

# CHAPTER 6

## ENVIRONMENTAL CONSEQUENCES –

### YAKIMA TRAINING CENTER

This chapter describes both direct and indirect impacts, as well as cumulative impacts, that would result at YTC from implementation of the action alternatives described in **Chapter 2**. This chapter is organized by resource area to describe the impacts. Impacts that would result from Alternative 1 are also identified to provide a comparative basis for the three action alternatives. The details of each of the alternatives, including the number of Soldiers and Family members stationed and/or training at the installation, the types of new construction anticipated to support the new Soldiers, the types of live-fire and maneuver training anticipated for each unit, and the number of maneuver training miles anticipated for each alternative, are provided in **Chapter 2**. These details are also summarized by alternative in the foldout table inside the back cover of this document.

The overall methodology used to analyze the potential impacts (environmental consequences) on the affected environment that would result from implementation of the alternatives is described in **Appendix B**. Any additional resource-specific methodology for evaluating the potential impacts is discussed with the individual resources below.

**Table 6–1** below provides a comparative summary of the potential direct and indirect impacts of implementing each alternative. **Table 6–2** provides a comparative summary of the potential cumulative effects of implementing each alternative at YTC. The tables exhibit the composite impact for each VEC resulting from implementation of each alternative.

**Table 6–1 Summary of Direct and Indirect Impacts at YTC by Alternative**

VEC	Alternative			
	1	2	3	4
Soil Erosion	€	W	W	W
Water Resources	W	W	W	W
Biological Resources	€	U	U	U
Wetlands	€	€	€	€
Wildfire Management	€	W	W	W
Cultural Resources	€	€	€	€
Air Quality	€	€	€	€
Noise	€	€	€	€
Land Use Conflict/Compatibility	€	€	€	€
Traffic and Transportation	€	€	€	€
Socioeconomics	€	€	€	€
Hazardous Materials and Wastes	€	€	€	€
Airspace	€	€	€	€
Facilities	€	€+	€+	€+
Energy Demand/Generation	•	€	€	€

U = Significant Effects

+ = Beneficial Effects

W = Significant but Mitigable to less than Significant Effects

N/A = Not Applicable

€ = Less than Significant Effects

• = No Effects



Proposed construction activities for each of the action alternatives are not expected to impact soil erosion significantly. Construction activities disturb soils, exposing them to wind and water erosion processes, but typically only for short periods. Constructed facilities also typically isolate underlying soil resources from erosion over long periods.

Live-fire training can have significant impacts to soils as a result of vegetation removal and cratering. Cratering directly removes soil resources from their natural position; increasing potential erosion rates and creating areas of bare ground that are more susceptible to erosion. Soils remaining in craters may be compacted and heated, reducing their ability to produce vegetation and altering their water storage and runoff characteristics. Maneuver training is capable of increasing the rate of soil erosion. In particular, off-road exercises in periods of high soil saturation and maneuvers consisting of high-speed, sharp turns can strip vegetation and disturb upper soil horizons, leading to increased rates of erosion in previously undisturbed maneuver training areas (Jones and Kunze 2003).

### 6.1.1 Resource-specific Significance Criteria

Factors considered when determining whether an alternative would have a significant impact on soil erosion were evaluated and distinguished by the degree to which the impact would:

- Impair the ability of the Army to sustain land resources to maintain effective training grounds and ranges;
- Result in loss of soil (through increased erosion) that exceeds the amount of soil loss at which the quality of a soil can be maintained as a medium for plant growth; or
- Conflict with existing federal, state, or local statutes or regulations.

### 6.1.2 Overview of Impacts to Soil Erosion by Alternative

Table 6-3 summarizes the impacts associated with soil erosion that would occur under each of the alternatives.

**Table 6-3 Summary of Potential Impacts to Soil Erosion at YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	•	€	€	€
Live-fire Training Direct and Indirect Effects	€	W	W	W
Maneuver Training Direct and Indirect Effects	€	W	W	W
Cumulative Effects	€	W	W	W

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

### 6.1.3 Alternative 1 — No Action Alternative

#### 6.1.3.1 Construction Direct and Indirect Effects

##### 6.1.3.1.1 No Effects

No construction projects would occur at YTC under Alternative 1. Because no additional soils would be disturbed, soil erosion at YTC because of construction activities would not be modified beyond levels described in Section 5.1.

### 6.1.3.2 *Live-fire Training Direct and Indirect Effects*

#### 6.1.3.2.1 *Less than Significant Effects*

Live-fire training under Alternative 1 would occur with frequency and intensity similar to current levels. Firearms training can directly affect soil erosion due to projectile impacts and resultant disturbance of native soil and vegetative cover. Because of the large area over which munitions and ordinance impacts are dispersed, the likelihood of disturbing continuous tracts of land through cumulative cratering, and thus increasing the potential for rill and gully erosion, is small. Therefore, continued live-fire training is not expected to directly affect soil erosion significantly.

Range fires resulting from live-fire training indirectly affect soil erosion by decreasing vegetative cover and soil stability. Current management activities contained in the CNRMP/INRMP and IWFMP manage these effects through erosion control, upland revegetation, and wildland fire management. Continued implementation of these management activities results in reduced soil erosion through increased site stability (e.g., maintenance of suitable vegetative cover), maintenance and repair of erosive features (e.g., rills and gullies), and through wildland fire suppression and pre-suppression actions designed to prevent the start and spread of fires within pre-determined areas (e.g., maintenance of firebreaks). Continued implementation of the CNRMP/INRMP and IWFMP would ensure that direct and indirect effects of live-fire training on soil erosion would not impair the Army's goal of maintaining sustainable training areas, and therefore, would be less than significant.

### 6.1.3.3 *Maneuver Training Direct and Indirect Effects*

#### 6.1.3.3.1 *Less than Significant Effects*

Under Alternative 1, maneuver training off road and on MIL-CLASS 4 and 5 roads would continue to be major contributors to current soil erosion at YTC. Maneuver training creates the majority of unimproved roads at YTC. Firebreaks and unimproved roads (essentially equivalent to MIL-CLASS 4 and 5 roads at YTC, respectively) have been shown to contribute significant sediment loads that are disproportionate to their limited aerial extent. For example, Distributed Hydrology Soil Vegetation Model – Hillslope Erosion Model (DHSVM-HEM) modeling indicates that roads and firebreaks contribute 66 percent and 48 percent of all sediment to two YTC catchment ponds, while they only make up 2 percent and 3 percent of the watershed areas, respectively (Wigmosta et al. 2007).

Because use of MIL-CLASS 4 and 5 roads affects their surface condition and potential for erosion (i.e., increased travel can increase rutting and potential for rill erosion), determining actual and anticipated use of these roads is necessary. Although predicting future erosion based on anticipated road use is not possible, anticipated vehicle mileages for Alternatives 2 through 4 are presented in **Appendix E**, as are assumptions used to calculate these mileages. Alternative 1 mileages are limits established in previous EAs prepared for the SBCTs (Army 2001b, 2004b). Actual current mileages may be substantially higher than these limits (**Chapter 2**).

**Table 6-4** shows the estimated annual impacts on soils at YTC from maneuver training activities. These annual impacts are based on calculations and assumptions presented in **Appendix C**.

Under Alternative 1, the same types of maneuver training would occur with similar frequency and intensity as at present, and no additional unimproved roads are anticipated to be constructed. No significant additional effects to soil resources would occur from maneuver training activities. Rates of soil erosion are expected to be similar to those described in **Section 5.1**. Off-road maneuver training is constrained to areas adjacent to specific training objectives and the lands between these

1 objectives and nearby roads. Concentrating off-road travel and surface disturbances to these areas  
 2 has typically produced only 75 acres (30 ha) of disturbance each year that have required the  
 3 implementation of reseeding and other restoration measures. Because current BMPs in place at YTC  
 4 have effectively maintained training lands and minimize soil erosion, impacts to soils as a result of  
 5 continued maneuver training activities would be less than significant.

**Table 6–4 Annual Impacts of Training on Soils at YTC**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Approximate acres impacted annually by maneuver activities	7,000 to 10,500	36,480 to 54,725	36,815 to 55,225	37,990 to 56,985
Approximate acres impacted annually by digging	~ 50 acres	~ 75 acres	~ 75 acres	~ 75 acres
Acres impacted annually by training-caused fires	Variable: 100s to 1,000s of acres; fewest acres of all alternatives	Variable: 100s to 1,000s of acres; more acres than Alternative 1, fewer acres than Alternative 4	Variable: 100s to 1,000s of acres; similar number of acres to Alternative 2	Variable: 100s to 1,000s of acres; greatest number of acres of all alternatives

See **Appendix C** for calculations and assumptions.

6

7 **6.1.4 Alternative 2 —GTA Actions**

8 **6.1.4.1 Construction Direct and Indirect Effects**

9 **6.1.4.1.1 Less than Significant Effects**

10 No new cantonment facilities at YTC are proposed under Alternative 2. Construction of training  
 11 ranges under Alternative 2 would directly affect soils through vegetation removal, surface  
 12 disturbances, and compaction at construction sites. Similar effects would occur at supply and  
 13 equipment staging areas. The displacement of soils and increased exposure to erosion through  
 14 vegetation removal would indirectly affect other resources (e.g., surface water quality and wetlands)  
 15 by increasing the amount of sediment that would be transported during runoff events.

16 An SFF range would be constructed in TAA 1, and an MPMG range would be constructed on top of  
 17 an existing machine gun range at Range 5. The SFF range would require an area approximately  
 18 600 meters by 1,000 meters (about 150 acres) in size (Army 2004f). Construction would be limited  
 19 to 40 stationary infantry targets, 8 moving infantry targets, and 4 firing positions, each of which  
 20 would require limited soil disturbance during construction. Stationary infantry targets would each  
 21 have a disturbance footprint of approximately 1 square meter. Moving infantry targets typically  
 22 move along winch or chain-driven rail systems and require supports for the rails. Rail dimensions  
 23 and disturbance footprints for moving infantry targets vary by manufacturer and type of system  
 24 required. Dimensions of firing positions for the SFF range are not outlined in TC 25–8.

25 The MPMG range would require an area approximately 1,500 meters by 1,000 meters (about  
 26 371 acres) in size (Army 2004f). Similar types of targets would be constructed at the MPMG range.  
 27 One-hundred and eighty stationary infantry targets, 20 moving infantry targets, and 20 stationary  
 28 armor targets would be constructed. Stationary armor targets require disturbance footprints of  
 29 approximately 1 square meter.

1 Construction of SFF and MPMG range facilities is not expected to significantly impact rates of soil  
2 erosion as disruption of soils would be dispersed across the training ranges. Individual locations of  
3 ground disturbance would be, in most cases, small and segregated from other disturbances. Impacts  
4 to soil erosion would be slightly higher than under Alternative 1; however, because they would not  
5 impair the effective maintenance of training areas or conflict with statutes or regulations, the effects  
6 would be less than significant.

#### 7 **6.1.4.2 Live-fire Training Direct and Indirect Effects**

##### 8 **6.1.4.2.1 Significant but Mitigable to less than Significant Effects**

9 Approximately 50 percent more live-fire training would occur at YTC under Alternative 2 than that  
10 which currently occurs. With the exceptions of the new SFF and MPMG ranges, live-fire training  
11 would continue on established ranges. The new SFF and MPMG ranges together would increase the  
12 area available for live-fire training by approximately 521 acres; however, a large portion of this new  
13 area lies within the footprint of an existing range (i.e., the MPMG overlies the existing Range 5).  
14 Increased firearms training would directly affect potential soil erosion due to increased projectile  
15 impacts and resultant disturbance of native soil and vegetative cover.

16 Indirect effects to soil erosion from increased live-fire training include a higher potential for  
17 wildland fires to burn relatively undisturbed vegetation, thereby increasing susceptibility to erosion  
18 (Army 2007d). Increased soil disturbance above current levels resulting from wildland fires could be  
19 significant, and would require additional mitigation as discussed in **Section 6.1.9**.

#### 20 **6.1.4.3 Maneuver Training Direct and Indirect Effects**

##### 21 **6.1.4.3.1 Significant but Mitigable to less than Significant Effects**

22 Under Alternative 2, maneuver training would occur at existing maneuver areas. Training of a third  
23 SBCT would result in increased frequency and intensity of company, battalion, and brigade  
24 maneuver training at YTC. Increased mounted and unmounted training using Stryker vehicles,  
25 including off-road travel, would be expected to damage or remove vegetation and disturb soils.  
26 Increased levels of training would likely affect a larger area and more frequently than under existing  
27 conditions.

28 An increase in vehicle mileage and vehicle position digging above current levels would be expected  
29 under Alternative 2. The abundance of bare ground has been shown to increase in off-road areas  
30 travelled by Strykers. Significant negative impacts to soil hydrologic stability usually occur after one  
31 Stryker pass and degradation increases with increased travel intensity (Jones and Kunze 2003).  
32 Depending on the dominant vegetation community present, the amount of bare ground present  
33 increases by 45 to 230 percent immediately after four straight-line Stryker passes. Increasing bare  
34 ground distribution at the expense of canopy, microbotic, and litter covers decreases the effective  
35 saturated conductivity of soil, which, in turn, decreases infiltration and increases runoff and soil loss  
36 (Jadcyszyn and Niedzwiecki 2005; Wigmosta et al. 2007). For each of the vegetation communities  
37 studied, approximately half of the initial increase of bare ground is recovered after 1 year (Jones and  
38 Kunze 2003). This indicates that resting training areas for longer than 1 year may be necessary to  
39 provide for effective recovery of maneuver training areas.

40 Although the effects of individual maneuvers are understood, it remains difficult to quantify impacts  
41 to soil erosion and downstream sedimentation because of increased maneuver frequency. Because  
42 each Training Unit may restructure their training regimen due to anticipated theatre conditions or  
43 tactics, there are no guidelines for quantifying anticipated training effects. Previous environmental  
44 analyses of SBCT training have employed the Army Training and Testing Area Carrying Capacity  
45 (ATTACC) technique to address this issue, but this model is no longer utilized.

1 The Revised Universal Soil Loss Equation (RUSLE) is another technique that is available to estimate  
 2 erosion rates at YTC. For current land conditions, inputs to the RUSLE are available from the  
 3 Natural Resources Conservation Service (NRCS). However, assessing soil erosion resulting from  
 4 increased training using the RUSLE is also hindered by the lack of an acceptable method by which  
 5 RUSLE variables may be modified in anticipation of future training impacts. Furthermore, seasonal  
 6 variations of soil erodibility are not incorporated in the RUSLE (Wigmosta et al. 2007). Therefore,  
 7 the RUSLE has not been applied to address soil erosion impacts due to expected actions under  
 8 Alternative 2. Rather, the sediment yield classes proposed by Wigmosta et al. (2007) and presented  
 9 in **Table 5-3** have been modified to represent anticipated changes in land condition. This provides a  
 10 quantitative estimate of increased soil loss resulting from increased maneuver training under  
 11 Alternative 2.

12 As a worst-case scenario, a 50 percent increase in off-road maneuver training could be expected to  
 13 result in a 50 percent increase in the area of YTC occupied by unimproved roads at the expense of  
 14 rangeland. Because unimproved roads are areas of relatively high erosion rates, this increase is  
 15 represented by a 50 percent increase in the areal extent of high sediment yield subbasins Classes 4  
 16 and 5) (high yield) subbasins (**Section 5.1.2.2**) at the expense of moderate sediment yield Class 3  
 17 areas (**Table 6-5**). It is possible that low sediment yield subbasins Class 1 and 2 subbasins would be  
 18 modified to more erosive conditions, but these impacts were not evaluated. In addition to  
 19 unimproved roads, current erosion rates in Classes 4 and 5 subbasins are also a product of firebreaks  
 20 or naturally erosive rangeland. Because the extent of these features is not expected to increase as a  
 21 result of GTA actions, a 50 percent increase in the extent of Classes 4 and 5 subbasins is likely  
 22 greater than would actually occur.

**Table 6-5 Anticipated Sediment Yield at YTC Under Alternative 2**

Sediment Yield Class	Mean Sediment Yield (t/ac/y)	Current Conditions			Alternative 2 Conditions		
		% of YTC Area	Sediment Yield (tpy)	% of YTC Sediment Yield	% of YTC Area	Sediment Yield (tpy)	% of YTC Sediment Yield
1	0.08	25.2	6,597	6.4	25.2	6,597	5.9
2	0.23	32.6	24,536	23.9	32.6	24,536	22.1
3	0.40	28.7	37,566	36.6	22.1	28,927	26.1
4	0.69	11.4	25,740	25.1	17.1	38,610	34.8
5	1.25	2.0	8,181	8.0	3.0	12,271	11.1
		Total Yield	102,620	tpy	Total Yield	110,941	tpy
Total acres:	327,232	Average Yield	0.31	t/ac	Average Yield	0.34	t/ac

Source: Current conditions data from Wigmosta et al. (2007); Alternative 2 conditions data based on discussion in **Section 6.1.4.3.1**.

23  
 24 This analysis considered the relative change in sediment yield based on the aforementioned changes  
 25 to land condition. For current and Alternative 2 scenarios, the mean erosion rate for each sediment  
 26 yield class was applied to the anticipated area of YTC covered by each of the classes. The estimated  
 27 percent of overall YTC sediment yield for each class is comparable to that presented in **Table 5-3**.  
 28 Under Alternative 2 actions, sediment yield Classes 4 and 5 would be expected to occupy 17.1 and  
 29 3.0 percent of YTC lands, respectively. This would result in an increased overall annual sediment  
 30 yield of approximately 8,000 tons (0.02 tons/acre), or an approximate 8 percent relative increase  
 31 from current conditions. The proportion of additional soil that would be deposited in YTC  
 32 sedimentation ponds is unclear. Because peak runoff at YTC mostly occurs during January and  
 33 February, the majority of additional sediment load that does reach the Yakima and Columbia Rivers  
 34 would not be added during irrigation season, when sediment loads are highest (Joy and Patterson

1 1997). Therefore, sediment loss would not be expected to have significant adverse impacts on  
2 downstream water quality (**Section 6.2**).

3 Bivouac and digging associated with maneuver training would also be expected to increase by  
4 50 percent under this alternative. Because of the relatively small impact to soil erosion compared to  
5 maneuver training, these activities are not incorporated into estimates of soil loss. The increased  
6 number of vehicle positions dug is expected to disturb approximately 75 acres (30 ha) of soils per  
7 year (**Table 6-4**). Soils disturbed by digging would lose productivity and cohesion due to mixing  
8 and removal of binding vegetation (Army 2007d).

9 Increased maneuver training required under Alternative 2 would also affect the ability to maintain  
10 natural soil productivity at sustainable levels. For each soil unit at YTC, the soil loss tolerance factor  
11 (T factor) determined by the NRCS is an estimate of the maximum average annual rate of soil  
12 erosion can occur without affecting vegetative productivity over a sustained period (USDA 2009).  
13 When compared to current erosion rates at YTC (Wigmosta et al. 2007), 1,222 acres (495 ha) are  
14 presently losing soil at rates above this threshold. Following the assumptions presented above and  
15 summarized in **Table 6-5**, potential worst-case scenario impacts to soil sustainability resulting from  
16 maneuver training under Alternative 2 are discussed below.

17 Up to 54,725 acres (22,146 ha) could be impacted by off-road maneuver training annually at YTC  
18 under Alternative 2. This represents the maximum disturbed area possible under anticipated off-road  
19 mileages (**Appendix C**). In reality, this number may be much lower, due to the current tendency for  
20 maneuver training to be confined to roads at areas directly between roads and training objectives.  
21 However, because there are no regulations providing that this approach is taken, and because the  
22 numbers of off-road miles presented in **Appendix E** are expected to be driven, there is the potential  
23 for the surface disturbances shown in **Table 6-4** to occur.

24 Most of the affected soils would be in Assembly Areas and areas close to existing roads and trails.  
25 Using ArcExplorer, potential maneuver areas were selected by removing cantonment and urban  
26 areas, impact areas, proposed and existing live-fire training ranges, and other areas at YTC where  
27 maneuver training would likely not be conducted due to other military activities. Areas of sensitive  
28 environmental concern or slope gradients greater than 30 percent were also excluded from what are  
29 considered primary potential maneuver areas.

30 Approximately 80,000 acres (30,000 ha) are available for Stryker training at YTC (Nissen and  
31 Kelley 2009). The exact locations of these areas were not available during this analysis, but it is  
32 recognized that most off-road training would be in areas near roads and training objectives.  
33 Assuming that off-road travel would be constrained to areas adjacent to existing roads, a 471-foot  
34 (144-m) buffer was created around unimproved roads and trails (235.5 feet (72 m) from the  
35 centerline on each side of the road) identified within the maneuver area described in the preceding  
36 paragraph. This provides an ‘affected soils’ area of 54,725 acres (22,146 ha). Because all of the lands  
37 expected to be impacted by maneuver training are within the ‘affected soils’ area, the areas expected  
38 to transform from sediment yield Class 3 to Classes 4 and 5 (**Table 6-5**) would also be contained  
39 within the same area. Although a larger proportion of Class 3 soils is expected to transition to Class 4  
40 than Class 5, the mean annual sediment yield of Class 4 (0.69 tons/year) is less than 1 ton per acre.  
41 Because no soils at YTC are assigned soil loss tolerability factors of less than 1, all Class 4 lands  
42 (existing and created as a result of maneuver training) are expected to maintain natural soil  
43 productivity at sustainable levels.

44 In areas that transition from Class 3 to Class 5, annual sediment yield levels (mean of 1.25 tons/acre)  
45 are expected to exceed tolerable soil loss levels in areas where the T factor equals 1 ton per acre per

1 year. Because there is no method available to predict which portions of the maneuver area would  
2 actually be impacted, Class 3 soil polygons were selected at random from the ‘affected soils’ area  
3 until the selected acreage was 3,280 acres ([1,330 ha] approximately 1 percent of YTC lands – see  
4 **Table 6–5**). The sediment yield of the selected soils was then reassigned to the mean yield of Class 5  
5 soils (1.25 tons/acre). Finally, the sediment yield of the randomly selected soils was compared to  
6 their T factor. This approach estimates that each year, sediment loss rates for approximately  
7 1,770 acres (720 ha) of soils could increase beyond tolerable levels – twice the current area.  
8 Although this is a small fraction of YTC lands, because this area represents potential annual  
9 disturbance and because vegetative cover of soils only partially recovers within 1 year of initial  
10 disturbance (Jones and Kunze 2003), there is potential for significant impact to soil quality at YTC.

11 Estimates of soils that could be impacted beyond tolerable levels are based on maximum possible  
12 disturbance areas. Current and probable future maneuver training at YTC is, and would likely be,  
13 concentrated around objectives such as battle courses. This would constrain a majority of off-road  
14 travel to areas much smaller than the overall area available at YTC. Therefore, damage to soils in  
15 these areas would be more intense, but also spatially constrained. Estimates of 54,725 acres  
16 (22,146 ha) of soils that could be impacted by maneuver training and 1,770 acres (720 ha) of soils  
17 that could be rendered unsustainable are potentially higher than realistic levels, but provide a  
18 maximum possible level of disturbance that could need to be addressed. Alternatively, if the current  
19 annual area of approximately 75 acres (30 ha) that requires restoration increases by 50 percent,  
20 commensurate with increased training levels, approximately 110 acres (45 ha) of soils would need  
21 restoration on an annual basis (**Section 6.1.8**). Because training objectives can change at the  
22 discretion of training commanders and due to combat theater requirements, it is impossible to predict  
23 exactly where and to what extent soils would be impacted under this alternative. However, in the  
24 circumstance where increased levels of restoration are deemed necessary and completed  
25 successfully, impacts to soil erosion would not affect the Army’s capability to maintain sustainable  
26 training areas, nor would there be conflict with existing statutes or regulations. Hence, potentially  
27 significant impacts would be mitigated to less than significant levels. If soil erosion does increase  
28 substantially beyond current levels, and the necessary restoration and rehabilitation are not  
29 performed, the significant loss of productive soils and effective training areas could occur. As  
30 identified in the 2007 YTC Land Management Report, additional resources will be necessary to  
31 increase erosion monitoring and data collection processes and equipment, especially in response to  
32 increased training levels (Durkee 2007).

### 33 **6.1.5 Alternative 3 — GTA Actions + CSS Soldiers**

#### 34 **6.1.5.1 Construction Direct and Indirect Effects**

##### 35 **6.1.5.1.1 Less than Significant Effects**

36 Alternative 3 would not require the construction of any range projects additional to those required for  
37 Alternative 2. Therefore, impacts to soil erosion from construction would be the same as under  
38 Alternative 2.

#### 39 **6.1.5.2 Live-fire Training Direct and Indirect Effects**

##### 40 **6.1.5.2.1 Significant but Mitigable to less than Significant Effects**

41 Training requirements for each of the units that compose a CSS unit include live-fire training,  
42 although the type, frequency, and intensity of individual and crew-served weapons practice and  
43 qualifications would vary with the distribution of CSS units. Some convoy and urban operations  
44 training would be expected, but significant increase of heavy ordnances is not expected compared to

1 Alternative 2. Direct and indirect impacts to soil erosion from live-fire training munitions impacts  
2 and potential wildfires are expected to increase regardless of unit structure.

3 Because live-fire training would occur at the same existing or newly constructed training ranges as  
4 under Alternative 2, and would primarily consist of personal weapons training, direct and indirect  
5 (e.g., wildfires) impacts to soil erosion from live-fire training under Alternative 3 are not expected to  
6 increase significantly from those anticipated under Alternative 2. Similar adaptive soil and wildland  
7 fire management techniques and programs would be necessary under Alternatives 2 and 3 (**Section**  
8 **6.1.8**). When sufficiently executed, these programs are expected to maintain effective training lands  
9 and minimize soil erosion to less than significant levels.

### 10 **6.1.5.3 Maneuver Training Direct and Indirect Effects**

#### 11 **6.1.5.3.1 Significant but Mitigable to less than Significant Effects**

12 Similar limitations to quantifying effects of and identifying mitigation techniques applicable to  
13 maneuver training at YTC under Alternative 2 apply to Alternative 3. CSS maneuver training would  
14 occur on roads, trails, and maneuver areas at YTC and would involve use of HMMWVs, HET  
15 trucks, cargo trucks, fuels trucks, and other vehicles. Although training could potentially occur on  
16 unimproved or limited off-road areas, most maneuver training would be limited to existing roads.  
17 Training frequency, intensity, and type would vary depending on the final distribution of CSS units,  
18 but are not expected to increase soil disturbance significantly above that anticipated under  
19 Alternative 2 because support vehicles typically cause less disturbance to soils and vegetation than  
20 do Strykers.

21 Current soil management policies and practices, such as avoiding off-road travel during periods of  
22 high soil saturation, would limit effects of CSS maneuver training on soil erosion. Impacts to soil  
23 erosion and management policies and practices necessary to maintain sustainable training ranges are  
24 not expected to vary significantly from those under Alternative 2. The additional training of CSS  
25 Soldiers is not expected to increase off-road travel mileage significantly above that which was  
26 described for Alternative 2. Because there is no anticipated difference between soil erosion levels  
27 under Alternatives 2 and 3, the same mitigation strategy for Alternative 2, when fully implemented,  
28 would maintain effective training lands and rates of soil erosion effects at less than significant levels.

### 29 **6.1.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

#### 30 **6.1.6.1 Construction Direct and Indirect Effects**

##### 31 **6.1.6.1.1 Less than Significant Effects**

32 No additional facilities would be constructed at YTC under Alternative 4 beyond those that would be  
33 constructed under Alternative 2. Therefore, impacts to soil erosion would be the same as under  
34 Alternative 2.

#### 35 **6.1.6.2 Live-fire Training Direct and Indirect Effects**

##### 36 **6.1.6.2.1 Significant but Mitigable to less than Significant Effects**

37 Medium CAB live-fire training would occur at the same existing or newly constructed training  
38 ranges as under Alternatives 2 and 3, and would primarily consist of personal weapons training.  
39 Direct and indirect (e.g., wildfires) impacts to soil erosion from live-fire training under Alternative 4  
40 are not expected to increase significantly from those anticipated under Alternative 3. Similar

1 adaptive soil and wildland fire management techniques and programs would be necessary as under  
2 Alternatives 2 and 3 (**Section 6.1.8**) to ensure that effective training areas are maintained and soil  
3 erosion is minimized. When sufficiently executed, these programs are expected to maintain impacts  
4 to soil resources at less than significant levels.

### 5 **6.1.6.3 Maneuver Training Direct and Indirect Effects**

#### 6 **6.1.6.3.1 Significant but Mitigable to less than Significant Effects**

7 Similar limitations to quantifying effects of and identifying mitigation techniques applicable to  
8 maneuver training at YTC discussed under Alternative 2 apply to Alternative 4. Medium CAB  
9 maneuver training at YTC would include flight and joint unit training at facilities, such as the  
10 DMPRC. Because many of the soils at YTC are susceptible to wind erosion, flight training, such as  
11 landing/takeoff operations in maneuver areas or other training ranges, would be expected to impact  
12 soil erosion. In addition, dust clouds in these areas could lead to pilot vision impairment and  
13 increased helicopter maintenance needs. Areas where recurring take offs, landing, and hovering  
14 activities occur have previously been hardened to support this type and level of use. Additional sites  
15 will be evaluated for similar treatment in the future should the need be identified. The training of the  
16 medium CAB is expected to increase off-road travel from what was described under Alternative 3 by  
17 approximately 17,000 miles (27,000 km; **Appendix E**). However, most of the additional off-road  
18 travel would be conducted by MHWWV and MWT vehicles, which create lower impacts to soils  
19 than Strykers. Impacts to soil erosion and management policies and practices necessary to maintain  
20 sustainable training ranges would not be expected to vary significantly from those under Alternatives  
21 2 and 3.

### 22 **6.1.7 Cumulative Effects**

#### 23 **6.1.7.1 Significant but Mitigable to less than Significant Effects**

24 Current and anticipated projects and actions conducted by the Army and non-Army operators on and  
25 near YTC, in conjunction with the alternatives, are expected to produce less than significant  
26 cumulative impacts to soil erosion on YTC and in the surrounding areas. Live-fire and maneuver  
27 training by visiting units on YTC would have additive impacts on soil erosion. Ongoing training,  
28 including HIMARS launching and other small arms tracer fire, at YTC could affect soil erosion by  
29 increasing the likelihood of igniting wildfires during rocket launches. Other military actions are  
30 expected to contain mitigation measures to protect against significant increases in soil erosion.  
31 Although direct and indirect impacts to soils at YTC would occur under the alternatives, with the  
32 greatest impacts occurring under Alternative 4, cumulative effects on soil erosion at YTC are not  
33 expected to increase significantly beyond current levels when properly maintained through an  
34 adaptive management program (**Section 6.1.8**). Although YTC's semi-arid climate, steep slopes, and  
35 sparse vegetation contribute to highly erosion-prone soils, adaptation of current soil management  
36 practices and policies in light of increased training levels would continue to maintain soil erosion at  
37 levels that would not exceed any of the resource-specific significance criteria.

### 38 **6.1.8 Mitigation**

39 Mitigation and monitoring plans identified as part of the 2007 Land Management Report (Durkee  
40 2007) should be implemented prior to implementation of proposed actions under Alternatives 2, 3,  
41 and 4 to ensure that adequate baseline data have been established. These data will increase  
42 effectiveness of Range and Training Land Assessment (RTLA). YTC will submit an annual  
43 recurring requirement for funding of rehabilitation and restoration efforts to repair damage to soils  
44 due to wildfires, vehicle maneuvers, and other impacts of increased training activities. These efforts

1 may include hardening of heavily used training areas that would not normally recover through  
2 natural processes under increased training requirements.

## 3 **6.2 WATER RESOURCES**

4 Potential impacts to water resources were identified based on regulatory standards, scientific  
5 judgment, and public concerns expressed during the scoping process. Regulatory standards  
6 considered during the impact analysis included, but were not limited to, the following:

- 7 • Federal and state primary and secondary drinking water standards under the Safe Drinking  
8 Water Act;
- 9 • State and local plans and policies protecting surface water and groundwater resources;
- 10 • Limits on development of available surface and groundwater resources;
- 11 • Compliance with the Clean Water Act (CWA); and
- 12 • State water code regulations.

13 Public concerns related to water resources at YTC identified during the scoping process include:

- 14 • The effects of Army Growth and Force Structure Realignment on surface water resources at  
15 YTC; and
- 16 • The effects of construction and demolition activities and long-term operations on surface and  
17 groundwater quality, including drinking water sources, and hydrology.

18 Analysis of impacts was based on multiple factors related to activity groups associated with the  
19 proposed actions. Impacts from range construction and impacts from live-fire and maneuver training  
20 were evaluated for their potential to affect water resources adversely.

21 Impacts on water resources were analyzed by evaluating two groups of impact issues. These include  
22 impacts on surface and groundwater quality and quantity.

23 Both direct and indirect impacts were evaluated for each alternative. Direct impacts to water  
24 resources include increased water use due to increased troop numbers. Impacts to water resources  
25 may also result from impacts to other affected resources, such as soils and vegetation, which also  
26 have the potential to alter flow dynamics and water quality.

### 27 **6.2.1 Resource-specific Significance Criteria**

28 Factors considered when determining whether an alternative would have a significant impact on  
29 water resources include the extent or degree to which its implementation would:

- 30 • Degrade surface or groundwater quality in a manner that would reduce the existing or  
31 potential beneficial uses of the water;
- 32 • Reduce the availability of, or accessibility to, one or more of the beneficial uses of a water  
33 resource;
- 34 • Alter the existing pattern of surface or groundwater flow or drainage in a manner that would  
35 adversely affect the uses of the water within or outside the project region;
- 36 • Be out of compliance with existing or proposed water quality standards or with other  
37 regulatory requirements related to protecting or managing water resources; or
- 38 • Be out of compliance with the CWA.

**6.2.2 Overview of Impacts to Water Resources by Alternative**

Table 6–6 summarizes the potential impacts to water resources, including surface water and groundwater quantity and quality that would occur under each of the alternatives.

**Table 6–6 Summary of Potential Impacts to Water Resources at YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	•	€	€	€
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	W	W	W	W
Cumulative Effects	W	W	W	W

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

**6.2.3 Alternative 1 — No Action Alternative**

**6.2.3.1 Construction Direct and Indirect Effects**

**6.2.3.1.1 No Effects**

**6.2.3.1.1.1 Surface Water Quantity and Quality**

No construction activities are proposed at YTC under Alternative 1; therefore, no impacts to surface water resources related to construction activities would occur.

**6.2.3.1.1.2 Groundwater Quantity and Quality**

No construction activities are proposed at YTC under Alternative 1; therefore, no impacts to groundwater resources related to construction activities would occur.

The available water supply is adequate to meet existing demand, and groundwater withdrawals are not considered to be adversely affecting other area groundwater resources. Force structure and assigned personnel under Alternative 1 would remain the same as under the existing conditions; therefore, there would be no increase in water use and consequently no impacts to groundwater quantity beyond those occurring under existing conditions.

**6.2.3.2 Live-fire Training Direct and Indirect Effects**

**6.2.3.2.1 Less than Significant Effects**

**6.2.3.2.1.1 Surface Water Quantity and Quality**

Under Alternative 1, continued live-fire training could potentially result in impacts to surface water quality from the introduction of munitions chemical residues that could degrade the water quality and beneficial uses. However, no impacts due to chemical residues from live-fire training have been observed to date.

Live-fire training could also increase erosion and sedimentation due to soil disturbance from projectile impacts and from wildland fires caused by training, which make soils more susceptible to erosion. Cratering related to projectile impacts directly removes soil resources from their natural position, increasing potential erosion rates, and creates areas of bare ground that are more susceptible

1 to erosion. Soils remaining in craters may be compacted and heated, reducing their ability to produce  
2 vegetation and altering their water storage and runoff characteristics. However, these impacts are not  
3 anticipated to affect existing drainage patterns and degrade water quality to a degree where they  
4 would affect beneficial uses. Therefore, the impacts are considered less than significant.

5 Compared to current levels, live-fire training under Alternative 1 would remain unchanged, and the  
6 munitions constituents would be identical to those currently in use. Therefore, no additional impacts  
7 would result from implementation of Alternative 1. Impacts to surface water quality could also result  
8 from contamination of surface water from spills during training activities. However, YTC requires  
9 all spills to be cleaned up; therefore, any potential effects are anticipated to be less than significant.

#### 10 6.2.3.2.1.2 Groundwater Quantity and Quality

11 Impacts to shallow groundwater resources from live-fire training could potentially occur from  
12 introduction of chemical constituents through leaching and percolation. No such impacts have been  
13 observed to date in the area. Compared to current levels, live-fire training would remain the same  
14 and the munitions constituents would be identical to those currently in use. Therefore, no impacts  
15 would result from implementation of Alternative 1. Impacts to groundwater quality could also result  
16 from accidental release of contaminants (e.g., fuel spills) during training activities. However,  
17 continued implementation of BMPs, such as spill prevention and clean up, would minimize potential  
18 impacts resulting from leaks or spills of hazardous materials.

### 19 6.2.3.3 *Maneuver Training Direct and Indirect Effects*

#### 20 6.2.3.3.1 *Significant but Mitigable to less than Significant Effects*

##### 21 6.2.3.3.1.1 Surface Water Quantity and Quality

22 Under Alternative 1, continued existing levels of maneuver training could result in impacts to surface  
23 water quality from nonpoint source sediment loading and accidental spills, increased runoff, and  
24 degradation of the stream channel. As described in **Section 5.2**, soil disturbance related to maneuver  
25 training, as well as other land use activities, have historically contributed to degradation of many  
26 streams at YTC. For example, channel incisions have caused discontinuity between the channel and  
27 floodplain. As incision continues, flow becomes more concentrated, and increased degradation  
28 results from decreased upland and bank storage capacity. This process can effectively lower the  
29 water table and affect the presence and composition of riparian vegetation. An increase in the  
30 amount of bare ground can reduce the quantity of water held within upland areas and increase  
31 overland flow. This can increase discharge of peak flows and decrease the duration of flood flows.  
32 Wildland fires resulting from training can also decrease both upland and riparian vegetative cover,  
33 and can reduce soil stability, thereby increasing erosion and sedimentation to streams. Current  
34 programs for upland and riparian restoration and watershed protection have had a positive effect on  
35 the condition of riparian areas on YTC and would continue under Alternative 1.

36 The primary impacts under Alternative 1 would be related to sedimentation and erosion from off-  
37 road vehicle maneuvering, specifically those involving stream crossings. However, SBCTs account  
38 for most of the maneuver training conducted at YTC and only about 20 percent would involve cross-  
39 country or off-road travel. Compared to training at Fort Lewis, about 70 percent of the off-road  
40 maneuver miles would occur at YTC.

41 The severity and extent of vehicle impacts depend on the physical characteristics of the vehicle and  
42 its movement as well as frequency of training. For example, tracked vehicles are inherently more  
43 damaging to the land and ecology of an area, thus lending to greater soil instability and loss of  
44 vegetation and creating more runoff from water erosion. An experimental study was implemented in

1 the summer of 2001 to assess effects of the Light Armored Vehicle (LAV), very similar to the  
2 Stryker vehicle, on vegetation and ground surface characteristics of three ecological communities at  
3 YTC. Based on this study, the initial environmental effects and short-term response from LAV  
4 vehicles were less severe than those from tracked vehicles on shrub-steppe communities at YTC.  
5 After one year, thresholds for significant LAV damage were higher relative to damage thresholds for  
6 tracked vehicles, but results varied by community and attribute examined (Jones and Kunze 2003).  
7 SBCTs do not employ any tracked vehicles, resulting in less soil disturbance and lower impacts from  
8 sedimentation.

9 The management activities described in **Sections 5.1, 5.2, and 5.3** benefit water resources by  
10 reducing and minimizing discharge of sediment to both the Yakima and Columbia Rivers. The  
11 program includes management and rotation of training areas to allow vegetation to recover, active  
12 restoration by planting, construction of sediment-trapping check dams at critical locations, and  
13 protection of critical riparian vegetation corridors by restrictions on use. As a result, the magnitude  
14 of suspended solids contribution from YTC is very small compared to other sources (such as  
15 agriculture and grazing). Frequency of maneuver training would also remain the same as under the  
16 existing conditions; therefore, no additional impacts beyond those currently occurring would result  
17 from implementation of Alternative 1.

18 Training activities may also result in accidental releases of fuels, solvents, and other hazardous and  
19 toxic substances into the environment. Potential spills would typically be small in magnitude and  
20 localized and would be addressed effectively through standard procedures.

#### 21 6.2.3.3.1.2 Groundwater Quantity and Quality

22 Potential impacts to groundwater could result from compaction of soils and subsequent decreased  
23 percolation to groundwater following maneuver training and impacts to water quality related to  
24 spills. However, due to limits on off-road maneuvering and tracked vehicle use, as well as  
25 continuation of the vegetation restoration and watershed protection program, the impacts are  
26 expected to be minimal. The Army would continue to implement spill prevention, containment, and  
27 clean-up BMPs and mitigation measures to address any potential impacts. No impacts to  
28 groundwater beyond those currently occurring would result from implementation of Alternative 1.

### 29 **6.2.4 Alternative 2 —GTA Actions**

#### 30 **6.2.4.1 Construction Direct and Indirect Effects**

##### 31 **6.2.4.1.1 Less than Significant Effects**

#### 32 6.2.4.1.1.1 Surface Water Quantity and Quality

33 Construction of the training ranges under this alternative could result in increases in erosion and  
34 runoff. Use of heavy construction equipment would cause compaction of near-surface soils, which  
35 could result in increased runoff and increased sedimentation. Clearing and grading during  
36 construction would expose the soils to erosion. Intermittent streams that drain to Selah Creek pass  
37 through the footprint of the proposed range facilities. Suspended solids could be carried from the  
38 footprint of the proposed range projects to Selah Creek and eventually discharged to Yakima River.  
39 These impacts would be short-term and limited to the active construction phase. Engineering  
40 controls and BMPs would be used to minimize erosion and soil loss during construction. As  
41 described in **Section 5.2**, to date, conclusions indicate that sediment loads from YTC contribute only  
42 a small fraction of total sediment loads in the Columbia and Yakima systems. Pursuant to provisions  
43 in the CWA, contractors must submit a NOI to obtain coverage under the National Pollutant  
44 Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from

1 Construction Activities for each construction project that disturbs 1 acre or more of land. Contractors  
2 must also develop and implement a SWPPP for each project that outlines mitigation strategies to  
3 reduce impacts associated with storm water runoff during construction. The Army would incorporate  
4 BMPs that would reduce runoff and sedimentation to aquatic environments in accordance with CWA  
5 regulations for storm water runoff at construction sites.

