Chapter 3.2

Air Quality

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3.2 AIR QUALITY

3.2.1 INTRODUCTION

3.2.1.1 Overview

Morrow County and Naval Weapons Systems Training Facility (NWSTF) Boardman are located in the Eastern Oregon Intrastate Air Quality Control Region 191, which includes the following Oregon counties: Baker, Gilliam, Grant, Harney, Malheur, Morrow, Umatilla, Union, Wallowa, and Wheeler. Therefore, the Eastern Oregon Intrastate Air Quality Control Region 191 is considered the study area or region of influence for the air quality analysis. The following section provides the regulatory framework for air quality and contains general information and definitions of terms commonly used in this section.

3.2.1.2 Regulatory Framework

The United States (U.S.) Environmental Protection Agency (EPA) is responsible for enforcing the Clean Air Act of 1970 and its 1977 and 1990 amendments (42 United States Code §7401, et seq.). The purposes of the Clean Air Act are to classify air basins as to their attainment status under the National Ambient Air Quality Standards (NAAQS) (40 Code of Federal Regulations [C.F.R.] § 50), to develop schedules and strategies to meet the NAAQS, and to regulate emissions of criteria pollutants and air toxics to protect the public health and welfare.

Criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than or equal to 10 micrometer (µm) in diameter (PM_{10}), fine particulate matter less than or equal to 2.5 µm in diameter ($PM_{2.5}$), and lead (Pb). Air basins that exceed a NAAQS are designated as "nonattainment" for that pollutant, while air basins that are in compliance with a NAAQS are in "attainment" for that pollutant. Nonattainment areas are required by the U.S. EPA to develop and execute a State Implementation Plan that describes actions that will lead the state into compliance with all federal air quality standards. Areas that have achieved attainment may be designated as "maintenance areas," which are subject to maintenance plans showing how the area will continue to meet federal air quality standards. Non-criteria air pollutants that can affect human health are categorized as hazardous air pollutants under Section 112 of the Clean Air Act. The U.S. EPA has identified 188 hazardous air pollutants, such as benzene, perchloroethylene, and methylene chloride. Hazardous air pollutants are examined individually where there is a source of these pollutants.

Section 176 (c) (1) of the Clean Air Act, commonly known as the General Conformity Rule (conformity), requires federal agencies to ensure that their actions conform to applicable implementation plans for achieving and maintaining NAAQS for criteria pollutants. To ensure conformity, a federal action must not contribute to new violations of ambient air quality standards, increase the frequency or severity of existing violations, or delay timely state or regional attainment of standards. A conformity review must be completed for every federal action that generates air emissions in nonattainment or maintenance (former non-attainment) areas. The General Conformity Rule does not apply to the Proposed Action because the study area is not within a nonattainment or maintenance area.

Air pollutants are classified as either primary or secondary pollutants. Primary air pollutants are those emitted directly into the atmosphere, such as CO, SO_2, Pb, and particulate matter. Secondary air pollutants, such as O_3, are those formed through atmospheric chemical reactions. Such reactions usually involve primary air pollutants and normal constituents of the atmosphere. Sunlight and meteorological conditions, such as temperature and humidity, also can affect atmospheric chemistry. Air pollutants such as organic gases and particulate matter are a combination of primary and secondary pollutants. PM_{10} and $PM_{2.5}$ are generated as primary pollutants by various mechanical processes (e.g., abrasion,

erosion, mixing, or atomization) or combustion processes. PM_{10} and $PM_{2.5}$ also can be formed as secondary pollutants, however, through chemical reactions or by the condensation of gaseous pollutants into fine aerosols.

Compounds that react to form secondary air pollutants, such as O_3, are called pollutant precursors. Precursors for O_3 fall into two broad groups of chemicals: nitrogen oxides (NO_X) and organic compounds. NO_X consists of nitric oxide and NO_2. Organic compound precursors of O_3 are routinely described by a number of different terms, including volatile organic compounds, reactive organic compounds, and reactive organic gases. The latter term, reactive organic gases, is used in this document to refer to organic compound precursors of O_3.

