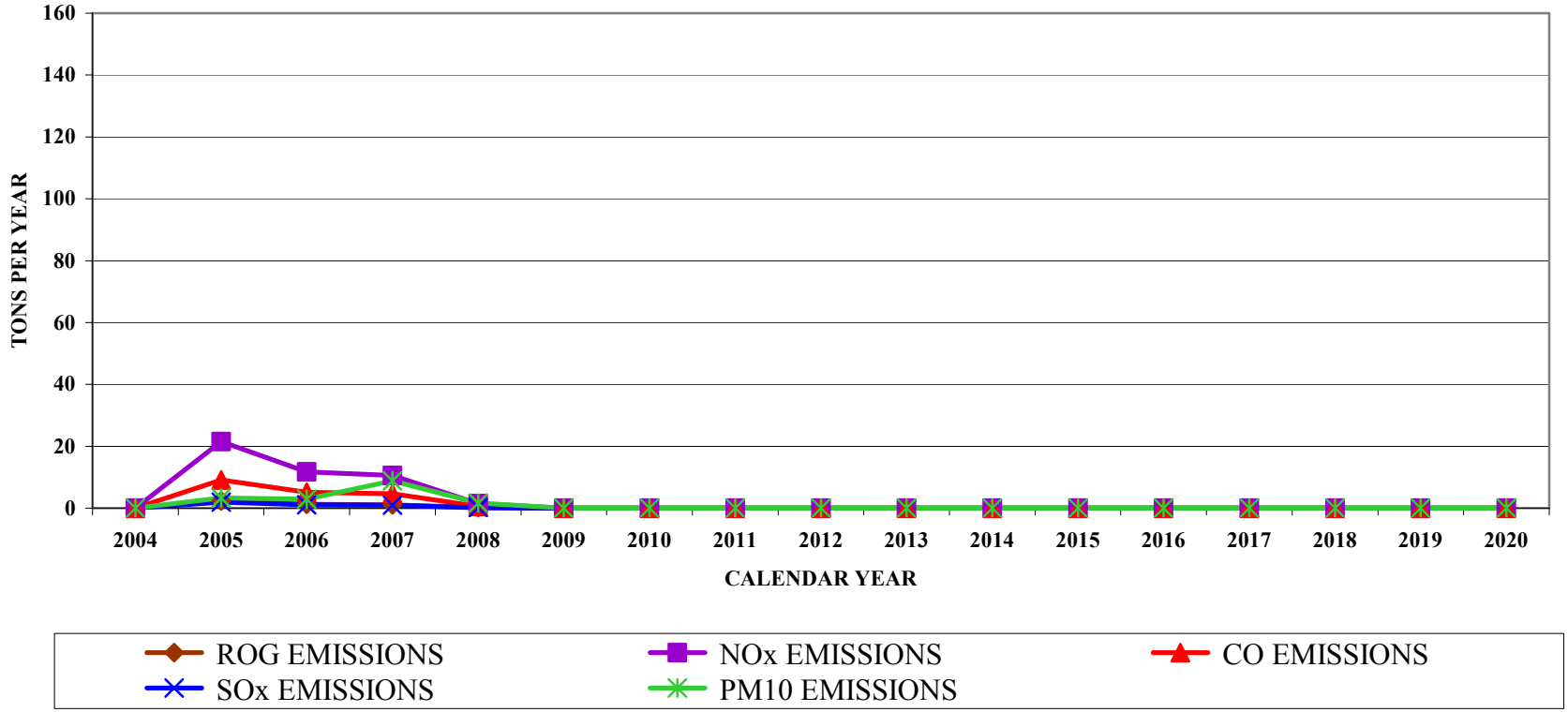

Figure 7-9 Annual Construction Emissions at Kahuku Training Area

Emissions from ordnance use. Use of the CACTF at KTA would involve SRTA in addition to blank ammunition. Some pyrotechnic devices also would be used at KTA. Only blank ammunition would be used at KLOA. Due to changes in the nature of training activities, the annual quantity of ammunition used at KTA and KLOA would decrease by about 34 percent under the Proposed Action, compared to No Action. Emissions from ordnance use have not been quantified, but, as discussed for SBMR in Chapter 5, Section 5.5.2, pollutant emission quantities from ordnance use are small. Based on the general nature of detonation processes and the very low emission rates that have been published in studies of munitions firing and open detonations, emissions associated with ordnance use at KTA and KLOA pose very little risk of creating adverse air quality impacts. Consequently, air quality impacts from munitions use under the Proposed Action are considered less than significant.

Engine emissions from military vehicle use. Military vehicle use at KTA and KLOA would result in as many as 241 vehicles participating in a single exercise. The change in overall vehicle use would represent a 77 percent increase in VMT and an 80 percent increase in vehicle operating hours, compared to No Action. Annual military vehicle emissions would increase by 145 percent compared to No Action conditions. Figure 7-10 summarizes the estimated net increase in annual engine emissions from military vehicle use at KTA and KLOA under the Proposed Action. The net increase in military vehicle engine emissions would be 1.3 tons (1.2 metric tons) per year for reactive organic compounds, 12.4 tons (11.3 metric tons) per year for nitrogen oxides, 3.9 tons (3.5 metric tons) per year for carbon monoxide, 0.14 ton (0.13 metric ton) per year for sulfur oxides, and 1.1 tons (1 metric ton) per year for PM_{10}. The net increase in military vehicle engine emissions would be too small to have meaningful effects on ambient air quality conditions or to affect the attainment status of the project area. Consequently, emissions from military vehicle use at KTA and KLOA would be a less than significant impact under the Proposed Action.