6 Increased imperviousness of surfaces caused by construction of facilities at the new ranges would  
7 slightly increase storm water runoff from these areas over the long-term. However, new facilities  
8 would be constructed with storm water BMPs as appropriate and necessary. With mitigation  
9 measures in place, these impacts are expected to be less than significant.

10 Construction activities would also temporarily increase the use of fuels, solvents, and other  
11 hazardous and toxic substances, which could result in indirect impacts to surface water if  
12 accidentally released into the environment. Potential spills would be typically small in magnitude  
13 and localized. Impacts from spills would be addressed effectively through existing BMPs and  
14 standard procedures, which include training personnel in spill prevention and control techniques and  
15 requirements, maintaining appropriate spill control equipment in areas where refueling may occur,  
16 prohibiting refueling and storage of fuel near water bodies, and complying with all hazardous  
17 materials management regulations. Preventive measures would also include safe driving practices  
18 and following proper procedures for transporting hazardous materials in compliance with Army,  
19 state, and federal regulations. All facilities that generate hazardous wastes or that store hazardous  
20 materials would employ appropriately trained personnel to manage these materials. Hazardous  
21 materials are managed according to the Army's standard operating procedures and in compliance  
22 with state and federal requirements. Facilities would be designed with engineering controls, such as  
23 secondary containment, automatic shutoff controls, and other systems, to reduce the potential for  
24 releases. If releases were to occur, they would be cleaned up. With these established measures,  
25 impacts are expected to be less than significant.

#### 26 6.2.4.1.1.2 Groundwater Quantity and Quality

27 Range construction could result in short-term, localized effects that would include increased  
28 overland flow and runoff and consequently decrease percolation to shallow groundwater aquifers.  
29 These impacts are expected to be less than significant since they would not affect the availability and  
30 beneficial uses of groundwater. Potential impacts may also result from spills and leaks, which could  
31 adversely affect shallow groundwater resources. Engineering controls and BMPs, including the  
32 SWPPP, would be used to minimize these potential impacts to a less than significant level.

33 No additional Soldiers would be permanently stationed at YTC under this alternative. However, the  
34 amount of training personnel and related water demand would increase due to addition of 1,878  
35 Soldiers stationed at Fort Lewis that would train at YTC for some portion of the year. Assuming a  
36 consumption rate of 9.21 g/p/d (35 L/p/d), this would translate to a daily increase of 17,300 gallons  
37 (65,500 L). The existing water supply system at YTC would be capable of supporting the anticipated  
38 additional potable water demand created by this alternative.

### 39 **6.2.4.2 *Live-fire Training Direct and Indirect Effects***

#### 40 **6.2.4.2.1 *Less than Significant Effects***

##### 41 6.2.4.2.1.1 Surface Water Quantity and Quality

42 Potential impacts related to live-fire training would be the same in nature as those described under  
43 Alternative 1 and would include increased erosion, introduction of munitions chemical residues, and  
44 contamination of surface water from spills. Although the live-fire training would increase by

1 approximately 50 percent under this alternative, the munitions constituents would remain identical to  
2 those currently in use. Because no impacts to surface water from munitions residues have been  
3 observed at YTC in the past, none would be anticipated under Alternative 2.

4 Increased live-fire training would directly affect potential soil erosion and sedimentation due to  
5 increased projectile impacts and resultant disturbance of native soil and vegetative cover. Increased  
6 live-fire training would also increase potential for wildland fires, which typically make soils more  
7 susceptible to erosion and would reduce upland and riparian vegetative cover. Decreased vegetative  
8 cover can reduce the quantity of water held within upland areas and increase overland flow.  
9 However, most live-fire training would occur on fixed ranges, which represent a small portion of the  
10 overall land area; therefore, the overall increase in soil disturbance from live-fire training would be  
11 negligible, and erosion and sedimentation impacts would be less than significant.

#### 12 6.2.4.2.1.2 Groundwater Quantity and Quality

13 Potential impacts to groundwater resources from live-fire training would be the same as those  
14 described under Alternative 1. Even though live-fire training would increase by 50 percent under this  
15 alternative, the munitions constituents would be identical to those currently in use, and no impacts to  
16 groundwater quality would be anticipated.

### 17 6.2.4.3 *Maneuver Training Direct and Indirect Effects*

#### 18 6.2.4.3.1 *Significant but Mitigable to less than Significant Effects*

##### 19 6.2.4.3.1.1 Surface Water Quantity and Quality

20 Potential impacts related to maneuver training would be the same in nature as those described under  
21 Alternative 1 and would include impacts to surface water quality from nonpoint source sediment  
22 loading and accidental spills, increased runoff, and wildland fire degradation. However, increased  
23 training under Alternative 2 would increase the disturbance of vegetation and soil, thereby causing  
24 increased erosion of soil and subsequent potential discharge of suspended solids into streams. The  
25 training would also include more vehicle crossings of intermittent streams, more digging, and  
26 additional area assembly activities, all of which would add to erosion and sedimentation.

27 The primary impacts would result from off-road vehicle maneuver training. Erosion impacts from  
28 off-road maneuvering are difficult to quantify; however, simplified analysis is presented in **Section**  
29 **6.1.4.3.1**. Based on this analysis, the overall annual soil loss on YTC would increase by  
30 approximately 8 percent compared to current conditions. Soil loss, however, represents material  
31 actually removed from a site and is generally greater than the actual sediment transported to a  
32 stream. The sediment transport mechanism depends on the capacity of a watershed to deliver  
33 suspended material. For example, hydraulically rough landscapes transport sediment inefficiently;  
34 thus, much of the eroded sediment is deposited in the landscape and never reaches the stream.

35 Sedimentation impacts from Alternative 2 would have a potential to increase by less than 8 percent  
36 compared to those under Alternative 1. This increase does not represent a significant increase that  
37 would result in significant degradation of water quality and beneficial water uses beyond those  
38 identified under Alternative 1. Impacts from training activities would continue to be addressed  
39 effectively through land use policies that prohibit ground-disturbing activities in sensitive areas, limit  
40 activities near water bodies and riparian corridors, promote vegetated buffer zones near waterways,  
41 continue upland and riparian revegetation and restoration actions described in the CNRMP/INRMP,  
42 implement the IWFMP, and use inert environmentally friendly training rounds (e.g., non-exploding  
43 or dud producing rounds) when possible. Additionally, the existing rangeland  
44 restoration/rehabilitation and watershed protection programs contained in the CNRMP/INRMP

1 would be continued to maintain water quality. This program reduces suspended solids discharges by  
2 minimizing streambed and gully erosion and reducing disturbance of soils at stream crossings.  
3 Implementation of these BMPs and programs would mitigate training impacts under Alternative 2 to  
4 a less than significant level.

#### 5 6.2.4.3.1.2 Groundwater Quantity and Quality

6 Potential impacts to groundwater would be the same in nature as those described under Alternative 1.  
7 Increased maneuver training with the Stryker is expected to lead to more soil compaction and  
8 overland surface flow, which in turn may reduce percolation and groundwater recharge. The  
9 potential for impacts from accidental spills would also increase due to increased training under this  
10 alternative. With the implementation of the BMPs and other measures for range  
11 restoration/rehabilitation and spill prevention and cleanup outlined above, impacts to groundwater  
12 are expected to be minimal.

### 13 **6.2.5 Alternative 3 — GTA Actions + CSS Soldiers**

#### 14 **6.2.5.1 Construction Direct and Indirect Effects**

##### 15 **6.2.5.1.1 Less than Significant Effects**

#### 16 6.2.5.1.1.1 Surface Water Quantity and Quality

17 No additional construction activities are proposed at YTC under the Alternative 3; therefore, no  
18 additional impacts to surface water resources related to construction activities would occur beyond  
19 those identified under Alternative 2.

#### 20 6.2.5.1.1.2 Groundwater Quantity and Quality

21 No additional construction activities are proposed at YTC under the Alternative 3; therefore, no  
22 additional impacts to groundwater resources related to construction activities would occur beyond  
23 those identified under Alternative 2.

24 No additional Soldiers would be permanently stationed at YTC under this alternative. However, the  
25 amount of training personnel and related water demand would increase due to addition of 2,878 GTA  
26 and CSS Soldiers stationed at Fort Lewis that would train at YTC during some portion of the year.  
27 Assuming a consumption rate of 9.21 g/p/d (35 L/p/d), this would translate to a daily increase of  
28 26,500 gallons (100,000 L). The existing water supply system at YTC would be capable of  
29 supporting the anticipated additional potable water demand created by this alternative.

#### 30 **6.2.5.2 Live-fire Training Direct and Indirect Effects**

##### 31 **6.2.5.2.1 Less than Significant Effects**

#### 32 6.2.5.2.1.1 Surface Water Quantity and Quality

33 Only a minimal increase in live-fire training would result from this alternative. Potential impacts  
34 related to live-fire training would be the same in nature as those described under Alternative 1.  
35 Although the live-fire training would increase under this alternative, the munitions constituents  
36 would remain identical to those currently in use, and no measurable impacts from munitions residues  
37 are anticipated. Potential impacts from sedimentation and erosion would increase by some small  
38 amount; however, because most live-fire training would occur on fixed ranges, which represent a  
39 small portion of the overall land area, the overall increase in soil disturbance from live-fire training  
40 would be negligible, and these impacts are expected to be less than significant.

1           6.2.5.2.1.2 Groundwater Quantity and Quality

2 Potential impacts to groundwater resources from live-fire training would be the same as those  
3 described under Alternatives 1 and 2. Even though live-fire training would increase compared to  
4 Alternative 2, the munitions constituents would be identical to those currently in use, and no  
5 additional impacts to groundwater quality would be anticipated.

6           **6.2.5.3     *Maneuver Training Direct and Indirect Effects***

7           **6.2.5.3.1   *Significant but Mitigable to less than Significant Effects***

8           6.2.5.3.1.1 Surface Water Quantity and Quality

9 Potential impacts related to maneuver training would be the same in nature as those described under  
10 Alternative 1. Alternative 3 would result in an additional increase in the amount of maneuver  
11 training conducted at YTC compared to Alternative 2. However, due to limits on off-road  
12 maneuvering, the increased maneuver training with CSS units would lead to a minimal increase in  
13 maneuver impacts compared to Alternative 2.

14          6.2.5.3.1.2 Groundwater Quantity and Quality

15 Potential impacts to groundwater would be the same in nature as those described under Alternative 1.  
16 The potential for these impacts would increase slightly due to increased maneuver training under this  
17 alternative. With implementation of BMPs and other measures, impacts to groundwater are expected  
18 to be less than significant.

19           **6.2.6   Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

20           **6.2.6.1     *Construction Direct and Indirect Effects***

21           **6.2.6.1.1   *Less than Significant Effects***

22           6.2.6.1.1.1 Surface Water Quantity and Quality

23 No additional construction activities are proposed at YTC under Alternative 4; therefore, no  
24 additional impacts to surface water resources related to construction activities would occur, beyond  
25 those identified under the previous alternatives.

26           6.2.6.1.1.2 Groundwater Quantity and Quality

27 No additional construction activities are proposed at YTC under Alternative 4; therefore, no  
28 additional impacts to groundwater resources related to construction activities would occur, beyond  
29 those identified under the previous alternatives.

30 No additional Soldiers would be permanently stationed at YTC under this alternative. However, the  
31 amount of training personnel and related water demand would increase due to the addition of 5,678  
32 Soldiers stationed at Fort Lewis that would train at YTC during some portion of the year. This total  
33 amount includes the SBCT, GTA Soldiers, CSS, and CAB units, which would most likely not be  
34 training at YTC at the same time and would only train for short periods. Assuming a consumption  
35 rate of 9.21 g/p/d (35 L/p/d), this would translate to a daily increase of 52,300 gallons (198,000 L).  
36 The existing water supply system at YTC would be capable of supporting the anticipated additional  
37 potable water demand created by this alternative.

1       **6.2.6.2    *Live-fire Training Direct and Indirect Effects***

2       **6.2.6.2.1   *Less than Significant Effects***

3           6.2.6.2.1.1   Surface Water Quantity and Quality

4       In addition to impacts discussed under the previous alternatives, this alternative would result in  
5       additional impacts related to aerial gunnery training. Use of weaponry such as grenades, .50 cal., and  
6       rockets would result in increased soils disturbance, and therefore, increased erosion and potential for  
7       sedimentation. Even though this alternative would involve increased amounts of ammunition  
8       expended, the constituents are expected to be similar to those currently in use. Since no impacts from  
9       munitions residues have been observed in the area to date, these impacts are expected to be less than  
10      significant. Potential impacts related to sedimentation from wildland fires, and spills from  
11      established refueling points would increase under this alternative; however, implementation of BMPs  
12      would minimize any potential impacts to surface water to less than significant level.

13          6.2.6.2.1.2   Groundwater Quantity and Quality

14      Potential impacts to groundwater resources from live-fire training would be similar to those under  
15      the other alternatives. Even though live-fire training would increase under this alternative, the  
16      munitions constituents would be similar to those currently in use, and potential impacts to  
17      groundwater quality would involve increased amounts of ammunition expended by the medium CAB  
18      Soldiers. Since no impacts from munitions residues have been observed in groundwater to date, these  
19      impacts are expected to be less than significant. Potential impacts from spills would also increase  
20      under this alternative. However, continued implementation of BMPs would minimize potential  
21      impacts resulting from leaks or spills of hazardous materials.

22      **6.2.6.3    *Maneuver Training Direct and Indirect Effects***

23      **6.2.6.3.1   *Significant but Mitigable to less than Significant Effects***

24           6.2.6.3.1.1   Surface Water Quantity and Quality

25      Flight and joint military training associated with medium CAB maneuver training would occur on  
26      ranges such as the DMPRC. The training of the medium CAB is not expected to result in digging  
27      exercises or significantly increase off-road travel mileage. Due to limited off-road maneuvering  
28      associated with the CAB, these impacts are not expected to increase measurably beyond those  
29      discussed under previous alternatives. BMPs would continue to be implemented to protect water  
30      quality at YTC.

31          6.2.6.3.1.2   Groundwater Quantity and Quality

32      Potential impacts to groundwater would be the same in nature as those described under the previous  
33      alternatives and could result from compaction of soils and subsequent decreased percolation to  
34      groundwater aquifers during maneuver training. Due to limited ground-based activities associated  
35      with medium CAB training, these impacts are not expected to increase measurably beyond those  
36      discussed under previous alternatives. The potential for impacts from accidental spills would,  
37      however, increase slightly due to training associated with the medium CAB. With implementation of  
38      BMPs and other measures, impacts to groundwater are expected to be minimal.

1 **6.2.7 Cumulative Effects**

2 **6.2.7.1 Significant but Mitigable to less than Significant Effects**

3 **6.2.7.1.1 Surface Water Quantity and Quality**

4 Cumulative effects to water resources may occur from past, present, and reasonably foreseeable  
5 future projects and activities. Potential cumulative effects to surface water quality and quantity  
6 resulting from these activities include increased erosion and sedimentation, increased surface runoff,  
7 and degradation of the stream channel. Cumulative effects to surface water could also occur from  
8 surface disturbance related to construction activities. Construction activities commonly include  
9 removing vegetation, stockpiling topsoil, and constructing roads and shallow excavations, which  
10 would contribute to erosion and sedimentation. Cumulative effects to surface water resources would  
11 be highest shortly after construction begins and would decrease over time in response to reclamation  
12 efforts. BMPs to control erosion would be implemented to ensure that surface disturbing activities  
13 have minimal effects on surface water resources.

14 Land use activities that degrade upland and riparian resources, including activities that increase the  
15 occurrence of wildland fires, which can remove upland and riparian vegetation and reduce soil  
16 stability, can have an adverse affect on surface water resources through increased overland flow,  
17 degradation of the stream channel, and discharges of suspended sediment into receiving streams.  
18 Historically, Yakima River basin has been receiving high sediment inputs from sources such as  
19 runoff from agricultural lands, particularly irrigation return flows. Most of the agricultural loading of  
20 suspended sediment occurs downstream from YTC, although some occurs in the Kittitas Valley and  
21 from tributaries west of YTC that drain similar terrain. Other sources of sediment include improperly  
22 designed and located roads, degraded channels resulting from mass wasting, and natural erosion  
23 processes.

24 In 1994 and 1995, the Washington Department of Ecology conducted a TMDL evaluation, and in  
25 1998, the EPA approved a Water Cleanup Plan designed to reduce suspended sediments and  
26 pesticides in the Yakima River. More recent (2003) Washington Department of Ecology monitoring  
27 evaluated the suspended solids loads at the Kiona Station and concluded that the loads have been  
28 greatly reduced (by 50 to 70 percent) compared to previous decades (Coffin et al. 2006).

29 Cumulative effects to surface water could occur from ongoing and visiting unit training, as well as  
30 training activities related to other small arms tracer fire and HIMARS launching. Impacts from  
31 maneuver training of visiting units using tracked vehicles would result in greater soil disturbance and  
32 would cumulatively increase the potential for sedimentation and erosion in the area. Training by  
33 HIMARS field artillery battalions and other units would also increase the potential for impacts to  
34 water quality from introduction of chemical constituents, such as munitions residues and accidental  
35 spills and leaks, and by increasing the likelihood of igniting fires during rocket launches and use of  
36 tracer rounds.

37 Discharges of suspended solids from YTC, combined with larger natural and agricultural sources,  
38 could contribute cumulatively to water quality impairment (sedimentation) of the Lower Yakima  
39 River. These impacts have a potential to be significant; however, with the Water Cleanup Plan for  
40 Yakima River in place, these impacts would be mitigable to less than significant. As discussed in  
41 **Section 5.2**, to date, conclusions indicate that sediment loads from YTC contribute only a small  
42 fraction of total sediment loads in the Yakima River system.

1 Potential cumulative effects to Columbia River could result from military training activities  
2 combined with implementation of past, present, and reasonably foreseeable future actions. Water  
3 quality in Columbia River is considered good and has not been designated as impaired in the vicinity  
4 of YTC. Past and present actions include agriculture and recreational activities. The chemicals  
5 associated with the fertilizers and pesticides include nitrogen, phosphate, potassium, and numerous  
6 other organic compounds. Many of the organic compounds are not persistent in the environment and  
7 do not present a water quality concern. Some organic compounds and inorganic nutrients, such as  
8 nitrate, do end up in receiving waters such as the Columbia River via erosion of soil particles,  
9 surface runoff, or returning irrigation water and can reduce water quality. However, because of the  
10 volume of water carried by the Columbia River, chemicals that do reach the river from agricultural  
11 practices are highly diluted and, as noted above, Columbia River water quality is considered good  
12 (Army 2005a).

13 Past and reasonably foreseeable future projects that could cumulatively affect water quality in  
14 Columbia River include: Grant County Public Utility District and Federal Energy Regulatory  
15 Commission relicensing for the operation of dams, construction of a new Pacific Power powerline  
16 across YTC, and the recently completed Columbia River Erosion Control project (Army 2005a).  
17 Potential cumulative impacts from these projects may result in temporary increase in sediment loads  
18 due to construction activities and altered streamflows related to dam operations.

#### 19 **6.2.7.1.2 Groundwater Quantity and Quality**

20 Cumulative effects to groundwater could occur from ongoing and visiting unit training and increased  
21 training activities such as those related to the HIMARS launching. Additional training activities  
22 would increase the potential to impact shallow groundwater resources from introduction of chemical  
23 constituents such as munitions residues and accidental spills and leaks. However, no contaminants  
24 related munitions residues have been detected at YTC to date. BMPs would be implemented to  
25 ensure these impacts have minimal effects on groundwater resources.

### 26 **6.2.8 Mitigation**

27 No additional mitigation measures would be necessary to reduce potential impacts to water resources  
28 under Alternative 1. However, for Alternatives 2, 3, and 4, additional mitigation would be needed to  
29 reduce the potential effects of increased maneuver training. Mitigation plans identified in the  
30 CNRMP/INRMP should be implemented before implementation of proposed actions under  
31 Alternatives 2, 3, or 4 to ensure that adequate baseline data have been established. Finally, YTC will  
32 submit an annual recurring requirement for funding of rehabilitation and restoration efforts to repair  
33 damage to soils due to wildfires, vehicle maneuvers, and other impacts of increased training  
34 activities, which also will mitigate the potential adverse effects of sedimentation of surface water  
35 bodies.

## 36 **6.3 BIOLOGICAL RESOURCES**

### 37 **6.3.1 Vegetation**

38 Three issues pertaining to vegetation were identified during scoping: 1) the effects of increased  
39 training activities on rare species and habitats on the installation; 2) the potential spread of noxious  
40 weed species as a result of Army actions; and 3) the potential for increased fire danger resulting from  
41 increased live-fire training use of YTC.

**6.3.1.1 Resource-specific Significance Criteria**

Impacts to vegetation would be considered significant if Army actions resulted in:

- A long-term loss or degradation of unique or high-quality plant communities;
- A measurable reduction in diversity within high-quality plant communities;
- Take of federally listed species or increased mortality of proposed or candidate plant species; or
- Local extirpation of rare or sensitive species not currently listed under the ESA.

The potential for impacts to be significant depends on the importance of the community or species (ecologically, sociologically, or legally), the magnitude of the impact in relation to the size of the population or community, and the resilience of the plant or community after a disturbance.

In addition to this EIS, a BA was prepared that addresses federally listed threatened and endangered plant species, and species proposed for listing, that could be impacted by the action alternatives (**Appendix F**).

**6.3.1.2 Overview of Impacts to Vegetation by Alternative**

**Table 6–7** summarizes the impacts on vegetation that would occur under each of the alternatives.

**Table 6–7 Summary of Potential Impacts to Vegetation at YTC**

<b>Activity Group</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Construction Direct and Indirect Effects	€	€	€	€
Live-fire Training Direct and Indirect Effects	€	U	U	U
Maneuver Training Direct and Indirect Effects	€	U	U	U
Cumulative Effects	€	U	U	U

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

**6.3.1.3 Alternative 1 – No Action Alternative**

**6.3.1.3.1 Construction Direct and Effects**

**6.3.1.3.1.1 Less than Significant Effects**

No construction projects are proposed at YTC under Alternative 1. Vegetation could be impacted by ongoing facility maintenance and upgrades that would continue to occur at current levels under Alternative 1. However, these activities would most likely occur in the cantonment area where the existing plant communities are highly fragmented and consist of a mixture of native and introduced species, primarily grasses, forbs, and shrubs. Listed and rare species and unique and high quality plant communities would not be affected by these activities. Impacts to vegetation would be minor.

**6.3.1.3.2 Live-Fire Direct and Indirect Effects**

**6.3.1.3.2.1 Less than Significant Effects**

Under Alternative 1, the risk of fire, and corresponding risks to vegetation, would be much the same as at present. The potential effects to vegetation from live-fire training under this alternative were

1 analyzed in previous EAs prepared for the two SBCTs and other Fort Lewis units that train at YTC  
2 (Army 2001b, 2004b). These EAs predicted less than significant impacts to vegetation. The area  
3 impacted by fire annually would continue to vary depending on weather conditions and the success  
4 of fire management measures on the installation. The greatest impacts would occur in shrubland  
5 habitats with big sagebrush as a dominant species, or in areas where fire may aid in the spread of  
6 downy brome (cheatgrass) or other annual, fire-tolerant weeds. Additionally, fires that burn outside  
7 of ranges and other prescribed containment areas would be more likely to damage intact plant  
8 communities, and would result in greater impacts to vegetation than fires that burn in areas that are  
9 subject to repeated burns, which typically have lower fuel buildup. The degree of impact to  
10 vegetation from training-related fires would depend on the acreage burned, the location of the fire,  
11 and the effectiveness of fire management programs. Under current levels of training and fire  
12 management, effects would continue to be less than significant.

13 Special status species would continue to be susceptible to fire. Although many areas occupied by  
14 special status species have been identified and mapped, and the Army would continue to make an  
15 extra effort to protect these areas in the event of a fire, it may not be possible to prevent a fire from  
16 harming or killing special status species.

### 17 **6.3.1.3.3 Maneuver Training Direct and Indirect Effects**

#### 18 **6.3.1.3.3.1 Less than Significant Effects**

19 The potential impacts to vegetation from maneuver training activities under Alternative 1 were  
20 analyzed in previous EAs (Army 2001b, 2004b). These EAs predicted less than significant impacts  
21 to vegetation under the existing management policies.

22 The greatest potential for impacts would result from off-road vehicle maneuvers by Strykers, which  
23 can cause injury and mortality to vegetation and lead to changes in plant cover, species composition,  
24 and structure. In addition, disturbance to vegetation by vehicles is capable of exposing bare soil,  
25 thereby opening up pathways for the invasion and establishment of non-native invasive plants, and a  
26 corresponding reduction in the cover of native plants. Maneuver training may also compact the soil,  
27 causing changes to the rooting zone that reduce plant vigor. It is likely that lasting changes to species  
28 composition and community structure would occur in disturbed areas, particularly where big  
29 sagebrush was damaged by vehicle maneuvers.

30 Given the arid growing conditions at YTC, plants are easily damaged and slow to recover. Studies  
31 have been done assessing the impacts of LAVs on vegetation at YTC. LAVs are wheeled vehicles  
32 that are similar to Strykers and are expected to have a similar effect on vegetation. All general plant  
33 community types (shrubland, grassland, and dwarf shrubland) exhibited severe impacts to vegetation  
34 structure after a single straight-line pass by an LAV, with little additional degradation resulting from  
35 subsequent passes (Jones 2002). Total plant cover was reduced by 60 to 80 percent, with a  
36 corresponding increase in bare ground, and notable recovery generally took from 2 to 3 years.

37 SBCT vehicles typically travel in small groups or clusters, and impact approximately 7,000 to  
38 10,500 acres (2,830 to 4,250 ha) annually due to off-road travel (**Table 6-8**). Approximately  
39 80,000 acres (16,187 ha) of training lands are suitable for Stryker off-road training, as Strykers  
40 cannot operate safely on slopes greater than 30 percent (Nissen and Kelley 2009).

41 At YTC, the acreage of terrain suitable and available for off-road maneuver training by support  
42 vehicles (i.e., areas open to maneuver training with less than 60 percent slopes) is approximately  
43 225,000 acres (91,055 ha).

1 Under Alternative 1, vegetation on 3 to 5 percent of the available training lands would continue to be  
 2 affected annually, with a greater percentage impacted on more level training lands. In terms of land  
 3 area affected annually, initial impacts would be moderate; however, impacts could be cumulative  
 4 over time if an additional 3 to 5 percent of training lands were affected each year. Shrubland  
 5 communities dominated by big sagebrush are expected to exhibit the most severe and lasting  
 6 impacts, as loss of big sagebrush changes the species composition and community structure, with full  
 7 recovery rates tied to the germination, regrowth, and reestablishment of sagebrush at the site.  
 8 Intensive rehabilitation of these sites may be necessary to ensure recovery of these sites after  
 9 disturbance. Grasslands and dwarf shrub sites are likely to recover from disturbance more quickly  
 10 than shrublands, although some lasting impacts (including reduction of soil crusts, alteration of  
 11 species composition, and a spread of invasive species) may also occur at these sites.

**Table 6–8 Annual Impacts of Training on Vegetation at YTC**

	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>	<b>Alternative 4</b>
Approximate acres impacted annually by maneuver activities	7,000 to 10,500	36,480 to 54,725	36,815 to 55,225	37,990 to 56,985
Percent of training lands impacted <sup>1</sup>	3 to 5	16 to 24	16 to 25	17 to 25
Approximate acres impacted annually by digging	~ 50 acres	~ 75 acres	~ 75 acres	~ 75 acres
Acres impacted annually by training-caused fires	Variable: 100s to 1,000s of acres; fewest acres of all alternatives	Variable: 100s to 1,000s of acres; more acres than Alternative 1, fewer acres than Alternative 4	Variable: 100s to 1,000s of acres; similar number of acres to Alternative 2	Variable: 100s to 1,000s of acres; greatest number of acres of all alternatives

Note:

1. Acres impacted as a percentage of acres available for maneuver training by Strykers and other support vehicles. Approximately 80,000 acres (16,187 ha) are suitable for Stryker vehicle training, and an additional 145,000 acres (58,700 ha) of training lands are suitable for support vehicle training. See **Appendix C** for calculations and assumptions.

12  
 13 Under Alternative 1, digging activities would continue to affect less than 50 acres (20 ha) of land on  
 14 YTC annually, which constitutes a fraction of a percent of the available training land. Impacts at  
 15 digging sites range from a short-term loss of vegetation to a long-term loss in native vegetation as a  
 16 result of the mixing of surface and subsurface soils in these areas. Given the area of land impacted by  
 17 digging relative to the total acreage of land on YTC, the impacts to vegetation from digging should  
 18 continue to be minor, provided populations of special status plant are avoided.

19 **Special Status Plant Species.** Under Alternative 1, impacts to special status plant species would  
 20 continue to be less than significant, with a continuation of management and monitoring programs to  
 21 minimize long-term impacts to these species. No federally listed, proposed, or candidate plant  
 22 species are known to occur on YTC. Other sensitive species that could be impacted by training  
 23 include gray cryptantha, Columbia milk-vetch, Hoover’s desert-parsley, and Hoover’s tauschia. Gray  
 24 cryptantha and Hoover’s desert-parsley are found near the Columbia River and outside of designated  
 25 maneuver corridors. Under Fort Lewis Regulation 420–5, designated sensitive populations of  
 26 Columbia milk-vetch, Hoover’s tauschia, and other special status species are protected from off-road  
 27 maneuvers by Seibert (Siber) staking. However, some populations would continue to be at risk from

1 injury or mortality. Additional management to reduce and offset training-related impacts to sensitive  
2 plant species include impact reduction techniques, revegetation of maneuver areas, and fire  
3 management activities, which are discussed in the CNRMP/INRMP and IWFMP (Army 2002b).  
4 Local extirpation of these species should not occur, and impacts would remain less than significant.

### 5 **6.3.1.4 Alternative 2 – GTA Actions**

#### 6 **6.3.1.4.1 Construction Direct and Indirect Effects**

##### 7 **6.3.1.4.1.1 Less than Significant Effects**

8 Under Alternative 2, the total area impacted by proposed construction projects would be  
9 approximately 521 acres. Short-term, minor impacts to vegetation would result from the operation of  
10 heavy-duty construction equipment, demolition, and increased vehicular traffic attributed to  
11 construction personnel. Additionally, a very small amount of vegetation would be lost from clearing  
12 of range areas to construct these training facilities. These activities are not expected to affect unique  
13 or high quality plant communities, and would not affect listed or sensitive species. Therefore, effects  
14 would be less than significant.

#### 15 **6.3.1.4.2 Live-Fire Direct and Indirect Effects**

##### 16 **6.3.1.4.2.1 Significant Effects**

17 Given the potential for fire to impact native shrubland habitats and big sagebrush, as well as  
18 populations of special status species that are protected from vehicles but not fire, the increase in fire  
19 risk under this alternative would constitute a significant effect to vegetation. Despite ongoing fire  
20 management programs, it is reasonably foreseeable that range fires could result in a long-term loss or  
21 degradation of unique or high-quality plant communities or could cause a local extirpation of a  
22 sensitive species.

#### 23 **6.3.1.4.3 Maneuver Training Direct and Indirect Effects**

##### 24 **6.3.1.4.3.1 Significant Effects**

25 Under Alternative 2, the types of impacts to native plant communities from maneuver training would  
26 be similar to those described for Alternative 1. However, the extent of these impacts would be  
27 greater given the increased level of training (a 5-fold increase in off-road miles, relative to  
28 Alternative 1). There would be a notable increase in the loss of plant cover in areas where off-road  
29 maneuvers occur. There are two different training possibilities under this alternative, which would  
30 result in different levels of impacts to vegetation, and therefore, different significance  
31 determinations. Both possibilities are addressed below.

32 The first future possibility is that maneuver training would continue to follow the current model of  
33 SBCT training on YTC, in which most impacts to vegetation would be concentrated into small areas,  
34 rather than widely spread out over the entire installation. Vegetation in assembly areas and other  
35 heavily used areas would be most affected, but areas of intact native plant communities would  
36 receive minimal impacts. With existing measures in place to reseed and rehabilitate heavily used  
37 areas after training exercises, overall effects to vegetation would be less than significant.

38 The second future possibility is that the area used for maneuver training would increase from the  
39 current model, or training needs would change to require more off-road travel in less heavily used  
40 available training lands, in which impacts to high-quality native plant communities could potentially  
41 be much greater. This possibility would represent a worst-case scenario. Strykers could potentially  
42 impact between 15,795 and 23,400 acres (6,390 and 9,470 ha) annually from off-road travel, an

1 acreage that represents about 2 to 4 vehicle passes on 7 to 10 percent of available training lands.  
2 SBCT support vehicles could potentially impact between 20,960 and 31,050 acres (8,480 and 12,565  
3 ha) annually, an acreage that represents about 2 to 4 vehicle passes on between 10 to 15 percent of  
4 available training lands for support vehicle training annually. Impacts could be additive to those from  
5 Strykers, although it is likely that support vehicles would often use the same trails as Strykers (**Table**  
6 **6–8**). Vehicles in GTA units would impact between 185 to 275 acres (75 to 110 ha). Thus, all  
7 vehicles associated with Alternative 2 could potentially impact up to 36,480 to 54,725 acres (14,765  
8 to 22,145 ha) annually under a worst case scenario.

9 Under this second future possibility, effects to vegetation would potentially be significant. Big  
10 sagebrush shrublands would have a greater likelihood of being impacted by maneuver training than  
11 under Alternative 1, and the spread of non-native species would be likely to increase. As a result,  
12 lasting changes in community structure and species composition would likely occur over a greater  
13 area than under Alternative 1. Additionally, it is possible there would be a decrease in the rest and  
14 rotation of some training lands after a disturbance, as compared to Alternative 1. Relatively level  
15 training lands with a slope of 30 percent or less would likely be most at risk for repeat disturbance.  
16 Effects to vegetation in these communities would be significant because restoration of these  
17 communities would require extensive, long-term efforts beyond reseeding and/or rehabilitation after  
18 training exercises.

19 Under Alternative 2, the amount of digging on YTC annually would increase from about 50 acres to  
20 75 acres (20 to 30 ha). This acreage would still represent a negligible amount of available training  
21 land, and impacts would continue to be minor, provided populations of sensitive plant species  
22 continue to be avoided.

23 ***Special Status Plant Species.*** A BA developed in conjunction with this EIS determined that the  
24 proposed actions would have no effect on federally listed plant species, or species proposed for  
25 listing. Other sensitive plant species would continue to receive some protection from maneuver  
26 training by Seibert staking their location outside of maneuver corridors. However, the substantial  
27 increase in off-road miles and total vehicle miles under this alternative would increase the likelihood  
28 that unprotected populations of special status species would be impacted by vehicles during training  
29 activities, or that Soldiers would inadvertently enter protected areas. The existing protection of  
30 sensitive plant species would continue to minimize the risk of local extirpations, and effects would  
31 be minor to moderate, depending on the rate of disturbance and the ability of populations to recover.

### 32 **6.3.1.5 Alternative 3 – GTA Actions + CSS Soldiers**

#### 33 **6.3.1.5.1 Construction Direct and Indirect Effects**

##### 34 **6.3.1.5.1.1 Less than Significant Effects**

35 Under Alternative 3, impacts to vegetation from construction would be the same as those discussed  
36 under Alternative 2. No additional construction projects are proposed under Alternative 3.

#### 37 **6.3.1.5.2 Live-Fire Training Direct and Indirect Effects**

##### 38 **6.3.1.5.2.1 Significant Effects**

39 The CSS units engage in a minimal amount of live-fire training; thus, the number of potential  
40 ignition sources utilized in the ranges and impact areas on YTC would be slightly greater than those  
41 under Alternative 2. Consequently, the risk of fire and effects to vegetation would also be slightly  
42 greater than under Alternative 2.

1       **6.3.1.5.3   *Maneuver Training Direct and Indirect Effects***

2           **6.3.1.5.3.1   Significant Effects**

3       Under Alternative 3, the increase in off-road travel would result in greater damage to plant  
4       communities than under Alternative 2. As discussed under Alternative 2, under the first future  
5       possibility of continued training in localized areas by the SBCTs, GTA units and CSS units, effects  
6       to vegetation would be limited to high use areas, with low impacts to much of the high quality  
7       sagebrush habitat on the installation. With existing measures in place to reseed and rehabilitate  
8       heavily used areas after training exercises, overall effects to vegetation would be less than  
9       significant.

10       Under the second future possibility, in which more of the available training land would be required  
11       to support training by the new units, impacts to vegetation would be significant. CSS vehicles could  
12       potentially impact between 335 and 500 acres (135 and 200 hectares; **Table 6-8**) annually, although  
13       not all of these acres would be additive to those impacted by SBCT vehicles, given overlap in use of  
14       certain areas. Assuming equal use of all available maneuver areas, SBCT, GTA, and CSS vehicles  
15       could potentially impact approximately 16 to 25 percent of YTC training lands annually. Impacts to  
16       vegetation associated with this alternative would not be substantially different than those under  
17       Alternative 2, although impacts to big sagebrush shrublands and the potential for spread of non-  
18       native species would potentially be greater. Effects to vegetation would be significant.

19       The number of annual digging events and impacts associated with digging on YTC would remain  
20       near levels identified under Alternative 2. Therefore, associated effects to vegetation would be  
21       similar to those described for Alternative 2.

22       ***Special Status Plant Species.*** A BA developed in conjunction with this EIS determined that the  
23       proposed actions under Alternative 3 would be unlikely to adversely affect federally listed plant  
24       species, or species proposed for listing that occur on or near YTC. Under Alternative 3, the risk for  
25       impacts to sensitive plant species would be slightly greater than under Alternative 2. However, the  
26       existing protection measures would be adequate to prevent local extirpations of these species, and  
27       effects would be less than significant.

28       **6.3.1.6       *Alternative 4 – GTA Actions + CSS Soldiers + Medium CAB***

29           **6.3.1.6.1   *Construction Direct and Indirect Effects***

30            **6.3.1.6.1.1   Less than Significant Effects**

31       Under Alternative 4, impacts to vegetation from construction would be the same as those under  
32       Alternatives 2 and 3. No additional construction projects are proposed under Alternative 4.

33           **6.3.1.6.2   *Live Fire Training Direct and Indirect Effects***

34            **6.3.1.6.2.1   Significant Effects**

35       The additional gunnery training conducted by the medium CAB at YTC would likely increase the  
36       risk of fire and result in a greater number of ignitions occurring on YTC annually than under the  
37       other Alternatives. Despite ongoing fire management programs, effects to native plant communities  
38       and sensitive species would constitute significant adverse effects.

39           **6.3.1.6.3   *Maneuver Training Direct and Indirect Effects***

40            **6.3.1.6.3.1   Significant Effects**

41       Under Alternative 4, off-road travel by vehicles would result in greater impacts to vegetation in  
42       maneuver areas than under Alternatives 1, 2, and 3. Under one future training possibility, in which

1 training would continue to be concentrated in localized areas by all the units under this alternative,  
2 effects to vegetation would be limited to high use areas and, minimized by reseeding/rehabilitation  
3 efforts after training. Provided intact native communities were subject to minimal off-road  
4 disturbance, effects would be less than significant.

5 Under the second future training possibility, in which more of the available training land would be  
6 required to support training by the new units, impacts to vegetation would be significant. Medium  
7 CAB vehicles could potentially impact between 1,185 and 1,760 acres (480 and 710 ha) annually,  
8 with approximately 17 to 25 percent of training lands impacted annually. Overall, the potential for  
9 degradation of big sagebrush shrublands and other native plant communities would be greater under  
10 this alternative than under any of the other alternatives. Effects to vegetation would be significant.

11 Helicopter-based activities by the medium CAB would occur in the YTC airspace, and therefore  
12 would have minimal, if any, impacts on vegetation. It is not anticipated that medium CAB units  
13 would conduct digging activities. Ground activities would typically occur in hardened areas and  
14 areas where impacts to vegetation have recurred in the past and high-quality native plant  
15 communities and sensitive species do not occur.

16 ***Special Status Plant Species.*** The BA for this action determined that proposed activities under  
17 Alternative 4 would have no effect on federally listed plant species or species proposed for listing.  
18 The risk for impacts to sensitive plant species would be greater under Alternative 4 than under any of  
19 the other alternatives. However, the existing protection measures would be adequate to prevent local  
20 extirpations of these species, and effects would be less than significant.

### 21 **6.3.1.7 Cumulative Effects**

#### 22 **6.3.1.7.1 Significant Effects**

23 Cumulative effects would be less than significant under Alternative 1, but significant under  
24 Alternatives 2, 3, and 4. Significant, adverse cumulative impacts to vegetation on YTC, and  
25 moderate, adverse cumulative impacts to vegetation in the Interior Columbia River Basin, would be  
26 expected. Vegetation on YTC has been degraded by past and present construction and military  
27 training activities. As discussed above, continued training and proposed increases in training would  
28 likely further impact vegetation.

29 Natural and man-caused fires burn several thousand acres annually on YTC. Much of this acreage is  
30 accounted for by grassland communities in ranges and other containment areas, where fires are  
31 recurrent, low-fuel burns that are relatively easy to suppress. These areas may include a high  
32 proportion of non-native grasses. Larger fires are typically one-time burns in other areas on the  
33 installation, often shrublands with heavy fuels that are more difficult to control and that typically  
34 convert to grassland communities as a result of fire.

35 Other past, present, and future activities that could contribute to loss of native vegetation include  
36 residential, recreational, and commercial development and agricultural activities (including farming  
37 and ranching). Prior to European settlement, eastern Washington was covered by an almost  
38 unbroken, 10.4 million-acre (4.2 million-ha) expanse of shrub-steppe habitat (Dobler 1992).  
39 Agricultural, rangeland, residential, and commercial development have reduced the amount of shrub-  
40 steppe habitat to 4.2 million acres (1.7 million ha), much of it now occurring in small, widely  
41 scattered parcels. Currently, YTC lies within the largest remaining contiguous block of shrub-steppe  
42 habitat in Washington (Army 2002b). Mitigation proposed in this EIS, continued implementation of  
43 upland vegetation management efforts included in the CNRMP/INRMP, ongoing rehabilitation/  
44 restoration activities, and regional efforts to protect remaining shrub-steppe habitat would help  
45 maintain and protect native plant communities and sensitive plant species on YTC and in the region.