Air pollutant emissions refer to the amount (weight or volume) of one or more specific compounds emitted into the atmosphere by a source. Most air pollutant emissions are expressed as a rate (e.g., pounds [lb.] per hour, pounds per day, or tons per year). Typical measurement units for emission rates on a source activity basis include pounds per thousand gallons of fuel burned, pounds per ton of material processed, and grams per vehicle-mile of travel.

Ambient air quality is determined by the atmospheric concentrations of specific air pollutants at a particular time and location. The ambient air pollutant concentrations measured at a particular location are determined by the pollutant emissions rate, local meteorology, and atmospheric chemistry. Wind speed and direction and precipitation patterns affect the dispersal, dilution, and removal of air pollutant emissions. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million by volume).

3.2.1.3 Determination of Significance

The impact analysis for air quality considered possible changes in ambient air quality that could result from the Proposed Action. Such changes could arise from air pollutant emissions associated with increases in military readiness activities (e.g., combustion emissions from aircraft, vehicles, and equipment). Factors used in determining if impacts to air quality would be significant include whether emissions from the alternatives would be expected to change the NAAQS attainment status in the Eastern Oregon Intrastate Air Quality Control Region 191 and whether emissions would exceed allowable Prevention of Significant Deterioration increments.

3.2.2 AFFECTED ENVIRONMENT

3.2.2.1 Regional and Local Air Quality

The Oregon Department of Environmental Quality monitors criteria air pollutants through a network of air quality monitoring sites throughout the state. Based upon data collected from these monitoring sites, the U.S. EPA prepares annual summaries of local air quality that identify those areas that exceed NAAQS for one or more air pollutants. Geographic areas that have not consistently met the NAAQS are designated as nonattainment areas. Maintenance areas are geographic areas that had a history of nonattainment, but are now consistently meeting NAAQS and have a maintenance plan (see Section 3.0.1, Regulatory Framework for additional details).

The Eastern Oregon Intrastate Air Quality Control Region 191 generally has good air quality, as indicated by the lack of nonattainment areas in the region. Morrow County and NWSTF Boardman are not located in a nonattainment or maintenance area. Currently, only three areas in Oregon are designated as nonattainment areas, all for particulate matter: Klamath Falls, Oakridge, and Eugene/Springfield. The

closest maintenance area to NWSTF Boardman is La Grande, approximately 100 miles (161 kilometers) east/southeast of NWSTF Boardman (Oregon Department of Environmental Quality 2011a).

The Air Quality Index is a health index that normalizes the various air pollutants in order to report one health level. In 2010, the Air Quality Index for Hermiston, which is located about 25 miles (40.2 kilometers) east of NWSTF Boardman, was in the "good" category on 93 percent of the days for which a value was calculated and in the "moderate" category on the remaining days (Oregon Department of Environmental Quality 2011b). The most recent air emissions inventory data that are available for Morrow County and the Eastern Oregon Intrastate Air Quality Control Regional 191 are from 2002 (Table 3.2-1).

Table 3.2-1: Annual Baseline (2002) Criteria and Precursor Air Pollutant Emissions for Morrow County, Oregon and Eastern Oregon Intrastate Air Quality Control Region 191

Geographic Area	Criteria and Precursor Air Pollutant Emissions in Tons/Year[1]					
	CO	NO_x	HC[1]	SO_x	PM_{10}	$PM_{2.5}$
Morrow County	13,359	10,695	3,004	12,379	6,633	1,418
Eastern Oregon Intrastate Air Quality Control Region 191	364,171	36,845	77,011	16,037	67,991	25,559

[1]Presented as volatile organic compounds in U.S. Environmental Protection Agency 2008
Notes: CO = carbon monoxide, NO_x = nitrogen oxides, HC = total hydrocarbons, SO_x = sulfur oxides, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter, $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 micrometers in diameter.
Source: U.S. Environmental Protection Agency 2008