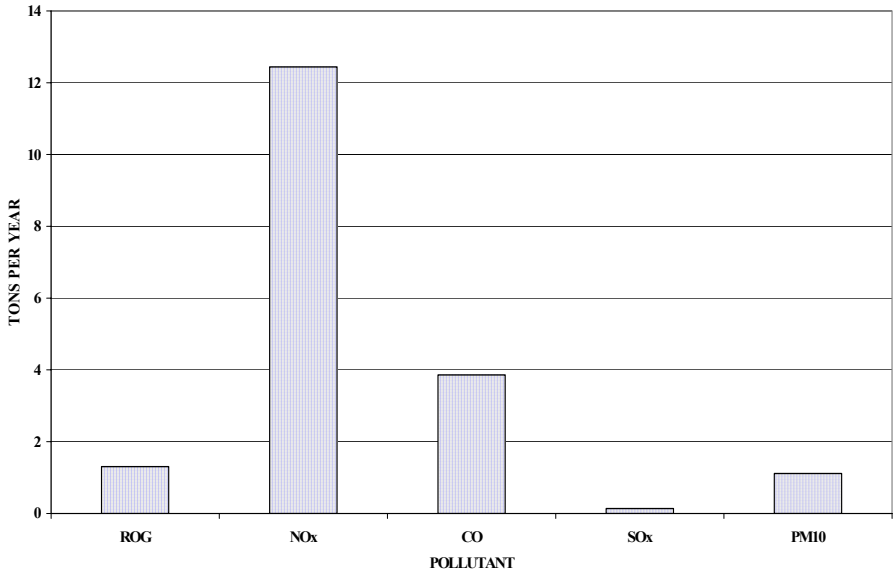

Figure 7-10. Net Change in Military Vehicle Emissions for the Proposed Action: Kahuku Training Area

Emissions from increased aircraft operations. The Proposed Action would not result in any major change to Army helicopter flight operations in Hawai'i. Some UAV flight activity could be based at KTA, but the total flight time would be relatively low. The net increase in emissions resulting from UAV flight activity would be too small to have a meaningful effect on ambient air quality conditions. Consequently, the increase in aircraft emissions at KTA and KLOA under the Proposed Action would be a less than significant impact.

Emissions from wildfires. The Proposed Action would include the use of SRTA at KTA, which might create a slightly increased risk of wildfires. However, overall ordnance use at KTA and KLOA would decrease by 34 percent compared to No Action. Consequently, there would be little change in the overall risk of wildfires. Because the overall frequency and size of wildfires at KTA and KLOA is not expected to change substantially from present conditions, emissions from wildfires would be a less than significant impact under the Proposed Action.

No Impact

Other emissions from personnel increases. No Army personnel are based at KTA or KLOA, and the installations do not have any stationary emission sources, so the Proposed Action would not result in any emissions from personal vehicle use or any increase in emissions from fixed facilities at KTA.

Reduced Land Acquisition

Air quality impacts and mitigations at KTA under the RLA Alternative would be the same as under the Proposed Action.

No Action

Less than Significant Impacts

Emissions from ordnance use. Overall ordnance use under No Action would be 52 percent greater than under the Proposed Action or the RLA Alternative. Based on the general nature of detonation processes and the very low emission rates that have been published in studies of munitions firing and open detonations, emissions associated with training ordnance use at KTA and KLOA pose very little risk of creating adverse air quality impact; consequently, air quality impacts from continued Legacy Force munitions use under No Action is considered less than significant.

Engine emissions from military vehicle use. Vehicle use associated with KTA and KLOA would remain at present levels under No Action. Estimated annual emissions from vehicle engine operations would be approximately the following:

- 0.9 ton (0.8 metric ton) of reactive organic compounds;
- 8.6 tons (7.8 metric tons) of nitrogen oxides;
- 2.7 tons (2.4 metric tons) of carbon monoxide;

- 0.1 ton (0.09 metric ton) of sulfur oxides; and
- 0.8 ton (0.7 metric ton) of PM_{10}.

The amount of military vehicle engine emissions would be too small to have meaningful effects on ambient air quality conditions. Consequently, military vehicle engine emissions would have a less than significant impact under No Action.

Fugitive dust from military vehicle use. Vehicle numbers and estimated annual use levels would remain at current conditions under No Action. Fugitive dust PM_{10} emissions from military vehicle use at KTA and KLOA would remain at the current level of about 161 tons (146 metric tons) per year. Because existing conditions at KTA and KLOA have not led to any known violations of state or federal ambient air quality standards, the fugitive dust from military vehicle use at KTA and KLOA would have a less than significant impact under No Action.

Wind erosion from areas disturbed by military vehicle use. Vehicle maneuver activity at KTA would remain the same as current conditions under No Action. An estimated 93 tons (84 metric tons) per year of PM_{10} would be generated by wind erosion from the affected areas. Wind erosion from disturbed areas would be too small to have a meaningful effect on ambient air quality conditions, and therefore would be a less than significant impact under No Action.

Emissions from increased aircraft operations. There would be no change in aircraft operations and no increase in aircraft emissions at KTA and KLOA under No Action. Because there would be no change from current conditions and because current conditions have not been known to violate any state or federal ambient air quality standards, emissions from aircraft operations under No Action would have a less than significant impact on air quality.

Emissions from wildfires. The risk of wildfires at KTA and KLOA would remain the same as that for current conditions under No Action. Because the frequency and size of wildfires at KTA and KLOA is not expected to change, emissions from wildfires would be a less than significant impact under No Action.

No Impact

Emissions from construction activities. No construction projects are associated with No Action, so there would be no air quality impact from construction under No Action.

Other emissions from personnel increases. There are no personnel based at either KTA or KLOA, so No Action would not result in any emissions from added personal vehicle use or any increase in emissions from fixed facilities.