1       **6.3.1.8    Mitigation**

2       No additional mitigation is necessary under Alternative 1.

3       Long-term loss or degradation of unique or high-quality plant communities, and a measurable  
4       reduction in diversity within high-quality plant communities, would be likely under Alternatives 2, 3,  
5       and 4. The following mitigation is proposed to help reduce impacts to native plant communities as a  
6       result of fire and maneuver training damage:

- 7           •    Rehabilitate the majority of training lands that are impacted by fire and maneuver training,  
8                with a focus on recovering the community types that have been degraded by the action.  
9                However, the ability of YTC to rehabilitate training lands would be contingent upon Army  
10              funding.

11       Because of higher levels of training, it is assumed that successively higher levels of management  
12       effort would be required under Alternatives 3 and 4 than under Alternative 2 because more training  
13       lands would be damaged under these alternatives.

14       **6.3.1.9    Conclusions**

15       Significant impacts to plant resources would occur under the action alternatives as a result of  
16       increased fire risk and increases in the number of off-road vehicle miles allowed on YTC each year.  
17       Training-related impacts would be lowest under Alternative 1 and highest under Alternative 4. The  
18       general management approach outlined in the CNRMP/INRMP would be followed under all the  
19       action alternatives and revisions would be made to vegetation management plans to help reduce the  
20       level of impact under Alternatives 2, 3, and 4. Additional mitigation to rehabilitate the majority of  
21       training lands impacted is proposed.

22       **6.3.2    Fish and Aquatic Resources**

23       **6.3.2.1    Resource-specific Significance Criteria**

24       Effects to fish and other aquatic resources were not identified as an issue of concern during scoping.  
25       For the purposes of this analysis, impacts to fish resources on YTC would be considered significant  
26       if Army actions resulted in:

- 27           •    A take of a federally listed species or a species proposed for listing;  
28           •    A loss of designated critical habitat;  
29           •    A long-term (greater than 2-year) impact on populations and/or habitat of federal or state  
30                species of concern that would result in a trend toward endangerment or the need for federal  
31                listing;  
32           •    A long-term loss of habitat for single or multiple common fish species; or  
33           •    A creation of a fish barrier.

34       In addition to this EIS, a BA and EFH assessment have been prepared that address federally listed  
35       threatened and endangered species, and species proposed for listing, that could be impacted by the  
36       action alternatives, and impacts that could occur to EFH (**Appendix F**).

37       **6.3.2.2    Overview of Impacts to Fish and Aquatic Resources by Alternative**

38       **Table 6–9** summarizes the impacts associated with fish and aquatic resources that would occur under  
39       the alternatives.

**Table 6–9 Summary of Potential Impacts to Fish and Aquatic Resources at YTC**

<b>Activity Group</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Construction Direct and Indirect Effects	€	€	€	€
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	€	€	€	€
Cumulative Effects	€	€	€	€

U = Significant Effects

W = Significant but Mitigable to less than Significant Effects

€ = Less than Significant Effects

+ = Beneficial Effect

N/A = Not Applicable

• = No Effects

1

2 **6.3.2.3 Alternative 1 – No Action Alternative**3 **6.3.2.3.1 Construction Direct and Indirect Effects**4 **6.3.2.3.1.1 Less than Significant Effects**

5 No construction projects are proposed at YTC under Alternative 1. Ongoing facility maintenance and  
6 upgrades that would continue to occur at current levels under Alternative 1 would follow federal,  
7 state, and local regulations; erosion BMPs; and SPCCPs in order to minimize the risks of  
8 sedimentation into or contamination of aquatic habitats on the installation. Therefore, overall impacts  
9 of construction activities on aquatic habitats and species would be minor.

10 **6.3.2.3.2 Live-Fire Training Direct and Indirect Effects**11 **6.3.2.3.2.1 Less than Significant Effects**

12 Potential impacts to fish resources associated with live-fire training under Alternative 1 have been  
13 analyzed in previous EAs prepared for the SBCTs and other units stationed at Fort Lewis that train at  
14 YTC (Army 2001a, 2001b, 2004a, 2005a). These previous evaluations found that effects to fish  
15 resources from live-fire training would be less than significant. Gunnery training may have an  
16 indirect impact on fish by causing fires, which temporarily remove vegetation and organic matter  
17 from a site, contributing to runoff and sedimentation into aquatic habitats. Fires have the potential to  
18 spread to riparian habitats, where loss of vegetation in riparian buffer zones is likely to destabilize  
19 stream banks and lead to erosion and sedimentation into aquatic habitats. In addition, temperature  
20 increases caused by defoliation can harm fish. The risk of these impacts would continue to be  
21 reduced by fire management programs on YTC, as well as noxious weed control programs.

22 **6.3.2.3.3 Maneuver Training Direct and Indirect Effects**23 **6.3.2.3.3.1 Less than Significant Effects**

24 Under Alternative 1, there would not be any major changes in the types and amounts of training  
25 occurring at YTC. Therefore, potential impacts to fish and other aquatic organisms from maneuver  
26 training activities would not increase from those identified in previous EAs (Army 2001a, 2001b,  
27 2004a, 2005a). These documents predicted minor impacts to fish and other aquatic organisms under  
28 the existing management policies.

29 Off-road vehicle travel and digging activities would continue to have a minor adverse impact on fish  
30 habitat by potentially contributing to erosion and stream sedimentation, aiding the spread of noxious  
31 weeds into riparian areas, altering stream flows and temperatures, and limiting the development of  
32 coarse woody debris and other structural components of aquatic habitats (Army 2002b). The amount  
33 that training-related events alter water quality and aquatic habitats on the installation is currently

1 unknown, but it is likely that training activities would have a minor impact on fish by contributing to  
2 impacts to water quality during runoff events. River crossing and stream fording activities would  
3 continue at current levels. These activities can lead to erosion and compaction of stream banks,  
4 sedimentation, and disturbance, release of vehicle materials (e.g., fuels and oils) into water bodies,  
5 and injury or mortality to any fish that are present at the crossing. All major stream crossings on  
6 YTC have been hardened or upgraded to minimize impacts to water quality and fish resulting from  
7 erosion.

8 ***Special Status Fish Species.*** Federally listed species that occur in the vicinity of YTC include the  
9 Upper Columbia River Spring-run Chinook salmon ESU and the Upper Columbia and Mid-  
10 Columbia River Steelhead trout ESUs (along either the Yakima or Columbia Rivers), although only  
11 Upper Columbia River steelhead has been observed in streams on YTC. Listed salmonids spawn in  
12 the nearby Yakima and Columbia Rivers, where spawning habitat could be indirectly affected by  
13 sedimentation originating in streams on YTC. Current data indicate that sediment loads from YTC  
14 contribute a small fraction of total sediment loads in the Columbia River and Yakima River systems.

15 Under Alternative 1, impacts to fish would continue to be less than significant, as YTC would  
16 continue to protect and improve fish habitat through aquatic buffers, stream restoration projects,  
17 erosion control practices, and noxious weed management.

#### 18 **6.3.2.4 Alternative 2 – GTA Actions**

##### 19 **6.3.2.4.1 Construction Direct and Indirect Effects**

###### 20 **6.3.2.4.1.1 Less than Significant Effects**

21 Under Alternative 2, proposed construction includes two range projects located outside of the  
22 cantonment area and away from water bodies (**Figure 2–5**), although intermittent streams pass  
23 through the area that could discharge suspended solids to Selah Creek and eventually the Yakima  
24 River. These effects to aquatic habitat would be limited to the active construction phase, and  
25 construction activities would follow federal, state, and local regulations; erosion BMPs; and SPCCs  
26 in order to minimize the risks of sedimentation into or contamination of aquatic habitats on YTC.  
27 Therefore, risks to fish species would remain low, and effects would be less than significant.

##### 28 **6.3.2.4.2 Live-Fire Training Direct and Indirect Effects**

###### 29 **6.3.2.4.2.1 Less than Significant Effects**

30 Under Alternative 2, the amount of live-fire training on YTC would be greater than under  
31 Alternative 1. The degree of impact to aquatic habitats and fish would continue to depend on the  
32 amount of vegetation burned from resulting fires and whether a fire enters a riparian buffer area.  
33 Ongoing fire management programs would continue to minimize the risk of large fires, but would be  
34 unable to eliminate such a risk completely. Burned riparian habitat could constitute a short-term,  
35 adverse effect to aquatic habitats, with an indirect effect on fish species, but would be unlikely to  
36 have population level effects or affect aquatic habitats over the long-term. Therefore, effects to fish  
37 resources would be less than significant.

##### 38 **6.3.2.4.3 Maneuver Training Direct and Indirect Effects**

###### 39 **6.3.2.4.3.1 Less than Significant Effects**

40 Under Alternative 2, there would be a 5-fold increase in off-road vehicle mileage by Strykers, as  
41 well as additional off-road mileage by SBCT and GTA unit support vehicles. Additionally, there  
42 would be an increase in stream fording activities. These increases would result in a higher risk of  
43 aquatic habitats being degraded by sedimentation, runoff, channel incision, and stream bank erosion

1 over the short-term than under Alternative 1. Although it is difficult to measure the extent of training  
2 impacts relative to those caused by natural variations in hydrology and weather, there may be a small  
3 decline in fish habitat on the installation associated with increased off-road miles. Increases in stream  
4 fording activities would increase the risk that fish in crossings would be harmed, and the frequency  
5 that sediments or automotive materials would enter the waterway during crossings. Given the  
6 presence of hardened crossings at fording sites, and the intermittent nature of most of the streams on  
7 YTC, associated impacts would be minor. No barriers to fish migration would be created as a result  
8 of training activities by the SBCTs.

9 ***Special Status Fish Species.*** A BA and EFH prepared in conjunction with this EIS determined that  
10 activities associated with Alternative 2 may affect, but are not likely to adversely affect, listed fish  
11 species in the project area (**Appendix F**). Given that listed fish species are rarely found on YTC, and  
12 are not known to spawn on the installation, increases in runoff and sedimentation that degrade fish  
13 habitat on YTC would be unlikely to affect these species significantly. Sediment originating on the  
14 installation could reach spawning habitat in the Columbia and Yakima Rivers, but would continue to  
15 contribute only a fraction of the total sediment loads in these rivers. Therefore, impacts to fish  
16 habitat off the installation, including EFH, and to listed species, would be minor under Alternative 2.

### 17 **6.3.2.5 Alternative 3 – GTA Actions + CSS Soldiers**

#### 18 **6.3.2.5.1 Construction Direct and Indirect Effects**

##### 19 **6.3.2.5.1.1 Less than Significant Effects**

20 Under Alternative 3, impacts to aquatic organisms and their habitats from construction projects  
21 would be the same as those discussed under Alternative 2. No additional construction projects are  
22 proposed under Alternative 3.

#### 23 **6.3.2.5.2 Live-Fire Training Direct and Indirect Effects**

##### 24 **6.3.2.5.2.1 Less than Significant Effects**

25 Under Alternative 3, the risk of fire would also be greater than under Alternative 2, as would the  
26 potential risk of a large fire burning into a riparian area and affecting aquatic habitat. These risks  
27 would be minimized by fire management programs, but aquatic habitats could still be impacted. A  
28 riparian fire would be unlikely to have population-level effects or affect aquatic habitats over the  
29 long-term. Therefore, effects to fish resources would be less than significant.

#### 30 **6.3.2.5.3 Maneuver Training Direct and Indirect Effects**

##### 31 **6.3.2.5.3.1 Less than Significant Effects**

32 Under Alternative 3, the increase in off-road travel would be associated with a greater risk of aquatic  
33 habitat degradation than under Alternatives 1 and 2. It is also likely that there would be an increase  
34 in the frequency of stream fording activities, which could be associated with an influx of sediments  
35 and/or automotive wastes. Given the presence of riparian buffers, hardened crossings at fording sites,  
36 and the intermittent nature of most of the streams on YTC, associated impacts would not be  
37 significant. No barriers to fish migration would be created as a result of training activities by the  
38 SBCTs, GTA, and CSS units.

39 ***Special Status Fish Species.*** A BA and EFH developed in conjunction with this EIS determined that  
40 the proposed actions under Alternative 3 would be unlikely to adversely affect listed fish species or  
41 species proposed for listing (**Appendix F**). The amount of sediment originating on the installation  
42 would likely be greater than the amount generated under Alternative 2, and could reach spawning

1 habitat in the Columbia and Yakima Rivers, but would continue to contribute only a fraction of the  
2 total sediment loads in these rivers. Impacts to fish and aquatic resources would be less than  
3 significant under Alternative 3.

#### 4 **6.3.2.6 Alternative 4 – GTA Actions + CSS Soldiers + Medium CAB**

##### 5 **6.3.2.6.1 Construction Direct and Indirect Effects**

###### 6 **6.3.2.6.1.1 Less than Significant Effects**

7 Under Alternative 4, impacts to aquatic organisms and their habitats from construction projects  
8 would be the same as those discussed under Alternatives 2 and 3. No additional construction projects  
9 are proposed under Alternative 4.

##### 10 **6.3.2.6.2 Live-Fire Training Direct and Indirect Effects**

###### 11 **6.3.2.6.2.1 Less than Significant Effects**

12 The additional live-fire training conducted by the medium CAB at YTC would likely increase the  
13 risk of fire and result in a greater number of fires occurring on YTC annually than under the other  
14 alternatives. The potential effects to fish and aquatic habitats would be similar to those described  
15 under Alternatives 2 and 3. A riparian fire would be unlikely to have population-level effects or  
16 affect aquatic habitats over the long-term. Effects to fish resources would be less than significant  
17 under Alternative 4.

##### 18 **6.3.2.6.3 Maneuver Training Direct and Indirect Effects**

###### 19 **6.3.2.6.3.1 Less than Significant Effects**

20 Under Alternative 4, the increase in off-road vehicle travel would be associated with a greater risk of  
21 aquatic habitat degradation (and therefore indirect effects to fish) than under Alternatives 1, 2, and 3.  
22 Impacts associated with vehicle maneuver training would be similar to those discussed under  
23 Alternatives 1 and 2, but the associated risk would be greater. The additional off-road miles driven  
24 by medium CAB vehicles annually would result in increased risks of habitat degradation through  
25 sedimentation, runoff, channel incision, stream bank erosion, and release of vehicle pollutants.

26 Because medium CAB vehicles would not typically cross water bodies, risks to fish and aquatic  
27 habitats associated with stream fording would be the same as under Alternative 3. Additionally, the  
28 medium CAB could potentially use chaff, resulting in the deposition of chaff fibers into aquatic  
29 habitats. Chaff fibers (made of glass silicate with an aluminum coating) landing on a water body  
30 either would sink to the bottom or be deposited along the shoreline. Given that chaff would rarely be  
31 used during training, significant adverse effects to aquatic species and habitats would not be  
32 expected.

33 Spill control plans and buffers between aquatic habitats and sites of ground training, and between  
34 aquatic habitats and sites of helicopter takeoff and landing, would protect aquatic resources on the  
35 installation. No barriers to fish migration would be created as a result of training activities by the  
36 medium CAB. Therefore, effects to aquatic species would be less than significant.

37 **Special Status Fish Species.** A BA and EFH developed in conjunction with this EIS determined that  
38 proposed activities under Alternative 4 would be unlikely to adversely affect threatened or  
39 endangered fish species that occur on or near the installation (**Appendix F**). Riparian buffers would  
40 continue to minimize the risks to these species.

1       **6.3.2.7    Cumulative Effects**

2       **6.3.2.7.1   Less than Significant Effects**

3       Cumulative effects would be less than significant. Short- and long-term, minor, adverse cumulative  
4       impacts to fish would be expected from past, present, and future actions within the Interior Columbia  
5       River Basin. These actions have contributed and will contribute to reduced water flows and pollution  
6       of fish habitat. Reduced water flows and dams in the Yakima River and Columbia River have limited  
7       salmonid access to the upper portions of these rivers and the Snake River. Erosion, sedimentation,  
8       and pollution associated with construction and training can also adversely impact fish habitat.  
9       Military training activities conducted by all units that use YTC lands for training would cumulatively  
10      impact water quality.

11      Residential and commercial development, road construction, and agricultural practices have  
12      impacted water quality and flows within the Interior Columbia River Basin. Since the early 1900s,  
13      many wetlands have been drained or diked, and streams channelized to promote conversion of these  
14      lands to agricultural or other uses. Although laws exist to protect wetlands and streams, and several  
15      large wetland creation projects have been completed by Ducks Unlimited, the Yakama Nation, and  
16      other public and private groups, loss of these habitats continues in the region.

17      Impacts to fish from habitat loss can be substantial, but these impacts have been mitigated by  
18      aggressive efforts in recent years by the Army, government agencies, conservation groups, and  
19      citizens to protect and enhance fish habitat on and near YTC. The Army has removed invasive  
20      vegetation and used plantings to restore riparian and wetland vegetation in several creeks. The Army  
21      also limits off-road vehicle activity near water bodies. In accordance with Army Regulation 200–1,  
22      YTC will develop a salmonid endangered species management plan to guide the protection and  
23      management of endangered and threatened salmon species that use the installation now or in the  
24      future.

25      Rehabilitation and restoration work has also been conducted on other aquatic bodies in the region.  
26      Beaver removal efforts have helped to keep waterways free-flowing. Sediment and water retention  
27      ponds are routinely constructed in new developments to trap pollutants while allowing storm water  
28      to recharge the groundwater. Ducks Unlimited, WDFW, the Yakama Nation, and other groups have  
29      teamed to create new freshwater habitats for use by fish and wildlife. These wetlands serve as  
30      important nursery, feeding, and resting grounds for an abundance of freshwater fish. Hatcheries have  
31      been constructed by WDFW to provide fish to the Yakima and Columbia Rivers, and the U.S. Army  
32      Corps of Engineers and local counties have been active in trying to reduce the loss of juvenile  
33      salmon killed by power turbines in dams.

34      **6.3.2.8    Mitigation**

35      The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
36      effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
37      limit, repair, reduce, or compensate for the adverse effects.

38      **6.3.2.9    Conclusions**

39      Increased training maneuvers off road and on unimproved roads, as well as helicopter training,  
40      would likely result in minor impacts to fish under the action alternatives. Impacts would be related to  
41      the amount of training. The primary impacts associated with off-road driving are increased soil  
42      compaction and temporary removal of vegetation, leading to increased runoff from sites on which  
43      maneuver training occurs. The potential impact to federally listed species as a result of training

1 would be minor under all alternatives. These species rarely use streams on YTC, and sedimentation  
2 from YTC into the Yakima and Columbia Rivers would continue to be minimal. Under all  
3 alternatives, restoration projects and other management activities would continue to improve  
4 degraded aquatic habitats on YTC.

### 5 **6.3.3 Wildlife Resources**

6 YTC provides habitat for more than 240 species of wildlife including several species of concern  
7 (Army 2002b). During scoping, the public expressed concern about the potential impacts to wildlife  
8 from increased hunting pressure, especially on deer and elk; the effects of increased training  
9 activities at YTC on rare species and habitats on the installation; and the potential for increased fire  
10 danger resulting from increased live-fire training use.

11 Wildlife resource management on YTC focuses on a group of wildlife species of concern: the bald  
12 eagle, the greater sage-grouse, passerine and upland game birds, raptors, and big game species. In  
13 addition, YTC has identified shrub-steppe, riparian, and rare and sensitive areas as habitats that  
14 support all native and desirable non-native wildlife species on the installation. Therefore, impacts to  
15 these species and habitats are of particular importance in this EIS.

#### 16 **6.3.3.1 Resource-specific Significance Criteria**

17 For the purposes of this analysis, impacts to wildlife would be considered significant if Army actions  
18 resulted in:

- 19 • A substantial, long-term (greater than 2 years) reduction in the quantity or quality of habitat  
20 critical to the survival of local populations of common wildlife species;
- 21 • Injury or mortality to common wildlife species, such that species populations would not  
22 recover within 2 years;
- 23 • A reduction in the population, habitat, or viability of a federal or state species of concern or  
24 sensitive species that would result in a trend toward endangerment or the need for federal  
25 listing;
- 26 • Any loss of critical habitat, or nesting habitat critical to birds under the Migratory Bird Treaty  
27 Act, on the installation; or
- 28 • Mortality to a listed species or species proposed for listing that could result in a “take” under  
29 the ESA.

30 In addition to this EIS, a BA has been prepared that addresses federally listed threatened and  
31 endangered species, or species proposed for listing, that could be impacted by the action alternatives  
32 (**Appendix F**).

#### 33 **6.3.3.2 Overview of Impacts to Wildlife Resources by Alternative**

34 **Table 6–10** summarizes the impacts on wildlife resources that would occur under each of the  
35 alternatives.

**Table 6–10 Summary of Potential Impacts to Wildlife Resources at YTC**

<b>Activity Group</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Construction Direct and Indirect Effects	€	€	€	€
Live-fire Training Direct and Indirect Effects	€	U	U	U
Maneuver Training Direct and Indirect Effects	€	U	U	U
Cumulative Effects	€	U	U	U

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

1

2 **6.3.3.3 Alternative 1 – No Action Alternative**

3 **6.3.3.3.1 Construction Direct and Indirect Effects**

4 **6.3.3.3.1.1 Less than Significant Effects**

5 Under Alternative 1, no construction projects are proposed at YTC. Ongoing facility maintenance  
 6 and upgrades would continue to occur at current levels under Alternative 1. These activities would  
 7 have short-term, minor effects on wildlife.

8 **6.3.3.3.2 Live-Fire Training Direct and Indirect Effects**

9 **6.3.3.3.2.1 Less than Significant Effects**

10 The risk of fire resulting from gunnery training and other activities would continue at current levels  
 11 under Alternative 1, with corresponding risks to wildlife. It is expected that impact areas and  
 12 adjacent areas would continue to be most susceptible to burning. In the past 20 years, more than one  
 13 fourth of the acreage on YTC has burned, leading to substantial alteration of habitat. Fires would  
 14 cause some mortality to wildlife, although many animals would be able to flee from fire. More  
 15 sedentary species, such as small mammals and ground-nesting birds, would continue to be at risk for  
 16 injury or mortality from fires. Additionally, wildlife habitat would be impacted by fire. Fire is an  
 17 integral part of the shrub-steppe ecosystem, and a factor under which plant and animal communities  
 18 have evolved. However, there has been a substantial increase in fire during the last 100 years, with  
 19 the result that grassland communities, including fire-intolerant weeds, have replaced shrubland  
 20 communities in many burned areas (Army 2002b). In addition, crested wheatgrass and other non-  
 21 native species have been used to control erosion and stabilize the soil in burned and other disturbed  
 22 areas. This practice has provided good ground cover and site stability, but has provided little habitat  
 23 for wildlife.

24 **6.3.3.3.3 Maneuver Training Direct and Indirect Effects**

25 **6.3.3.3.3.1 Less than Significant Effects**

26 The potential impacts to wildlife from training activities under Alternative 1 were analyzed in the  
 27 previous EAs prepared for the SBCTs and other Fort Lewis units that train at YTC (Army 2001b,  
 28 2004b). These EAs predicted minor impacts to wildlife under the existing management policies.

29 Under this alternative, there would be no major changes in the types and amounts of training  
 30 occurring on YTC. Off-road vehicle travel and the incidence of fire and digging activities would  
 31 remain much the same as at present.

1 Direct impacts to wildlife in the form of injury and mortality would occur as a result of off-road  
2 vehicle movements. Behavioral impacts resulting from training-related noises would cause wildlife  
3 to disperse, and could alter wildlife access to food, water, and cover during portions of the day and  
4 night during training. Gladwin et al. (1988) noted that wildlife are startled by artillery noise, but soon  
5 resume their normal behavior. Because training has been ongoing at YTC for decades, it is likely that  
6 some resident and migratory species that utilize the installation have adapted to these activities;  
7 therefore, impacts to these species would be minor. It is expected that impacts to species that are less  
8 tolerant of noise and human activity would be moderate.

9 Impacts to vegetation from off-road vehicle travel, discussed in **Section 6.3.1.3.3.1**, would indirectly  
10 affect wildlife by altering habitat. Alternative 1 would continue to result in impacts to 3 to 5 percent  
11 of the available training lands, and a greater percentage of the more level training lands, annually.

12 In some areas, impacts would last a few years, but could last longer if the site was re-disturbed. Use  
13 of the same areas in multiple years would increase the time required for the site to recover from a  
14 disturbance. It is expected that, while some areas would be able to recover to near pre-disturbance  
15 conditions, others would suffer lasting impacts in the form of altered community structure (e.g.,  
16 shrubland converted to grassland) or species composition (e.g., non-native species replacing native  
17 species on a site). The loss of shrubland structure and complexity reduces the number of niches  
18 available to wildlife, while non-native grasses and forbs are often less palatable to wildlife and  
19 provide inadequate cover.

20 **Special Status Wildlife Species.** The potential impacts to wildlife special status species from training  
21 were evaluated in BAs prepared for the two SBCTs and other units stationed at Fort Lewis, but that  
22 train at YTC (Army 2001a, 2004a, 2005b, 2009a). Species of concern most likely to be affected by  
23 SBCT training include the bald eagle, greater sage-grouse, several species of hawk, and the  
24 burrowing owl. Impacts to these species would be minor. Maneuver activities near Hanson Creek  
25 and the Columbia River have the potential to disturb foraging and roosting eagles, but Fort Lewis  
26 Regulation 420–5 limits the types of vehicle and flight activities that can occur in this area.  
27 Maneuver and other off-road vehicle activities are prohibited in sage-grouse protection areas and  
28 near leks from March 1 through June 15, which affords protection to breeding and nesting adults and  
29 their offspring during spring. Throughout the rest of the year, bivouacking and excavations are not  
30 permitted in sage-grouse protection areas, and maneuver training is limited. Noise and human  
31 disturbance can affect hawk nesting and foraging activities, but nests often are located in rock  
32 outcrops where Stryker vehicles are unlikely to travel, and military activities are prohibited within  
33 1,640 feet (500 m) of ferruginous hawk nests. Although burrowing owls are rare on the installation,  
34 their burrows are susceptible to collapse from military vehicles; when found, nest sites are protected  
35 from military activity with Seibert stakes. With these protective measures in place, effects to special  
36 status species should continue to be less than significant.

#### 37 **6.3.3.4 Alternative 2 – GTA Actions**

##### 38 **6.3.3.4.1 Construction Direct and Indirect Effects**

###### 39 **6.3.3.4.1.1 Less than Significant Effects**

40 Under Alternative 2, wildlife found near construction sites would be impacted by noise associated  
41 with equipment and vehicles. However, there are already high levels of human activity and noise in  
42 the vicinity of the YTC training areas to which some of the more tolerant wildlife species have  
43 adapted. Wildlife could also be impacted by fuel spills associated with construction activities and  
44 equipment. As these spills would be cleaned up immediately, impacts to wildlife would be minor.  
45 Construction activities would follow federal, state, and local regulations; erosion BMPs; and

1 SPCCPs in order to minimize the risks of sedimentation into or contamination of wildlife habitats on  
2 the installation. Therefore, overall impacts of construction activities on wildlife, including species of  
3 concern, would be minor.

#### 4 **6.3.3.4.2 Live-Fire Training Direct and Indirect Effects**

##### 5 **6.3.3.4.2.1 Significant Effects**

6 Gunnery activities would produce short, loud blasts that could startle nearby wildlife, temporarily  
7 interfering with their activities. Because some wildlife on the installation have habituated to  
8 occasional loud noises at impact areas, an increase in the frequency of these loud noises would not  
9 be expected to have significant effects on wildlife populations. Species that currently avoid the  
10 installation because of the existing levels of noise would continue to do so.

11 Ongoing fire management programs would continue to minimize the risk of large fires, but would be  
12 unable to eliminate such a risk completely. It is expected that there would be more fire-related  
13 mortality under this alternative than under Alternative 1. However, the greatest impact to wildlife  
14 would be loss and degradation of habitat. Sagebrush obligates, such as greater sage-grouse, would be  
15 the most affected by the increased fire potential on YTC.

16 Fire is a threat to sagebrush communities and the species that depend on them because it kills big  
17 sagebrush. Additionally, repeated fires can make an area vulnerable to invasions by noxious weeds,  
18 such as downy brome and knapweed. Fire regimes in the lower Columbia River Basin were  
19 historically characterized by regular, low-intensity burns, which created a mosaic of seral stages.  
20 Following fire, natural re-establishment of sagebrush is slow (about 20 to 30 years; Britton and Clark  
21 1985). Several thousand acres burn on YTC each year. In recent years, burns have occurred in areas  
22 with mature sagebrush stands, as troops have trained in more remote areas of the installation and  
23 away from established firing ranges. As a result, large tracts of sagebrush habitat have been lost due  
24 to fire, reducing the amount of sagebrush habitat. This loss of habitat, especially if it increases with  
25 higher levels of training proposed under Alternative 2, could have a significant impact on sagebrush  
26 obligate species. Sage-grouse are especially susceptible to loss of habitat due to their dependence on  
27 sagebrush and their low population numbers on the installation. With the loss and fragmentation of  
28 shrub-steppe habitat, fire poses a significant threat to much of the remaining greater sage-grouse  
29 habitat in Washington. Fires caused by live-fire training could remove large areas of suitable sage-  
30 grouse habitats, resulting in a significant adverse effect to the species.

##### 31 **6.3.3.4.2.2 Less than Significant Effects**

32 Gunnery activities would produce short, loud blasts that could startle nearby wildlife, temporarily  
33 interfering with their activities. Because some wildlife on the installation have habituated to  
34 occasional loud noises at impact areas, an increase in the frequency of these loud noises would not  
35 be expected to have significant effects on wildlife populations. Species that currently avoid the  
36 installation because of the existing levels of noise would continue to do so.

#### 37 **6.3.3.4.3 Maneuver Training Direct and Indirect Effects**

##### 38 **6.3.3.4.3.1 Significant Effects**

39 The types of impacts to wildlife and their habitats described for Alternative 1 would be similar to  
40 those occurring under Alternative 2. However, the number of individuals and acres affected would  
41 likely increase in proportion to the level of training activity. Given the 5-fold increase in off-road  
42 vehicle travel under Alternative 2, it is expected that impacts to wildlife and their habitats would be  
43 substantially greater than under Alternative 1. As discussed under Vegetation, if new units conduct

1 their training in a few small, heavily used areas rather than over a large portion of the installation,  
2 adverse effects to the highest quality sagebrush habitat would be minimized, and effects to wildlife  
3 would be less than significant. However, since there are no regulations or restrictions in place to  
4 limit training to heavily used areas, it is assumed that all available training lands could be used for  
5 maneuver training if needed. Under such a scenario, the impacts of military training on wildlife and  
6 their habitats would be significant.

7 As discussed in **Section 6.3.1.4.3.1**, SBCT training levels proposed under Alternative 2 could have a  
8 significant impact on shrub-steppe vegetation. Therefore, this level of training also could have a  
9 significant effect on the wildlife that depend upon this vegetation for all or part of their life  
10 requisites. Specifically, damage to vegetation would impact vegetative structure and the availability  
11 of perching, nesting, hiding, and foraging sites for wildlife. The recovery afforded training lands  
12 would be unlikely to allow for complete recovery of shrub-steppe vegetation, and it is likely that a  
13 substantial, long-term reduction in habitat of sagebrush obligate species would occur. A study of  
14 Stryker vehicle effects to vegetation at YTC showed that plant cover and height were negatively  
15 correlated, while the amount of bare ground was positively correlated with Stryker vehicle travel  
16 intensity (Jones 2002). For big sagebrush sites, plant cover and height decreased by 50 percent or  
17 more after only two vehicle passes over an area. Additionally, it is expected that the prevalence of  
18 non-native species would increase in many areas used for maneuver training, thereby reducing the  
19 value of the lands as wildlife habitat.

20 **Special Status Wildlife Species.** According to a BA prepared in conjunction with this EIS, no  
21 federally listed threatened or endangered wildlife are found on YTC (**Appendix F**). However,  
22 training activities would adversely affect non-federally listed special status wildlife species on YTC.

23 Special status species that use shrub-steppe habitats would be most at risk for adverse impacts from  
24 higher levels of training. Greater sage-grouse and many species of passerines and upland game birds  
25 use shrub-steppe habitat for all or part of their life requisites. Shrub-steppe habitat is also important  
26 to raptors and mule deer.

27 More than one-fourth of avian species of concern in Washington use habitats within the shrub-steppe  
28 ecosystem including migratory birds (WDFW 2002). For species that use sagebrush for food or  
29 cover, damage to sagebrush plants from vehicle maneuvers would lead to loss of habitat (forage,  
30 nesting, and cover), and vehicles could directly harm adults or young on the nest. Special status  
31 passerine bird species that could be impacted by the proposed training activities include several  
32 shrub-steppe obligates. Proposed training activities could cause the injury and loss of migratory and  
33 other birds, but would not result in significant adverse effects on bird populations. Training activities  
34 would comply with the USFWS rule (as directed by Section 315 of the National Defense  
35 Authorization Act of FY 2003) that authorizes such take, with limitations, that result from military  
36 readiness activities of the Armed Forces (USFWS 2007).

37 Special status raptor species that are likely to be found on YTC include the bald eagle, burrowing  
38 owl, ferruginous hawk, and golden eagle. Raptors mostly nest in trees, cliffs, and rock outcrops, but  
39 forage in shrub-steppe habitat. Loss of shrub-steppe habitat as a result of higher levels of maneuver  
40 training would adversely affect nest, roost, and perch sites in trees and prey species for hawks  
41 including rodents and small birds. Burrowing owl nests would also be susceptible to impacts,  
42 although all known active burrowing owl nest sites are protected from vehicle maneuvers by Seibert  
43 stakes.

44 The Columbia Basin population of the greater sage-grouse, a candidate for federal listing as  
45 threatened, would be particularly at risk for adverse effects from increased maneuver training under

1 Alternative 2. YTC's Western Sage-Grouse Management Plan (June 1998) provides for the  
2 protection, restoration/enhancement, and monitoring of known sage-grouse leks and nesting areas  
3 (sage-grouse protection areas). The sage-grouse habitat receives seasonal (from February to June)  
4 protection from military activity. During the remainder of the year, breeding and foraging habitat in  
5 sage-grouse protection areas would be protected from bivouacking and digging, and maneuver  
6 training would be closely monitored and managed, with training area use rotated to promote habitat  
7 recovery following training events. Pyrotechnics (e.g., tracer rounds, flares, smoke pots) are  
8 restricted during periods of increased fire danger. A few leks (MPRC, and Range 15) are outside of  
9 sage-grouse protection areas and are not afforded protection during the breeding period. Because  
10 most nesting and brood rearing activity occurs within 5 miles of leks, higher levels of vehicle activity  
11 near these leks during all seasons would increase potential for habitat loss and mortality or injury of  
12 adult sage-grouse or their young. Although observations are scarce, males at the MPRC and Range  
13 15 leks appear to be subject to human disturbance. An increase in human disturbance associated with  
14 higher levels of training would make shrub-steppe habitat less suitable for sage-grouse due to loss of  
15 vegetation. Thus, it is reasonably foreseeable that increased habitat degradation and disturbance  
16 associated with increased maneuver training under Alternative 2 could have a significant impact on  
17 sage-grouse populations given their downward trend in population numbers on YTC.

### 18 **6.3.3.5 Alternative 3 – GTA Actions + CSS Soldiers**

#### 19 **6.3.3.5.1 Construction Direct and Indirect Effects**

##### 20 **6.3.3.5.1.1 Less than Significant Effects**

21 Under Alternative 3, impacts to wildlife from construction would be the same as those discussed  
22 under Alternative 2. No additional construction projects are proposed under Alternative 3.

#### 23 **6.3.3.5.2 Live-Fire Training Direct and Indirect Effects**

##### 24 **6.3.3.5.2.1 Significant Effects**

25 Under Alternative 3, the noise associated with live-fire training would be only slightly greater than  
26 under Alternative 2. Noise-related effects would be less than significant.

27 Since the amount of live-fire training by CSS units would be minimal, the risk of fire would only be  
28 slightly greater than under Alternative 2. Therefore, effects to wildlife habitat associated with live-  
29 fire training would be similar to those discussed under Alternative 2. The likely loss of big  
30 sagebrush-bunchgrass habitat on YTC over the long-term, which could be slightly greater than under  
31 Alternative 2, would be significant.

#### 32 **6.3.3.5.3 Maneuver Training Direct and Indirect Effects**

##### 33 **6.3.3.5.3.1 Significant Effects**

34 Under Alternative 3, a total of approximately 36,815 to 55,225 acres (14,900 to 22,350 ha) of habitat  
35 could be affected by maneuver training annually, although some of this acreage would be areas  
36 where training by SBCTs, GTA, and CSS units overlaps. Because most training activities by CSS  
37 units are concentrated in assembly areas, impacts to intact shrub-steppe habitat from maneuver  
38 training would not be much greater than under Alternative 2. As under Alternative 2, maneuver  
39 training would potentially have a significant impact on shrub-steppe vegetation and the wildlife that  
40 depends upon this vegetation for all or part of their life requisites. It is expected that the prevalence  
41 of non-native species would increase in many of the areas in which maneuver training would take  
42 place, reducing the value of the lands as wildlife habitat.

1 **Special Status Wildlife Species.** According to a BA prepared in conjunction with this EIS, no  
2 federally listed threatened or endangered wildlife are found on YTC (**Appendix F**). However,  
3 training activities would adversely affect non-listed special status wildlife species on YTC. The types  
4 of effects and the species affected would be much the same as those discussed under Alternative 2. It  
5 is expected that most populations of sensitive wildlife species would be protected from disturbance  
6 during the breeding period by existing regulations. However, sage-grouse at some leks are subject to  
7 human disturbance that could interfere with breeding success. Impacts to sage-grouse and other  
8 shrub-steppe obligates would potentially be significant as a result of habitat degradation.

### 9 **6.3.3.6 Alternative 4 – GTA Actions + CSS Soldiers + Medium CAB**

#### 10 **6.3.3.6.1 Construction Direct and Indirect Effects**

##### 11 **6.3.3.6.1.1 Less than Significant Effects**

12 Under Alternative 4, impacts to wildlife from construction would be the same as those discussed  
13 under Alternatives 2 and 3. No additional construction projects are proposed under Alternative 4.

#### 14 **6.3.3.6.2 Live-Fire Training Direct and Indirect Effects**

##### 15 **6.3.3.6.2.1 Significant Effects**

16 Because some wildlife on the installation have habituated to occasional loud noises at impact areas,  
17 an increase in the frequency of loud noises associated with live-fire training would not be expected  
18 to have significant effects on wildlife populations.

19 Under Alternative 4, the potential effects to wildlife and their habitat would be similar to those  
20 described under Alternatives 2 and 3, but would be greater in extent because of the greater risk of  
21 fire under this alternative. Fires caused by live-fire training could remove large areas of shrub-steppe  
22 habitats, resulting in a significant impact to sage-grouse and other sagebrush-dependent species.

#### 23 **6.3.3.6.3 Maneuver Training Direct and Indirect Effects**

##### 24 **6.3.3.6.3.1 Significant Effects**

25 Helicopter training by the medium CAB could affect wildlife by disturbing wildlife and by collisions  
26 with birds. Low-level flights by helicopters would cause additional disturbance to wildlife. The loud  
27 noise and wind disturbance associated with helicopters would result in a greater incidence of  
28 distractions to wildlife than under the other alternatives, and could cause some animals to flee the  
29 area. In most cases, animals would be able to resume normal activities after the disturbance ceased,  
30 although some long-term behavioral modification and interference with life requisite activities could  
31 occur. The species most susceptible to noise disturbance would be sensitive species, such as the bald  
32 eagle, which are discussed below. It is expected that bird-aircraft collisions would be infrequent.

33 Although wildlife could potentially inhale or ingest chaff fibers, it is not expected that significant  
34 effects to wildlife would occur because chaff would be used very infrequently during training.

35 Under Alternative 4, human disturbance and off-road vehicle travel associated with maneuver  
36 training would be greater than under the other alternatives. A total of approximately 37,990 to  
37 56,985 acres (15,375 to 23,060 ha) of wildlife habitat could be affected by maneuver training  
38 annually, although some of this acreage would be areas where training by SBCTs, GTA, CSS, and  
39 CAB units overlaps. As under Alternatives 2 and 3, long-term degradation of wildlife habitat would  
40 potentially constitute a significant adverse effect to wildlife species that depend on shrub-steppe

1 habitat. Additionally, more animals would be hit or crushed by vehicles, although it is expected that  
2 associated mortality would occur infrequently.

3 ***Special Status Wildlife Species.*** According to a BA prepared in conjunction with this EIS, no  
4 federally listed threatened or endangered wildlife are found on YTC. However, training activities  
5 would adversely affect non-listed wildlife species, and potentially to a greater degree than under the  
6 other alternatives. The types of effects from ground training, and the species affected, would be  
7 much the same as those discussed under Alternatives 2 and 3. Additional impacts to sensitive  
8 wildlife species would be associated with helicopter training. Although increased helicopter traffic  
9 would cause increased avoidance flights and disruption of feeding to wintering bald eagles, existing  
10 buffers and altitude restrictions would prevent significant effects to eagles. Greater sage-grouse  
11 would be at an increased risk for disturbance during nesting and brood rearing from disturbance from  
12 vehicles and helicopters, and loss of habitat to fire. Regulations that prohibit overflights by aircraft  
13 within 0.6 mile (1 km) of leks during the lek protection period (March 1 to May 15), as well as the  
14 fire management procedures, would help to reduce impacts to the greater sage-grouse. Protection for  
15 other sensitive species on the installation would also continue through existing management  
16 programs for species and their habitats (particularly intact shrub-steppe and riparian communities).  
17 However, as under the other action alternatives, impacts to sage grouse and other shrub-steppe  
18 obligates would potentially be significant under Alternative 4.