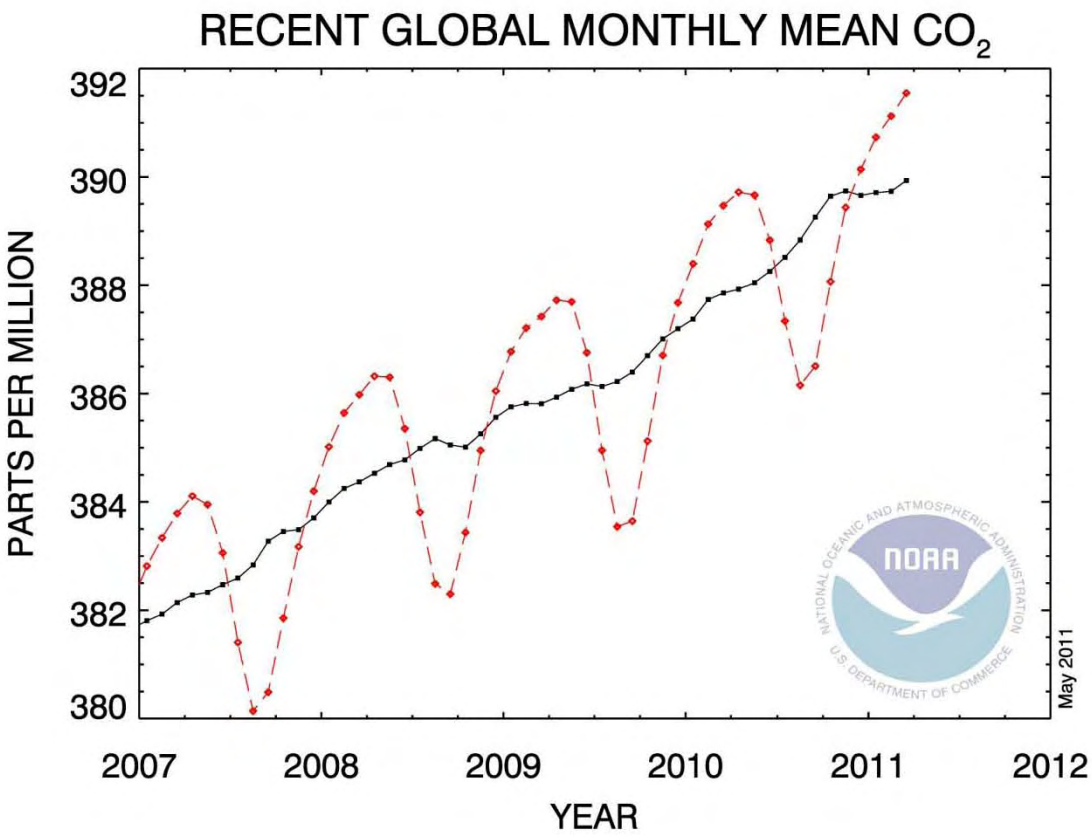
3.2.2.2 Existing Air Pollutant Emissions at NWSTF Boardman

Air pollutant emissions at NWSTF Boardman primarily originate from mobile sources, with the main source being fixed-wing aircraft overflights in the Special Use Airspace. Other sources include helicopters, Unmanned Aerial Systems, and military ground vehicles and equipment.

The only stationary air pollution source at NWSTF Boardman is an emergency generator, which is located in the Administration Area (U.S. Department of the Navy 2011). No air pollution sources are located on the range itself. Emergency generators are excluded from the minor sources required to obtain permits under Oregon Department of Environmental Quality regulations (Oregon Administrative Rules 340-216-0020).

3.2.2.3 Climate Change

Global warming is the increase in the average temperature of the Earth's near-surface air and oceans since the mid-20th century. Global surface temperatures have increased by an average of about 1.3 degrees Fahrenheit (°F) during the last century (Solomon et al. 2007). Climate change has been attributed to many factors, including increasing atmospheric concentrations of CO_2, NO_2, methane, and other greenhouse gases. Figure 3.2-1 illustrates the global increase in CO_2 concentration over the past five years (Department of Commerce 2011). Most of the observed temperature increase since the mid-20th century is correlated with increasing amounts of greenhouse gases emitted by human activities, such as combustion of fossil fuels and deforestation (Solomon et al. 2007).