19 Proposed training activities could cause the injury and loss of migratory and other birds, but would  
20 not result in significant adverse effects on bird populations. Training activities would comply with  
21 the USFWS rule (as directed by Section 315 of the National Defense Authorization Act of FY 2003)  
22 that authorizes such take, with limitations, that result from military readiness activities of the Armed  
23 Forces (50 CFR Part 21).

### 24 **6.3.3.7 Cumulative Effects**

#### 25 **6.3.3.7.1 Significant Effects**

26 Cumulative effects would be less than significant under Alternative 1, but would be significant under  
27 all the other alternatives. Short- and long-term, adverse, cumulative impacts to wildlife would occur  
28 as a result of Army actions, as well as actions taking place off the installation. Past and present  
29 military training activities have resulted in the mortality and injury of wildlife and loss of habitat.  
30 Noise and disturbance associated with military personnel and equipment has caused some wildlife to  
31 avoid training areas for varying periods of time. Past disturbances in training lands and the  
32 cantonment area have favored the spread of noxious weeds and other invasive species to the  
33 detriment of native species. The substantial increases in military training from current levels under  
34 this alternative would have a significant impact on wildlife, as discussed above.

35 An increase in the regional population would lead to more residential and commercial development  
36 and conversion of lands to agriculture, mortality and injury to wildlife, and loss and fragmentation of  
37 habitat. With the exception of a few large tracts of land (e.g., Hanford Reservation, Crab Creek  
38 Wildlife Area), wildlife habitat in much of the remaining portions of the Interior Columbia River  
39 Basin is found in fragmented patches not conducive to the welfare of species that require large tracts  
40 of contiguous habitat. In addition, fires at the Hanford Reservation eliminated certain components of  
41 shrub-steppe communities in many areas, making the existing intact shrub-steppe on YTC more  
42 important on a regional scale.

43 Loss of habitat due to development, agriculture, recreation (horseback riding and all-terrain vehicle  
44 use), and military training has been especially harmful to shrub-steppe species. Populations of  
45 species that are endemic to these habitats include greater sage-grouse, several species of passerines,  
46 upland game birds, and raptors, and a variety of small mammals (Army 2002b).

1 For several decades, the Army has undertaken programs to protect and enhance wildlife habitat on  
2 the installation to offset impacts and to comply with federal and state laws and programs. Seeps,  
3 riparian wetlands, and freshwater spring wetlands have been Seibert-staked, as have areas containing  
4 special status plant species. Projects have been implemented or are underway to improve wetland  
5 and upland habitats. The Army has identified wildlife and habitats of concern on YTC, and has  
6 focused much of its efforts on protecting these species and enhancing habitats. Implementation of  
7 best management practices and management programs would help reduce impacts to wildlife.

### 8 **6.3.3.8 Mitigation**

9 No mitigation measures would be required to address impacts of Alternative 1 on wildlife resources.

10 Significant impacts that could potentially occur under Alternatives 2, 3, and 4 include: a substantial,  
11 long-term (greater than 2 years) reduction in the quantity or quality of habitat critical to the survival  
12 of local populations of common wildlife species, and a reduction in the population, habitat, or  
13 viability of a federal or state species of concern or sensitive species that would result in a trend  
14 toward endangerment or the need for federal listing. The following mitigation is proposed to help  
15 reduce impacts to wildlife habitat from fire and maneuver training:

- 16 • Rehabilitate the majority of training lands that are impacted by fire and maneuver training,  
17 with a focus on recovering the community types that have been degraded by the action.  
18 However, the ability of YTC to rehabilitate training lands would be contingent upon Army  
19 funding.

20 Because higher levels of training are anticipated under Alternatives 3 and 4, respectively, than  
21 Alternative 2, it is assumed that higher levels of management effort would be required under these  
22 alternatives than under Alternative 2 because more training lands would be damaged under these  
23 alternatives.

### 24 **6.3.3.9 Conclusions**

25 Significant impacts to wildlife resources are expected to occur under the action alternatives,  
26 especially Alternative 4, as a result of a potentially substantial increase in fire risk and in vehicle and  
27 helicopter activity on YTC each year. Training-related impacts would be lowest under Alternative 1  
28 and greatest under Alternative 4.

## 29 **6.4 WETLANDS**

30 Construction- and training-related ground-disturbing activities can adversely affect wetlands in  
31 several ways. They can directly affect wetlands through direct disturbance. Indirectly, they can cause  
32 sedimentation of wetlands by disturbing soils and exposing them to wind and water, reduced  
33 infiltration, and increased runoff. Impacts to wetlands were assessed by evaluating the potential  
34 effects of project construction and operations activities on wetlands directly. The evaluation also  
35 considered the indirect effects of project activities on soils and water resources.

### 36 **6.4.1 Resource-specific Significance Criteria**

37 The significance of wetlands effects was determined using the following considerations:

- 38 • Compliance with policies and regulations related to wetlands conservation and protection,  
39 including the Clean Water Act, EO 11990, Protection of Wetlands, and Army Reg. 200–1.
- 40 • Percentage losses in size and functions of local and regional wetland resources.

**6.4.2 Overview of Impacts to Wetlands by Alternative**

Table 6–11 summarizes the impacts on wetlands that would occur under each of the alternatives.

**Table 6–11 Summary of Potential Impacts to Wetlands at YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	•	•	•	•
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	€	€	€	€
Cumulative Effects	€	€	€	€

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

**6.4.3 Alternative 1 — No Action Alternative**

**6.4.3.1 Construction Direct and Indirect Effects**

**6.4.3.1.1 No Effects**

No projects would be constructed at YTC under this alternative. Consequently, no wetlands at YTC would be disturbed by construction.

**6.4.3.2 Live-fire Training Direct and Indirect Effects**

**6.4.3.2.1 Less than Significant Effects**

Implementation of this alternative would continue the less than significant live-fire training impacts that currently affect wetlands on YTC. Training on the live-fire ranges would not disturb wetlands directly since wetlands are off-limits.

Indirectly, fugitive dust generated by training could drift from the ranges and be deposited in downwind wetlands. However, this impact would be less than significant because the dust would be limited by natural moisture and standard dust suppression measures, and periodic precipitation at YTC would flush out any fugitive dust deposited in them. No such wetland dust deposition problems have been reported at YTC to date.

Another continued indirect effect would be potential for a wildfire to burn a wetland. The potential for accidental wildfire ignition under Alternative 1 would remain the same as it is currently and the effects of wildfires burning wetlands are expected to be less than significant. Wetlands present on YTC are primarily occupied by cattails, rushes, and sedges, which recover rapidly after burning.

**6.4.3.3 Maneuver Training Direct and Indirect Effects**

**6.4.3.3.1 Less than Significant Effects**

The amount of training conducted annually would not increase under this alternative. Therefore, sedimentation into water bodies on YTC associated with off-road vehicle travel would be much the same as over recent years.

1 With maneuver training, vehicles would be crossing streams at vehicle stream crossings. On YTC,  
2 vehicles only cross waterways at designated crossings. At unhardened crossing locations, some  
3 discharge of suspended sediments from the stream bank and bed into the water and downstream  
4 wetlands would likely occur. At hardened crossings, vehicles would carry some soil from upland  
5 areas into streams, temporarily affecting the water quality and potentially depositing the sediment in  
6 wetlands downstream. Vehicles crossing streams at locations with culverts would not discharge  
7 sediment into the streams. Overall, any impacts to water quality in wetlands from vehicles fording  
8 creeks would be localized, less than significant, and temporary.

9 Digging activities could result in some increased sedimentation, as the associated loss of plant cover  
10 could expose soil to wind and water, reduce infiltration, and increase runoff. Given that the amount  
11 of land exposed to digging at any given time is very small, and that areas that support multiple  
12 excavations are reseeded once training is complete, the amount of sedimentation into waterways as a  
13 direct or indirect result of digging would have less than significant, long-term effects on wetlands.

14 The risk for leaks and spills during fueling or training would remain the same as existing conditions  
15 under Alternative 1. The Training Unit SOP prohibits POL vehicles from parking closer than 100  
16 meters from drainages, and requires that refueling points be located at least 200 meters from  
17 drainages. In addition, because vehicles would only cross streams at designated crossings and YTC  
18 would require that all spills be cleaned up, the risk of contamination of water resources as a result of  
19 training would continue to be low.

## 20 **6.4.4 Alternative 2 — GTA Actions**

### 21 **6.4.4.1 Construction Direct and Indirect Effects**

#### 22 **6.4.4.1.1 No Effects**

23 Construction of the SFF Range and MPMG Range at Range 5 would not affect any wetlands because  
24 the construction footprint for both ranges is located outside of wetland areas. Therefore, no wetlands  
25 would be disturbed.

### 26 **6.4.4.2 Live-fire Training Direct and Indirect Effects**

#### 27 **6.4.4.2.1 Less than Significant Effects**

28 The effects of live-fire training on wetlands would be similar to those for Alternative 1. No direct  
29 effects are anticipated; however, indirect effects would be greater due to increased live-fire training  
30 under Alternative 2. The potential for accidental wildfire ignition would increase because of the  
31 increased frequency in the use of explosives and munitions, as well as the presence of additional  
32 vehicles, and flammable materials in training areas. Although the risk of wetlands burning because  
33 of wildfire would increase under Alternative 2, the effects of wildfires burning wetlands are expected  
34 to be less than significant since wetlands present on YTC are primarily occupied by cattails, rushes,  
35 and sedges, which recover rapidly after burning.

### 36 **6.4.4.3 Maneuver Training Direct and Indirect Effects**

#### 37 **6.4.4.3.1 Less than Significant Effects**

38 The types of impacts on wetlands from maneuver training under Alternative 2 would be the same as  
39 those discussed under Alternative 1. However, the potential for sedimentation into water bodies on  
40 YTC associated with off-road vehicle travel and digging activities would increase due to the increase  
41 in annual maneuver training under Alternative 2. In addition, with the increase in training, there  
42 would likely be an increase in the number of vehicle stream crossings occurring on YTC. As

1 discussed under Alternative 1, on YTC, vehicles only cross waterways at designated crossings.  
2 Overall, with the implementation of the management practices described under Alternative 1, any  
3 impacts to water quality in wetlands from maneuver training would be localized, less than  
4 significant, and temporary.

5 Because there would be an increase in the number of vehicles, munitions, and other equipment used  
6 during maneuver training under this alternative, there would also be a greater risk for leaks and spills  
7 to occur during fueling or training. However, with the implementation of the Training Unit SOP and  
8 BMPs, the risk of contamination of water resources because of increased training would be low.

#### 9 **6.4.5 Alternative 3 — GTA Actions + CSS Soldiers**

##### 10 **6.4.5.1 Construction Direct and Indirect Effects**

###### 11 **6.4.5.1.1 No Effects**

12 No additional construction projects are proposed under Alternative 3. Therefore, construction-related  
13 wetland impacts would be the same as those discussed under Alternative 2.

##### 14 **6.4.5.2 Live-fire Training Direct and Indirect Effects**

###### 15 **6.4.5.2.1 Less than Significant Effects**

16 Live-fire training impacts on wetlands would be similar to those described under Alternative 2.  
17 While these impacts would be slightly greater under Alternative 3, they would remain less than  
18 significant. While the potential for accidental wildfire ignition would increase because of the  
19 increased frequency in the use of explosives and munitions, vehicles, and flammable materials in  
20 training areas, the effects of wildfires burning wetlands are also expected to be less than significant.  
21 Wetlands present on YTC are primarily occupied by cattails, rushes, and sedges, which recover  
22 rapidly after burning.

##### 23 **6.4.5.3 Maneuver Training Direct and Indirect Effects**

###### 24 **6.4.5.3.1 Less than Significant Effects**

25 Maneuver training effects on wetlands under Alternative 3 would be similar to those described under  
26 Alternative 2, but would be slightly greater due to an increase in maneuver training activities  
27 associated with CSS Soldiers. Since the amount of training conducted annually would increase from  
28 Alternatives 1 and 2, the potential for sedimentation into water bodies on YTC associated with off-  
29 road vehicle travel and digging activities, as well as the potential for contamination due to a spill or  
30 leak, would also increase. However, these effects would remain less than significant.

#### 31 **6.4.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

##### 32 **6.4.6.1 Construction Direct and Indirect Effects**

###### 33 **6.4.6.1.1 No Effects**

34 No additional construction projects are proposed under Alternative 4. Therefore, construction-related  
35 wetland impacts would be the same as those discussed under Alternative 2.

##### 36 **6.4.6.2 Live-fire Training Direct and Indirect Effects**

###### 37 **6.4.6.2.1 Less than Significant Effects**

38 Live-fire training impacts on wetlands would be similar to those described under Alternative 2.  
39 While these impacts would be greater under Alternative 4, they would remain less than significant.

1 Although training would increase under Alternative 4, training on the live-fire ranges is unlikely to  
2 disturb wetlands directly because wetlands are off limits. In addition, although the potential for  
3 accidental wildfire ignition would increase due to increased training, the effects of any increased  
4 number of wildfires burning wetlands are expected to be less than significant. Wetlands present on  
5 YTC are primarily occupied by cattails, rushes, and sedges, which recover rapidly after burning.

### 6 **6.4.6.3 Maneuver Training Direct and Indirect Effects**

#### 7 **6.4.6.3.1 Less than Significant Effects**

8 Maneuver training effects on wetlands under Alternative 4 would be similar to those described under  
9 Alternative 2. Since the amount of training conducted annually would increase from Alternatives 1,  
10 2, and 3, the potential for sedimentation into water bodies on YTC associated with off-road vehicle  
11 travel and digging activities, as well as the potential for contamination due to a leak or spill, would  
12 also increase. However, this increase would be minor since many medium CAB maneuver training  
13 activities would be conducted aurally. Implementation of measures, such as designated vehicle  
14 stream crossings, avoidance of wetland areas, and the Training Unit SOP, would keep wetland  
15 impacts to less than significant.

### 16 **6.4.7 Cumulative Effects**

#### 17 **6.4.7.1 Less than Significant Effects**

18 Cumulative effects would be less than significant under all of the alternatives. As discussed above,  
19 direct and indirect effects to wetlands generated by the alternatives themselves would be less than  
20 significant. These impacts could overlap the effects of one or more of the reasonably foreseeable  
21 future actions, such as ongoing training by visiting units and HIMARS training. Despite legal  
22 measures, wetlands are still disappearing regionally; however, wetland areas at YTC have not  
23 diminished, and conditions overall have been improved for a number of years. Implementation of  
24 BMPs and mitigation measures identified for these other actions would limit the cumulative effects  
25 to less than significant.

### 26 **6.4.8 Mitigation**

27 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
28 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
29 limit, repair, reduce, or compensate for the adverse effects.

## 30 **6.5 WILDFIRE MANAGEMENT**

31 Many ecosystems require fire for function and productivity, and fire is not always considered an  
32 adverse impact. However, wildfires are a concern on YTC because of the potential impact on human  
33 activities and structures, sensitive biological and cultural resources, air quality, and military  
34 operations. Alteration of the natural fire regime by increasing the rate of ignitions is a potential  
35 adverse impact. This is especially important in the shrub-steppe ecosystems, like those present at  
36 YTC, where increased fire frequency has led to major shifts in plant communities. The result has  
37 been a decrease in size and density of late seral stage native vegetation communities, and an increase  
38 in fire-susceptible communities. This has also impacted soil retention, water quality, wildlife, and  
39 habitat. In addition, large-scale fire is one of the most significant threats to the federal candidate  
40 species greater sage-grouse, which occurs at YTC. This species requires mid- to late-successional  
41 sagebrush habitat, and natural re-establishment of sagebrush is slow, taking up to 20 to 30 years.

Each alternative was evaluated for its potential to impact wildfire risk adversely and its affect on wildfire management. Impacts from cantonment and range construction and live-fire and maneuver training were evaluated for their potential to affect wildfire risk adversely. Construction of facilities and the facilities themselves are not considered to impact wildfire risk adversely. Live-fire and maneuver training were identified as the primary activities capable of increasing the rate of fire to above natural frequencies. Fire-related practices and policies at YTC applicable to each alternative are presented in **Chapter 5**, and were evaluated on their ability to address appropriate changes to wildfire risk or management associated with implementing the stationing and realignment decisions of the 2007 GTA PEIS, as well as the future stationing of CSS Soldiers and a medium CAB, at YTC.

The following issue relating to wildfire management at YTC was identified during public scoping. This issue is addressed in the following sections for each alternative.

- The potential for increased fire danger resulting from increased live-fire training use of YTC.

### 6.5.1 Resource-specific Significance Criteria

Impact determinations were based on the assumption that the existing wildfire condition is acceptable. The following criteria were used to assess impacts on wildfire management and risk:

- Increased frequency of accidental ignitions from live-fire and maneuver training; and
- Suitability of fire management practices, policies, and firefighting resources to respond to and manage an increase in fire ignitions.

### 6.5.2 Overview of Impacts to Fire Management by Alternative

**Table 6–12** summarizes the impacts on fire management that would occur under each of the alternatives.

**Table 6–12 Summary of Potential Impacts to Wildfire Management at YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	N/A	•	•	•
Live-fire Training Direct and Indirect Effects	€	W	W	W
Maneuver Training Direct and Indirect Effects	€	W	W	W
Cumulative Effects	€	W	W	W

U = Significant Effects

W = Significant but Mitigable to less than Significant Effects

€ = Less than Significant Effects

+ = Beneficial Effect

N/A = Not Applicable

• = No Effects

### 6.5.3 Alternative 1 — No Action Alternative

#### 6.5.3.1 Construction Direct and Indirect Effects

##### 6.5.3.1.1 Not Applicable

No cantonment area or training range construction is anticipated at YTC under Alternative 1; therefore, impact analysis is Not Applicable. There would be no increased risk of wildfire, and no impacts to wildfire management are anticipated.

### 6.5.3.2 *Live-fire Training Direct and Indirect Effects*

#### 6.5.3.2.1 *Less than Significant Effects*

Under Alternative 1, live-fire training would continue occur on YTC at current frequencies and intensities, and ignitions and fires would continue to occur at current frequencies on YTC as a result of these live-fire activities. Such fires would be concentrated at locations such as the CIA and MPRC. Although the risk of wildfire would depend on other factors, such as weather conditions and fuel loads, the risk of accidental wildfire ignition is not anticipated to increase under Alternative 1 because the frequency, type, and intensity of training activities would not change over current conditions. No additional impacts on firefighting resources or wildfire management are anticipated. Under YTC's current wildland fire management program, several measures to minimize wildfire risk and suppress fires are already in place including implementing a Fire Risk Management Assessment prior to training activities during the fire danger season, pre-incident planning, fire suppression activities by troops and the YTC Fire Department, prescribed burning, and maintenance of firebreaks. This existing program is sufficient to manage existing wildfire risk at YTC. Therefore, overall impacts to wildfire management from current training levels would be less than significant.

### 6.5.3.3 *Maneuver Training Direct and Indirect Effects*

#### 6.5.3.3.1 *Less than Significant Effects*

Transportation of personnel and equipment, off-road use of vehicles, use of pyrotechnics and tracer ammunition, demolition activities, and use of flammable or combustible materials, such as fuel or ordnance, would continue to pose a wildfire risk. Fires from maneuver training activities would continue to occur at current frequencies at YTC. The inherent risk of accidental ignition attributed to maneuver training is minor. Although the risk of wildfire would depend on other factors, such as weather conditions and fuel loads, the risk of accidental wildfire ignition is not anticipated to increase under Alternative 1 because the frequency, type, and intensity of maneuver training activities would not change over current conditions. No additional impacts to wildfire management or firefighting resources are anticipated, and overall impacts to wildfire management from current training levels would be less than significant since YTC's current wildland fire management program would be sufficient to manage the existing wildfire risk at YTC.

## 6.5.4 **Alternative 2 — GTA Actions**

### 6.5.4.1 *Construction Direct and Indirect Effects*

#### 6.5.4.1.1 *No Effects*

Additional training range construction would be necessary under Alternative 2. While training range construction activities would temporarily increase human presence, equipment use, and activity at construction sites, this increase is not expected to impact the risk of accidental wildfire ignition. The small potential for accidental ignition during construction activities would be short-term and negligible. No impacts to wildfire management are anticipated from training range construction.

No cantonment area construction is anticipated to occur at YTC under Alternative 2; therefore, impact analysis is Not Applicable. There would be no increased risk of wildfire ignition, and no impacts to wildfire management are anticipated.

### 6.5.4.2 *Live-fire Training Direct and Indirect Effects*

#### 6.5.4.2.1 *Significant but Mitigable to less than Significant Effects*

Live-fire training under Alternative 2 would be focused on existing ranges and the two new ranges, and where possible, some weapons systems would use inert training rounds, which have less

1 environmental impact, as a substitute for the firing of live rounds. However, the approximate 50  
2 percent increase in the frequency of use of mutations, as well as increased vehicles, flammable  
3 materials, and pyrotechnics (e.g., flares, smoke devices), is anticipated to result in about a 50 percent  
4 increase in the rate of ignitions in training and impact areas. Although the risk of wildfire occurring  
5 from ignitions would depend on other factors, such as weather conditions, location of ignition, and  
6 fuel loads, the risk of accidental wildfire ignition would significantly increase under Alternative 2.  
7 The vegetation communities present at YTC consist of light fuels that are easily ignited and burn  
8 rapidly, resulting in fires that spread quickly. A wildfire can damage animal and plant communities,  
9 including listed species, damage cultural resources and places of traditional importance, increase soil  
10 erosion from vegetation removal, and contribute to the spread of invasive plant species. Fires that  
11 move off post have the potential to damage surrounding homes and community resources.

12 Fires would continue to be concentrated at locations such as the CIA and MPRC at YTC under  
13 Alternative 2, with some fires also occurring in training areas. Although the cumulative average  
14 acreage burned at YTC as a result of training activities has declined over the past decade due to  
15 enhancements in fire management policy related to pre-suppression and suppression activities and  
16 improved suppression resources and personnel training, large-scale fires, such as the large fire that  
17 occurred in 2003, still occur at YTC and can escape off post. Based on YTC's fire history, climate,  
18 and the types of vegetation communities present at the installation, the increase in wildfire risk  
19 ignitions associated with the 50 percent increase in live-fire training under Alternative 2 is  
20 anticipated to be significant.

21 However, several measures to minimize wildfire risk and suppress fires are in place under YTC's  
22 Integrated Wildland Fire Management Program, which would reduce the risk of wildfires occurring  
23 as a result of training activities under Alternative 2 and would decrease the extent and intensity of  
24 fires that do occur. Pre-suppression actions include the planning and execution of pre-emptive  
25 measures, such as construction and maintenance of firebreaks, development of suppression water  
26 resources, prescribed burning, pre-incident planning, and implementation of a system of risk  
27 management that considers daily fire danger and proposed activities. Suppression measures include  
28 providing for adequate ground and aerial assets (e.g., seasonal wildland firefighters and firebucket  
29 assets during the fire danger season) necessary to rapidly suppress and control fires to contain them  
30 on YTC, preventing fires from escaping from designated control areas (e.g., impact areas, range  
31 fans), and preventing impacts to sensitive resources (e.g., riparian/wetland areas, sensitive species  
32 habitats). Specific methods for accomplishing these measures are addressed in the IWFMP and  
33 CNRMP/INRMP, and the methods are periodically reviewed and updated as new information is  
34 made available. YTC would monitor its Wildland Fire Management Program annually to ensure that  
35 fire prevention and control measures are sufficient to manage the increase in ignitions that would  
36 occur under Alternative 2. Therefore, wildfire impacts under Alternative 2 are anticipated to be  
37 mitigated to a less than significant level.

### 38 **6.5.4.3 *Maneuver Training Direct and Indirect Effects***

#### 39 **6.5.4.3.1 *Significant but Mitigable to less than Significant Effects***

40 Transportation of personnel and equipment, off-road use of vehicles, use of pyrotechnics and tracer  
41 ammunition, demolition activities, and use of flammable or combustible materials, such as fuel or  
42 ordnance, would increase with the approximately 50 percent increase in the amount of maneuver  
43 training under Alternative 2, all of which would increase the potential for an accidental ignition.  
44 Although the risk of wildfire occurring from ignitions would depend on other factors, such as  
45 weather conditions, location of ignition, and fuel loads, the risk of accidental wildfire ignition would  
46 increase under Alternative 2.

1 Maneuver training under Alternative 2 would occur in areas that are currently used for off-road  
2 maneuvers at YTC, and would occur over a wide range of terrain. The inherent risk of accidental  
3 ignition attributed to maneuver training is minor. However, increased training use and frequency  
4 under Alternative 2 may result in training extending into areas that have not been used as frequently.  
5 Based on YTC's fire history, climate, and the types of vegetation communities present at the  
6 installation, the corresponding increase in ignition risk associated with the 50 percent increase in  
7 maneuver training under Alternative 2 is anticipated to be significant. Increased maneuver training  
8 would also increase the potential for damage to firebreaks from vehicles at YTC. Heavy damage  
9 from training during winter months was noted to be the probable cause of vegetation overgrowth  
10 along several existing firebreaks in recent years (Durkee 2006, Roberts and Durkee 2005). However,  
11 continued implementation of YTC's wildland fire management program (described under Live-Fire  
12 Training above) and mitigation measures would reduce the probability of wildfire occurrence from  
13 training to a less than significant level and would decrease the extent and intensity of fires that do  
14 occur.

## 15 **6.5.5 Alternative 3 — GTA Actions + CSS Soldiers**

### 16 **6.5.5.1 Construction Direct and Indirect Effects**

#### 17 **6.5.5.1.1 No Effects**

18 No additional cantonment area or training range construction would occur at YTC to support CSS  
19 Soldiers; therefore, effects on wildfire management would be the same as for Alternative 2.

### 20 **6.5.5.2 Live-fire Training Direct and Indirect Effects**

#### 21 **6.5.5.2.1 Significant but Mitigable to less than Significant Effects**

22 The additional training of CSS Soldiers would further increase the amount of live-fire training and  
23 rounds fired occurring at YTC over that occurring under Alternative 2; however, the increase above  
24 Alternative 2 would be minor. Therefore, the increase in ignitions above Alternative 2 would be  
25 minor. Although the risk of wildfire occurring from ignitions would depend on other factors, such as  
26 weather conditions, location of ignition, and fuel loads, the risk of accidental wildfire ignition would  
27 slightly increase under Alternative 3. However, continued implementation of YTC's wildland fire  
28 management program as described above and mitigation measures would reduce the probability of  
29 wildfire occurrence from training to a less than significant level and would decrease the extent and  
30 intensity of fires that do occur.

### 31 **6.5.5.3 Maneuver Training Direct and Indirect Effects**

#### 32 **6.5.5.3.1 Significant but Mitigable to less than Significant Effects**

33 The additional training of CSS Soldiers would further increase the amount of maneuver training  
34 occurring at YTC under Alternative 3 over that occurring under Alternative 2; however, the increase  
35 above Alternative 2 would be minor. There would be a corresponding increase in ignitions due to  
36 increased transportation of personnel and equipment, off-road vehicle use, use of pyrotechnics and  
37 tracer ammunition, demolition activities, and use of flammable or combustible materials, such as fuel  
38 or ordnance. Increased maneuver training would also increase the potential for damage of firebreaks  
39 from vehicles at YTC. However, continued implementation of YTC's wildland fire management  
40 program and mitigation measures would reduce the probability of wildfire occurrence from training  
41 to a less than significant level and would decrease the extent and intensity of fires that do occur.

1 **6.5.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

2 **6.5.6.1 Construction Direct and Indirect Effects**

3 **6.5.6.1.1 No Effects**

4 No additional cantonment area or training range construction is anticipated at YTC to support the  
5 medium CAB; therefore, effects on wildfire management would be the same as described for  
6 Alternative 2.

7 **6.5.6.2 Live-fire Training Direct and Indirect Effects**

8 **6.5.6.2.1 Significant but Mitigable to less than Significant Effects**

9 The additional training of a medium CAB would further increase the amount of live-fire training and  
10 rounds fired occurring at YTC under Alternative 4 over that occurring under Alternative 3. This  
11 increase would be moderate in intensity. In addition to individual weapons practice and qualification,  
12 aviation units conduct aviation gunnery tasks, such as door gunner qualification, diving fire  
13 engagements, and aviation armor engagements. A proportionate increase in ignitions would result  
14 from the increased frequency and intensity of live-fire training including frequent gunnery training  
15 from helicopters. In addition, with an increased number of aircraft training on YTC under  
16 Alternative 4, the risk of fires related to aircraft accidents would be greater. Although the risk of  
17 wildfire occurring from ignitions would depend on other factors, such as weather conditions, location  
18 of ignition, and fuel loads, the risk of accidental wildfire ignition would increase under Alternative 4  
19 above that anticipated under the other alternatives. The vegetation communities present at YTC  
20 consist of light fuels that are easily ignited and burn rapidly, resulting in fires that spread quickly.

21 Based on YTC's fire history, climate, and the types of vegetation communities present at the  
22 installation, the increase in wildfire ignitions associated with the increase in live-fire training,  
23 including aviation gunnery training, under Alternative 4 is anticipated to be significant. The potential  
24 for an increase in accidental wildfire ignition due to live-fire training would be greatest under  
25 Alternative 4 compared with the other alternatives, particularly during the high fire danger period.  
26 However, continued implementation of YTC's wildland fire management program and mitigation  
27 measures would reduce the probability of wildfire occurrence from training and would decrease the  
28 extent and intensity of fires that do occur. Therefore, wildfire impacts are anticipated to be mitigated  
29 to a less than significant level.

30 **6.5.6.3 Maneuver Training Direct and Indirect Effects**

31 **6.5.6.3.1 Significant but Mitigable to less than Significant Effects**

32 Flight and joint military training with the medium CAB would occur throughout YTC, but most  
33 often at established ranges and the CIA at YTC. Aviation maneuver training would also involve the  
34 firing of munitions; the effects of medium CAB-related munitions on fire risk and management at  
35 YTC are described above under Live-fire Training. The primary additional wildfire concern from  
36 medium CAB maneuver training would be an increased potential for fires related to aircraft  
37 accidents and from ignitions at landing sites. The inherent risk of accidental ignition attributed to  
38 maneuver training is minor. However, increased training use and frequency under Alternative 4 may  
39 result in training extending into areas that have not been used as frequently. Continued  
40 implementation of YTC's wildland fire management program and mitigation measures would reduce  
41 wildfire impacts to a less than significant level.

## 6.5.7 Cumulative Effects

### 6.5.7.1 Significant but Mitigable to less than Significant Effects

There would be some adverse additive wildfire impacts expected from other Army proposals and projects occurring or anticipated to occur at YTC. Other actions that would increase the potential for a fire on YTC include ongoing live-fire and maneuver training activities, including HIMARS training and training by visiting units. Fire risk associated with HIMARS training is primarily limited to ignition of the HIMARS rocket, as the rockets are non-explosive on impact, resulting in localized increases in wildfire risk at and around the ignition site. Training by other visiting units would increase the use of explosives and munitions, thereby increasing the potential for ignitions and resulting fires. Other Army projects occurring or that may occur in the reasonably foreseeable future are expected to contain mitigation measures to minimize the potential for starting a wildfire and to reduce environmental impacts associated with wildfires. In addition, the Army has developed an IWFMP to prevent and control fires at YTC, and the plan is reviewed annually.

Because no increases or changes in current live-fire and maneuver training activities would occur at YTC under Alternative 1, no increases in ignitions or wildfire risk are anticipated under Alternative 1. Alternative 1 would not contribute significantly to cumulative wildfire impacts at YTC. However, the increased live-fire and maneuver training under Alternatives 2, 3, and 4, and the associated increases in ignitions, would contribute to significant cumulative wildfire impacts on YTC. High fire-risk areas, such as the CIA and MPRC, would continue to be treated with prescribed burning and firebreak and road maintenance to reduce the spread of fire, and training would continue to follow established protocols for wildland fire management. These measures would reduce the overall cumulative wildfire impact under Alternatives 2, 3, and 4 to less than significant.

## 6.5.8 Mitigation

No additional mitigation for wildfire management is necessary for Alternative 1.

For Alternatives 2, 3, and 4, YTC should review the effectiveness of its Wildland Fire Management Program annually to ensure that fire prevention and control measures are sufficient to manage the increase in ignitions that would occur under these alternatives. Following annual review, modifications to this program may include increased frequency and extent of pre-suppression measures, including construction and maintenance of fuel breaks, development of suppression resources, prescribed burning. In addition, firebreak monitoring and maintenance at YTC would increase to ensure that any damage to firebreaks resulting from increased maneuver training activities under these alternatives is repaired.

## 6.6 CULTURAL RESOURCES

### 6.6.1 Resource-specific Significance Criteria

Impacts to cultural resources on YTC from the alternatives were assessed by evaluating the degree to which impacts would:

- Cause adverse effects to an NRHP-eligible or listed historic property, of which examples include: demolishing historic buildings or structures; damaging, or neglecting to prevent damage to, an archaeological site in a training area; or restricting access to traditional cultural practices or places, including culturally important plant or animal resources, particularly during specific times of the year when such resources are traditionally used, collected, or visited;



1 that supports plants that are culturally important to tribes. Coordination with the YTC ENRD would  
2 ensure continued access for traditional use of YTC lands for tribal members.

### 3 **6.6.3.3 Maneuver Training Direct and Indirect Effects**

#### 4 **6.6.3.3.1 Less than Significant Effects**

5 YTC contains more than 1,000 archaeological sites distributed throughout all training/range areas.  
6 Maneuver training can cause direct impacts to archaeological resources from off-road vehicle use  
7 (tracked and wheeled vehicles), excavation and earth-moving activities (e.g., digging weapon or tank  
8 emplacements), or rutting and erosion near wetlands or streams. Under Alternative 1, the location,  
9 frequency, and intensity of maneuver training would remain the same. YTC has recorded fewer  
10 impacts to archaeological sites that are protected by Seibert stakes compared with Fort Lewis. While  
11 it is probable that impacts to known and unknown archaeological sites would continue under  
12 Alternative 1, particularly if Soldiers or contractors are not informed about the location of Seibert-  
13 staked sites, or if staked boundaries are inadvertently or willfully disregarded, it is expected that  
14 impacts would be less than significant.

15 Maneuver training areas may contain places or plant or animal resources that are important to the  
16 Yakama and Wanapum tribes for their traditional or ceremonial use. Previous consultation with the  
17 tribes has not identified impacts to such resources from vehicle use, habitat degradation, or restricted  
18 access associated with maneuver training. Coordination with YTC ENRD would ensure that  
19 potential impacts to the traditional use of YTC lands are avoided or minimized.

## 20 **6.6.4 Alternative 2 — GTA Actions**

### 21 **6.6.4.1 Construction Direct and Indirect Effects**

#### 22 **6.6.4.1.1 No Effects**

23 Most, but not all, of the training ranges on YTC have been surveyed for archaeological resources and  
24 known sites are mapped in the YTC GIS database. Construction in live-fire ranges proposed under  
25 Alternative 2 is not expected to result in impacts to known archaeological sites, as mapped sites can  
26 be avoided during the planning process. Unknown sites that may be present in training areas that  
27 have not been surveyed could be impacted by construction-related activities; these areas would be  
28 restricted until cleared by the CRM.

29 No direct impacts or restricted access to places or plant or animal resources that are important to the  
30 Yakama and Wanapum tribes for traditional or ceremonial use are expected from construction of the  
31 range projects. Coordination with the YTC ENRD would ensure that potential impacts to the  
32 traditional use of YTC lands from construction of the new range projects are avoided or minimized.

### 33 **6.6.4.2 Live-fire Training Direct and Indirect Effects**

#### 34 **6.6.4.2.1 No Effects**

35 Because Soldiers would access live-fire training areas on established roads and paths under  
36 Alternative 2, no impacts to known or unknown archaeological resources are expected. The Army is  
37 developing a new method of producing “smoke” to be used in training as a visual and electronic  
38 obscurant. This method involves pulverizing “synthetic” graphite to a fine powder and blowing the  
39 powder into the air. Synthetic graphite is made from ancient carbon, the introduction of which may  
40 distort the radiocarbon age of archaeological sites if incorporated into the soil matrix through natural

1 or artificial processes. The volume threshold of smoke that would potentially affect the soil matrix of  
2 an archaeological site directly or indirectly is currently being studied. Radiocarbon and volcanic ash  
3 samples at YTC samples will be collected and analyzed to provide baseline data before use of the  
4 smoke begins so that potential adverse impacts to the scientific value of archaeological data can be  
5 avoided or mitigated.

6 Alternative 2 would likely increase the duration and frequency of noise levels from large-caliber  
7 weapons due to intensified use of live-fire training areas. As discussed under Alternative 1, impacts  
8 to traditional cultural places or resources can only be identified by those who value and use them,  
9 and consultation to date with the Yakama and Wanapum tribes has not identified impacts to such  
10 resources from incompatible noise levels or restricted access associated with live-fire training. All  
11 training complexes on YTC contain habitat that supports culturally important plants. Coordination  
12 with the YTC ENRD would ensure continued access for traditional use of YTC lands for tribal  
13 members.

### 14 **6.6.4.3 Maneuver Training Direct and Indirect Effects**

#### 15 **6.6.4.3.1 Less than Significant Effects**

16 It is not possible to determine if intensified use of training areas under Alternative 2 (e.g., increased  
17 off-road vehicle miles traveled) would result in increased impacts to known or unknown  
18 archaeological sites because the use of specific locations within training areas that also contain  
19 archaeological sites is unknown. However, it is probable that impacts would increase as the use of  
20 training areas is intensified to accommodate more Soldiers, particularly if Soldiers or contractors are  
21 not informed about the location of Seibert-staked sites, or if staked boundaries are inadvertently or  
22 willfully disregarded. Potential impacts to archaeological sites from implementation of Alternative 2  
23 would be avoided, minimized, or mitigated through compliance with the PA and SOPs (see  
24 Appendix D). Areas that have not been surveyed for archaeological resources would be restricted for  
25 training purposes until cleared by the CRM.

26 Because maneuver training areas may contain places and plant or animal resources that are important  
27 to the Yakama and Wanapum tribes for their traditional or ceremonial use, intensified use of training  
28 areas under Alternative 2 could impact such resources through vehicle use, habitat degradation, or  
29 restricted access at certain times of the year. Previous consultation with the tribes has not identified  
30 impacts to such resources. Coordination with the YTC ENRD would ensure that potential impacts to  
31 the traditional use of YTC lands are avoided or minimized. The PA and SOPs in Appendix D  
32 stipulate the procedures by which the Army would continue to consult with the tribes to identify and  
33 resolve impacts from future GTA actions that may be identified.

### 34 **6.6.5 Alternative 3 — GTA Actions + CSS Soldiers**

#### 35 **6.6.5.1 Construction Direct and Indirect Effects**

##### 36 **6.6.5.1.1 No Effects**

37 The two range projects discussed under Alternative 2 would also be constructed under Alternative 3.  
38 No additional construction projects would occur under Alternative 3. Therefore, construction-related  
39 impacts to cultural resources under Alternative 3 would be the same as those described for  
40 Alternative 2.

### 6.6.5.2 *Live-fire Training Direct and Indirect Effects*

#### 6.6.5.2.1 *No Effects*

Because Soldiers would access live-fire training areas on established roads and paths, no impacts to known or unknown archaeological resources are expected under Alternative 3. Use of training ranges and areas would likely intensify under Alternative 3 with the need to accommodate more Soldiers completing their training, and therefore, noise levels are likely to increase. However, impacts to traditional cultural places or resources can only be identified by those who value and use them, and tribal consultation to date has not identified impacts to the use of places or resources that are important to the tribes. Coordination with the YTC ENRD would ensure continued access for traditional use of YTC lands for tribal members under Alternative 3.

As with Alternative 2, the volume threshold of synthetic smoke that would potentially affect the soil matrix of an archaeological site directly or indirectly is being studied to provide baseline data so that potential adverse impacts to the scientific value of archaeological data can be avoided or mitigated.

### 6.6.5.3 *Maneuver Training Direct and Indirect Effects*

#### 6.6.5.3.1 *Less than Significant Effects*

Similar to the discussion for Alternative 2, while the probability that impacts to known or unknown archaeological sites would increase under Alternative 3, impacts cannot be predicted in advance because the use of specific training locations that also contain archaeological sites is unknown. However, impacts are expected to be less than significant. As with Alternative 2, potential impacts to archaeological sites from implementation of Alternative 3 would be avoided, minimized, or mitigated through compliance with the PA and SOPs (see Appendix D). Areas that have not been surveyed for archaeological resources would be restricted for training purposes until cleared by the CRM. Coordination with the YTC ENRD would ensure that potential impacts to the traditional use of YTC lands are avoided or minimized. The PA and SOPs in Appendix D stipulate the procedures by which the Army would continue to consult with the tribes to identify and resolve impacts from future GTA actions that may be identified.

## 6.6.6 **Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

### 6.6.6.1 *Construction Direct and Indirect Effects*

#### 6.6.6.1.1 *No Effects*

The two range projects discussed under Alternatives 2 and 3 would also be constructed under Alternative 4. No construction-related impacts to archaeological or tribal cultural resources are expected under Alternative 4.

### 6.6.6.2 *Live-fire Training Direct and Indirect Effects*

#### 6.6.6.2.1 *No Effects*

As with Alternatives 2 and 3, the volume threshold of synthetic smoke that would potentially affect the soil matrix of an archaeological site directly or indirectly is being studied to provide baseline data so that potential adverse impacts to the scientific value of archaeological data can be avoided or mitigated.

1 As discussed under Alternatives 2 and 3, tribal consultation to date has not identified impacts to the  
2 use of places or resources that are important for their traditional or ceremonial use from incompatible  
3 noise levels or restricted access. Coordination with the YTC ENRD would ensure continued access  
4 for traditional use of YTC lands for tribal members under Alternative 4.

### 5 **6.6.6.3 Maneuver Training Direct and Indirect Effects**

#### 6 **6.6.6.3.1 Less than Significant Effects**

7 As with Alternatives 2 and 3, the probability of impacts to known or unknown archaeological sites  
8 may increase under Alternative 4, but impacts cannot be predicted in advance because the use of  
9 specific training locations that also contain archaeological sites is unknown. It is expected that  
10 impacts would be less than significant. Potential impacts to archaeological sites from implementation  
11 of Alternative 4 would be avoided, minimized, or mitigated through compliance with the PA and  
12 SOPs (see Appendix D). Areas that have not been surveyed for archaeological resources would be  
13 restricted for training purposes until cleared by the CRM.

14 No new flight training routes at YTC for the medium CAB have been identified for Alternative 4.  
15 Intensified use of established training flight routes for Low-level, Terrain or Contour, and NOE  
16 aviation training with fixed-wing and rotary-blade aircraft is not expected to result in significant  
17 increased noise levels along flight routes or entry and exit points. Tribal consultation to date with the  
18 Yakama and Wanapum tribes has not identified impacts to traditional cultural places or resources  
19 from incompatible noise levels or restricted access associated with aviation-based training on YTC.  
20 The PA and SOPs in Appendix D stipulate the procedures by which the Army would continue to  
21 consult with the tribes to identify and resolve impacts from future GTA actions that may be  
22 identified.

## 23 **6.6.7 Cumulative Effects**

### 24 **6.6.7.1 Less than Significant Effects**

25 Cumulative impacts to cultural resources from past, present, and reasonably foreseeable future  
26 military actions on YTC are associated with ongoing and project-specific ground disturbance to  
27 archaeological resources from intensified use of range and training areas, plant habitat degradation  
28 from vehicle use, and potential increases in noise levels or restricted access to culturally important  
29 resources or places, particularly at certain times of the year when these resources are collected or  
30 visited.

31 Because archaeological sites are a finite resource, ongoing and intensified use of training and range  
32 areas where known and unknown archaeological resources are present could result in a gradual loss  
33 of scientific and historical archaeological data with which to answer important research questions.  
34 As described above, the Army is developing a new method of producing “smoke” to be used in  
35 training. The volume threshold of synthetic smoke required for potential alteration of radiocarbon  
36 dates of affected archaeological sites, if any, is unknown at this time. Until studies are completed, it  
37 is unknown whether this is a potential impact, and if so, whether it is a direct, indirect, or cumulative  
38 impact. A study to collect and analyze radiocarbon and volcanic ash samples at YTC has been  
39 completed that will provide baseline data before use of the smoke begins.

40 The intensified use of range and training areas under Alternatives 2, 3, and 4 may result in an  
41 increase in the duration or frequency of noise to levels incompatible with the use of places or  
42 resources that are important to the Yakama and Wanapum tribes for their traditional or ceremonial  
43 use. Tribal consultation to date has not identified these impacts, which can only be identified by

1 those who value and use the resources in question. Similarly, intensified use of training areas could  
2 result in future restriction of access to such places or resources to specific times of the year that  
3 conflict with their traditional, ceremonial, or religious use, although tribal consultation to date has  
4 not identified such impacts.

5 The cumulative effects of increased noise levels, restricted access, or plant habitat degradation could  
6 result in the eventual and/or long-term interruption of traditional practices. As discussed above,  
7 however, consultation to date has not identified impacts to tribal cultural resources. The PA and  
8 SOPs in Appendix D stipulate the procedures by which the Army would continue to consult with the  
9 tribes to identify and resolve impacts from future GTA actions to important places, natural resources,  
10 and traditional or ceremonial practices. Consultation that identifies potential impacts and/or  
11 mitigation measures for sensitive resources that the tribes wish to keep confidential may not be  
12 documented in the ROD for this EIS as provided for by federal authorities.

### 13 **6.6.8 Mitigation**

14 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
15 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
16 limit, repair, reduce, or compensate for the adverse effects.

## 17 **6.7 AIR QUALITY**

18 The potential for impacts to air quality, and resulting effects on human health and climate change,  
19 from proposed construction/demolition activities and long-term operations associated with GTA  
20 actions was identified as an issue of concern during scoping. In addition, the potential for increased  
21 fire danger resulting from increased live-fire training use of YTC was of concern. Increased fire  
22 incidence would lead to increased smoke production and potential human and animal health issues.

23 The activity that is most likely to affect air quality on and near YTC is training, as it would generate  
24 smoke, fugitive dust, and exhaust emissions. Construction activities would have a minor impact on  
25 air quality.

### 26 **6.7.1 Resource-specific Significance Criteria**

27 Impacts to air quality would be considered significant if the proposed activities were to:

- 28 • Increase ambient air pollutant concentrations above any NAAQS at the installation  
29 boundary;
- 30 • Contribute to an existing violation of any NAAQS;
- 31 • Interfere with or delay timely attainment of NAAQS;
- 32 • Impair visibility within any federally mandated PSD Class I area; or
- 33 • Produce emissions of hazardous air pollutants exceeding state or federal emission levels at  
34 the installation boundary.

### 35 **6.7.2 Overview of Impacts to Air Quality by Alternative**

36 **Table 6–14** summarizes the impacts associated with air quality that would occur under each of the  
37 alternatives.

**Table 6–14 Summary of Potential Effects to Air Quality at YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	•	€	€	€
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	€	€	€	€
Cumulative Effects	€	€	€	€

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

1

2 **6.7.3 Emission Sources**

3 The major pollutants in the Yakima region and on YTC are vehicular emissions (primarily CO, NO<sub>x</sub>,  
 4 and VOCs). In addition, particulate emissions (PM<sub>10</sub> and PM<sub>2.5</sub>), also known as fugitive dust, are  
 5 generated by military vehicles traveling on unpaved roads and off road, and by military aircraft. The  
 6 number of vehicles and aircraft used during training would vary among alternatives, as would the  
 7 number of miles traveled by vehicles and aircraft. Thus, air emissions associated with vehicle and  
 8 aircraft use and mileage are estimated and analyzed in this EIS. Emissions from portable generators  
 9 used during training exercises are also estimated.

10 Impacts to air quality from Army activities also include emissions from training-related fires;  
 11 stationary sources, such as heating plants; dust and exhaust emissions from mobile sources, such as  
 12 construction equipment and personal vehicles; and hazardous emissions from building demolition,  
 13 maintenance and repair shops, and other activities. However, emissions associated with these sources  
 14 were not evaluated in the EIS. The number of personnel training and working at YTC is expected to  
 15 remain near current levels under all alternatives. Thus, personal vehicle emissions would not differ  
 16 much from current levels.

17 Current construction plans do not include the installation of any new or modified air emission  
 18 sources. Emissions associated with training support activities, including fuel storage and transfer,  
 19 painting operations, and generator usage (which were evaluated in the 1994 Stationing EIS), would  
 20 not change significantly from levels in 1994 under any of the alternatives. YTC has decommissioned  
 21 three natural gas boilers as of June 2009, which will help to reduce emissions on the installation. If  
 22 YTC were to install a new or modified air emission source in the future, the impacts would be  
 23 evaluated in a Notice of Construction application submitted to the Yakima Regional Clean Air  
 24 Agency or Washington Department of Ecology. If applicable, new air emission sources would  
 25 comply with all federally established new source performance standards, national emission standards  
 26 for hazardous air pollutants, and NAAQS. In addition, the emission sources would comply with all  
 27 state and local emission standards and ambient air quality standards.

28 **6.7.4 General Conformity Determination**

29 The “general conformity” rule (40 CFR Subpart W, 51.850) requires a review of proposed federal  
 30 actions that may affect air quality in nonattainment and maintenance areas. A conformity analysis  
 31 must demonstrate that the project would not:

- 32 • Cause or contribute to a new violation of any standard;
- 33 • Interfere with the provisions in the applicable State Implementation Plan (SIP) for  
 34 maintenance of any standard;
- 35 • Increase the frequency or severity of any existing violation of any standard; or
- 36 • Delay timely attainment of any standard.

1 Additional thresholds are pollutant-specific for nonattainment and maintenance areas. Air quality on  
 2 YTC is generally considered good, although it can degrade rather quickly when particulate matter is  
 3 generated by rangeland fires and fugitive dust associated with maneuver training activities. However,  
 4 particulate matter commonly dissipates quickly as a result of the predominant winds from the west-  
 5 southwest. A very small strip of YTC's western cantonment area (less than 100 acres; 40 ha) lies  
 6 within a maintenance area for PM<sub>10</sub>. Therefore, this small portion of the cantonment area is subject to  
 7 a general conformity threshold of 100 tons (91 metric tons) per year for PM<sub>10</sub>. A portion of Yakima  
 8 County is also a maintenance area for CO; therefore, impacts of CO are also addressed in this EIS. A  
 9 conformity analysis for the proposed Army actions is presented under each alternative.

## 10 6.7.5 Description of Methodology to Evaluate Air Emissions

### 11 6.7.5.1 Emissions Calculations

12 Emissions for all criteria pollutants were calculated for each alternative and compared to the  
 13 conformity thresholds where applicable. **Table 6–15** summarizes the emissions sources calculated  
 14 and the method used to perform the calculation.

**Table 6–15 Emissions Sources and Calculation Methods**

Emission Category	Calculation Method
Training Activities	AP-42 Section 13.2.1 (Paved Roads) and Section 13.2.2 (Unpaved Roads) equations to calculate PM <sub>10</sub> and PM <sub>2.5</sub> . These equations consider the silt and moisture content of the soil, precipitation, and vehicle weight when determining the amount of dust generated by a military vehicle. EPA Tier 2 Engine emission factors calculate vehicle exhaust emissions.
Generators	AP-42 Section 3.3 – Gasoline and Diesel Industrial Engines Table 3.3-1
Aircraft	Emissions and Dispersion Modeling System (EDMS Version 5.1) calculates aircraft exhaust based on number of landing and takeoff cycles.

### 16 6.7.5.1 Dispersion Modeling Analysis

17 Air pollution models are used to make future projections of air pollution levels or to estimate current  
 18 pollution levels at locations where monitors are not deployed. Air pollution models are most  
 19 frequently used to verify that a new source of air pollution will not exceed federal health-based  
 20 (NAAQS) standards. The models are generally designed to provide overestimates of air pollution  
 21 concentrations in order to be protective of air quality, and must be approved by the EPA. In general,  
 22 all air quality models require information about the pollutant source being modeled, including  
 23 pollutant emission rate, and information about the dispersing characteristics of the meteorology, such  
 24 as wind speed and direction.

25 Impacts from criteria pollutants CO and PM<sub>10</sub> were modeled for short-term periods and annual  
 26 periods using AERMOD. Meteorological data used in the modeling were obtained from the National  
 27 Weather Service stations at the Yakima Airport and Spokane Airport for the years 2002 through  
 28 2006. To ensure that pollutants associated with military vehicles would not adversely affect the  
 29 health of people off Post, one set of densely spaced modeling receptors was placed along the  
 30 installation boundary bordering the maintenance area, and another set was placed 1,640 feet (500 m)  
 31 outside the boundary. Additional receptors were placed out to 3 miles (5 km) from the facility  
 32 boundary for further assessment of off-site impacts in the maintenance area.

1       **6.7.5.2    Source Characterization**

2       An emission rate was calculated for each maneuver area in grams/second per m<sup>2</sup>. To simulate the  
3       emissions from exhaust and airborne dust correctly, the total height of the emission exhaust and the  
4       initial Sigma Z (initial vertical dimension of the area source plume) was set to 1.5 times the actual  
5       height of the Stryker vehicle. This height represents the dust wake created by Stryker vehicles.  
6       Emissions from generators and helicopters were also factored into the area source emission rates.

7       **6.7.5.3    PSD Applicability**

8       The PSD baseline date for YTC is December 14, 1977. In June 1979, the Department of the Army  
9       submitted an EIS that summarized the emissions at both facilities. At YTC, fugitive dust (particulate)  
10      emissions were estimated at approximately 49,500 tons (44,900 metric tons) per year. The EIS stated  
11      that most of the 49,500 tons per year was due to tracked vehicles' emissions on unimproved  
12      (unpaved) roads.

13      For future maneuvers at YTC, emissions were estimated as follows:

- 14           • Strykers travel 625 miles (1,000 km) per day for a company-level event. Conservatively, if  
15           174 of these maneuvers were performed each year, the total fugitive dust emissions would be  
16           1,000 (907 metric tons) tons per year, well under the baseline fugitive dust emission rate.

17      Given that the emissions from the future planned activities would be lower than the baseline  
18      emissions at both facilities; this modeling analysis did not consider PSD increment consumption and  
19      visibility impacts.

20      **6.7.6    Alternative 1 — No Action Alternative**

21           **6.7.6.1    Construction Direct and Indirect Effects**

22                   **6.7.6.1.1    No Effects**

23           No construction is proposed at YTC under Alternative 1; therefore, no impacts on air quality from  
24           construction would occur. Minor building maintenance and repair projects would continue to occur;  
25           however, there are no plans to install any new or modified air emission sources on YTC.

26           **6.7.6.2    Live-Fire Training Direct and Indirect Effects**

27                   **6.7.6.2.1    Less than Significant Effects**

28           The risk of fire associated with live-fire training would not increase under this alternative, and  
29           wildland fires would be expected to affect roughly the same average acreage annually (several  
30           thousand acres) as at present, with occasional large fires. Fires would have short-term effects on air  
31           quality by emitting CO<sub>2</sub>, CO, PM<sub>10</sub>, PM<sub>2.5</sub>, and VOCs as plant materials are consumed, but would be  
32           recurrent. Air quality in the area of the fire would be temporarily affected, but effects would be less  
33           than significant. Fire management programs would continue to be in place to minimize the risk of  
34           fire.

35           The Army would conduct prescribed burns to minimize the risks associated with training-induced  
36           fires. When managed properly, prescribed fires can be conducted to remove fuel while minimizing  
37           impacts to air quality by controlling the extent and intensity of the burn. Prescribed burning activities  
38           would be coordinated with local and regional air agencies to ensure that air quality is not adversely  
39           affected.

### 6.7.6.3 Maneuver Training Direct and Indirect Effects

#### 6.7.6.3.1 Less than Significant Effects

The potential impacts to air quality from training activities under Alternative 1 were analyzed in the EAs prepared for the two SBCTs and other units stationed at Fort Lewis, but that train at YTC (Army 2001b, 2004b). These EAs predicted no significant impacts to air quality under the existing management policies and with additional mitigation measures in place. Types of equipment with the most potential to affect air quality during training on YTC include Stryker vehicles, fog oil/graphite smoke generators, and smoke munitions. The impacts of smoke generators and smoke munitions on air quality on YTC were analyzed by the Army (1999, 2001d). Impacts to air quality from use of Stryker vehicles during training activities are discussed in the following section.

Under the current levels of training, military vehicles would continue to have moderate short-term impacts on ambient air quality at YTC. Modeling showed that current Stryker vehicle activity would not cause or contribute to an NAAQS violation (Army 2001b). Emissions of criteria pollutants associated with training increases were determined to be less than significant based on projected MIL-CLASS 4 and 5 and off-road miles (148,800 miles [239,420 km]) traveled by Strykers annually during training. Pollutants generated by Stryker and other military vehicles during training would not cause an air quality violation at YTC and would not adversely affect the health of humans off the installation. The modeling results are conservative, with all Stryker vehicles assumed to be concentrated in a very small area and operated at peak engine output constantly for periods up to 24 hours, and at 90 percent of capacity for periods greater than 24 hours.

The Army would be required to comply with federal, state, and local air quality regulations. Compliance with these regulations would continue to be the responsibility of the YTC Air Quality Program. The Army would continue to manage resources to reduce erosion and revegetate degraded areas to reduce the amount of dust produced during training exercises.

## 6.7.7 Alternative 2 — GTA Actions

Projected annual emissions under Alternative 2 are presented in **Table 6–16** (see **Appendix E** for calculations).

**Table 6–16 Sources and Estimated New Emissions at YTC under Alternative 2**

Source	Estimated New Annual Emissions (tpy)					
	CO	NO <sub>2</sub>	VOCs	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Stryker vehicle training	85.81	74.64	74.64	3.40	2,893.49	299.22
Other wheeled vehicle training	1.20	0.84	0.84	0.04	26.27	2.71
Generators	5.05	23.44	1.87	1.55	1.66	1.66
Military vehicle fuel station usage	0	0	0.92	0	0	0
Total emissions	92.06	98.92	78.27	4.99	2,921.42	303.59
Conformity Threshold	100	N/A <sup>1</sup>	N/A	N/A	100	N/A

Note:

1. N/A = Not applicable.

See **Appendix E** for calculations of emissions.

### 6.7.7.1 Construction Direct and Indirect Effects

#### 6.7.7.1.1 Less than Significant Effects

Current construction plans do not include the installation of any new or modified air emission sources on YTC. Under Alternative 2, two range construction projects would occur at YTC outside

1 of the cantonment area (**Figure 2–5**). Over the short-term, minor air quality impacts would result  
 2 from operation of heavy-duty construction equipment, installation of temporary heaters, demolition,  
 3 and increased vehicular traffic attributed to construction personnel.

4 Since the number of personnel at YTC, would remain at or near current levels, air emissions  
 5 associated with personal vehicles would remain much the same as under Alternative 1.

### 6 **6.7.7.2 Life-Fire Training Direct and Indirect Effects**

#### 7 **6.7.7.2.1 Less than Significant Effects**

8 Under Alternative 2, the increase in frequency of live-fire training would likely result in an increase  
 9 in wildland fires. Impact areas on YTC, and particularly the CIA, are subject to repeated low-fuel  
 10 fires and therefore have a low buildup of heavy fuels. Most fires in the impact areas are low-intensity  
 11 burns in fire-adapted systems that would not be expected to have significant or lasting effects on the  
 12 human environment.

13 Pollutants associated with smoke from fire include CO<sub>2</sub>, CO, PM<sub>10</sub>, PM<sub>2.5</sub>, VOCs, and water vapor,  
 14 with CO<sub>2</sub> and water vapor comprising about 90 percent of the emissions (Prescribed Fire and Fire  
 15 Effects Working Team 1985). CO<sub>2</sub> and water vapor do not have direct health or visibility effects, but  
 16 both are greenhouse gases that can contribute to climate change. CO accounts for nearly 6 percent of  
 17 the total mass emitted during burning, PM accounts for approximately 2 percent, and VOCs account  
 18 for nearly 1 percent. The total amount of these pollutants emitted annually would depend on the  
 19 number and size of the fires and the amount of fuel consumed. The additional fires resulting from  
 20 this alternative would most likely be small fires in impact areas, which would contribute relatively  
 21 small amounts of air pollutants to the atmosphere. It is possible, however, that the additional training  
 22 could result in a large fire with more fuel and therefore greater levels of pollutants. These fires would  
 23 be infrequent, and their impacts to air quality would occur only for a short period of time. Therefore,  
 24 impacts would not be significant.

25 YTC's wildland fire management program, as described in **Section 6.5**, would continue to be  
 26 implemented to minimize the risk of fire, although it is expected that the incidence of fire, as well as  
 27 associated air effects, would still be greater under this alternative than under Alternative 1.

28 Given that the closest PSD Class I Area is located approximately 60 miles (97 km) from YTC,  
 29 additional fires under this alternative are not expected to impair visibility in any Class I Areas.

### 30 **6.7.7.3 Maneuver Training Direct and Indirect Effects**

#### 31 **6.7.7.3.1 Less than Significant Effects**

32 Under Alternative 2, there would be an increase in training activities on YTC, which could result in  
 33 an increase in the amount of fugitive dust, exhaust pollutants, and smoke produced relative to  
 34 Alternative 1.

35 **Table 6–16** summarizes the predicted emissions generated by Strykers and support vehicles on YTC  
 36 under Alternative 2. Combustion of diesel fuel by Strykers would generate approximately 85.81 tons  
 37 of CO, 74.64 tons of NO<sub>2</sub>, 3.40 tons of SO<sub>2</sub>, and 74.64 tons of VOCs from exhaust, while 2,893.49  
 38 tons of dust would be generated annually during training exercises (**Appendix E**). Combustion of  
 39 diesel fuel by support vehicles and trucks would generate 1.20 tons of CO, 0.84 ton of NO<sub>2</sub>, 0.04 ton  
 40 of SO<sub>2</sub>, and 0.84 ton of VOCs from exhaust, and 26.27 tons of dust annually during training  
 41 exercises (**Appendix E**).

1 Increased fuel storage and transfer for military vehicles would generate approximately 1 ton of  
 2 VOCs annually. Increases in fuel storage and transfer would result from the need to provide fuel to  
 3 new vehicles. These VOCs are emitted from vents on storage tanks and during the transfer of fuel  
 4 from the storage tank to the vehicle.

5 Increased generator usage in the field would generate approximately 5 tons of CO, 23 tons of NO<sub>x</sub>, 2  
 6 tons of VOCs, and 2 tons of PM<sub>10</sub> and PM<sub>2.5</sub> annually (**Table 6–16**). These emissions would be  
 7 associated with exhaust from generators used during field exercises.

8 Under Alternative 2, there would be an increased potential for hazardous air pollutants to be released  
 9 on YTC relative to Alternative 1, due to increased fuel usage and vehicle maintenance activities. All  
 10 fuel storage and transfer activities and vehicle maintenance activities would follow air quality  
 11 compliance procedures that meet NESHAPs. Therefore, significant effects to air quality associated  
 12 with hazardous air pollutants would not be expected to occur.

13 Criteria and toxic air pollutants would be generated during smoke training. Air emissions associated  
 14 with different levels of smoke training on YTC were evaluated in the *Final Environmental*  
 15 *Assessment for the Fielding of M56 and M58 Smoke Generators at Fort Lewis and Yakima Training*  
 16 *Center* (Army 1999), and in the *Final Environmental Assessment for Training with Smoke Munitions*  
 17 *at Fort Lewis and Yakima Training Center, Washington* (Army 2001d). To ensure the smoke training  
 18 would not violate air quality standards, use of smoke munitions and generators would not exceed the  
 19 limits identified in these two EAs.

#### 20 **6.7.7.4 Conformity Analysis**

21 Less than 100 acres (40 ha) of the YTC cantonment area are within a PM<sub>10</sub> maintenance area, for  
 22 which the increase threshold for a conformity analysis is 100 tons (91 metric tons) per year. Based  
 23 on total predicted new emissions occurring under Alternative 2, a conformity determination would  
 24 be triggered for PM<sub>10</sub>. Only a small portion of the proposed training would occur within this portion  
 25 of the YTC cantonment area, as dust can be generated by vehicles driving on paved roads.

26 To determine whether the actions under Alternative 2 would cause a violation of the NAAQS,  
 27 dispersion modeling was performed for emissions of PM<sub>10</sub>. The results of this modeling are  
 28 presented in **Table 6–17**.

29 These results indicate that emissions of PM<sub>10</sub> would be less than the NAAQS. Therefore, YTC would  
 30 prepare a FONSI to the General Conformity Rule under this alternative.

31 Training at YTC would not cause or contribute to an air quality violation at the installation boundary  
 32 under Alternative 2, and would not adversely affect the health of humans off the installation.  
 33 Therefore, air quality impacts associated with training would be less than significant.

### 34 **6.7.8 Alternative 3 — GTA Actions + CSS Soldiers**

35 Projected annual emissions under Alternative 3 are presented in **Table 6–18** (see **Appendix E** for  
 36 calculations).

#### 37 **6.7.8.1 Construction Direct and Indirect Effects**

##### 38 **6.7.8.1.1 Less than Significant Effects**

39 No additional construction projects above those described for Alternative 2 would occur under this  
 40 alternative, and the number of personnel at YTC would remain at or near current levels. Therefore,  
 41 associated air quality impacts would be the same as those described for Alternative 2.

42

**Table 6–17 Air Pollutant Concentrations Modeled at the YTC Installation Boundary (Including Monitored Background<sup>1</sup>) under Alternative 2**

Training Area	Pollutant Concentrations ( $\mu\text{g}/\text{m}^3$ ) <sup>1</sup>	
	24-hr PM <sub>10</sub>	Annual PM <sub>10</sub>
TA1	2.06	N/A
TA2	0.85	N/A
TA3	1.08	N/A
TA4	0.57	N/A
TA5	1.63	N/A
TA6	2.52	N/A
TA7	1.80	N/A
TA8	2.04	N/A
TA9	2.50	N/A
TA10	5.12	N/A
TA11	4.32	N/A
TA12	4.62	N/A
TA13	46.43	N/A
TA14	12.50	N/A
TA15	2.99	N/A
TA16	1.37	N/A
AA1	41.89	N/A
AA2	41.21	N/A
AA3	17.97	N/A
SDZ	5.61	N/A
MPRC	1.68	N/A
MPTR	2.66	N/A
All Training Areas	N/A	0.57
Maximum Modeled Concentration	46.43	0.57
Monitored Background	59.0	23.0
Total Impact	105.43	23.57
NAAQS	150	50

Note:

1. Includes Monitored Background, which refers to background concentrations of pollutants from natural sources, nearby sources, and unidentified sources. Source of background air data is EPA 2007.

1

2

**Table 6–18 Sources and Estimated New Annual Emissions at YTC under Alternative 3**

Source	Estimated New Annual Emissions (tpy)					
	CO	NO <sub>2</sub>	VOCs	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Stryker vehicle training	85.81	74.64	74.64	3.40	2,893.49	299.22
Other wheeled vehicle training	1.20	0.84	0.84	0.04	26.27	2.71
CSS wheeled vehicle training	2.55	2.16	2.16	0.18	29.78	4.03
Generators	5.37	24.92	1.99	1.65	1.81	1.81
Military vehicle fuel station usage	0	0	1.02	0	0	0
Total emissions	94.93	102.56	80.65	5.27	2,951.35	307.77
Conformity Threshold	100	N/A	N/A	N/A	100	N/A

3

### 6.7.8.2 *Live-Fire Training Direct and Indirect Effects*

#### 6.7.8.2.1 *Less than Significant Effects*

Under Alternative 3, there would only be a slightly greater amount of live-fire training than under Alternative 2. Therefore, the associated risk of fire and resultant air quality impacts would be similar to those described under Alternative 2 and would be less than significant.

### 6.7.8.3 *Maneuver Training Direct and Indirect Effects*

#### 6.7.8.3.1 *Less than Significant Effects*

Under Alternative 3, the amount of fugitive dust, vehicle exhaust pollutants, and other emissions associated with maneuver training would be greater than under Alternatives 1 and 2, because of the added training by CSS vehicles. **Table 6–18** summarizes the amount of pollutants generated by SBCT vehicles and CSS support vehicles at YTC. These emissions would include approximately 89.56 tons of CO, 77.64 tons of NO<sub>2</sub>, 3.62 tons of SO<sub>2</sub>, and 77.64 tons of VOCs from exhaust, and 2,949.54 tons of dust annually during training exercises (See **Appendix E** for more information). These estimates amount to only 1 to 3 percent greater emissions than under Alternative 2.

Increased fuel storage and transfer associated with military vehicles would generate approximately 1.02 tons of VOCs annually (**Table 6–18**), which is a negligible increase over Alternative 2. Emissions associated with generator usage would be slightly greater than those under Alternative 2, at approximately 5.32 tons of CO, 24.92 tons of NO<sub>2</sub>, 1.99 tons of VOCs, 1.66 tons of SO<sub>2</sub>, 1.76 tons of PM<sub>10</sub>, and 1.76 tons of PM<sub>2.5</sub> annually. These emissions are 5 to 6 percent greater than those under Alternative 2.

Under Alternative 3, there would be a slightly greater potential for hazardous air pollutants to be released on YTC than under Alternative 2. All fuel storage and transfer activities and vehicle maintenance activities would follow air quality compliance procedures that meet NESHAPs, and significant effects to air quality would not be expected to occur.

### 6.7.8.4 *Conformity Analysis*

Based on total predicted new emissions occurring under Alternative 3, a conformity determination would be triggered for PM<sub>10</sub>. To determine whether the proposed actions under Alternative 3 would cause a violation of the NAAQS, dispersion modeling was performed for PM<sub>10</sub>. The results of this modeling are presented in **Table 6–19**. These results indicate that the emissions would be less than the NAAQS. Therefore, training at YTC would not cause or contribute to an air quality violation at the installation boundary under Alternative 3. YTC would prepare a FONSI to the General Conformity Rule under this alternative. The projected increase in PM of 2,951 tons per year, most of which would originate outside the PM maintenance area, would not constitute a significant adverse effect to air quality under Alternative 3.

## 6.7.9 **Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

Projected annual emissions under this alternative are presented in **Table 6–20** (see **Appendix E** for calculations).

### 6.7.9.1 *Construction Direct and Indirect Effects*

#### 6.7.9.1.1 *Less than Significant Effects*

No additional construction projects beyond those described for Alternative 2 would occur under this alternative, and the number of personnel would remain at or near current levels. Therefore, associated air quality impacts would be the same as those under Alternatives 2 and 3 and would be less than significant.

**Table 6–19 Air Pollutant Concentrations Modeled at the YTC Installation Boundary (Including Monitored Background) under Alternative 3**

Training Area	Pollutant Concentrations ( $\mu\text{g}/\text{m}^3$ ) <sup>1</sup>	
	24-hr PM <sub>10</sub>	Annual PM <sub>10</sub>
TA1	2.09	N/A
TA2	0.87	N/A
TA3	1.11	N/A
TA4	0.58	N/A
TA5	1.66	N/A
TA6	2.58	N/A
TA7	1.84	N/A
TA8	2.08	N/A
TA9	2.56	N/A
TA10	5.22	N/A
TA11	4.40	N/A
TA12	4.72	N/A
TA13	47.39	N/A
TA14	12.76	N/A
TA15	3.05	N/A
TA16	1.39	N/A
AA1	42.76	N/A
AA2	42.09	N/A
AA3	18.36	N/A
SDZ	5.73	N/A
MPRC	1.72	N/A
MPTR	2.73	N/A
All Training Areas	N/A	0.59
Maximum Modeled Concentration	47.39	0.59
Monitored Background	52	22
Total Impact	99.39	22.59
NAAQS	150	50

Note:

1. Includes Monitored Background, which refers to background concentrations of pollutants from natural sources, nearby sources, and unidentified sources. Source of background air data is EPA 2007.

1

**Table 6–20 Sources and Estimated New Annual Emissions at YTC under Alternative 4**

Source	Estimated New Annual Emissions (tpy)					
	CO	NO <sub>2</sub>	VOCs	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Stryker vehicle training	85.81	74.64	74.64	3.40	2,893.49	299.22
Other wheeled vehicle training	1.20	0.84	0.84	0.04	26.27	2.71
CSS wheeled vehicle training	2.55	2.16	2.16	0.18	29.78	4.03
CAB wheeled vehicle training	2.33	1.95	1.95	0.16	71.17	7.32
Helicopters	8.52	0.71	7.01	0.25	0.26	0.26
Generators	10.50	48.72	3.88	3.22	3.46	3.46
Military vehicle fuel station usage	0	0	1.58	0	0	0
Total emissions	110.91	129.02	92.06	7.25	3,024.43	317
Conformity Threshold	100	N/A	N/A	N/A	100	N/A

## 6.7.9.2 *Live-Fire Training Direct and Indirect Effects*

### 6.7.9.2.1 *Less than Significant Effects*

Under Alternative 4, the amount of live-fire training, and therefore the risk of fire, would be greater than under the other alternatives. The total amounts of pollutants emitted annually in smoke from fire would depend on the number and size of the fires, and the amount of fuel consumed. It is expected that most of the additional fires under this alternative would be low-fuel fires that would contribute relatively small quantities of pollutants into the air. However, larger, more polluting fires in less fire-adapted habitats would also be a risk with the additional live-fire training. In all cases, impacts would last only a short amount of time. Additionally, existing fire management actions would continue to minimize the risk of larger fires, as discussed under Alternative 2. Effects to air quality would be less than significant.

Given that the closest PSD Class I Area is located approximately 60 miles (97 km) from YTC, additional fires under this alternative are not expected to impair visibility in any Class I Areas.

## 6.7.9.3 *Maneuver Training Direct and Indirect Effects*

### 6.7.9.3.1 *Less than Significant Effects*

Under Alternative 4, the amount of fugitive dust, vehicle exhaust, and other emissions associated with maneuver training would be greater than under the other alternatives, because of added training by CAB vehicles and helicopters. **Table 6–20** summarizes the total estimated emissions associated with maneuver training under Alternative 4. These emissions would include 97.38 tons of CO, 84.21 tons of NO<sub>2</sub>, 3.78 tons of SO<sub>2</sub>, and 84.21 tons of VOCs from exhaust, and 3,201.67 tons of dust annually during training exercises (**Appendix E**). Combustion of diesel fuel by helicopters would generate 8.52 tons of CO, 0.71 ton of NO<sub>2</sub>, 7.01 tons of VOC, and 0.25 ton of SO<sub>2</sub> from exhaust, and 3.46 tons of PM<sub>10</sub>/PM<sub>2.5</sub> annually during training exercises. The numbers and types of helicopters used by the medium CAB, annual training hours, landing and takeoff cycles, and emissions estimates are given in **Appendix E**. Annual emissions of most pollutants associated with vehicle and helicopter training combined are approximately 9 percent greater than under Alternative 3, and 10 to 13 percent greater than under Alternative 2. In the case of CO, emissions under Alternative 4 are 18 percent greater than those under Alternative 3 and 22 percent greater than those under Alternative 2.

Increased fuel storage and transfer associated with military vehicles would generate approximately 1.58 tons of VOCs annually, which would be greater than the amount under the other alternatives, but still minor. Emissions associated with generator usage would be about double those under Alternative 3, at approximately 10.50 tons of CO, 48.72 tons of NO<sub>2</sub>, 3.88 tons of VOCs, 3.22 tons of SO<sub>2</sub>, 3.46 tons of PM<sub>10</sub>, and 3.46 tons of PM<sub>2.5</sub> annually.

Under Alternative 4, there would be a greater potential for hazardous air pollutants to be released on YTC than under the other alternatives. All fuel storage and transfer activities and vehicle maintenance activities would follow air quality compliance procedures that meet NESHAPs, and significant effects to air quality would not be expected to occur.

## 6.7.9.4 *Conformity Analysis*

Based on total new emissions occurring under Alternative 4, emissions of CO and PM<sub>10</sub> would exceed the conformity threshold and trigger a conformity determination. To determine whether the proposed actions under Alternative 4 would cause a violation of the NAAQS, dispersion modeling

1 was performed for emissions of CO and PM<sub>10</sub>. The results of this modeling are presented in **Table 6–**  
 2 **21**. These results indicate that the predicted emissions of CO and PM<sub>10</sub> are less than the NAAQS, and  
 3 the proposed actions under Alternative 4 would not cause a violation of the NAAQS. YTC would  
 4 prepare a FONSI to the General Conformity Rule under this alternative. The projected increase in  
 5 PM of 3,204 tons per year, most of which would originate outside the PM maintenance area, would  
 6 not constitute a significant adverse effect to air quality. Additionally, the projected increase in CO of  
 7 110.9 tons per year, originating outside of the CO maintenance area, would not constitute a  
 8 significant adverse effect to air quality.

**Table 6–21 Air Pollutant Concentrations Modeled at the YTC Installation Boundary  
 (Including Monitored Background) under Alternative 4**

Training Area	Pollutant Concentrations ( $\mu\text{g}/\text{m}^3$ ) <sup>1</sup>			
	1-hr CO	8-hr CO	24-hr PM <sub>10</sub>	Annual PM <sub>10</sub>
TA1	5.11	0.89	2.15	N/A
TA2	1.90	0.35	0.89	N/A
TA3	3.05	0.56	1.13	N/A
TA4	1.28	0.24	0.59	N/A
TA5	4.24	0.83	1.70	N/A
TA6	5.98	0.96	2.64	N/A
TA7	5.73	0.92	1.89	N/A
TA8	5.54	0.93	2.13	N/A
TA9	6.99	10.76	2.62	N/A
TA10	9.93	2.00	5.35	N/A
TA11	7.86	1.61	4.51	N/A
TA12	6.40	1.74	4.84	N/A
TA13	85.17	21.08	48.66	N/A
TA14	18.77	5.40	13.08	N/A
TA15	6.09	1.30	3.13	N/A
TA16	2.96	0.54	1.43	N/A
AA1	43.63	13.76	43.76	N/A
AA2	70.68	16.86	43.11	N/A
AA3	35.53	8.59	18.84	N/A
SDZ	11.63	2.43	5.85	N/A
MPRC	4.59	1.08	1.77	N/A
MPTR	7.29	1.36	2.79	N/A
All Training Areas	N/A	N/A	N/A	0.60
Maximum Modeled Concentration	85.17	21.08	48.66	0.60
Monitored Background	5,057.47	3,563.22	52	22
Total Impact	5,142.64	3,584.30	100.66	22.60
NAAQS	40,000	10,000	150	50

Note:

1. Includes Monitored Background, which refers to background concentrations of pollutants from natural sources, nearby sources, and unidentified sources. Source of background air data is EPA 2007.

## 6.7.10 Cumulative Effects

### 6.7.10.1 Less than Significant Effects

Cumulative effects would be less than significant. Cumulative impacts to air quality would be associated with ongoing Army activities (including continued and increased training), as well as other emission sources in the region, such as car emissions and wood burning. Various regional

1 efforts to reduce air emissions and improve air quality would continue to help offset cumulative  
2 impacts and protect air quality.

3 In the Columbia Basin, development, population increases, and agriculture have contributed to air  
4 quality emissions. As a result of the cumulative emissions from numerous activities, particulate  
5 matter and CO have become pollutants of concern in the region. Wood stoves, wind erosion, off-road  
6 vehicles (including military training at YTC), and agricultural activities have all contributed to  
7 particulate matter in the air, with smoke from wood burning during winter the biggest contributor.  
8 Car emissions and winter wood smoke have been the primary regional source of CO emissions.

9 The proposed action and other actions and activities in the area of YTC would result in increases in  
10 air pollutant emissions within the region. Current, proposed, and future training would result in an  
11 increase in the number of Army vehicles utilized at YTC. There would be increased exhaust  
12 emissions from aircraft and ground vehicles, and in the case of vehicles used for maneuver training,  
13 increased dust emissions. Training on YTC takes place in remote areas, where winds predominantly  
14 transport air emissions away from more polluted areas in the Yakima Valley. On a regional scale, the  
15 population in the YTC ROI has increased over time and will likely continue to do so. Development  
16 in the region also continues to increase. As a result, emissions associated with personal vehicles,  
17 residences, and industry continue to increase. Army actions would be expected to contribute to  
18 cumulative impacts to air quality in the region. Continuing to follow fire management programs  
19 would help to minimize the amount of PM<sub>10</sub> generated by Army activities on YTC. Additionally,  
20 YTC's Master Dust Control Plan helps to minimize emissions in the form of dust.

21 Off-Post, continued improvements in vehicle fuel efficiency and pollution control, upgrading of  
22 construction standards for housing and industrial development to reduce energy use, better pollution  
23 control equipment and technology, and enforcement of pollution control regulations for industry  
24 should help to reduce air emissions regionally. Population growth in the Yakima Valley and portions  
25 of the Interior Columbia River Basin has lagged behind growth rates in other parts of Washington,  
26 helping to keep the amount of new air emissions low relative to other portions of the state. Control  
27 measures instituted by the Yakima Clean Air Agency (such as burn permits, burn bans, and  
28 compliance patrols) have helped improve air quality in the region and maintain air quality standards.

29 Based on current scientific research, there is growing concern about the potential effects of primary  
30 greenhouse gases (CO<sub>2</sub>, methane, NO<sub>x</sub>, ozone, water vapor, and chlorofluorocarbons) on global  
31 climate. Through many complex interactions on regional and global scales, the lower layers of the  
32 atmosphere experience a net warming effect. These trends could be caused by greenhouse warming  
33 or natural fluctuations in the climate. Information relevant to the specific impacts of Army projects,  
34 including the proposed actions, on the global climate is not known. The state of science pertaining to  
35 GHG is developing and it is not currently possible to predict at what levels emissions impact climate  
36 change. Consequently, conclusive scientific findings that would aide decision-makers are not  
37 possible at this time (40 CFR 1502.22).

38 Activities on YTC and regionally would produce some of the listed greenhouse gases, primarily as a  
39 result of power requirements and fuel consumption (activities that produce CO). The incremental  
40 contribution of greenhouse gases from ongoing training, however, would be negligible when  
41 compared to total greenhouse gas contributions. Efforts by YTC and regionally to reduce fossil fuel  
42 use and reduce emissions would help to ensure that cumulative impacts to air quality and global  
43 warming from activities on YTC and in the region be less than significant.

1 **6.7.11 Mitigation**

2 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
3 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
4 limit, repair, reduce, or compensate for the adverse effects.

5 **6.7.12 Conclusions**

6 Air emissions would be generated by personnel at YTC, by construction activities, and from military  
7 training activities. As these increase, the amount of pollutants generated increases. As shown above,  
8 total projected CO and PM<sub>10</sub> emissions from activities that would occur under the alternatives would  
9 exceed levels that trigger a conformity analysis. Dispersion modeling was conducted to determine  
10 the air quality impacts in the maintenance area. The proposed activities under all of the alternatives  
11 would not cause a violation of the NAAQS and do not violate the General Conformity Rule.

12 **6.8 NOISE**

13 The Army conducted a noise study in July 2008 (USACHPPM 2008a) to provide noise contours that  
14 forecast condition aircraft and impulsive weapons noise contours for the YTC Installation  
15 Operational Noise Management Plan and the YTC master plan.

16 The ROI for noise depends on the intensity of noise generation. The ROI is defined as the outer  
17 geographic limit of the direct noise effects. This includes the land and airspace that falls within the  
18 area where noise generated from the project area can be distinguished from other ambient noise. For  
19 this project, the distance could be up to 24 miles (39 km).

20 For this EIS, USACHPPM modeled a baseline condition and a forecast condition at YTC. The  
21 baseline condition represents Alternative 1. The forecast condition noise contours were created by  
22 modeling the baseline condition plus the fielding of a medium CAB. This scenario represents  
23 Alternative 4, and represents greater noise impacts than anticipated under any of the other action  
24 alternatives. Therefore, impacts to Alternatives 2 and 3 are qualitatively compared to modeled  
25 impacts of Alternative 4 in the following analysis.

26 **6.8.1 Resource-specific Significance Criteria**

27 The significance of the impacts is determined by the comparison of affected receptors to the  
28 acceptable compatible land uses. Sensitive receptors include residential areas, hospitals, and schools.  
29 Considerations used while evaluating noise impact significance include:

- 30 • Whether land use compatibility problems would be created (AR 200–1, Environmental  
31 Protection and Enhancement); and
- 32 • Whether peak noise and random blast noise levels are exceeded 15 percent of the time and  
33 would be likely to cause significant annoyance to individuals in incompatible land uses  
34 (USACHPPM evaluation of blast noise complaints).