Notes: The dashed red line with diamond symbols represents the monthly mean values, centered on the middle of each month. The black line with the square symbols represents the same, after correction for the average seasonal cycle.
Source: Department of Commerce 2011

Figure 3.2-1: Recent CO_2 Global Trend

The greenhouse gas effect is the process by which certain gases in the atmosphere allow long-wave radiation in, but also keep short-wave radiation from escaping, which then warms the planet's lower atmosphere and surface. Greenhouse gases are transparent to long-wave radiation from the sun; this radiation passes through the atmosphere without being absorbed or reflected, and warms the earth's surface. Greenhouse gases trap short-wave (infrared) radiation emitted by the earth's surface, however, preventing it from dissipating into space and causing it to re-radiate down to the surface of the earth. The existence of the greenhouse effect is not disputed. The issues and interrelationship between these issues that are not clearly defined include how the strength of the greenhouse effect changes with different concentrations of greenhouse gases, the relationships among natural sources and sinks of greenhouse gases, human sources of greenhouse gases, and atmospheric concentrations of greenhouse gases. Climate processes are understood at a general level and more research is needed before impacts may be clearly defined.

CO_2 is the major greenhouse gas emitted by human activities, primarily from the combustion of fossil fuels such as coal, oil, and natural gas. Atmospheric concentrations of CO_2 have increased by 36 percent since the mid-1700s (U.S. Environmental Protection Agency 2010). This level is much higher than at any time during the last 650,000 years (Canadell et al. 2007). Less direct geological evidence indicates that CO_2 values this high were last seen about 20 million years ago (Pearson and Palmer 2000). The burning of fossil fuel has produced about 75 percent of the increase in CO_2 from human activity over the past 20

years. The potential effects of proposed greenhouse gas emissions are by nature global and may result in cumulative impacts, as individual sources of greenhouse gas emissions are not large enough to have any noticeable effect on climate change. Therefore, the impact of proposed greenhouse gas emissions to climate change is discussed in the context of cumulative impacts in Chapter 4.

3.2.2.4 Current Requirements and Management Practices

Equipment used by military units in the study area, including aircraft and vehicles, are properly maintained in accordance with applicable Navy and Oregon National Guard (ORNG) requirements. Operating equipment meets federal and state emission standards, where applicable.

3.2.3 Environmental Consequences

3.2.3.1 No Action Alternative

3.2.3.1.1 Air Pollutant Emissions Associated with Construction Activities

The No Action Alternative does not include construction activities.

3.2.3.1.2 Air Pollutant Emissions Associated with Training and Testing Activities

Criteria Pollutants

Table 3.2-2 lists criteria air pollutant and precursor emissions in the NWSTF Study Area from the No Action Alternative. Emissions are totaled for each major source component (i.e., aircraft, ordnance, and military vehicles and equipment). The air pollutants emitted in the greatest quantity are NO_x, PM_{10}, $PM_{2.5}$, and CO, with fixed-wing aircraft contributing the largest amounts. All emissions calculations are provided in Appendix D.

Table 3.2-2: Annual Criteria and Precursor Air Pollutant Emissions for Training and Testing under the No Action Alternative

Emissions Source	Criteria and Precursor Air Pollutant Emissions in Tons/Year						
	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Pb
Aircraft	15	31	2	7	29	15	-[1]
Ordnance	0.05	0.01	-[1]	-[1]	0.02	0.01	0.0001
Military Vehicles and Equipment	1	2	<0.01	-[1]	<0.01	<0.01	-[1]
Total All Sources =	**16**	**33**	**2**	**7**	**29**	**15**	**0.0001**
No Action Alternative emissions as a percentage of Morrow County baseline (2002)	0.12%	0.31%	0.08%	0.05%	0.43%	1.06%	-
No Action Alternative emissions as a percentage of Air Quality Control Region 191 baseline	0.004%	0.089%	0.003%	0.042%	0.042%	0.059%	-

[1]Not applicable because the source produces insignificant amount of this pollutant.
Notes: CO = carbon monoxide, NO_x = nitrogen oxides, HC = total hydrocarbons, SO_x sulfur oxides, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter, $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 micrometers in diameter, Pb = lead.