35 **6.8.2 Overview of Noise Impacts by Alternative**

36 **Table 6–22** summarizes the noise impacts that would occur under each of the alternatives.

37

**Table 6–22 Summary of Potential Effects to Noise at and around YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	•	€	€	€
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	€	€	€	€
Cumulative Effects	€	€	€	€

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33

**6.8.3 Alternative 1 — No Action Alternative**

**6.8.3.1 Construction Direct and Indirect Effects**

**6.8.3.1.1 No Effects**

Under Alternative 1, no projects are planned for construction at YTC. Therefore, there would be no construction-related impacts to noise at YTC under this alternative.

**6.8.3.2 Live-fire Training Direct and Indirect Effects**

**6.8.3.2.1 Less than Significant Effects**

Training ranges and facilities necessary to support SBCTs are detailed in **Chapter 2**. Both small and large caliber weapons would be operated. Under Alternative 1, three SBCTs would be stationed at Fort Lewis, but only two SBCTs would likely train at YTC at any one time because of deployments.

Impacts from small caliber weapons are shown on **Figure 5–7**. Baseline impacts to Zone II exceed the southwestern boundary and impact a small portion of YTC. The Zone II (PK15[met] 87 dB) contour extends less than 3,937 feet (1,200 m) beyond the installation boundary and, because the software cannot account for any reflection or absorption as a result of the terrain, the actual levels extending beyond the installation boundary may be less than 87 dB PK15(met). Because the contours are based on peak levels rather than a cumulative or average level, the size of the contours would not change if the number of rounds fired increases. This impact would be less than significant. Baseline impacts from large caliber weapons are shown on **Figure 5–5**. There is no impact to the cantonment area. The LUPZ extends west of the boundary by 5,300 meters, and Zone II extends 4,265 feet (1,300 m). The LUPZ also extends beyond the southwestern boundary. These off-boundary areas are sparsely populated or unpopulated and have compatible land uses. The LUPZ extends beyond the southern boundary by 3,281 feet (1,000 m), Zone II extends approximately 1,640 feet (500 m), and Zone III extends 160 feet (50 m). This off-boundary area is zoned agricultural, is sparsely populated, and is compatible with the land use. Because this does not create a land use compatibility problem, this impact would continue to be less than significant.

Baseline impacts from VAH are shown in **Figure 5–6**. The LUPZ and Zone II noise contours do not extend beyond the boundary or near existing structures. The low number of operations does not produce a Zone III noise contour. The impact from the VAH would continue to be less than significant.

Complaint risk impacts are described in **Section 5.8**. Baseline and forecast impacts are the same because the size of the contours does not change if the number of rounds increases. The moderate (115 dB PK15 [met]) and high (130 dB PK15 [met]) complaint risk noise contours do not extend into

1 the YTC cantonment area. The probability of receiving noise complaints in the cantonment area  
2 would be low.

3 The moderate and high complaint risk noise contours do extend beyond the facility boundary.  
4 However, the actual risk of complaints may be low, as these areas are primarily mountainous or  
5 agricultural and either sparsely populated or unpopulated. Additionally, in the past 9 years, there  
6 have been noise-related inquiries, but there have been no recorded noise complaints at YTC  
7 (USACHPPM 2008b). Baseline noise contours at YTC show there are currently few residences  
8 exposed to high noise levels (USACHPPM 2008a). The lack of impact is primarily due to YTC's  
9 remote location and mountainous terrain surrounding YTC. The significance criteria would not be  
10 exceeded for live-fire training; therefore, under Alternative 1, overall impacts to noise from the live-  
11 fire training would be less than significant.

### 12 **6.8.3.3 Maneuver Training Direct and Indirect Effects**

#### 13 **6.8.3.3.1 Less than Significant Effects**

14 Larger unit training at the battalion and brigade levels would typically occur at YTC, and this  
15 training often incorporates company-level training. One or two SBCTs have been training at YTC  
16 since the Army fielded the first SBCT at Fort Lewis. Maneuver training can sometimes involve  
17 firing while some maneuver training just involves driving. Other maneuver training, such as convoy  
18 live-fire, involves firing while on the move. Strykers are quieter than tracked vehicles. Therefore,  
19 impacts from maneuver training would be less than impacts from live-fire training. The significance  
20 criteria would not be exceeded for maneuver training; therefore, under Alternative 1, impacts to  
21 noise from maneuver training would be less than significant.

## 22 **6.8.4 Alternative 2 — GTA Actions**

### 23 **6.8.4.1 Construction Direct and Indirect Effects**

#### 24 **6.8.4.1.1 Less than Significant Effects**

25 Two range construction projects are planned at YTC under Alternative 2. Impacts from construction  
26 would be short-term and less than significant because the significance criteria would not be  
27 exceeded.

### 28 **6.8.4.2 Live-fire Training Direct and Indirect Effects**

#### 29 **6.8.4.2.1 Less than Significant Effects**

30 Training ranges and facilities necessary to support a SBCT are detailed in **Table 2-7**. Both small and  
31 large caliber weapons would be operated. Under Alternative 2, three SBCTs would train at YTC  
32 annually. As noted above, noise impacts from Alternative 2 were not specifically modeled, but  
33 instead are compared to the modeled results for Alternative 4, discussed below. Impacts to noise  
34 from Alternative 2 would be similar to impacts described under Alternative 4, and would be less than  
35 significant. However, because Alternative 2 does not include a medium CAB, the noise impacts  
36 would be less than impacts from Alternative 4.

### 37 **6.8.4.3 Maneuver Training Direct and Indirect Effects**

#### 38 **6.8.4.3.1 Less than Significant Effects**

39 Larger unit training at the battalion and brigade levels would typically occur at YTC, and this  
40 training often incorporates company-level training. One or two SBCTs have been training at YTC  
41 since the Army fielded the first SBCT at Fort Lewis. Some maneuver training involves firing, some

1 involves only driving, and some (such as convoy live-fire) involves firing while on the move.  
2 Strykers are quieter than tracked vehicles. Therefore, impacts from maneuver training would be less  
3 than impacts from live-fire training. The significance criteria would not be exceeded for maneuver  
4 training; therefore, under Alternative 1, impacts to noise from maneuver training would be less than  
5 significant.

## 6 **6.8.5 Alternative 3 — GTA Actions + CSS Soldiers**

### 7 **6.8.5.1 Construction Direct and Indirect Effects**

#### 8 **6.8.5.1.1 Less than Significant Effects**

9 Under Alternative 3, both of the range projects identified for Alternative 2 would be constructed; no  
10 additional construction would occur. As described for Alternative 2, effects from the construction  
11 would be less than significant because the significance criteria would not be exceeded.

### 12 **6.8.5.2 Live-fire Training Direct and Indirect Effects**

#### 13 **6.8.5.2.1 Less than Significant Effects**

14 Because the addition of CSS Soldiers does not significantly impact noise from live-fire training,  
15 impacts to noise from Alternative 3 would be similar to those described for Alternative 2, and would  
16 be less than significant.

### 17 **6.8.5.3 Maneuver Training Direct and Indirect Effects**

#### 18 **6.8.5.3.1 Less than Significant Effects**

19 Because the addition of CSS Soldiers does not significantly impact noise from maneuver training,  
20 impacts to noise from Alternative 3 would be similar to those described for Alternative 2, and would  
21 be less than significant.

## 22 **6.8.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

### 23 **6.8.6.1 Construction Direct and Indirect Effects**

#### 24 **6.8.6.1.1 Less than Significant Effects**

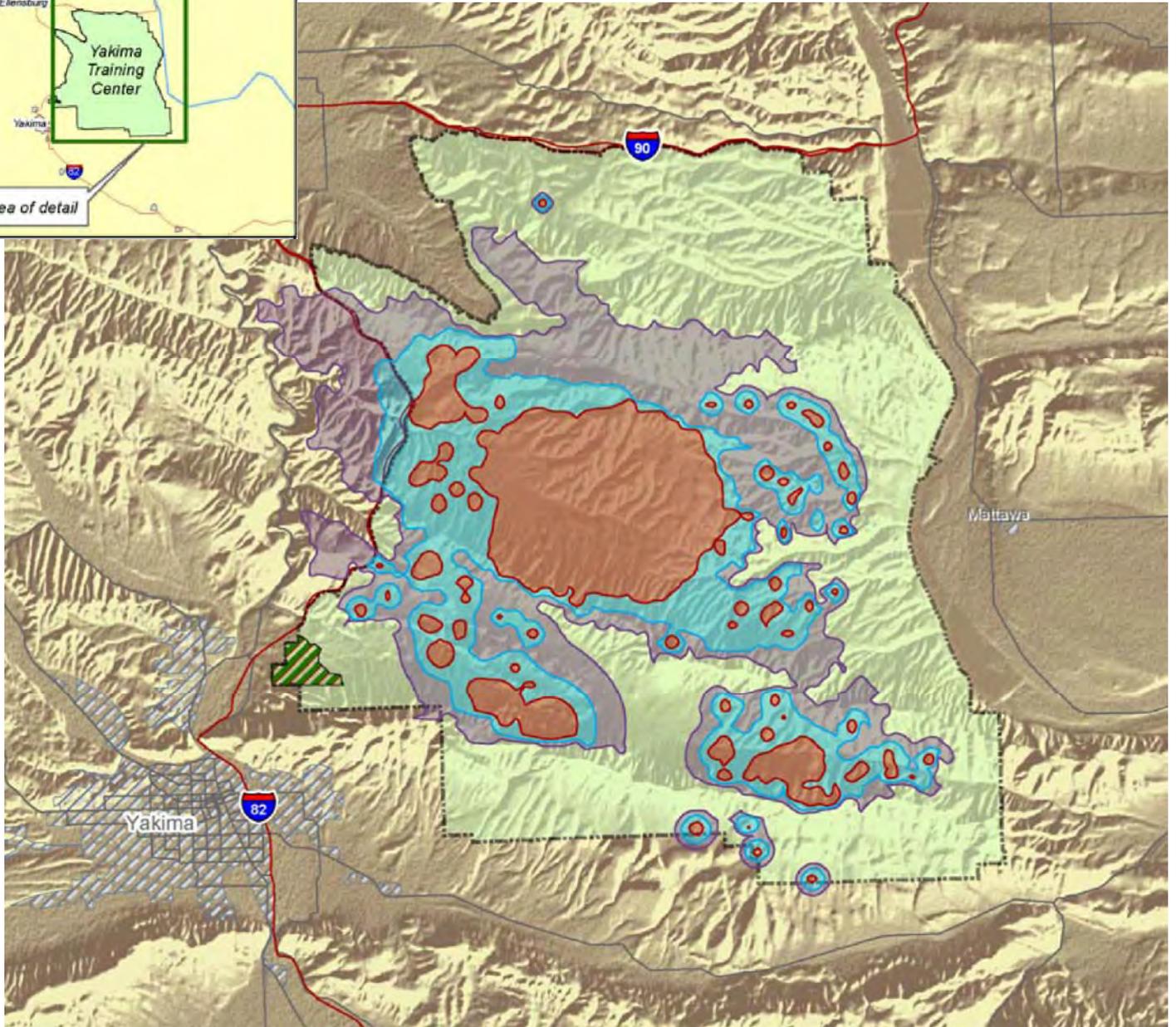
25 Under Alternative 4, both of the range projects identified for Alternative 2 would be constructed; no  
26 additional construction would occur. As described for Alternative 2, effects from construction would  
27 be less than significant because the significance criteria would not be exceeded.

### 28 **6.8.6.2 Live-fire Training Direct and Indirect Effects**

#### 29 **6.8.6.2.1 Less than Significant Effects**

##### 30 **6.8.6.2.1.1 Demolition and Large Caliber Weapons**

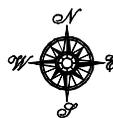
31 **Figure 6-1** contains the forecast contours for demolition and large caliber weapons. The forecast  
32 contours represent the existing operations and the proposed activity. Due to the small increase in  
33 activity, the forecast contours are almost identical to the baseline condition noise contours. The  
34 exception is well inside of the installation boundary, near the air-to-ground range and CIA. Because  
35 this does not create a land use compatibility problem, this impact would be less than significant.



Source: USACHPPM 2008a

**Legend**

-  115 dB PK15
-  130 dB PK15
-  Cantonment Area
-  Yakima Training Center
-  Interstate Highway



<b>FORT LEWIS GTA EIS</b>	
<i>Figure 6-1 Yakima Training Center Forecast Conditions Demolition and Large Caliber Operational Noise Contours</i>	
ANALYSIS AREA: Thurston & Pierce Counties, Washington	
Date: 7/14/2009	File: Ft. Lewis Figures.dwg
Prepared By: ETC	Layout: 018

#### 6.8.6.2.1.2 Small Caliber Weapons Noise Contour Modeling Results

The contours for small arms operations at YTC were created using PK15(met) as prescribed in Army Regulation 200-1. The contours show the predicted peak levels for individual rounds (metric term is PK15[met]). Because the contours are based on peak levels rather than a cumulative or average level, the size of the contours would not change if the number of rounds fired increases. The results for forecast contours are the same as the baseline shown in **Figure 5-7**. This impact would be less than significant.

#### 6.8.6.2.1.3 Vagabond Army Helicopter

The noise contours for the forecasted operations are shown in **Figure 6-2**. The additional airfield activity reflects the possibility of fielding a medium CAB. The LUPZ (60 ADNL) extends beyond the western boundary approximately 2 miles (3 km). The land is zoned agricultural and/or remote with limited development potential and, as such, the land use is compatible. However, there is the potential for aircraft to cause annoyance while entering/existing the airspace, as this area is sparsely populated. The Zone II (65 ADNL) and Zone III (75 ADNL) noise contours do not extend beyond the installation boundary. This impact would be less than significant.

#### 6.8.6.2.1.4 Flight Corridors

Based on modeling results, a buffer area of one-third mile was added to each side of the corridor. This gives an adequate buffer to reduce possible annoyance. The YTC flight corridor generally follows the installation boundary, avoiding areas that are off-limits to aviation or that have altitude restrictions. The majority of the flight track centerline is approximately 700 feet (200 m) from the boundary. The aircraft utilizing the flight corridor are the AH-64, CH-47, OH-58D, and the UH-60. There may be multiple aircraft or multiple types of aircraft in the corridor at one time. Because the buffers are based on maximum levels, the number of aircraft in the corridor at one time does not affect the size of the annoyance potential buffer.

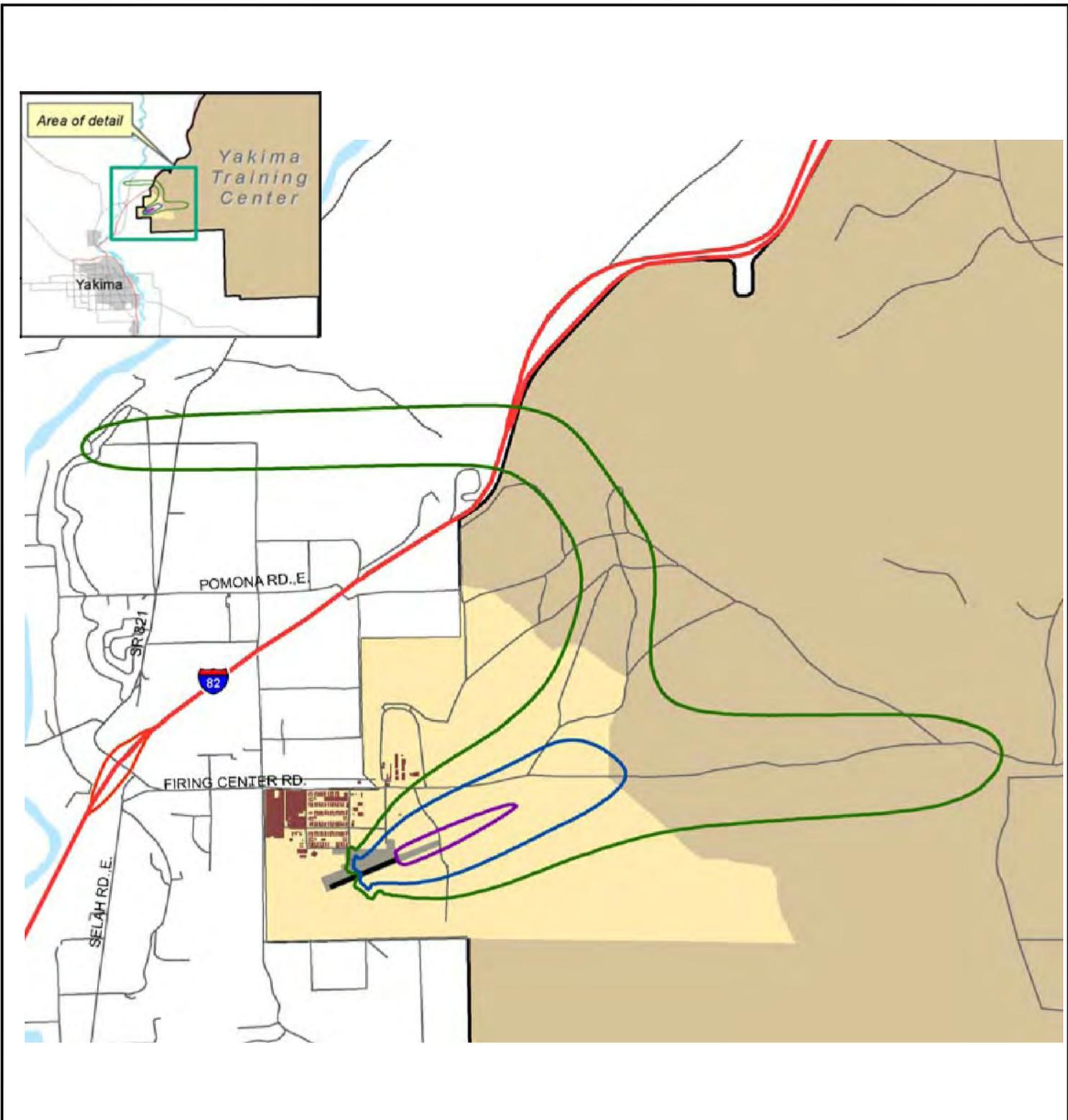
The supplemental buffer width is based upon achieving maximum values of 70 dBA and/or a 5 percent complaint risk or more at the receiver. One third mile is added to the flight corridor width for the loudest aircraft (AH-64 and CH-47) using the flight corridor to account for annoyance created by activity taking place at the edge of the flight corridors. The supplemental buffers cannot account for any terrain features. The supplemental annoyance buffer would extend slightly beyond the western installation boundary and beyond the eastern boundary (**Figure 6-3**). The majority of the area is unpopulated; therefore, the risk of annoyance is low. This impact would be less than significant.

#### 6.8.6.2.1.5 Complaint Risk

To predict the risk of complaints for demolition and large caliber weapon operations, PK15(met) contours were developed. The baseline and forecast complaint risk contours are identical because the type of weapon and ranges utilized are the same. The complaint risk contours are based on peak levels rather than a cumulative or average level. Therefore, the size of the contours would not change if the number of rounds fired increases. The large caliber weapons complaint risk noise contours are shown in **Figure 5-8**.

The moderate and high complaint risk noise contours do not extend into the YTC cantonment area. Consequently, the probability of receiving noise complaints in the cantonment area would be low.

The moderate and high risk of complaint contours extend beyond the western and southern boundaries, and the moderate risk of complaint contour extends beyond the southwestern boundary. The complaint risk guidelines would indicate a moderate to high probability of receiving noise complaints from demolition and large caliber activity at YTC. However, the actual risk of complaints

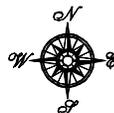


Source: USACHPPM 2008a

**Legend**

- Existing Structures
- Vagabond Army Heliport
- Cantonment Area
- Yakima Training Center
- LUPZ (60 dB ADNL)
- Zone II (65 dB ADNL)
- Zone III (75 dB ADNL)

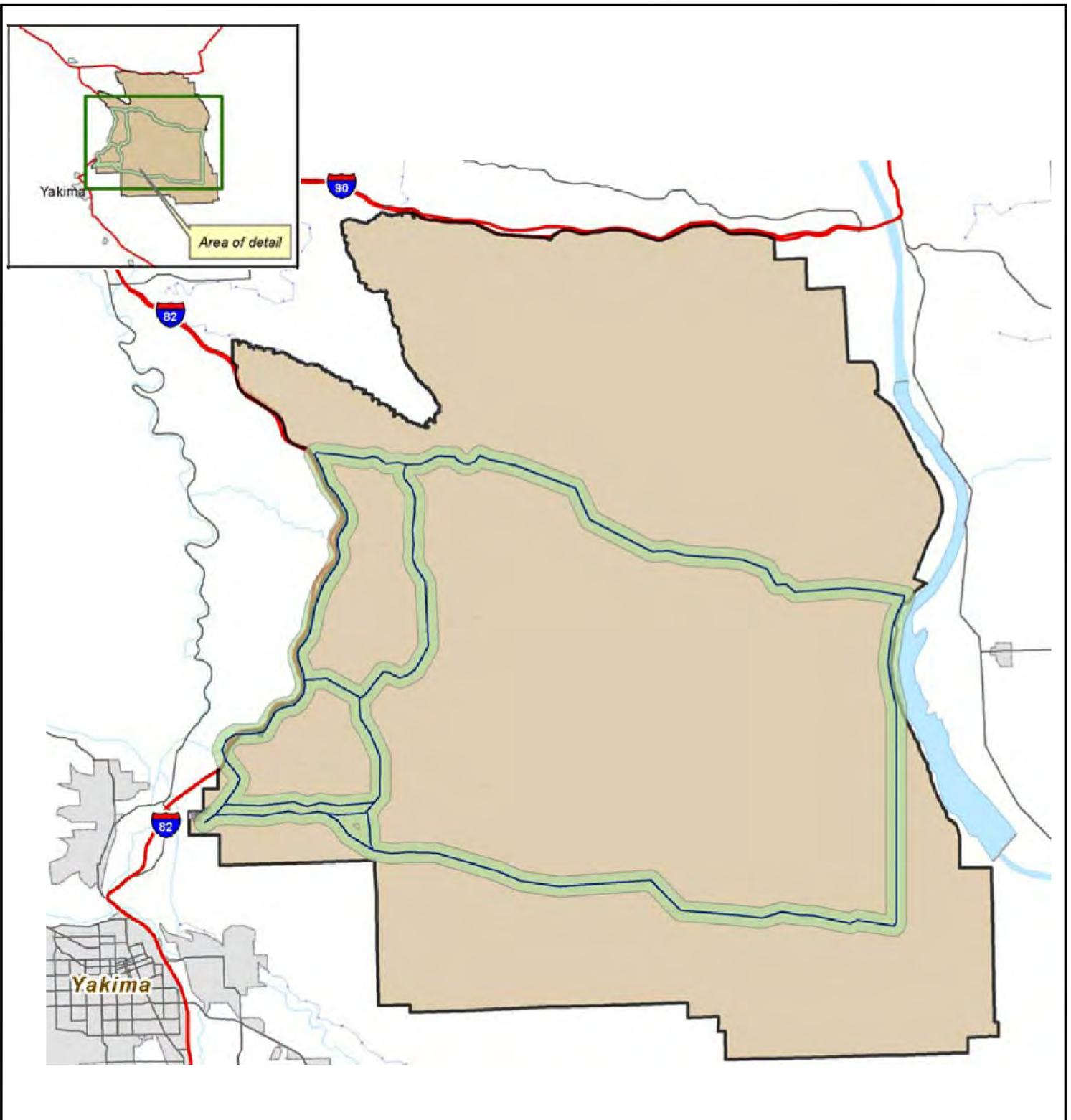
\* Forecast condition noise contours include the baseline activity and the proposed Heavy Combat Aviation Brigade.



**FORT LEWIS GTA EIS**

*Figure 6-2  
Yakima Training Center Forecast Conditions  
Vagabond Army Heliport Operational  
Noise Contours*

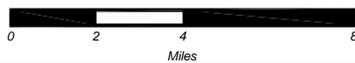
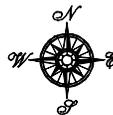
ANALYSIS AREA: Thurston & Pierce Counties, Washington	
Date: 7/14/2009	File: Ft. Lewis Figures.dwg
Prepared By: ETC	Layout: 019



Source: USACHPPM 2008a

### Legend

-  Flight Corridor Centerline
-  Supplemental Annoyance Buffer (1/3 Mile)
-  Yakima Training Center
-  Interstate Highway



### FORT LEWIS GTA EIS

*Figure 6-3  
Yakima Training Center Corridor  
Annoyance Buffer*

ANALYSIS AREA: Thurston & Pierce Counties, Washington	
Date: 7/14/2009	File: Ft. Lewis Figures.dwg
Prepared By: ETC	Layout: 020

1 may be low, as these areas are primarily mountainous or agricultural, and are either sparsely  
2 populated or unpopulated. In the past 9 years, there have been noise-related inquiries beyond the  
3 southern boundary, but there have been no recorded noise complaints at YTC (USACHPPM 2008b).

4 Forecast noise contours at YTC suggest that few residences are currently exposed to high noise  
5 levels (USACHPPM 2008a). The lack of impact is primarily due to YTC's remote location and the  
6 surrounding mountainous terrain. The significance criteria would not be exceeded for live-fire  
7 training; therefore, overall impacts to noise from live-fire training would be less than significant  
8 under Alternative 4.

### 9 **6.8.6.3 Maneuver Training Direct and Indirect Effects**

#### 10 **6.8.6.3.1 Less than Significant Effects**

11 Some maneuver training involves firing, some involves only driving, and some (such as convoy live-  
12 fire) involves firing while on the move. Strykers are quieter than tracked vehicles. Therefore,  
13 impacts from maneuver training would be less than impacts from live-fire training. The significance  
14 criteria would not be exceeded for maneuver training; therefore, maneuver training noise impacts  
15 would be less than significant.

## 16 **6.8.7 Cumulative Effects**

### 17 **6.8.7.1 Less than Significant Effects**

18 While there would be additive noise impacts from the alternatives in conjunction with other noise-  
19 generating activities and actions at YTC and in the region, cumulatively, these effects would be less  
20 than significant. The principle activities within the region that contribute to noise are those mission  
21 activities occurring at YTC, including training by visiting units. Other sources contributing to noise  
22 are Yakima Municipal Airport; Bowers Field; and traffic noise from I-82, I-90, SR 2, SR 12, and  
23 SR 97. Projects considered in the cumulative impacts analysis are continued HIMARS launching and  
24 one project (DIGITAL MPRC, listed in **Appendix B**), that has already been analyzed under NEPA.  
25 The DIGITAL MPRC would contribute to cumulative construction-related noise impacts.

26 Under the HIMARS program, 432 rockets are fired annually with 54 rockets launched during each  
27 battalion exercise. An exercise lasts 1 to 5 days. Impacts to noise from HIMARS would be expected  
28 to be similar to those associated with larger arms and demolitions where the 115 PK15(met) contour  
29 does not impact the cantonment area and extends beyond the western, southwestern, and southern  
30 boundaries. While HIMARS would add to noise impacts, cumulative noise impacts would be less  
31 than significant.

## 32 **6.8.8 Mitigation**

33 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
34 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
35 limit, repair, reduce, or compensate for the adverse effects.

## 36 **6.9 LAND USE CONFLICT/COMPATIBILITY**

37 Impacts to land uses and recreation resources were assessed based on whether the proposed project  
38 activities would be compatible with existing or planned land uses in the ROI for each project  
39 alternative. Impacts on recreation resources were assessed by determining the types of land and  
40 recreational uses in and around the project activities and then evaluating their sensitivity to the short-  
41 and long-term project effects. Localized and temporary impacts on land use during construction are  
42 also evaluated, as well as training changes to land that is currently used for training. Also considered



1 maintenance activities. There would be no direct and indirect impacts from construction activities to  
 2 existing and planned land uses, including non-military uses, at YTC under Alternative 1.

### 3 **6.9.3.2 Live-fire Training Direct and Indirect Effects**

#### 4 **6.9.3.2.1 Less than Significant Effects**

5 Direct and indirect effects from live-fire training, which is one of the primary factors contributing to  
 6 indirect effects on surrounding land uses, would continue under current levels of use. Under current  
 7 levels of use, there are no changes to land uses or conflicts with existing land use, as live-fire  
 8 training is the primary existing land use of live-fire ranges and impact areas. Indirect impacts from  
 9 continued live-fire activities would include effects from noise, dust, and training-related traffic.  
 10 These indirect effects to land use activities in neighboring areas would continue at current levels  
 11 because the number of required live-fire user days per year at YTC would be near current levels  
 12 under Alternative 1. Implementation of YTC's administrative management programs and associated  
 13 land management practices would continue. Consequently, there would be no additional direct and  
 14 indirect impacts to military and non-military land uses from Alternative 1, and impacts would remain  
 15 less than significant.

### 16 **6.9.3.3 Maneuver Training Direct and Indirect Effects**

#### 17 **6.9.3.3.1 Less than Significant Effects**

18 Direct and indirect effects from maneuver training intensity and frequency at YTC would remain at  
 19 current levels. Implementation of YTC's administrative management programs and associated land  
 20 management practices would continue. Continuing noise, dust, or other indirect effects outside the  
 21 installation boundaries could preclude locating residences or other sensitive receptors in these areas  
 22 in the future. These effects would continue under Alternative 1; however, no additional impacts are  
 23 anticipated, and impacts would remain less than significant.

## 24 **6.9.4 Alternative 2 — GTA Actions**

### 25 **6.9.4.1 Construction Direct and Indirect Effects**

#### 26 **6.9.4.1.1 Less than Significant Effects**

27 No projects involving construction, or any other activity with the potential to affect existing land  
 28 uses in the cantonment area, are proposed under Alternative 2. Therefore, no impacts to existing land  
 29 use designations within the cantonment area are anticipated, and Alternative 2 would not conflict  
 30 with the YTC Master Plan update.

31 The two range/training infrastructure projects proposed under Alternative 2 would be located within  
 32 existing range/training areas at YTC and would support live-fire training. Construction of range  
 33 projects would indirectly affect nearby land uses because of increased noise, dust, odors,  
 34 construction-related traffic, adverse effects on views from public areas, and human presence and  
 35 activity in the construction sites. The SFF would be a new live-fire range in TAA 1. Live fire would  
 36 be a new military use of TAA 1; however, the primary objective of meeting military mission goals  
 37 would be met. Effects to current military and non-military land uses are anticipated to be less than  
 38 significant. The MMPG would be located in Range 5. This range project would not constitute a  
 39 change in the land use or conflict with existing land uses, as the current military training use of  
 40 Range 5 includes live-fire training.

41 During construction on Range 5, UXO could be encountered. Potential impacts associated with the  
 42 presence of UXO and mitigation by implementation of Army SOPs are evaluated in greater detail in  
 43 **Section 5.12**. UXO cleanup and the evacuation of structures, if necessary, would be a temporary

1 disruption of training activities and other land uses, such as recreation and tribal uses of resources.  
2 Live-fire activities do not currently take place on TAA 1; therefore, UXO would likely not be  
3 encountered during construction.

4 Direct and indirect impacts to military and non-military land uses from range construction under  
5 Alternative 2 would be less than significant. There would be no change to existing land uses, and  
6 disruptions of existing military and non-military land uses from construction activities would be  
7 temporary.

#### 8 **6.9.4.2 Live-fire Training Direct and Indirect Effects**

##### 9 **6.9.4.2.1 Less than Significant Effects**

10 Under Alternative 2, training would increase at all ranges on YTC, and would increase both the  
11 number of rounds fired and vehicular traffic to and from training areas. Increased noise, dust, or  
12 other indirect effects associated with this alternative are not expected to affect off-Post land uses.  
13 The areas surrounding live-fire training areas are uninhabited lands within the installation. No  
14 residential areas, schools, hospitals, or businesses are expected to be affected. These impacts would  
15 be localized to the vicinity around the ranges. The nearest inhabited area is the cantonment area to  
16 the southwest of TAA 1.

17 Recreational and tribal access to authorized activities related to cultural and natural resources in  
18 Range 5 would not be affected by Alternative 2, as access to this impact area is currently and would  
19 continue to be restricted. The SFF would be a new live-fire range in TAA 1, and this area is not  
20 currently used for live-fire training. Under Alternative 2, use of this area for live-fire training would  
21 close the range to recreational and tribal uses. While this would be a change in the land use, it is not  
22 considered a significant change because the primary land use is military training, and this area is  
23 located within an existing range on YTC. In addition, sufficient dispersed recreation opportunities  
24 exist on other YTC training areas. No developed recreation areas occur in TAA 1, and none would  
25 be affected from this change in use.

26 Outdoor recreation activities in impact areas contaminated with UXO are prohibited. Therefore, no  
27 change to current opportunities and levels of recreational uses are expected from UXO from  
28 increased training within the training areas.

29 Training areas adjoining live-fire training areas would be affected by increased live-fire training.  
30 Increased use of live-fire ranges would increase the frequency of activation of SDZs, which could  
31 cause an adjoining maneuver area to be unavailable for training. Implementation of Alternative 2  
32 would increase the potential for training conflicts. There would also be decreased recreation  
33 opportunities and tribal access for those adjoining maneuver areas affected by the activation of  
34 SDZs; however, these opportunities exist on other training areas at YTC. Impacts to adjoining  
35 training areas from increased use of SDZs would be less than significant because of the continued  
36 implementation of scheduling, regulatory, and administrative measures as described in the  
37 CNRMP/INRMP. Strict adherence to applicable regulations and procedures would continue to  
38 reduce or remove potential hazards to recreation uses and tribal access. Effects to these non-military  
39 uses would be less than significant.

#### 40 **6.9.4.3 Maneuver Training Direct and Indirect Effects**

##### 41 **6.9.4.3.1 Less than Significant Effects**

42 Existing maneuver training areas at YTC are expected to accommodate the 50 percent increase in the  
43 amount of maneuver training under Alternative 2. YTC is anticipated to support most large

1 maneuver training at the company and battalion levels and above. There would be no change to  
2 existing land uses from this increased training; however, there would be an increased frequency and  
3 intensity of use, which could conflict with desired land conditions in training areas. These effects  
4 could include the degradation of soils and vegetation cover, which would physically degrade land  
5 conditions over time and make conditions unsafe and less desirable for training, thus impeding the  
6 ability to support the primary land use of supporting military mission goals.

7 Current management and monitoring objectives focus on rehabilitating training damage and support  
8 ITAM's goals to revegetate disturbed areas and stabilize soils that have been impacted through  
9 training activities. Continued implementation of these objectives would minimize conflicts with land  
10 use management plans or policies and reduce impacts to less than significant. An increase in the  
11 frequency of maneuver training would affect non-military land uses of recreation and access by  
12 tribes to cultural and natural resources. Currently, training areas are open to recreational and tribal  
13 uses when there is no scheduled maneuver training. However, an increase in the number of Soldiers  
14 training would increase the number of operating hours for maneuver training. The opportunities for  
15 access to training areas would be reduced for dispersed recreational uses, such as hunting. Land uses  
16 are managed through multiple programs. Regulatory and administrative measures are described in  
17 the CNRMP/INRMP, which incorporates information and guidance presented in numerous planning  
18 documents and programs. On YTC, those land uses that do not meet the military mission either are  
19 prohibited in specific areas or must be scheduled for time periods that will not conflict with military  
20 training activities. Continued implementation of these scheduling and administrative measures with  
21 ongoing training would reduce impacts to recreation and tribal uses to less than significant.

22 Under Alternative 2, military activities, training, and restriction areas would be confined within the  
23 YTC maneuver training area boundaries and would not affect off-Post land uses. To accommodate  
24 expanded missions, and concurrently minimize encroachment from or upon the installation, YTC  
25 should continue to update management prescriptions in various land use planning and management  
26 programs to address greater levels of training uses. Adverse effects to military and non-military land  
27 uses from changes in land uses or from increased frequency and intensity of training are mitigated by  
28 specific requirements to protect soils, vegetation, riparian areas, and wetland resources that are  
29 presented in the appropriate resource sections of this analysis. The continued development of the GIS  
30 program and incorporation of the program into existing land management programs would increase  
31 the effectiveness of efforts to implement specific resource mitigation and monitoring requirements  
32 by reducing conflicts and redundancy among various programs.

## 33 **6.9.5 Alternative 3 — GTA Actions + CSS Soldiers**

### 34 **6.9.5.1 Construction Direct and Indirect Effects**

#### 35 **6.9.5.1.1 Less than Significant Effects**

36 There would be no construction projects implemented under Alternative 3 in addition to those that  
37 would occur under Alternative 2. Impacts on land uses during construction are described under  
38 Alternative 2, and would be temporary and less than significant.

### 39 **6.9.5.2 Live-fire Training Direct and Indirect Effects**

#### 40 **6.9.5.2.1 Less than Significant Effects**

41 Under Alternative 3, increased live-fire training would occur because of CSS Soldiers training at  
42 YTC in addition to GTA unit changes and a third SBCT under Alternative 2. Impacts on land use at  
43 and surrounding YTC would be very similar under Alternative 3 to those described under Alternative  
44 2. The minor increase in live-fire training under Alternative 3 over Alternative 2 levels would not  
45 result in additional impacts to land use beyond those described for Alternative 2.

1       **6.9.5.3    *Maneuver Training Direct and Indirect Effects***

2       **6.9.5.3.1    *Less than Significant Effects***

3       The increases in maneuver training from the addition of CSS Soldiers are expected to be small.  
4       There would be no change to existing land uses; however, there would be an increased frequency and  
5       intensity of use for maneuver training activities, which could conflict with desired land conditions in  
6       training areas. The effects include the physical degradation of soils and vegetation cover as described  
7       for Alternative 2, but would occur to a greater level under Alternative 3 due to the increase in  
8       Soldiers training. Continued implementation of current management and monitoring objectives that  
9       focus on rehabilitating training damage would minimize conflicts with land use management plans or  
10      policies and reduce impacts to less than significant.

11      An increase in the frequency of maneuver training would also increase the effects on such non-  
12      military land uses as recreation and access by tribes to cultural and natural resources described for  
13      Alternative 2. However, this increase would be small. Continued implementation of scheduling and  
14      administrative measures with ongoing training would reduce impacts to recreation and tribal uses to  
15      less than significant.

16      Under Alternative 3, military activities, training, and restriction areas would be confined within the  
17      YTC maneuver training area boundaries and would not affect off-Post land uses. To accommodate  
18      expanded missions, and concurrently minimize encroachment from or upon the installation, YTC  
19      should continue to update management prescriptions in various land use planning and management  
20      programs to address greater levels of training uses.

21      **6.9.6    Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

22      **6.9.6.1    *Construction Direct and Indirect Effects***

23      **6.9.6.1.1    *Less than Significant Effects***

24      There would be no construction projects implemented under Alternative 4 in addition to those that  
25      would occur under Alternative 2. Impacts on land uses during construction are described under  
26      Alternative 2, and would be temporary and less than significant.

27      **6.9.6.2    *Live-fire Training Direct and Indirect Effects***

28      **6.9.6.2.1    *Less than Significant Effects***

29      Under Alternative 4, additional live-fire training would occur associated with the medium CAB. The  
30      primary land use for the impact areas is live-fire training; therefore, current land use designations  
31      would not change with the additional training of a medium CAB. The effects of increased training on  
32      non-military land uses would be the same as those described under Alternative 3, with the exception  
33      of additional impacts to non-military uses from the 110 helicopters that accompany a medium CAB.  
34      There would be no change to non-military land use opportunities; however, the visual and noise  
35      disturbance from helicopters in flight could diminish the recreation experience for some users. This  
36      impact would be less than significant because the primary land use of meeting the military mission  
37      would not be affected. Tribal access would not be affected.

38      The increased number of Soldiers training at YTC under Alternative 4 would increase the frequency  
39      of live-fire training area use, thus increasing the number of rounds fired, as well as increased  
40      vehicular traffic. Increases in the frequency and intensity of training may increase the frequency of  
41      activation of SDZs over that which would occur under Alternatives 2 and 3, which could cause an  
42      adjoining maneuver area to be unavailable for training. There would also be decreased recreation

1 opportunities and tribal access for those adjoining maneuver areas affected by the activation of  
2 SDZs; however, these opportunities exist on other training areas at YTC. Impacts to adjoining  
3 training areas from increased use of SDZs would be less than significant due to the continued  
4 implementation of scheduling, regulatory, and administrative measures described in the CNRMP/  
5 INRMP. Effects to non-military uses from increased live-fire training are anticipated to be less than  
6 significant.

### 7 **6.9.6.3 Maneuver Training Direct and Indirect Effects**

#### 8 **6.9.6.3.1 Less than Significant Effects**

9 There would be no direct and indirect changes to existing land uses from increased maneuver  
10 training associated with the medium CAB; however, there would be an increased frequency and  
11 intensity of use for maneuver training activities, which could conflict with desired land conditions in  
12 training areas. The effects include the physical degradation of soils and vegetation cover as described  
13 for Alternative 2; however, the increase above levels that would occur under Alternative 2 would be  
14 small. Medium CAB activities involve aviation training, which have less than significant effects on  
15 soils and vegetation.

16 Many of the soils at YTC are susceptible to wind erosion, so that rotor downdrafts during flight  
17 training and landing/takeoff operations in maneuver areas or other training ranges would increase the  
18 potential for soil erosion. Increased levels of soil erosion and the resulting potential adverse effects  
19 to vegetation cover could affect the primary mission of the Land Management Program at YTC to  
20 support training by rehabilitating and maintaining land resources to provide a realistic training  
21 environment. Any additional effects to soils and vegetation cover from medium CAB training that  
22 could affect military training or non-military uses (such as recreation and tribal access) would be less  
23 than significant because the effects from helicopter training are likely to be small relative to other  
24 training activities that occur on the ground. Further, the YTC Land Management Program conducts  
25 routine maintenance and long-term repairs of land resources throughout training areas. In addition,  
26 current management and monitoring objectives focus on rehabilitating training damage and support  
27 ITAM's goals to revegetate disturbed areas and stabilize soils that have been impacted through  
28 training activities. Continued implementation of these objectives would minimize conflicts with land  
29 use management plans or policies.

30 An increase in the frequency of training would increase the effects on non-military land uses of  
31 recreation and access by tribes to cultural and natural resources above those described for Alternative  
32 3. Continued implementation of scheduling and administrative measures with ongoing training  
33 would reduce impacts to recreation and tribal uses to less than significant. In addition, medium CAB  
34 maneuver training would result in indirect effects on non-military uses from visual and noise  
35 disturbance from helicopters in flight. These disturbances could diminish the recreation experience  
36 for some users. This impact would be less than significant because the primary land use of meeting  
37 the military mission would not be affected. Tribal access would not be affected.

38 Hunting in maneuver areas would be affected by noise disturbances to wildlife from flight and  
39 gunnery activities by the medium CAB, and from noise and wind disturbances from low-level  
40 helicopter flights. The effects from flight and gunnery activities on wildlife species, including game  
41 species, would not be significant, as wildlife populations are habituated to current levels of noise.  
42 Impact to hunting activities would not be significant because once these disturbances cease, animals  
43 would be able to resume normal activities. Potential impacts to wildlife from helicopter flights are  
44 evaluated in greater detail in **Section 6.3.3**. Under Alternative 4, military activities, training, and  
45 restriction areas would be confined within the YTC maneuver training area boundaries and would

1 not affect off-Post land uses. To accommodate expanded missions, and concurrently minimize  
2 encroachment from or upon the installation, YTC should continue to update management  
3 prescriptions in various land use planning and management programs to address greater levels of  
4 training uses.

## 5 **6.9.7 Cumulative Effects**

### 6 **6.9.7.1 Less than Significant Effects**

7 Other projects and activities that could contribute to cumulative impacts on land use and recreation  
8 include current ongoing and planned Army projects such as maintenance activities and ongoing and  
9 visiting unit training activities at YTC. Alternative 1 would not contribute any new impacts to land  
10 use and recreation at YTC or regions surrounding the installation beyond those that are already  
11 occurring; therefore, cumulative impacts on land use would remain less than significant under  
12 Alternative 1.

13 Alternatives 2, 3, and 4 would not reallocate or change existing land uses on YTC and would not  
14 result in significant impacts to land uses with continued implementation of administrative,  
15 management, and monitoring programs. In addition, implementation of other Army and non-Army  
16 ongoing and reasonably foreseeable future projects is not likely to reallocate or change current land  
17 use designations in YTC. Implementation of other Army projects in addition to Alternative 2, 3, or 4  
18 would increase the frequency and intensity of military uses of existing land, including live-fire and  
19 maneuver training activities in ranges. The increased military uses under these alternatives could  
20 potentially degrade existing land conditions by increasing soil erosion and increasing the likelihood  
21 of igniting wildfires, with Alternative 4 having the biggest contribution to cumulative impacts due to  
22 having the greatest amount of training. However, as evaluated in the Soils Erosion analysis (**Section**  
23 **6.1**), cumulative impacts to soil erosion are expected to be less than significant under all of the  
24 alternatives with implementation of current management and monitoring objectives that focus on  
25 rehabilitating training damage. In light of historic, ongoing, and reasonably foreseeable future  
26 actions, the cumulative impacts to land uses at YTC would be less than significant.

## 27 **6.9.8 Mitigation**

28 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
29 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
30 limit, repair, reduce, or compensate for the adverse effects.

## 31 **6.10 TRAFFIC AND TRANSPORTATION**

32 Troops and equipment are transported between Fort Lewis and YTC in convoys as directed by Fort  
33 Lewis Regulation 55–2. The annual number of convoys between Fort Lewis and YTC is highly  
34 variable. Convoys typically consist of 6 or more vehicles organized to operate as a column or the  
35 dispatch of 10 or more vehicles per hour to the same destination over the same route. The approved  
36 convoy route from Fort Lewis to YTC is I–5 to I–405 to I–90 to I–82. The convoys are timed to  
37 avoid the primary rush hours of 0600 to 0900 and 1500 to 1700 on I–5 and I–405 (Brayton 2009).

### 38 **6.10.1 Resource-specific Significance Criteria**

39 Factors considered when determining whether an alternative would have a significant impact to  
40 traffic and transportation include the extent or degree to which its implementation would result in:

- 41 • Intersection operations — increase congestion at intersections currently operating at (or  
42 anticipated to operate at) capacity;



1 to standard growth level increases at Fort Lewis and associated training activities occurring at YTC;  
2 however, this increase would be negligible.

### 3 **6.10.4 Alternative 2 — GTA Actions**

#### 4 **6.10.4.1 Construction Direct and Indirect Effects**

##### 5 **6.10.4.1.1 Less than Significant Effects**

6 No additional transportation facilities are planned for construction at YTC under Alternative 2.  
7 Construction of new range projects at YTC proposed under Alternative 2 would result in an increase  
8 in construction-related vehicles at YTC. Construction-related traffic may result in back-ups at access  
9 points, and could interfere with on-Post traffic by causing delays. However, these impacts would be  
10 temporary and less than significant.

#### 11 **6.10.4.2 Live-Fire Training Direct and Indirect Effects**

##### 12 **6.10.4.2.1 Less than Significant Effects**

13 Although live-fire training activities at YTC would increase under Alternative 2, the increase would  
14 involve smaller groups with fewer vehicles than maneuver training, and would not occur at the same  
15 time as maneuver training. Any increase in traffic associated with increased live-fire training would  
16 not be noticeable to other motorists and would not disrupt or alter local traffic patterns. Therefore,  
17 less than significant impacts on traffic and transportation would be anticipated from live-fire training  
18 under Alternative 2.

#### 19 **6.10.4.3 Maneuver Training Direct and Indirect Effects**

##### 20 **6.10.4.3.1 Less than Significant Effects**

21 Under Alternative 2, the larger unit maneuvers at the company, battalion, and brigade levels would  
22 continue to occur at YTC. While the number of troops participating in each training session is  
23 expected to remain at existing levels, the amount of training would increase by 50 percent under  
24 Alternative 2. Therefore, the frequency of convoys traveling between Fort Lewis and YTC would  
25 increase by 50 percent. These convoys would continue to use the approved convoy route between  
26 Fort Lewis and YTC, and would continue to avoid primary rush hours. Impacts from these convoys  
27 could be noticeable by other motorists; however, the impacts would be temporary (only during travel  
28 between the installations) and would be less than significant. No long-term impacts on roadway  
29 segment or intersection operations would occur.

##### 30 **6.10.4.3.1.1 Access Control Points (ACPs) and Operations**

31 Under Alternative 2, the traffic volumes accessing YTC gates and using on-Post streets would not  
32 measurably increase on a daily basis. However, the frequency of the training session traffic accessing  
33 YTC is anticipated to increase by up to 50 percent under Alternative 2 because of GTA actions and a  
34 third SBCT training at YTC. This increase would result in more frequent back-ups at ACPs during  
35 larger training sessions; however, this impact would be temporary (although recurring) and less than  
36 significant.

1 **6.10.5 Alternative 3 — GTA Actions + CSS Soldiers**

2 **6.10.5.1 Construction Direct and Indirect Effects**

3 **6.10.5.1.1 Less than Significant Effects**

4 Impacts on traffic and transportation from construction activities would be the same as those  
5 described under Alternative 2. No additional transportation or other facilities are planned for  
6 construction at YTC as part of Alternative 3.

7 **6.10.5.2 Live-Fire Training Direct and Indirect Effects**

8 **6.10.5.2.1 Less than Significant Effects**

9 The small increase in live-fire training activities under Alternative 3 would only minimally increase  
10 associated traffic over levels anticipated under Alternative 2. This increase would not be noticeable  
11 to other motorists and would not disrupt or alter local traffic patterns. Therefore, impacts on traffic  
12 and transportation would be less than significant.

13 **6.10.5.3 Maneuver Training Direct and Indirect Effects**

14 **6.10.5.3.1 Less than Significant Effects**

15 Under Alternative 3, the number of troops participating in each training session is expected to  
16 increase by 3.2 percent compared to Alternative 2 due to the addition of CSS Soldiers to training  
17 sessions. This increase in Soldiers would have a resulting increase in convoy size accessing YTC.  
18 These convoys would continue to use the approved convoy route between Fort Lewis and YTC, and  
19 would continue to avoid primary rush hours. The increase in convoy size under Alternative 3 would  
20 be small, and would likely not increase impacts to traffic and transportation. As discussed under  
21 Alternative 2, the increased frequency of convoys traveling between Fort Lewis and YTC could be  
22 noticeable to other motorists; however, the impacts would be temporary (only during travel between  
23 the installations) and would be less than significant.

24 **6.10.5.3.1.1 Access Control Points (ACPs) and Operations**

25 The convoy sizes and subsequent traffic volumes at the gates accessing YTC and using the on-Post  
26 streets are anticipated to increase by 3.2 percent compared to Alternative 2. These increases in  
27 convoy size and frequency would result in more frequent back-ups at ACPs during larger training  
28 sessions; however, these impacts would be temporary (although recurring) and less than significant.

29 **6.10.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

30 **6.10.6.1 Construction Direct and Indirect Effects**

31 **6.10.6.1.1 Less than Significant Effects**

32 Impacts on traffic and transportation from construction activities would be the same as those  
33 described under Alternative 2. No additional transportation or other facilities are planned for  
34 construction at YTC as part of Alternative 4.

35 **6.10.6.2 Live-Fire Training Direct and Indirect Effects**

36 **6.10.6.2.1 Less than Significant Effects**

37 The increase in live-fire training activities under Alternative 4 would only minimally increase  
38 associated traffic over levels anticipated under Alternative 3. This increase would not be noticeable

1 to other motorists and would not disrupt or alter local traffic patterns. Therefore, impacts on traffic  
2 and transportation would be less than significant.

### 3 **6.10.6.3 Maneuver Training Direct and Indirect Effects**

#### 4 **6.10.6.3.1 Less than Significant Effects**

5 Under Alternative 4, the number of troops participating in each training session is expected to  
6 increase by 8.7 percent compared to Alternative 3. This increase in Soldiers would result in an  
7 increase in convoy size accessing YTC; however, Soldiers conducting helicopter training would  
8 access YTC via the air, and would not contribute to impacts on traffic or transportation. Flight routes  
9 and airspace impacts are described in **Section 6.13**. All convoys would continue to use the approved  
10 convoy route between Fort Lewis and YTC, and would continue to avoid primary rush hours. The  
11 increase in convoy size under Alternative 4 would be small, and would likely not increase impacts to  
12 traffic and transportation. As discussed under Alternative 2, the increased frequency of convoys  
13 traveling between Fort Lewis and YTC could be noticeable by other motorists; however, the impacts  
14 would be temporary (only during travel between the installations) and would be less than significant.

##### 15 **6.10.6.3.1.1 Access Control Points and Operations**

16 The convoy sizes and subsequent traffic volumes at the gates accessing YTC and using the on-Post  
17 streets are anticipated to increase by up to 8.7 percent compared to Alternative 3. However, medium  
18 CAB Soldiers conducting training in helicopters at YTC would fly the helicopters between Fort  
19 Lewis and YTC for training, and would not contribute to impacts on traffic or transportation at  
20 ACPs. Any increases in convoy size and frequency that would occur under Alternative 4 would  
21 result in more frequent backups at ACPs during larger training sessions; however, these impacts  
22 would be temporary (although recurring) and less than significant.

### 23 **6.10.7 Cumulative Effects**

#### 24 **6.10.7.1 Less than Significant Effects**

25 Regional growth in population and employment is expected to increase traffic volumes on I-82 by  
26 less than 1 percent per year. Negligible operations impacts are expected from this small increase  
27 because I-82 has sufficient capacity to accommodate the change in traffic. The increased size and  
28 frequency of convoys traveling between Fort Lewis and YTC under Alternatives 2, 3, and 4 would  
29 have an additive impact on traffic along I-82. However, because impacts from convoy traffic would  
30 be temporary (although recurring), the resulting cumulative impacts on traffic and transportation  
31 would be less than significant. In addition, helicopters associated with the medium CAB under  
32 Alternative 4 would be flown to YTC for training activities, and would not contribute to cumulative  
33 impacts on transportation or traffic.

### 34 **6.10.8 Mitigation**

35 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
36 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
37 limit, repair, reduce, or compensate for the adverse effects.

## 6.11 SOCIOECONOMICS

### 6.11.1 Resource-specific Impact Analysis Methodology

A number of measures are used to assess the economic effects that a given alternative could have on the regional economy. Attention is focused on the project-induced effects on population, employment, income, and sales volume.

The initial step in estimating socioeconomic effects is to characterize aspects of the construction and operational phases of the alternatives. With the aid of economic impact modeling techniques (described as follows), the economic effects of each aspect of the alternatives are translated into measures such as jobs and income.

The primary catalyst for changes to socioeconomic resources is a change in economic activity, represented by components such as industrial output (value of goods and services), employment, and income. Changes in employment have the potential to affect population, housing, and associated community services and infrastructure.

The following distinction is made between direct effects and secondary effects, the latter comprising both indirect and induced effects:

- Direct effects are defined as changes in expenditures on goods and services directly related to construction and operation. For example, an increase of \$25 million in the final demand for construction inputs (such as concrete block and brick) will cause that manufacturing sector to increase output by \$25 million worth of concrete block and brick.
- Indirect effects are defined as backward linkages through expenditures on intermediate goods or services required by the direct industry in order to increase output. These include construction or operation labor and other inputs. For example, \$25 million worth of additional concrete block and brick would require increased output by the cement-producing industry (to produce an additional \$2.5 million worth of cement) and aggregate industry (to produce \$0.5 million worth of sand/gravel).
- Induced effects are defined as forward linkages derived from employees (both direct and indirect) spending wages within a region. For example, if additional employees were hired to work in the industries supporting and providing inputs to the construction sector, their personal consumption expenditures will induce employment.

The differentiation among direct, indirect, and induced effects contributes to the concept of the “economic multiplier.” The larger and more highly urbanized the area, the more complex and integrated the economy is likely to be. Thus, more of the additional economic activity would likely occur within the area and increase the size of the multiplier. Conversely, the smaller and more rural an area, the less complex the economy is likely to be, and thus a larger portion of the additional economic activity spurred by the Proposed Action would occur outside the area and decrease the size of the multiplier.

The Army’s EIFS model is used to assess the economic effects of GTA alternatives. Results are compared to RTVs to evaluate the significance of these effects in relation to the regional economy.

RTVs are based on an evaluation of the historical trends for the defined region and measures of local historical fluctuations in the variables of sales volume, income, employment, and population. These evaluations identify the positive and negative changes within which a project can affect the local economy without creating a significant impact. The greatest historical changes define the boundaries

1 that provide a basis for comparing an action’s impact on the historical fluctuation in a particular area.  
2 Specifically, EIFS sets the upper (positive) boundary by multiplying the maximum historical  
3 deviation of the variables by 100 percent; the lower (negative) boundary is set by multiplying the  
4 maximum historical deviation of the variables by 75, 67, 67, and 50 percent, respectively. These  
5 boundaries determine the amount of change that will affect an area. The percentage allowances are  
6 arbitrary, but sensible. The maximum positive historical fluctuation is allowed with expansion  
7 because economic growth is beneficial. While cases of damaging economic growth have been cited,  
8 and although the zero-growth concept is being accepted by many local planning groups, military  
9 base reductions and closures generally are more harmful to local economics than are expansion.

10 Therefore, if the change in a given variable resulting from a proposed action, such as sales volume,  
11 income, employment, or population, is more than the maximum positive historical deviation, i.e.,  
12 more than 100 percent of the maximum positive historical deviation, it is considered a significant  
13 positive impact. However, if the change in a given variable caused by the proposed action is more  
14 than 75 percent of the maximum negative historical deviation of sales, it will be considered a  
15 significant negative impact.

16 The potential for disproportionate adverse impacts to minority and low-income populations from  
17 implementation of the project was identified during the public scoping process. This issue is  
18 addressed in the following sections for each alternative.

19 Socioeconomic impacts resulting from implementation of any alternative at YTC would be  
20 significantly less than those impacts projected for Fort Lewis. This is due to several factors:

- 21 1. There would be no additional military personnel or civilian employees assigned to or hired at  
22 YTC under any of the alternatives.
- 23 2. While the frequency of training and the number of Soldiers trained per year would increase,  
24 the economic impact of the increased number of Soldiers visiting YTC would be limited  
25 because Soldiers do not generally have an opportunity to leave YTC during training.
- 26 3. New construction activity at YTC would be limited under any of the alternatives.

### 27 **6.11.2 Resource-specific Significance Criteria**

28 Factors considered in determining whether an alternative would have a significant impact on the  
29 socioeconomic structure of the ROI would include the extent or degree to which its implementation  
30 would:

- 31 • Change the local housing market or vacancy rates, particularly when compared to the availability  
32 of affordable housing;
- 33 • Increase student enrollment beyond the capacity of the local schools;
- 34 • Change any social, economic, physical, environmental, or health conditions so as to  
35 disproportionately affect low-income or minority populations; or
- 36 • Disproportionately endanger children in areas on or near the proposed project activities or  
37 installations.

### 38 **6.11.3 Overview of Socioeconomic Impacts by Alternative**

39 **Table 6–25** provides a summary of the socioeconomics-related impacts associated with each of  
40 the alternatives.

41

**Table 6–25 Summary of Potential Socioeconomic Impacts at YTC**

<b>Construction and Population Change (Economic Effects)</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Construction Direct and Indirect Effects	•	€+	€+	€+
Live-fire Training Direct and Indirect Effects	€+	€+	€+	€+
Maneuver Training Direct and Indirect Effects	€+	€+	€+	€+
Cumulative Effects	€+	€+	€+	€+
<b>Housing</b>				
Construction Direct and Indirect Effects	•	•	•	•
Live-fire Training Direct and Indirect Effects	N/A	N/A	N/A	N/A
Maneuver Training Direct and Indirect Effects	N/A	N/A	N/A	N/A
Cumulative Impacts	•	•	•	•
<b>Quality of Life</b>				
Construction Direct and Indirect Effects	•	•	•	•
Live-fire Training Direct and Indirect Effects	•	€	€	€
Maneuver Training Direct and Indirect Effects	•	€	€	€
Cumulative Effects	•	€	€	€
<b>Environmental Justice</b>				
Construction Direct and Indirect Effects	•	•	•	•
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	€	€	€	€
Cumulative Effects	€	€	€	€
<b>Protection of Children</b>				
Construction Direct and Indirect Effects	•	€	€	€
Live-fire Training Direct and Indirect Effects	•	•	•	•
Maneuver Training Direct and Indirect Effects	•	•	•	•
Cumulative Effects	•	•	•	•

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects

+ = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

1

2 **6.11.4 Alternative 1 — No Action**

3 Alternative 1 serves as the baseline condition for analysis and includes those stationing decisions that  
 4 have already been made by Headquarters, Department of the Army to include stationing actions  
 5 recommended by the BRAC Commission (Army 2007e) as well as Army Global Defense Posture  
 6 Realignment actions that took place prior to 2009.

7 **6.11.4.1 Construction and Population Change: Economic Effects**8 **6.11.4.1.1 No Effects**

9 Because there would be no new construction at YTC under Alternative 1, there would be no  
 10 economic impact in the YTC ROI from construction under Alternative 1.

11 **6.11.4.1.1.1 On- and Off-Post Population**

12 Implementation of Alternative 1 would not result in changes to the population in the ROI. There  
 13 would be no increased labor demand associated with Alternative 1, and thus there would be no in-

1 migration of construction workers. There are no new stationing actions contained in Alternative 1,  
2 and there would be no increase in active duty military or civilian employment (**Table 6–26**).

**Table 6–26 YTC Projected Population Increase Under Alternative 1**

	Current	After Implementation Alternative 1 (FY 2013)	Total Population Increase
Military Personnel	124	124	0
Civilian Employees/Contractors	320	320	0
Military Family Members	188	188	0
Total	632	632	0

### 3 4 **6.11.4.2 Live-Fire and Maneuver Training: Economic Effects**

#### 5 **6.11.4.2.1 Less than Significant Effects**

6 Soldiers training at YTC are largely confined to YTC during training exercises, and thus the  
7 opportunity to interact with the local populace or provide customers to local merchants is limited; as  
8 a result, the economic impact generated by the off-Post spending of the Soldiers would be less than  
9 significant, although positive.

### 10 **6.11.4.3 Construction, Live-Fire and Maneuver Training: Housing Effects**

#### 11 **6.11.4.3.1 No Effects**

12 There is no on-Post housing at YTC for permanently stationed military personnel or civilian  
13 employees (Larson 2009c), and there is no provision under Alternative 1 to construct on-Post  
14 housing. There are no increases projected in either the stationed military personnel or civilian  
15 employee populations at YTC under Alternative 1. As a result, there would be no impacts to on-Post  
16 housing or the off-Post housing market in the ROI.

### 17 **6.11.4.4 Construction, Live-Fire and Maneuver Training: Quality of Life Effects**

#### 18 **6.11.4.4.1 No Effects**

19 Service-related impacts are usually the result of increased populations of military personnel or  
20 civilian employees. Alternative 1 would not result in an increase in either the on-Post or off-Post  
21 population. As a result, there would be no increase in the demand for on- or off-Post schools or child  
22 care facilities, family support, retirement, public safety, and other services. In addition, no increases  
23 in demand for on- or off-Post shops or recreation are anticipated.

### 24 **6.11.4.5 Construction, Live-Fire and Maneuver Training: Environmental Justice**

#### 25 **6.11.4.5.1 Less than Significant Effects**

26 Construction impacts are temporary in nature, but they can range from annoying to detrimental for  
27 those living near a construction site. Because no construction activity is proposed under Alternative  
28 1, no construction-related adverse impacts to low-income and minority communities would be  
29 realized.

30 During training activities at YTC, minority and low-income populations living near YTC would be  
31 expected to continue to experience noise disturbance under Alternative 1. Because weapons noise  
32 contours extend off the installation boundary, and because the percentage of minority and low-

1 income individuals residing in the ROI is higher than the percentage in Washington State as a whole,  
 2 disproportionate effects to these populations from noise may occur. However, given that the areas  
 3 where noise contours extend beyond the installation boundary are sparsely populated or unpopulated  
 4 and zoned for agricultural uses (USACHPPM 2008a), that there would not be an increase in the  
 5 frequency of loud noises, and that weapons noise would remain intermittent and infrequent, these  
 6 effects would not be significant. Therefore, no disproportionately high and adverse effects on  
 7 minority and low-income populations are anticipated under Alternative 1.

8 **6.11.4.6 Construction, Live-Fire and Maneuver Training: Protection of Children**

9 **6.11.4.6.1 No Effect**

10 There are no construction activities contained under Alternative 1; as a result, there is no potential  
 11 for adverse impacts to children during construction. There are no children currently residing or  
 12 regularly present at YTC, so there would be no effects on children during training exercises.

13 **6.11.5 Alternative 2 — GTA Actions**

14 **6.11.5.1 Construction and Population Change: Economic Effects**

15 **6.11.5.1.1 Less than Significant Effects**

16 Implementation of Alternative 2 at YTC would involve more frequent training activities. In order to  
 17 meet the needs of Alternative 2, YTC must construct the necessary ranges required to meet training  
 18 readiness standards of units it receives as part of the growth and realignment of the Army. The  
 19 currently scheduled range/training infrastructure construction projects for FY 10 through FY 15 are  
 20 shown in **Table 6–27**.

**Table 6–27 Proposed Construction Projects at YTC Under Alternative 2**

<b>Range</b>	<b>Expected Start of Construction</b>	<b>Estimated Cost</b>
Sniper Field Fire	FY 2011	\$4.0 million
Multi-purpose Machine Gun Range	FY 2014	\$1.75 million

21  
 22 Construction of the ranges at YTC under Alternative 2 would result in a small positive economic  
 23 benefit in the YTC ROI as shown in **Table 6–28**.

24 The changes in specific economic parameters would fall well within historical fluctuations, as  
 25 represented by the RTVs shown in **Table 6–28**, and would thus be considered minor and less than  
 26 significant.

27 **6.11.5.1.1.1 On- and Off-Post Population**

28 Due to the small size of the construction projects at YTC under Alternative 2, no temporary  
 29 movement of workers from outside the ROI to fill the supply of construction job opportunities is  
 30 expected. No new military personnel or civilian employees would be stationed at YTC under  
 31 Alternative 2; the population at YTC would remain as shown in **Table 6–26**.

**Table 6–28 Economic Impacts from Construction and Population Change at YTC under Alternative 2**

<b>Fiscal Year</b>	<b>Indicator</b>	<b>Projected Change</b>	<b>Change (Percentage)</b>	<b>Rational Threshold Values Range (Percentage)</b>
2011	Direct Sales Volume	\$4,000,000		
	Total Sales Volume	\$10,120,000	0.15	-6.69 to 10.05
	Direct Income	\$678,159		
	Total Income	\$1,715,741	0.03	-8.61 to 9.88
	Direct Employment	19		
	Total Employment	48	0.04	-3.1 to 6.49
	Local Population	0	0.00	-0.9 to 1.49
	Local Off-Post Population	0		
2014	Direct Sales Volume	\$1,750,000		
	Total Sales Volume	\$4,427,500	0.07	-6.69 to 10.05
	Direct Income	\$296,694		
	Total Income	\$750,637	0.02	-8.61 to 9.88
	Direct Employment	8		
	Total Employment	21	0.02	-3.1 to 6.49
	Local Population	0		-0.9 to 1.49

1

2 **6.11.5.2 Live-Fire and Maneuver Training: Economic Effects**3 **6.11.5.2.1 Less than Significant Effects**

4 Increased live-fire and maneuver training at YTC may result in some less than significant, beneficial  
5 economic impacts. Additional maneuver training would increase the demand for liquid fuels at YTC.  
6 Some portion of this additional demand may be met by local commercial establishments. The direct  
7 and indirect impacts of these purchases would be positive, but would be less than significant.

8 Soldiers training at YTC are largely confined to YTC during training exercises, and thus the  
9 opportunity to interact with the local populace or provide customers to local merchants is limited. As  
10 a result, the economic impact generated by the off-Post spending of the Soldiers would be less than  
11 significant. Increased on-Post spending by the additional Soldiers undergoing training at YTC may  
12 generate indirect effects as replacement stock is purchased from local providers; this impact,  
13 however, is projected to be less than significant.

14 The increase in frequency of gunnery training under Alternative 2 could provide additional ignition  
15 sources for range fires on the installation, which could cause economic damage if a large fire were to  
16 burn off the installation and damage private property. However, the risk of such a fire would  
17 continue to be more dependent on weather conditions and the success of YTC's fire management  
18 program rather than on the frequency of training activities. In addition, while an escaped fire could  
19 have a significant economic effect on adjacent private landowners, the overall economic impact to  
20 the region would be insignificant (Army 2004b).

21 In summary, the direct and indirect economic impacts from increased live-fire and maneuver training  
22 at YTC are projected to be less than significant.

1       **6.11.5.3 Construction, Live-Fire and Maneuver Training: Housing Effects**

2       **6.11.5.3.1 No Effects**

3       There is no on-Post housing at YTC for permanently stationed military personnel or civilians, and  
4       there is no provision under Alternative 2 to construct on-Post housing. There are no increases  
5       projected in stationed military or civilian populations at YTC because of actions under Alternative 2.  
6       Soldiers visiting YTC for training reside at YTC in barracks or in the field as part of their training.  
7       As a result, there would be no impacts to on- or off-Post housing under this alternative.

8       **6.11.5.4 Construction, Live-Fire and Maneuver Training: Quality of Life Effects**

9       **6.11.5.4.1 Less than Significant Effects**

10       Alternative 2 would not result in an increase in either the on-Post or off-Post populations; as a result,  
11       there would be no increase in demand for schools or on- or off-Post child care facilities, public  
12       safety, and other services. However, increased live-fire and maneuver training under Alternative 2  
13       would result in less than significant quality of life impacts, as described below.

14       **6.11.5.4.1.1 Family Support and Retirement Services**

15       Because YTC is a training center, it offers very limited services to families of active duty Soldiers or  
16       retirees. Family support and retirement services would continue to be provided to residents and  
17       retirees by the Army Community Support Center, the Family Connection, Family Readiness Groups,  
18       and the Retirement Services Office located at Fort Lewis.

19       No immediate increase in the retiree population is anticipated. No new active duty personnel would  
20       be assigned to YTC under Alternative 2. Although some of the older active duty personnel may  
21       possibly choose to retire or settle in this area after discharge or retirement, the small number of  
22       active duty personnel suggests that it is unlikely that Alternative 2 would have an impact on the  
23       retiree population.

24       **6.11.5.4.1.2 Shops and Services, On-Post**

25       The limited number and variety of on-Post shops and services at YTC may be impacted under  
26       Alternative 2 as a result of increased training activities at YTC. For instance, there may be additional  
27       demands placed on these limited retail facilities at YTC by visiting Soldiers. However, these impacts  
28       are projected to be less than significant. The development of any infrastructure to house additional  
29       shops and services would undergo separate NEPA review before implementation in accordance with  
30       regulations and current practice.

31       **6.11.5.4.1.3 Shops and Services, Off-Post**

32       There are projected to be no impacts to off-Post shops and services in the YTC ROI because of  
33       actions under Alternative 2. Although the frequency of training activities at YTC would increase,  
34       Soldiers are generally confined to YTC during training activities, thus restricting their ability to  
35       partake of off-Post services and shopping.

36       **6.11.5.4.1.4 Recreation**

37       Demand for recreational facilities could increase with the additional training activities at YTC  
38       considered under Alternative 2. The increase in demand for on-Post recreational facilities from  
39       Soldiers training at YTC could result in assigned personnel increasing the demand for off-Post  
40       recreational facilities (assigned personnel can choose to utilize off-Post facilities, whereas Soldiers  
41       training at YTC cannot). The services provided through the private sector can be expected to respond  
42       to the increased demand by increasing supply.

1       **6.11.5.5 Construction, Live-Fire and Maneuver Training: Environmental Justice**

2       **6.11.5.5.1 Less than Significant Effects**

3       Construction impacts are temporary in nature, but they can range from annoying to detrimental for  
4       those living near a construction site. Because any construction activity would be carried out within  
5       the boundaries of YTC, and because there are no permanent housing facilities at YTC, no adverse  
6       impacts to low-income and minority communities from construction are expected. Impacts from  
7       noise, dust, and traffic generated by construction would be minimized by careful construction  
8       planning. Fugitive dust emissions would be minimized throughout the construction period by use of  
9       conventional dust suppression, BMPs, and mitigation techniques, such as soil erosion and  
10       sedimentation control, restrictions on where vehicles can travel on site, speed controls for  
11       construction vehicles and equipment, and watering of exposed soil and demolition debris to control  
12       dust. Noise from construction equipment would be controlled by use of appropriate sound mitigation  
13       techniques and BMPs. Construction traffic during peak hours would be reduced by the use of  
14       centralized construction staging areas.

15       During training activities at YTC, minority and low-income populations living near YTC would be  
16       expected to experience greater amounts of noise disturbance under Alternative 2 than under  
17       Alternative 1 as a result of the increased frequency of training. Because weapons noise contours  
18       extend off the installation boundary, and because the percentage of minority and low-income  
19       individuals residing in the ROI is higher than the percentage in Washington State as whole,  
20       disproportionate effects to these populations from noise may occur. However, given that the areas  
21       where noise contours extend beyond the installation boundary are sparsely populated or unpopulated  
22       and zoned for agricultural uses (USACHPPM 2008a), that there would be an increase in the  
23       frequency of loud noises rather than in the noise levels themselves, and that weapons noise, even  
24       with the additional training, would remain intermittent and infrequent, these effects would not be  
25       significant. Therefore, no disproportionately high and adverse effects on minority and low-income  
26       populations are anticipated during training activities under Alternative 2.

27       **6.11.5.6 Construction, Live-Fire and Maneuver Training: Protection of Children**

28       **6.11.5.6.1 Less than Significant Effects**

29       There is a potential for minor, short-term, adverse impacts to children during construction. Because  
30       construction sites can be appealing to children, construction activity and vehicle traffic could pose an  
31       increased safety risk. None of the construction projects contained in Alternative 2 would be located  
32       within the cantonment area of YTC, where children may occasionally be present. There is no  
33       housing at YTC in which children could be found. Range areas, in which the construction and  
34       training under Alternative 2 would be located, are off-limits to all but authorized personnel; children  
35       are not authorized personnel.

36       Despite the fact that children are highly unlikely to ever be found on a training range, barriers and  
37       “no trespassing” signs would be placed around construction sites to deter children from playing in  
38       these areas, as well as to keep out other trespassers. All construction vehicles, equipment, and  
39       materials would be stored in fenced areas and secured when not in use. During construction, safety  
40       measures stated in 29 CFR Part 1926, “Safety and Health Regulations for Construction,” and other  
41       applicable regulations and guidance would be followed to protect the health and safety of all  
42       personnel and employees at YTC, as well as construction workers. Therefore, less than significant  
43       impacts on children are anticipated.

1 **6.11.6 Alternative 3 — GTA Actions + CSS Soldiers**

2 **6.11.6.1 Construction and Population Change: Economic Effects**

3 **6.11.6.1.1 Less than Significant Effects**

4 No additional construction of infrastructure or training facilities is projected at YTC under  
5 Alternative 3 in excess of that described for Alternative 2. Accordingly, the economic impacts of  
6 construction under Alternative 3 would be identical to those of Alternative 2.

7 **6.11.6.1.1.1 On- and Off-Post Population**

8 Due to the small size of the construction projects at YTC under Alternative 3, no temporary  
9 movement of workers from outside the ROI to fill the supply of construction job opportunities is  
10 expected. No new military personnel or civilian employees would be stationed at YTC under  
11 Alternative 3; the population at YTC would remain as shown in **Table 6–26**.

12 **6.11.6.2 Live-Fire Training and Maneuver Training: Economic Effects**

13 **6.11.6.2.1 Less than Significant Effects**

14 The increase in live-fire and maneuver training at YTC under Alternative 3 may result in some less  
15 than significant, beneficial economic impacts. These impacts would be the same as those described  
16 for Alternative 2 above, and would not noticeably increase with the additional increase in training  
17 under Alternative 3.

18 **6.11.6.3 Construction, Live-Fire Training, and Maneuver Training: Housing Effects**

19 **6.11.6.3.1 No Effect**

20 There is no on-Post housing at YTC for permanently stationed military personnel or civilians, and  
21 there is no provision under Alternative 3 to construct such housing. There are no increases projected  
22 in either the stationed military or civilian populations at YTC because of actions under Alternative 3.  
23 Soldiers visiting YTC for training reside at YTC in barracks or in the field as part of their training.  
24 As a result, there would be no impacts to on- or off-Post housing under this alternative.

25 **6.11.6.4 Construction, Live-Fire Training, and Maneuver Training: Quality of Life**  
26 **Effects**

27 **6.11.6.4.1 Less than Significant Effects**

28 Alternative 3 would not result in an increase in either the on-Post or off-Post population; as a result,  
29 there would be no increase in demand for schools or on- or off-Post child care facilities, public  
30 safety, or other services. Impacts on family support and retirement services, on- and off-Post shops,  
31 and recreation opportunities from increased live-fire and maneuver training under Alternative 3  
32 would be the same as those described under Alternative 2 and would be less than significant.

33 **6.11.6.5 Construction, Live-Fire Training, and Maneuver Training: Environmental**  
34 **Justice**

35 **6.11.6.5.1 Less than Significant Effects**

36 Construction impacts are temporary in nature, but they can range from annoying to detrimental for  
37 those living near a construction site. Because any construction activity would be carried out within  
38 the boundaries of YTC, and because there are no permanent housing facilities at YTC, no adverse

1 impacts to low-income and minority communities from construction are expected. All construction-  
2 related mitigation measures and BMPs to reduce impacts from noise, dust, and traffic that are  
3 described under Alternative 2 would also be implemented under Alternative 3. During training  
4 activities at YTC, minority and low-income populations living near YTC would be expected to  
5 experience greater amounts of noise disturbance under Alternative 3 than under Alternative 2  
6 because of the increased frequency of training. Because weapons noise contours extend off the  
7 installation boundary, and because the percentage of minority and low-income individuals residing in  
8 the ROI is higher than the percentage in Washington State as a whole, disproportionate effects to  
9 these populations from noise may occur. However, given that the areas where noise contours extend  
10 beyond the installation boundary are sparsely populated or unpopulated and zoned for agricultural  
11 uses (USACHPPM 2008a), that there would be an increase in the frequency of loud noises rather  
12 than in the noise levels themselves, and that weapons noise, even with the additional training, would  
13 remain intermittent and infrequent, these effects would not be significant. Therefore, no  
14 disproportionately high and adverse effects on minority and low-income populations are anticipated  
15 because of increased training under Alternative 3.

16 **6.11.6.6 Construction, Live-Fire Training, and Maneuver Training: Protection of**  
17 **Children**

18 **6.11.6.6.1 Less than Significant Effects**

19 Potential impacts on children from implementation of Alternative 3 would be the same as those  
20 described for Alternative 2. No additional construction activities beyond those described for  
21 Alternative 2 would occur under Alternative 3, and all construction-related safety measures and  
22 BMPs described above would also be implemented under Alternative 3.

23 **6.11.7 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

24 **6.11.7.1 Construction and Population Change: Economic Effects**

25 **6.11.7.1.1 Less than Significant Effects**

26 No additional construction of infrastructure or training facilities is proposed at YTC under  
27 Alternative 4 in excess of those detailed for Alternative 2. Accordingly, the economic impacts of  
28 construction under Alternative 4 would be identical to those of Alternative 2.

29 **6.11.7.1.1.1 On- and Off-Post Population**

30 Due to the small size of the construction projects at YTC under Alternative 4, no temporary  
31 movement of workers from outside the ROI to fill the supply of construction job opportunities is  
32 expected. No new military personnel or civilian employees would be stationed at YTC under  
33 Alternative 4; the population at YTC would remain as shown in **Table 6–26**.

34 **6.11.7.2 Live-Fire Training and Maneuver Training: Economic Effects**

35 **6.11.7.2.1 Less than Significant Effects**

36 Increased live-fire and maneuver training at YTC may result in some less than significant, beneficial  
37 economic impacts. These impacts would be the same as those described for Alternative 2 above, and  
38 would not noticeably increase with the additional increase in training under Alternative 4.

1       **6.11.7.3 Construction, Live-Fire Training, and Maneuver Training: Housing Effects**

2       **6.11.7.3.1 No Effect**

3       There is no on-Post housing at YTC for permanently assigned military personnel or civilian  
4       employees. There are no increases projected in either the stationed military or civilian populations at  
5       YTC as a result of actions under Alternative 4. Soldiers visiting YTC for training reside at YTC in  
6       barracks or in the field as part of their training. As a result, there would be no impacts to on- or off-  
7       Post housing under this alternative.

8       **6.11.7.4 Construction, Live-Fire Training, and Maneuver Training: Quality of Life**  
9       **Effects**

10      **6.11.7.4.1 Less than Significant Effects**

11      No increase in the assigned population at YTC would occur under Alternative 4; as a result, there  
12      would be no increase in demand for schools or on- or off-Post child care facilities, public safety, or  
13      similar services. Impacts on family support and retirement services, on- and off-Post shops, and  
14      recreation opportunities from increased live-fire and maneuver training under Alternative 4 would be  
15      the same as those described under Alternative 2 and would be less than significant.

16      **6.11.7.5 Construction, Live-Fire Training, and Maneuver Training: Environmental**  
17      **Justice**

18      **6.11.7.5.1 Less than Significant Effects**

19      Construction impacts are temporary in nature, but they can range from annoying to detrimental for  
20      those living near a construction site. Because any construction activity would be carried out within  
21      the boundaries of YTC, and because there are no permanent housing facilities at YTC, few or no  
22      adverse impacts to low-income and minority communities from construction are expected. All  
23      construction-related mitigation measures and BMPs to reduce impacts from noise, dust, and traffic  
24      that are described under Alternative 2 would also be implemented under Alternative 4.

25      Minority and low-income populations living near YTC would be expected to experience greater  
26      amounts of noise disturbance under Alternative 4 than under the other alternatives as a result of the  
27      increase in gunnery and aviation training. Because both aircraft and weapons noise contours extend  
28      off the installation boundary, and because the percentage of minority and low-income individuals  
29      residing in the ROI is higher than the percentage in Washington State as a whole, disproportionate  
30      effects to these populations from noise may occur. However, given that the areas where noise  
31      contours extend beyond the installation boundary are sparsely populated or unpopulated and zoned  
32      for agricultural uses (USACHPPM 2008a), that there would be an increase in the frequency of loud  
33      noises rather than in the noise levels themselves, and that weapons noise, even with the additional  
34      training, would remain intermittent and infrequent, these effects would not be significant.

35      Therefore, no disproportionately high and adverse effects on minority and low-income populations  
36      are anticipated during construction or operations under Alternative 4.

1     **6.11.7.6 Construction, Live-Fire Training, and Maneuver Training: Protection of**  
2            **Children**

3            **6.11.7.6.1 Less than Significant Effects**

4            Potential impacts on children from implementation of Alternative 4 would be the same as those  
5            described for Alternative 2. No additional construction activities beyond those described for  
6            Alternative 2 would occur under Alternative 4, and all construction-related safety measures and  
7            BMPs described above would also be implemented under Alternative 4.

8     **6.11.8 Cumulative Effects**

9            **6.11.8.1 Less than Significant Effects**

10           Less than significant, beneficial, cumulative economic effects would occur under all of the  
11           alternatives due to the direct and indirect economic impacts generated by continued and increased  
12           live-fire and maneuver training actions, in combination with ongoing military training activities  
13           occurring at YTC. Because Alternative 1 would not result in any direct or indirect impacts on  
14           housing, quality of life, environmental justice, or protection of children, this alternative would not  
15           contribute to cumulative impacts on these resources. Less than significant cumulative impacts on  
16           low-income and minority populations would occur under the action alternatives due to a cumulative  
17           increase in training and associated increases in noise and disruptions in conjunction with other  
18           ongoing and visiting unit training. In addition, less than significant, cumulative quality of life  
19           impacts are anticipated from the action alternatives due to the potential for a cumulative increase in  
20           demand on on- and off-Post retail/ shopping facilities and recreation opportunities due to an increase  
21           in the number of Soldiers training, in conjunction with ongoing training by other visiting units.  
22           However, the action alternatives would not contribute to cumulative impacts on housing since they  
23           would not result in any direct or indirect impacts on this resource.

24     **6.11.9 Mitigation**

25           The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
26           effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
27           limit, repair, reduce, or compensate for the adverse effects.