Under the No Action Alternative, training and testing activities and associated criteria air pollutant emissions would not change. Air quality in the Eastern Oregon Intrastate Air Quality Control Region 191 would not change as a result of the No Action Alternative and would still be generally characterized as good. Criteria air pollutant emissions associated with training and testing activities would have a negligible effect on air quality under the No Action Alternative because changes to air quality would not

be detectable and would be below or within historical or desired air quality conditions. Criteria air pollutant emissions associated with the No Action Alternative would have no significant impact on air quality.

Hazardous Air Pollutants

The U.S. EPA has listed 188 hazardous air pollutants regulated under Title III (Hazardous Air Pollutants), Section 112(g) of the Clean Air Act. Hazardous air pollutants are emitted by processes associated with the No Action Alternative, including fuel combustion. Trace amounts of hazardous air pollutants are emitted by combustion sources participating in training and testing activities, including aircraft, ordnance, and military vehicles and equipment. The amounts of hazardous air pollutants emitted are small compared to the emissions of criteria pollutants; emission factors for most hazardous air pollutants from combustion sources are roughly three or more orders of magnitude lower than emission factors for criteria pollutants (California Air Resources Board 2007). Emissions of hazardous air pollutants from munitions use are smaller still, with emission factors ranging from roughly 10^{-5} to 10^{-15} lb. of individual hazardous air pollutants per item for cartridges to 10^{-4} to 10^{-13} lb. of individual hazardous air pollutants per item for mines and smoke canisters (U.S. Environmental Protection Agency 2009). As an example, 10^{-5} is equivalent to 0.0001 and 10^{-15} is equivalent to 0.00000000000001. Hazardous air pollutant emissions estimates were not calculated because of the small amounts that would be emitted.

Under the No Action Alternative, training and testing activities and associated hazardous air pollutant emissions would not change. Hazardous air pollutants emissions would be intermittent and distributed over the entire NWSTF Boardman Study Area. Their concentrations would be further reduced by atmospheric mixing and other dispersion processes. After initial mixing, it is unlikely that the No Action Alternative would result in detectable concentrations of hazardous air pollutants. The effects of hazardous air pollutant emissions under the No Action Alternative would be negligible and there would be no significant impacts to air quality.

Fugitive Dust

Ground-based training activities would be very limited under the No Action Alternative and generation of fugitive dust would be negligible. Fugitive dust from training activities would have no significant impact on air quality under the No Action Alternative.

3.2.3.2 Alternative 1

3.2.3.2.1 Air Pollutant Emissions Associated with Construction Activities

Construction of the proposed range enhancements under Alternative 1 would generate fugitive dust from activities such as grading. Operation of construction equipment would also result in combustion emissions such as CO, NO_x, Volatile Organic Compounds, and PM_{10}. These emissions would make a minimal contribution to overall air pollutant loadings in the region and would not be expected to affect the status of the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191 for the following reasons:

- The emissions would be temporary because construction activities would end when the range enhancements are completed.
- The emissions would be intermittent because construction activities would occur only during normal working hours and the various construction projects would be implemented over a period of several years.

- Periodic watering/wetting of construction sites would be employed as necessary to minimize generation and downwind migration of fugitive dust, especially on dry, windy days and in disturbed areas where construction equipment is being used.

Based on the minimal contribution to overall air pollutant loadings in the region, estimates of air pollutant emissions from construction activities were not calculated. Air pollutant emissions associated with construction activities under Alternative 1 would be short-term, intermittent, and localized and would not be expected to affect the status of the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191. Construction activities under Alternative 1 would have no significant impact on air quality.

3.2.3.2.2 Air Pollutant Emissions Associated with Training and Testing Activities

Criteria Pollutants

Table 3.2-3 lists criteria air pollutant and precursor emissions in the NWSTF Study Area from Alternative 1. Emissions are totaled for each major source component (i.e., aircraft, ordnance, and military vehicles and equipment). The air pollutants emitted in the greatest quantity are NO_x, PM_{10}, $PM_{2.5}$, and CO, with fixed-wing aircraft contributing the largest amounts. All emissions calculations are provided in Appendix D.

All criteria and precursor pollutant emissions would increase under Alternative 1 compared to the No Action Alternative. The increases would be attributable to the increased fixed-wing aircraft use (from 847 sorties to 1,627 sorties per year) and the increased ground vehicle use associated with training activities on the new ranges. The largest increase is predicted for NO_x, which is an O_3 precursor and would increase by 657 tons per year. While the General Conformity Rule is not applicable to the Proposed Action, the *de minimis* levels established in 40 C.F.R. § 93.153(b) for nonattainment or maintenance areas serve as a good benchmark for evaluating the magnitude of the emissions increase associated with Alternative 1. As shown in Table 3.2-3, the NO_X emissions estimate for Alternative 1 exceeds the *de minimis* level, while other emissions would be below *de minimis*.

The impacts of the Proposed Action on air quality, particularly the anticipated increase in emissions of NO_x, would not be significant. Average daily criteria air pollutant emissions from project activities, if dispersed horizontally within the 47,432 acre (19,195.1 hectare) training area and mixed vertically to the height of the inversion layer at 3,000 feet (914.4 meters) above ground level (a volume of approximately 40 cubic miles) would be less than the corresponding federal Prevention of Significant Deterioration increments. Allowable Prevention of Significant Deterioration increments are intended to maintain the NAAQS in attainment areas such as the Boardman region, and apply only to new major stationary sources. They are used here solely as a measure of the magnitude of air quality impacts that could have a meaningful long-term effect on regional air quality.

Table 3.2-3: Annual Criteria and Precursor Air Pollutant Emissions for Training and Testing under Alternative 1 Compared to the No Action Alternative

Emissions Source	Criteria and Precursor Air Pollutant Emissions in Tons/Year						
	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Pb
Alternative 1							
Aircraft	9	148	1	21	64	32	-[1]
Ordnance	2.6	0.44	-[1]	-[1]	1.48	0.74	5.21
Military vehicles and equipment	61	542	14	11	11	5.5	-[1]
Alternative 1 Total =	**73**	**690**	**15**	**32**	**76**	**38**	**5.21**
No Action Alternative							
Aircraft	15	31	2	7	29	15	-[1]
Ordnance	0.05	0.01	-[1]	-[1]	0.02	0.01	0.0001
Military vehicles and equipment	1	2	<0.01	-[1]	<0.01	<0.01	-[1]
No Action Alternative Total =	**16**	**33**	**2**	**7**	**29**	**15**	**0.0001**
Summary and Comparison							
Change in emissions from No Action Alternative	57	657	13	25	48	23	5.21
De minimis levels	100	100	100	100	100	-	25
Alternative 1 emissions as a percentage of Morrow County baseline (2002)	0.54%	6.46%	0.50%	0.26%	1.15%	2.68%	-
Alternative 1 emissions as a percentage of Air Quality Control Region 191 baseline	0.020%	1.874%	0.019%	0.199%	0.112%	0.149%	-

[1]Not applicable because the source produces insignificant amounts of this pollutant.
Notes: CO = carbon monoxide, NO_x = nitrogen oxides, HC = total hydrocarbons, SO_x = sulfur oxides, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter, $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 micrometers in diameter, Pb = lead.

Hazardous Air Pollutants

As discussed for the No Action Alternative, hazardous air pollutants are emitted by processes associated with Alternative 1, including fuel combustion. Trace amounts of hazardous air pollutants are emitted by combustion sources participating in training and testing activities, including aircraft, ordnance, and military vehicles and equipment. Hazardous pollutant emissions would increase under Alternative 1 and the increases would be roughly proportional to the increases observed for the criteria air pollutants emitted (Table 3.2-3).

Hazardous air pollutants emissions would continue to be intermittent and distributed over the entire NWSTF Boardman Study Area. Their concentrations would be further reduced by atmospheric mixing and other dispersion processes. After initial mixing, it is possible that hazardous pollutants would be measurable, but they would be in very low concentrations and would not affect the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191. The effects of hazardous air pollutant emissions from training and testing activities under Alternative 1 would be long-term and localized. There would be no significant impact to air quality.

Fugitive Dust

The potential for fugitive dust to be generated would increase substantially under Alternative 1 because additional ground-based activities would take place using wheeled and tracked vehicles (Abrams tank and Bradley fighting vehicle). While off-road maneuver training is not proposed, operation of military

vehicles on gravel roads within the Digital Multi-Purpose Training Range and Convoy Live Fire Range (CLFR) would generate dust during dry conditions. Generation of dust would be minimized by placing and maintaining crushed rock or gravel on the road surfaces. In addition, conditions would be evaluated prior to starting a training event and water or another dust palliative product would be used to minimize dust, if warranted. Implementing this best management practice (BMP) would ensure that fugitive dust does not result in significant impacts to air quality.

3.2.3.3 Alternative 2

3.2.3.3.1 Air Pollutant Emissions Associated with Construction Activities

Alternative 2 would include emissions associated with construction of the Joint-Use Range Operations and Control Center and the western CLFR, in addition to the construction proposed under Alternative 1. This additional construction would result in a slight increase in fugitive dust and combustion emissions compared to Alternative 1.

Similar to Alternative 1, air pollutant emissions associated with construction activities under Alternative 2 would be short-term, intermittent, and localized and would not be expected to affect the status of the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191. Construction activities under Alternative 2 would have no significant impact on air quality.

3.2.3.3.2 Air Pollutant Emissions Associated with Training and Testing Activities

Criteria Pollutants

The air pollutant emissions sources under Alternative 2 would be the same as Alternative 1, with the exception of non-explosive practice mortar rounds. The emissions calculations (Table 3.2-4 and Appendix D) indicate that emissions from practice mortar rounds would not result in a meaningful change in overall emissions (less than 0.05 ton per year) compared to Alternative 1.

As shown in Table 3.2-4, the NO_X emissions estimate for Alternative 2 exceeds the *de minimis* level, while other emissions would be below *de minimis*. As discussed for Alternative 1, average daily criteria air pollutant emissions from project activities would be less than the corresponding federal Prevention of Significant Deterioration increments. There would be no significant impact on air quality.

Hazardous Air Pollutants

As discussed for criteria pollutants, the emissions of hazardous air pollutants under Alternative 2 would be the same as Alternative 1, with the exception of non-explosive practice mortar rounds emissions, which are not expected to result in a meaningful change in hazardous air pollutants. Hazardous air pollutants emissions would continue to be intermittent and distributed over the entire NWSTF Boardman Study Area. Their concentrations would be further reduced by atmospheric mixing and other dispersion processes. After initial mixing, it is possible that hazardous pollutants would be measurable, but they would be in very low concentrations and would not affect the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191. The effects of hazardous air pollutant emissions from training and testing activities under Alternative 2 would be long-term and localized. There would be no significant impact to air quality.

Table 3.2-4: Annual Criteria and Precursor Air Pollutant Emissions for Training and Testing under Alternative 2 Compared to the No Action Alternative

Emissions Source	Criteria and Precursor Air Pollutant Emissions in Tons/Year						
	CO	NO_x	HC	SO_x	PM_{10}	$PM_{2.5}$	Pb
Alternative 2							
Aircraft	9	148	1	21	64	32	-[1]
Ordnance	2.6	0.44	-[1]	-[1]	1.48	0.74	5.21
Military vehicles and equipment	61	542	14	11	11	5.5	-[1]
Alternative 2 Total =	**73**	**690**	**15**	**32**	**76**	**38**	**5.21**
No Action Alternative							
Aircraft	15	31	2	7	29	15	-[1]
Ordnance	0.05	0.01	-[1]	-[1]	0.02	0.01	0.0001
Military vehicles and equipment	1	2	<0.01	-[1]	<0.01	<0.01	-[1]
No Action Alternative Total =	**16**	**33**	**2**	**7**	**29**	**15**	**0.0001**
Summary and Comparison							
Change in emissions from No Action Alternative	57	657	13	25	48	23	5.21
De minimis levels	100	100	100	100	100	-	25
Alternative 2 emissions as a percentage of Morrow County baseline (2002)	0.54%	6.46%	0.50%	0.26%	1.15%	2.68%	-
Alternative 2 emissions as a percentage of Air Quality Control Region 191 baseline	0.020%	1.874%	0.019%	0.199%	0.112%	0.149%	-

[1]Not applicable because the source produces insignificant amounts of this pollutant.
Note 1: CO = carbon monoxide, NO_x = nitrogen oxides, HC = total hydrocarbons, SO_x = sulfur oxides, PM_{10} = suspended particulate matter less than or equal to 10 micrometers in diameter, $PM_{2.5}$ = fine particulate matter less than or equal to 2.5 micrometers in diameter, Pb = lead.

Fugitive Dust

The potential for fugitive dust to be generated under Alternative 2 would be only slightly higher than Alternative 1 due to the introduction of mortar firing. Training on the proposed western CLFR would be a new source of dust under Alternative 2. About 50 percent of the CLFR training events conducted on the eastern CLFR under Alternative 1 would be conducted on the western CLFR under Alternative 2; however, the total number of CLFR training events would be the same as Alternative 1 and the amount of dust generated would be approximately the same. Generation of dust would be minimized by placing and maintaining crushed rock or gravel on the road surfaces. In addition, conditions would be evaluated prior to starting a training event and water or another dust palliative product would be used to minimize dust, if warranted. Implementing this BMP would ensure that fugitive dust does not result in significant impacts to air quality.

3.2.3.4 Proposed Management Practices, Monitoring, and Mitigation Measures

3.2.3.4.1 Proposed Best Management Practices

The Navy and the ORNG propose the following BMPs to avoid and minimize impacts to air quality under Alternatives 1 and 2:

- Water or another dust palliative product would be used as necessary to minimize generation and downwind migration of fugitive dust, especially on dry, windy days and in disturbed areas where construction equipment is being used.

- Generation of dust would be minimized by placing and maintaining crushed rock or gravel on the road surfaces that are used for training. In addition, conditions would be evaluated prior to starting a training event and water or another dust palliative product would be used to minimize dust, if warranted.

3.2.3.4.2 Proposed Monitoring

No specific monitoring needs where identified for air quality.

3.2.3.4.3 Proposed Mitigation Measures

No mitigation measures are warranted for air quality based on the analysis presented in Section 3.2.3 and implementation of proposed BMPs.

3.2.3.5 Summary of Effects and Conclusions

Table 3.2-5 lists each stressor analyzed for potential impacts to air quality at NWSTF Boardman. None of the alternatives would result in significant impacts to air quality.

Table 3.2-5: Summary of Impacts on Air Quality

Stressors		Summary of Effects and National Environmental Policy Act Impact Determination
Major Stressor Category	**Stressor Type**	
No Action Alternative		
Construction Activities		Not applicable. No construction is proposed.
Training and Testing Activities	Criteria pollutants	Negligible. Changes to air quality would not be detectable and would be below or within historical or desired air quality conditions.
	Hazardous air pollutants	Negligible. Changes to air quality would not be detectable and would be below or within historical or desired air quality conditions.
Impact Conclusion		The No Action Alternative would not result in significant impacts to air quality.
Alternative 1		
Construction Activities		Short-term, minor, and localized effects from fugitive dust and construction equipment combustion emissions.
Training and Testing Activities	Criteria pollutants	Long-term and localized effects. Measurable changes in air quality would be expected locally, but the status of the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191 would not be affected.
	Hazardous air pollutants	Long-term, minor, and localized effects. Measurable changes in air quality would be expected locally, but the status of the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191 would not be affected.
Impact Conclusion		Alternative 1 would not result in significant impacts to air quality.

1 **Table 3.2-5: Summary of Impacts on Air Quality (continued)**

STRESSORS		Summary of Effects and National Environmental Policy Act Impact Determination
Major Stressor Category	**Stressor Type**	
Alternative 2		
Construction Activities		Short-term, minor, and localized effects from fugitive dust and construction equipment combustion emissions.
Training and Testing Activities	Criteria pollutants	Long-term and localized effects. Measurable changes in air quality would be expected locally, but the status of the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191 would not be affected.
	Hazardous air pollutants	Long-term, minor, and localized effects. Measurable changes in air quality would be expected locally, but the status of the air quality in the Eastern Oregon Intrastate Air Quality Control Region 191 would not be affected.
Impact Conclusion		Alternative 2 would not result in significant impacts to air quality.