28     **6.12 HAZARDOUS MATERIALS AND WASTES**

29           Numerous federal, state, and local laws regulate the storage, use, recycling, disposal, and  
30           transportation of hazardous materials and waste. The methods for assessing potential hazards  
31           associated with hazardous materials and wastes for each project alternative generally include the  
32           following:

- 33           • Reviewing and evaluating each of the alternatives to identify the action's potential to use  
34           hazardous materials or to generate hazardous waste based on the activities proposed;
- 35           • Comparing the location of each proposed project activity with baseline data on known or  
36           potentially contaminated areas including land containing UXO;
- 37           • Assessing the compliance of each proposed project activity with applicable site-specific  
38           hazardous materials and waste management plans;
- 39           • Assessing the compliance of each proposed project activity with applicable site-specific  
40           Army SOPs and health and safety plans in order to avoid potential hazards; and

- 1           • Determination of known or suspected contamination potentially affected by each proposed  
2 project activity, including ongoing Army IRP remediation activities.

3 The overall methodology, including data sources and assumptions, used to conduct the human health  
4 and safety hazard impact evaluation is consistent with the Army NEPA Manual for Installation  
5 Operations and Training. This manual describes the various types of materials and waste that should  
6 be considered to identify potential impacts of the proposed project activities.

7 The following issue relating to hazardous materials and wastes at YTC was identified during public  
8 scoping. This issue is addressed in the following sections for each alternative.

- 9           • The effects on the environment from a potential release of hazardous/toxic chemicals during  
10 operations or because of an accident.

### 11 **6.12.1 Resource-specific Significance Criteria**

12 Factors considered in determining whether hazardous material and waste associated with each  
13 project alternative would result in a significant impact include the extent or degree to which the  
14 alternative's implementation would:

- 15           • Endanger the public or environment during the storage, transport, or use of ammunition;  
16           • Expose military personnel or the public to areas potentially containing UXO without  
17 protocols for protection;  
18           • Cause a spill or release of a hazardous substance (as defined by Title 40, CFR Part 302  
19 [CERCLA], or Parts 110, 112, 116 and 117 [CWA]);  
20           • Expose the environment or public to any hazardous condition through release or disposal (for  
21 example, exposure to toxic substances including pesticides/ herbicides or open burn/open  
22 detonation disposal of unused ordnance);  
23           • Adversely affect contaminated sites or the progress of IRP remediation activities;  
24           • Cause the accidental release of friable (easily crumbled by hand pressure) asbestos or LBP  
25 during the demolition or renovation of a structure; or  
26           • Generate either hazardous or acutely hazardous waste, resulting in increased regulatory  
27 requirements over the long term.

28 All of the action alternatives would result in an increase in the use of hazardous materials and  
29 subsequent generation, handling, storage, and disposal of larger quantities of wastes, including  
30 hazardous wastes. The Army follows strict SOPs for storing and using hazardous materials;  
31 therefore, no new procedures would need to be implemented to store or use the construction-related  
32 or operation-related hazardous materials. The regulatory and administrative requirements that would  
33 be implemented to minimize impacts to the environment or human health and safety are summarized  
34 in the following subsections.

### 35 **6.12.2 Overview of Impacts to Hazardous Materials and Wastes by Alternative**

36 **Table 6–29** summarizes the potential impacts associated with hazardous materials and hazardous  
37 wastes that would occur under each of the alternatives.

38

39

**Table 6–29 Summary of Effects to Hazardous Materials and Wastes at YTC**

<b>Activity Group</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Construction Direct and Indirect Effects	€	€	€	€
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	€	€	€	€
Cumulative Effects	€	€	€	€

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects

+ = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

1

2 **6.12.3 Alternative 1 — No Action Alternative**3 **6.12.3.1 Construction Direct and Indirect Effects**4 **6.12.3.1.1 Less than Significant Effects**

5 No cantonment area or range construction is proposed under Alternative 1. Therefore, no  
6 construction-related impacts associated with hazardous materials and wastes would occur.

7 Hazardous materials used or hazardous wastes generated at YTC would continue to include fuels,  
8 paints, solvents, lubricants, coolants, sealers, adhesives, refrigerants, compressed gases, batteries,  
9 cleaners, sanitation chemicals, munitions and UXO, biohazardous waste, pesticides and herbicides,  
10 asbestos- and lead-contaminated materials, PCBs, low-level radioactive wastes, and POLs. The  
11 Army would continue to manage hazardous materials and wastes similar to current conditions as  
12 described in **Section 5.12**.

13 Pesticides and herbicides would continue to be used within both the cantonment area and the training  
14 areas. With continued pest management in accordance with the IPMP, impacts would be less than  
15 significant because pesticide and herbicide use would be controlled to minimize the potential for  
16 human exposure or endangerment of the environment.

17 **6.12.3.2 Live-fire Training Direct and Indirect Effects**18 **6.12.3.2.1 Less than Significant Effects**

19 Under Alternative 1, the number of live-fire training days per year and the quantity of munitions  
20 used would remain similar to those under current conditions. Ammunition handling and storage  
21 methods, disposal protocols, and safety procedures would continue to be conducted in accordance  
22 with existing regulations. YTC would continue to implement the existing Ammunition Supply Point  
23 SOP for storage and transportation of additional munitions. Compliance with existing Army  
24 protocols would minimize the amounts of hazardous materials used and the quantities of wastes  
25 generated during training at YTC. With continued implementation of existing federal, state, and  
26 Army protocols, impacts are expected to be less than significant because current Army protocols for  
27 protection of Army personnel and the public would minimize the safety risks associated with  
28 ammunition and live-fire training.

29 The use of munitions during training would continue to generate UXO and spread lead within the  
30 live-fire impact zones similar to current rates, and the Army would continue to implement regulatory  
31 and administrative measures for range maintenance and repair. UXO would only be within the  
32 impact areas, which are fenced and posted as restricted to public access. The expanded EOD  
33 Company would continue to respond to discoveries of UXO for safe open detonation in place or at a

1 designated range location. Impact zones would be temporarily closed and remediated as needed.  
2 Impacts would be less than significant because current Army protocols for the protection of Army  
3 personnel and the public would reduce the safety risks associated with UXO and would minimize the  
4 potential for human or environmental exposure to UXO or lead.

5 When Soldiers train at the ranges, safety protocols must be followed in order to protect the public  
6 from injury or accidents. SDZs are established in accordance with Army Pamphlet 385-64,  
7 Ammunition and Explosive Safety Standards. In addition, in order to prevent conflict with  
8 recreational activities in areas near the training ranges, land use restrictions are set up to limit access  
9 to the areas during range training times. SDZs are included in the design configuration for the  
10 proposed ranges at YTC.

11 Additionally, similar safety protocols must be implemented to protect Army personnel during range  
12 training. Soldiers are given safety manuals with a complete discussion of safety procedures while  
13 training. In addition, before training, Soldiers are briefed on range-specific safety measures that may  
14 be necessary during the special exercise. Finally, Soldiers and officers are provided with field  
15 manuals for each specific operation and exercise that give more detailed procedures and protocols to  
16 be followed in order to prevent accidents. All government personnel or government contractors  
17 accessing impact areas would continue to follow OSHA and Army standards and guidelines to  
18 minimize health and safety impacts from exposure to any contaminants or ordnance. With continued  
19 implementation of existing federal, state, and Army protocols, impacts are expected to be less than  
20 significant because current Army protocols for protection of Army personnel and the public would  
21 minimize the safety risks associated with live-fire training.

### 22 **6.12.3.3 Maneuver Training Direct and Indirect Effects**

#### 23 **6.12.3.3.1 Less than Significant Effects**

24 Under Alternative 1, the use of munitions during maneuver training would continue to generate UXO  
25 and spread lead within the live-fire impact zones similar to the current generation rates. Impacts  
26 associated with the generation of UXO and lead, as well as range degradation, would be similar to  
27 those described for live-fire training. Impact zones would be temporarily closed and remediated as  
28 needed. Impacts would be less than significant because current Army protocols for the protection of  
29 Army personnel and the public would reduce the safety risks associated with UXO and would also  
30 minimize the potential for human or environmental exposure to UXO or lead.

31 Maneuver training also includes convoying the vehicles and equipment to the training areas. Under  
32 Alternative 1, the number of vehicles and equipment used for maneuver training would remain  
33 similar to current conditions. Maneuver training would continue to require the transport, storage, and  
34 use of POLs. With continued implementation of standard Army regulatory and administrative  
35 requirements, impacts would be less than significant because the likelihood of POL spills would be  
36 minimized and inadvertent spills would be quickly identified and remediated to avoid exposure of  
37 military personnel or the public and to prevent endangerment of the public or environment.

### 38 **6.12.4 Alternative 2 — GTA Actions**

#### 39 **6.12.4.1 Construction Direct and Indirect Effects**

##### 40 **6.12.4.1.1 Less than Significant Effects**

41 Construction-related activities would require the short-term use of hazardous materials and POLs in  
42 excess of existing quantities; however, contract specifications control the purchase amounts and use

1 of hazardous materials and require compliance with federal, state, and local requirements and with  
2 installation policy on hazardous materials. Impacts would be less than significant because continued  
3 implementation of standard Army regulatory and administrative measures would minimize the  
4 potential for inadvertent spills or exposure of Army personnel, the public, or the environment to  
5 hazardous materials during construction. Construction of the new ranges, along with a large increase  
6 in utilization of the facilities at all of the training areas under Alternative 2, may require additional  
7 on-site waste storage and more frequent waste pickup.

8 Because the new ranges would be constructed within lands previously used as ranges, the presence  
9 of UXO and lead may be encountered. With continued implementation of regulatory and  
10 administrative mitigation measures as described in **Section 5.12**, impacts would be less than  
11 significant because current Army protocols would minimize the risk for exposure of construction  
12 personnel to UXO and lead and there would be minimal potential for exposure of Army personnel,  
13 the public, or the environment to hazardous wastes generated during construction.

14 In order to maintain the two new ranges, Alternative 2 would result in the use of slightly increased  
15 amounts of pesticides and herbicides compared to current usage. With continued pest management in  
16 accordance with the IPMP, impacts would be less than significant because pesticide and herbicide  
17 use would be controlled to minimize the potential for human exposure or endangerment of the  
18 environment.

#### 19 **6.12.4.2 Live-fire Training Direct and Indirect Effects**

##### 20 **6.12.4.2.1 Less than Significant Effects**

21 Although the use of large caliber munitions would increase compared to Alternative 1, ammunition  
22 handling and storage methods, disposal protocols, and safety procedures would continue to be  
23 conducted in accordance with existing regulations. Impacts would be less than significant because  
24 current Army protocols for the protection of Army personnel and the public would reduce the safety  
25 risks associated with the use of ammunition and live-fire training.

26 Compared to Alternative 1, this alternative would result in increased quantities of POLs transported,  
27 stored, and used on Post over the long-term due to a greater number of vehicles used for training at  
28 YTC. Transportation, storage, and use of additional quantities of POLs would slightly increase the  
29 risk of inadvertent spills or releases of hazardous materials. YTC would continue to use aboveground  
30 storage tanks for storage of fuels and other petroleum products. Secondary containment would also  
31 be used at the vehicle maintenance and repair locations. The continued use of these containment  
32 systems would minimize the risk of area contamination from inadvertent POL spills. With continued  
33 implementation of standard Army regulatory and administrative requirements, impacts would be less  
34 than significant because the likelihood of POL spills would be minimized and inadvertent spills  
35 would be quickly identified and remediated to avoid exposure of military personnel or the public and  
36 to prevent endangerment of the public or environment.

37 As a result of increased training and greater quantities of munitions used during training under this  
38 alternative, additional quantities of UXO and lead would be generated within the live-fire impact  
39 zones and range degradation would occur at an accelerated rate compared to Alternative 1. Impact  
40 zones would be temporarily closed and remediated as needed. The frequency of range maintenance  
41 and remediation would be adjusted for the rate of range degradation associated with the intensity of  
42 training under Alternative 2. Impacts would be less than significant because current Army protocols  
43 for the protection of Army personnel and the public would reduce the safety risks associated with  
44 UXO and would minimize the potential for human or environmental exposure to UXO or lead.

1       **6.12.4.3   *Maneuver Training Direct and Indirect Effects***

2       **6.12.4.3.1   *Less than Significant Effects***

3       Because of additional quantities of munitions used for this alternative due to increased training, UXO  
4       and lead would be generated at a greater rate compared to Alternative 1. Impacts associated with  
5       generation of UXO and lead and range degradation would be similar to those described for live-fire  
6       training. Impact zones would be temporarily closed and remediated as needed. The frequency of  
7       range maintenance and remediation would be adjusted for the rate of range degradation associated  
8       with the intensity of training under Alternative 2. Impacts would be less than significant because  
9       continued implementation of standard Army protocols for the protection of Army personnel and the  
10       public would minimize the potential for human or environmental exposure to UXO or lead.

11       Compared to Alternative 1, additional quantities of POLs would be transported, stored, and used  
12       with a subsequent slightly increased risk of inadvertent spills or releases of hazardous materials.  
13       With continued implementation of standard Army regulatory and administrative requirements,  
14       impacts would be less than significant because the likelihood of POL spills would be minimized and  
15       inadvertent spills would be quickly identified and remediated to avoid exposure of Army personnel  
16       or the public and to prevent endangerment of the public or environment.

17       **6.12.5 Alternative 3 — GTA Actions + CSS Soldiers**

18       **6.12.5.1   *Construction Direct and Indirect Effects***

19       **6.12.5.1.1   *Less than Significant Effects***

20       Under Alternative 3, the only construction proposed at YTC would be the two new ranges described  
21       for Alternative 2. Impacts would be the same as those described under Alternative 2, and would be  
22       less than significant.

23       **6.12.5.2   *Live-fire Training Direct and Indirect Effects***

24       **6.12.5.2.1   *Less than Significant Effects***

25       Although the use of large caliber munitions would increase under Alternative 3 compared to  
26       Alternative 2, ammunition handling and storage methods, disposal protocols, and safety procedures  
27       would continue to be conducted in accordance with existing regulations. Impacts would be less than  
28       significant because continued implementation of standard Army protocols for munitions and for the  
29       protection of Army personnel and the public would reduce the safety risks associated with the use of  
30       ammunition and live-fire training.

31       Impacts of live-fire training would be similar to those described for Alternative 2; however, larger  
32       quantities of UXO and lead would be generated within the live-fire impact zones and range  
33       degradation would occur at an accelerated rate as a result of increased quantities of munitions used.  
34       Impact zones would be temporarily closed and remediated as needed. The frequency of range  
35       maintenance and remediation would be adjusted for the rate of range degradation associated with the  
36       intensity of training under Alternative 3. Impacts would be less than significant because continued  
37       implementation of standard Army protocols for the protection of Army personnel and the public  
38       would minimize the potential for human or environmental exposure to UXO or lead.

1       **6.12.5.3   *Maneuver Training Direct and Indirect Effects***

2       **6.12.5.3.1   *Less than Significant Effects***

3       Impacts associated with generation of UXO and lead and range degradation would be similar to  
4       those described for live-fire training for Alternative 3. While the intensity of maneuver training  
5       would increase compared to Alternative 2, impacts would be less than significant because continued  
6       implementation of standard Army protocols for the protection of Army personnel and the public  
7       would minimize the potential for human or environmental exposure to UXO or lead.

8       Compared to Alternative 2, the number of vehicles, equipment, and personnel involved in maneuver  
9       training would increase under Alternative 3, with a proportionate increase in the quantities of POLs  
10      transported, stored, and used, and a slightly increased risk of inadvertent spills or releases of  
11      hazardous materials. With continued implementation of standard Army regulatory and administrative  
12      requirements, impacts would be less than significant because the likelihood of POL spills would be  
13      minimized and inadvertent spills would be quickly identified and remediated to avoid exposure of  
14      military personnel or the public and to prevent endangerment of the public or environment.

15      **6.12.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

16      **6.12.6.1   *Construction Direct and Indirect Effects***

17      **6.12.6.1.1   *Less than Significant Effects***

18      Under Alternative 4, the only construction proposed at YTC would be the two new ranges described  
19      for Alternative 2. Construction-related impacts associated with hazardous materials and wastes  
20      would be similar to those for Alternative 2 and would be less than significant.

21      **6.12.6.2   *Live-fire Training Direct and Indirect Effects***

22      **6.12.6.2.1   *Less than Significant Effects***

23      In addition to weapons qualifications, the medium CAB would conduct aerial gunnery training that  
24      would increase live-fire training at YTC. Ammunition handling and storage methods, disposal  
25      protocols, and safety procedures would be conducted in accordance with existing regulations.  
26      Impacts would be less than significant because continued implementation of standard Army  
27      protocols for munitions and for the protection of Army personnel and the public would reduce the  
28      safety risks associated with the use of ammunition and live-fire training.

29      Impacts of live-fire training would be similar to those described for Alternatives 2 and 3; however,  
30      UXO and lead would be generated within the live-fire impact zones and range degradation would  
31      occur at accelerated rates proportionate to the additional quantities of munitions used for training  
32      under this alternative. Impact zones would be temporarily closed and remediated as needed. The  
33      frequency of range maintenance and remediation would be adjusted for the rate of range degradation  
34      associated with the intensity of training under Alternative 4. Impacts would be less than significant  
35      because continued implementation of standard Army protocols for the protection of Army personnel  
36      and the public would minimize the potential for human or environmental exposure to UXO or lead.

37      **6.12.6.3   *Maneuver Training Direct and Indirect Effects***

38      **6.12.6.3.1   *Less than Significant Effects***

39      Maneuver training impacts would be similar to those described for Alternatives 2 and 3; however,  
40      the medium CAB unit would contribute additional Soldiers, vehicles, and equipment, including

1 helicopters. Impacts associated with generation of UXO and lead and range degradation would be  
2 similar to those described for live-fire training. Impacts would be less than significant because  
3 continued implementation of standard Army protocols for the protection of Army personnel and the  
4 public would minimize the potential for human or environmental exposure to UXO or lead.

5 Because the number of vehicles and personnel involved in maneuver training would increase, greater  
6 quantities of POLs would be transported, stored, and used compared to Alternative 3. Therefore, the  
7 risk of inadvertent spills or releases of hazardous materials would slightly increase. YTC would  
8 continue to implement the appropriate management plans to minimize potential adverse effects from  
9 accidental leaks or spills resulting from the storage of additional petroleum products. With continued  
10 implementation of standard Army regulatory and administrative requirements, impacts would be less  
11 than significant because the likelihood of POL spills would be minimized and inadvertent spills  
12 would be quickly identified and remediated to avoid exposure of Army personnel or the public and  
13 to prevent endangerment of the public or environment.

## 14 **6.12.7 Cumulative Effects**

### 15 **6.12.7.1 Less than Significant Effects**

16 Military and nonmilitary actions that would contribute to cumulative effects on hazardous materials  
17 and wastes include ongoing military training activities at YTC, including HIMARS launching and  
18 training by visiting units, expanded capabilities of the existing SBCTs, a new ESC, and a Battlefield  
19 Surveillance Brigade, as well as anticipated regional population growth and development and  
20 changes in management practices in the Interior Columbia River Basin. There has been an increase  
21 in the use and handling of hazardous materials, releases of toxic materials, and generation of solid  
22 and hazardous wastes. Ongoing training activities at YTC would contribute slightly to this  
23 cumulative increase. Increased training under Alternatives 2, 3, and 4 would add slightly to the  
24 quantity of potential hazardous waste that would need to be managed at YTC. Each increase in  
25 training at YTC increases the amount of waste materials generated and the risk of release of  
26 hazardous substances. Regional anticipated population growth would continue to contribute  
27 cumulatively to the generation of hazardous and solid wastes. However, regional efforts to use non-  
28 toxic and recyclable materials and to recycle waste materials help to offset the regional increase.  
29 Efforts to achieve zero net waste at YTC would help to minimize the Army's contribution to this  
30 regional increase. With continued implementation of regulatory and administrative measures,  
31 including the Army's protocols and SOPs for transport, storage, handling, and disposal of hazardous  
32 materials and wastes, cumulative impacts associated with hazardous materials and wastes would be  
33 less than significant.

## 34 **6.12.8 Mitigation**

35 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
36 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
37 limit, repair, reduce, or compensate for the adverse effects.

## 38 **6.13 AIRSPACE**

39 Impacts on airspace were assessed by evaluating the potential effects of both project construction  
40 and operations activities on the principal attributes of airspace, namely controlled and uncontrolled  
41 or navigable airspace, special use airspace, en-route airways and jet routes, and airports/airfields.  
42 Impacts on controlled and uncontrolled airspace were assessed by determining if the project would  
43 reduce the amount of navigable airspace by creating new or expanding existing special use airspace

1 by introducing temporary flight restrictions or by constituting an obstruction to air navigation.  
 2 Impacts on special use airspace were assessed by determining the project’s requirement for  
 3 modifications to existing special use airspace. Impacts on en-route airways were assessed by  
 4 determining if the project would lead to a change in a regular flight course or altitude or instrument  
 5 procedures. Impacts on airports and airfields were assessed by determining if the project restricts  
 6 access to or affects the use of airports or airfields available for public use, or if it affects airfield or  
 7 airport arrival and departure traffic flows.

8 **6.13.1 Resource-specific Significance Criteria**

9 Factors considered in determining whether an alternative would have a significant impact on  
 10 airspace, based in part on FAA Order 7400.2G, Procedures for Handling Airspace Matters (FAA  
 11 2008), include the extent or degree to which its implementation would result in the following:

- 12 • Reduce the amount of navigable airspace;
- 13 • Lead to the assignment of new special use airspace (including prohibited areas, restricted  
 14 areas, warning areas, and military operations areas) or require the modification of special use  
 15 airspace;
- 16 • Change an existing or planned IFR minimum flight altitude, a published or special instrument  
 17 procedure, or an IFR departure procedure, or require a visual flight rules operation change  
 18 from a regular flight course or altitude;
- 19 • Restrict access to or affect the use of airports or airfields available for public use, or if it  
 20 would affect commercial or private airfield or airport arrival and departure traffic flows; or
- 21 • Create an obstruction to air navigation.

22 **6.13.2 Overview of Impacts to Airspace by Alternative**

23 **Table 6–30** summarizes the potential impacts associated with airspace resources that would occur  
 24 under each of the alternatives.

**Table 6–30 Summary of Potential Effects to Airspace at YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	•	•	•	•
Live-fire Training Direct and Indirect Effects	€	€	€	€
Maneuver Training Direct and Indirect Effects	€	€	€	€
Cumulative Effects	€	€	€	€

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

25  
 26 **6.13.3 Alternative 1 — No Action Alternative**

27 **6.13.3.1 Construction Direct and Indirect Effects**

28 **6.13.3.1.1 No Effects**

29 No construction projects are proposed under Alternative 1; therefore, no construction-related impacts  
 30 to airspace would occur.

1       **6.13.3.2   Live-fire Training Direct and Indirect Effects**

2       **6.13.3.2.1   Less than Significant Effects**

3       Implementation of this alternative would continue the less than significant impacts that currently  
4       affect airspace resources at YTC. This alternative would not require modifications to existing  
5       controlled or special use airspace, and no new special use airspace would be needed. The Special  
6       Use Airspace (Restricted Area R-6714) that already exists over YTC excludes non-participating and  
7       incompatible aircraft from flying below 55,000 feet above MSL without YTC or ATC’s permission.  
8       Helicopters, fixed-wing aircraft, and UASs would continue to operate in restricted airspace over  
9       YTC. Current operations, which could include artillery firing, aerial gunnery and bombardment, and  
10      high-speed and high-density aerial operations, would continue to occur.

11      **6.13.3.3   Maneuver Training Direct and Indirect Effects**

12      **6.13.3.3.1   Less than Significant Effects**

13      Maneuver training conducted under this alternative would continue the less than significant impacts  
14      that currently affect airspace resources at YTC. This alternative would not require modifications to  
15      existing controlled or special use airspace, and no new special use airspace would be needed. The  
16      restriction on airspace would allow all current flight operations to continue safely throughout the  
17      maneuver training areas without potential interference. Helicopters, fixed-wing aircraft, and UASs  
18      would continue to operate in the restricted airspace over YTC unimpeded by non-participating or  
19      incompatible aircraft. The daily training flights of the USAAAD’s seven-helicopter Medevac unit  
20      would continue to occur. Other maneuver operations would continue to occur with the same limited  
21      effects on airspace that YTC experiences (aircraft participating in maneuver training alone or with  
22      other units and avoidance of active live-fire ranges).

23      **6.13.4 Alternative 2 — GTA Actions**

24      **6.13.4.1   Construction Direct and Indirect Effects**

25      **6.13.4.1.1   No Effects**

26      Construction of the two range projects at YTC would temporarily increase human presence and  
27      activity at the construction sites. It would not, however, create obstructions to air navigation, affect  
28      flight operations at VAH, Selah airstrip, or any other airfield, or otherwise affect the use of airspace  
29      over YTC. Finally, the proposed construction would not require the FAA to modify existing  
30      controlled or special use airspace or create new special use airspace.

31      **6.13.4.2   Live-fire Training Direct and Indirect Effects**

32      **6.13.4.2.1   Less than Significant Effects**

33      The increase in live-fire training associated with Alternative 2 would result in less than significant  
34      impacts to airspace resources at YTC. The overall increase in live-fire training would not create  
35      obstructions to air navigation, affect flight operations at VAH, Selah airstrip, or any other airfield, or  
36      require the FAA to modify existing controlled or special use airspace or create new special use  
37      airspace.

38      Although activity on the live-fire ranges would increase, Army helicopters, fixed-wing aircraft, and  
39      UASs would continue to conduct training in the restricted airspace over YTC. Additional  
40      coordination and scheduling would be required to balance increased training requirements with the  
41      availability of airspace. This coordination would prevent non-participating flight operations from

1 occurring over active live-fire ranges where artillery firing, aerial gunnery and bombardment, or  
2 other active training may be present. Finally, training of the additional Soldiers would not require  
3 modifications to existing controlled or special use airspace, and no new special use airspace would  
4 be needed.

### 5 **6.13.4.3 Maneuver Training Direct and Indirect Effects**

#### 6 **6.13.4.3.1 Less than Significant Effects**

7 The increase in maneuver training associated with Alternative 2 would result in less than significant  
8 impacts to airspace resources at YTC. The overall increase in maneuver training would not create  
9 obstructions to air navigation, affect flight operations at VAH, Selah airstrip, or any other airfield, or  
10 require the FAA to modify existing controlled or special use airspace or create new special use  
11 airspace.

12 Although maneuver training conducted under this alternative would increase in frequency and  
13 intensity, it would result in less than significant effects to airspace resources at YTC. Army  
14 helicopters, fixed-wing aircraft, and UASs would continue to operate over training areas in support  
15 of maneuver training. The restriction on airspace would allow flight operations to continue safely  
16 throughout the maneuver training areas without potential interference from non-participating or  
17 incompatible aircraft. Consequently, this alternative would not require modifications to existing  
18 controlled or special use airspace, and no new special use airspace would be needed.

### 19 **6.13.5 Alternative 3 — GTA Actions + CSS Soldiers**

#### 20 **6.13.5.1 Construction Direct and Indirect Effects**

##### 21 **6.13.5.1.1 No Effects**

22 No additional construction is proposed under Alternative 3 above that which would occur under  
23 Alternative 2. There would be no effects to airspace from construction.

#### 24 **6.13.5.2 Live-fire Training Direct and Indirect Effects**

##### 25 **6.13.5.2.1 Less than Significant Effects**

26 Impacts on airspace from increased live-fire training under Alternative 3 would be the same as those  
27 described under Alternative 2 and would be less than significant. No additional impacts on airspace  
28 are anticipated from CSS training under Alternative 3.

#### 29 **6.13.5.3 Maneuver Training Direct and Indirect Effects**

##### 30 **6.13.5.3.1 Less than Significant Effects**

31 Impacts on airspace from increased maneuver training under Alternative 3 would be the same as  
32 those described under Alternative 2 and would be less than significant. No additional impacts on  
33 airspace are anticipated from CSS training under Alternative 3.

### 34 **6.13.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

#### 35 **6.13.6.1 Construction Direct and Indirect Effects**

##### 36 **6.13.6.1.1 No Effects**

37 No additional construction is proposed under Alternative 4 above that which would occur under  
38 Alternative 2. There would be no effects to airspace from construction.

### 6.13.6.2 *Live-fire Training Direct and Indirect Effects*

#### 6.13.6.2.1 *Less than Significant Effects*

The increase in live-fire training associated with Alternative 4 would result in less than significant impacts to airspace resources at YTC. The overall increase in live-fire training would not create obstructions to air navigation, affect flight operations at VAH, Selah airstrip, or any other airfield, or require the FAA to modify existing controlled or special use airspace or create new special use airspace.

Activity on the live-fire ranges would increase more under this alternative than under any of the other alternatives. This increase primarily would be the result of the medium CAB's live-fire training. The amount of aerial gunnery on live-fire ranges would increase. Army helicopters, fixed-wing aircraft, and UASs would continue to conduct training in the restricted airspace over YTC. Additional coordination and scheduling would be required to balance increased training requirements with the availability of airspace. This coordination would prevent non-participating flight operations from occurring over active live-fire ranges where artillery firing, aerial gunnery and bombardment, or other active training may be present. Finally, training of the additional Soldiers associated with the medium CAB would not require modifications to existing controlled or special use airspace, and no new special use airspace would be needed.

### 6.13.6.3 *Maneuver Training Direct and Indirect Effects*

#### 6.13.6.3.1 *Less than Significant Effects*

The increase in maneuver training would be greatest under this alternative. In addition to the annual training requirements of the three SBCTs, the additional GTA Soldiers, and CSS Soldiers, this alternative would involve a substantial increase in helicopter maneuver training. Approximately 1,450 flight hours would be flown in training at YTC (Clayton 2009a). The addition of these hours would substantially increase the current flight training hours conducted at YTC (Rodriguez 2009). The addition of the medium CAB also would double the overall number of takeoffs and landings at VAH from approximately 2,600 to 5,500 (Clayton 2009a).

Although the increase in the number of flight hours and landings and takeoffs appears substantial when compared to the current environment, the direct and indirect effects would be less than significant. Even with the units currently training at VAH, the restricted airspace is readily available and can easily accommodate the increase in flight training hours, landings, and takeoffs (Rodriguez 2009). Thus, the increase in maneuver training associated with the medium CAB would not create obstructions to air navigation, affect flight operations at VAH, Selah airstrip, or any other airfield, or require the FAA to modify existing controlled or special use airspace or create new special use airspace. The restriction on airspace and MOAs would allow flight operations to occur safely throughout the maneuver training areas without potential interference from non-participating or incompatible aircraft. Consequently, this alternative would not require modifications to existing controlled or special use airspace, and no new special use airspace would be needed.

### 6.13.7 Cumulative Effects

#### 6.13.7.1 *Less than Significant Effects*

Cumulative effects would be less than significant under all of the alternatives. All of the action alternatives would generate new less than significant impacts to airspace resources (despite the addition of a medium CAB under Alternative 4). These effects would overlap the direct and indirect effects of the HIMARS rocket training. The potential launching of a maximum of 432 HIMARS

1 rockets annually at YTC (216 for certification and 216 for collective training) would affect the use of  
2 airspace over YTC during the launches. Two HIMARS battalions would launch up to 108 rockets  
3 during each of four HIMARS certification and four collective training exercises that would occur  
4 each year. The cumulative effects of ongoing training and the HIMARS training would be less than  
5 significant. Each of the training exercises would last from 1 to 5 days. The crews would launch the  
6 rockets from two general firing areas in TA 16 and in the MPRC SDZ into the CIA. Air traffic would  
7 be restricted from the airspace when these training launches occur. Because air traffic in the YTC  
8 airspace would be limited only for 1 to 5 days per quarter, the cumulative effects would be less than  
9 significant.

### 10 **6.13.8 Mitigation**

11 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
12 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
13 limit, repair, reduce, or compensate for the adverse effects.

## 14 **6.14 FACILITIES**

15 The evaluation of potential impacts to real estate, installation facilities, infrastructure, and  
16 telecommunications is based on the project's potential to affect these facilities. Potential  
17 infrastructure shortfalls, inconsistencies, inadequacies, or deficiencies identified between the existing  
18 infrastructure and the requirements of a project alternative are identified. Where the existing  
19 facilities and infrastructure do not meet the mission requirements, the additional facilities and  
20 infrastructure would be acquired through construction by the Army or through community or private  
21 sector mechanisms. The effects of acquiring the additional facilities and infrastructure are assessed in  
22 this section.

23 Population changes projected for the proposed project were used for forecasting utility and public  
24 services demands. These utility forecasts were compared to existing levels of use and infrastructure  
25 capacities to determine if capacities would be exceeded.

26 The facilities impact analysis identifies the potential environmental consequences to Army real  
27 property, including lands, facilities, and infrastructure, within the ROIs for each project alternative.  
28 The environmental consequences to facilities, such as buildings, structures, and other improvements  
29 and utilities infrastructure are assessed for each alternative. This analysis included identification and  
30 evaluation of the mission requirements for facilities and infrastructure and the extent to which each  
31 installation already meets these requirements. The analysis also evaluates the need for upgrades to  
32 existing facilities or infrastructure and any secondary impacts associated with those upgrades.

33 This analysis includes potential impacts on infrastructure for potable water and wastewater systems  
34 and storm water management. Existing telecommunications systems are adequate for the planned  
35 activities for any of the alternatives. No impact analysis was required for this utility. Potential  
36 impacts to housing and educational facilities, land use compatibility, transportation infrastructure,  
37 energy infrastructure (electricity and natural gas), and waste management are analyzed in other  
38 sections of this document.

39 There is currently no shortage of land at YTC. No real estate or land acquisitions would occur under  
40 any of the alternatives. The proposed activities for all of the alternatives would occur within the  
41 current Army installation. Existing land ownership, rights-of-way (ROWs), easements, and leases on  
42 YTC would continue with no changes or additions. No impacts analysis was required for these  
43 components.



1           6.14.3.1.1.2 Utility Infrastructure

2           Under Alternative 1, no additional utility infrastructure would be constructed, and demand on  
3           utilities and infrastructure would be similar to current conditions. The capacities of the existing  
4           potable water, wastewater treatment, and storm water management systems are well above current  
5           and anticipated peak demands (Army 2007e). There would be no construction-related impacts to  
6           utility infrastructure for this alternative.

7           **6.14.3.2 *Live-fire Training Direct and Indirect Effects***

8           **6.14.3.2.1 *Less than Significant Effects***

9           6.14.3.2.1.1 Facilities

10          Existing live-fire training facilities are expected to be adequate to support training as proposed for  
11          this alternative. Live-fire training would continue to result in range degradation at current rates and  
12          the Army would continue to implement administrative management programs, such as ITAM,  
13          natural resource management, ecosystem management, and AR 350–19, The Army Sustainable  
14          Range Program, to manage range degradation. In addition, the Army would continue to implement  
15          SOPs for range sustainability and water and energy conservation. While there would be no new  
16          impacts to live-fire training facilities under this alternative, less than significant impacts on facilities  
17          would continue from the continuation of weapons qualifications at current training levels.

18          6.14.3.2.1.2 Utility Infrastructure

19          The amount of live-fire training projected for this alternative would not result in increased demand  
20          for utilities compared to current conditions; existing demands would continue. The capacities of the  
21          existing potable water, wastewater treatment, and storm water management systems are well above  
22          current and anticipated peak demands for live-fire training as projected under this alternative (Army  
23          2007e). Therefore, impacts on utility infrastructure from live-fire training under this alternative  
24          would continue to be less than significant.

25          **6.14.3.3 *Maneuver Training Direct and Indirect Effects***

26          **6.14.3.3.1 *Less than Significant Effects***

27          6.14.3.3.1.1 Facilities

28          Under Alternative 1, maneuver training would be conducted in the same locations as are presently  
29          used and would continue to cause range and training area degradation at current rates. Existing  
30          facilities would be adequate to support training as projected under Alternative 1. The use of  
31          munitions during training would continue to generate UXO and lead within the live-fire impact  
32          zones. The Army would continue to implement administrative management programs, such as  
33          ITAM, natural resources management, ecosystem management, and AR 350–19, The Army  
34          Sustainable Range Program, at all training areas. In addition, the Army would continue to implement  
35          SOPs for range sustainability and water and energy conservation. Therefore, impacts on facilities  
36          from maneuver training under this alternative would continue to be less than significant.

37          6.14.3.3.1.2 Utility Infrastructure

38          The amount of maneuver training projected for this alternative would not result in increased demand  
39          for utilities compared to current conditions. The capacities of the existing potable water, wastewater  
40          treatment, and storm water management systems are well above current and anticipated peak  
41          demands for maneuver training as projected under this alternative (Army 2007e). Therefore, impacts  
42          on utility infrastructure from maneuver training under this alternative would continue to be less than  
43          significant.

1 **6.14.4 Alternative 2 — GTA Actions**

2 **6.14.4.1 Construction Direct and Indirect Effects**

3 **6.14.4.1.1 Less than Significant Effects**

4 **6.14.4.1.1.1 Facilities**

5 Many of the buildings at YTC are aging and in need of renovation or replacement. Under Alternative  
6 2, no additional facilities are proposed within the cantonment area; however, increased training under  
7 this alternative would likely accelerate the need for replacing aging training and mobilization  
8 facilities at YTC. YTC has adequate space for construction of new facilities. If the need for new  
9 facilities were identified, construction of these facilities would be analyzed under separate NEPA  
10 studies.

11 Under Alternative 2, the two proposed range construction projects planned would enhance available  
12 training infrastructure at YTC. The new ranges would be constructed within existing ranges and  
13 YTC has adequate space for construction of these new facilities. No impacts to existing facilities are  
14 anticipated. Short-term impacts during range improvements would include the potential to encounter  
15 UXO and lead; however, implementation of the regulatory and administrative measures for  
16 construction described in **Section 4.14** would minimize the risk for exposure of construction  
17 personnel to UXO and lead. Over the long term, the proposed range improvements under this  
18 alternative would result in beneficial and less than significant impacts to facilities.

19 **6.14.4.1.1.2 Utility Infrastructure**

20 An initial capital investment may be required to extend the energy infrastructure at YTC to the new  
21 ranges proposed under this alternative. Impacts would be less than significant because this impact  
22 would be limited to the Army installation.

23 Utility demand for this alternative would be similar to current conditions because the resident  
24 population at YTC would not change and both new ranges would be outdoor ranges that would have  
25 minimal demands for public utilities. The new ranges and any appurtenant facilities would be  
26 designed with water- and energy-saving features to achieve a minimum of Silver LEED rating and  
27 would comply with AR 11–27, Army Energy Program; EO 13123, Greening the Government  
28 through Efficient Energy Management; EO 13423, Strengthening Federal Environmental, Energy,  
29 and Transportation Management; and the requirements under the new Energy Independence and  
30 Security Act of 2007. Water- and energy-saving features would likely offset some of the additional  
31 demand on public utilities. Impacts on demand for public utilities would be less than significant  
32 because the capacities of the existing potable water, wastewater treatment, and storm water  
33 management systems are well above current and anticipated peak demands (Army 2007e).

34 During construction, power, natural gas, and water lines may need to be routed to new planned  
35 facilities. Construction activities could result in short-term service interruptions in order to connect  
36 new lines and extend service. This impact would be temporary, and the length of disruptions would  
37 be minimized to the greatest extent possible during this period. Impacts on public utility  
38 infrastructure would be less than significant because these impacts would be limited to the Army  
39 installation and service would be returned to normal after construction is completed.

#### 6.14.4.2 *Live-fire Training Direct and Indirect Effects*

##### 6.14.4.2.1 *Less than Significant Effects*

###### 6.14.4.2.1.1 Facilities

Compared to Alternative 1, the frequency of live-fire training at YTC would increase by as much as 50 percent. The frequency of use would increase for all range types, the number of rounds fired would increase significantly for each range, and the use of large caliber munitions would increase. The two ranges projects proposed under Alternative 2 would support additional live-fire training needs, and would offset some of the increased demand on the existing ranges at YTC. Therefore, impacts on facilities from increased live-fire training would be less than significant because live-fire training facilities are expected to be adequate to support live-fire training as projected for this alternative.

As a result of greater quantities of munitions used under this alternative, additional quantities of UXO and lead would be generated in the live-fire impact zones and range degradation would occur at an accelerated rate compared to Alternative 1. With continued implementation of regulatory and administrative management programs for range sustainability, such as ITAM, natural resources and ecosystem management, and AR 350–19, The Army Sustainable Range Program, impacts would be less than significant because the impact zones would be remediated as needed. The frequency of range maintenance efforts would be adjusted for the intensity of use and rate of range degradation under Alternative 2.

###### 6.14.4.2.1.2 Utility Infrastructure

Increases in live-fire training under Alternative 2 would result in an increased demand for utilities compared to Alternative 1; however, the Army would continue to implement water and energy conservation measures to minimize utility demands. Impacts on utility infrastructure would be less than significant because the existing utility infrastructure at YTC would have sufficient excess capacity for the anticipated peak demands for live-fire training as projected under this alternative (Army 2007e).

#### 6.14.4.3 *Maneuver Training Direct and Indirect Effects*

##### 6.14.4.3.1 *Less than Significant Effects*

###### 6.14.4.3.1.1 Facilities

Maneuver training, which requires extensive areas of open land, would be restricted to existing training and maneuver areas at YTC. This alternative would result in an increased number of days of off-road vehicle maneuver within the training areas, including TAs 10, 11, and 12. Additional maneuver land at YTC would also be available if needed. Impacts would be less than significant because maneuver training facilities are expected to be adequate to support the projected maneuver training under this alternative.

Over time, the increased intensity in training under Alternative 2 would degrade the training areas at an accelerated rate compared to Alternative 1. Degradation of the training areas may reduce the types, quality, and quantity of training activities that YTC can support. The use of the training areas could not be rotated at the current frequency and would, therefore, have insufficient periods of time for recovery or restoration of vegetation, as required under the LRAM Program. The training lands would require additional repairs for damages caused by maneuver training and would result in increased demands on administrative management programs for management of the training areas. The frequency of training area maintenance efforts would be adjusted for the intensity of use and rate of degradation under Alternative 2. Maintenance costs for the training areas would increase in

1 proportion to the rate of damage incurred. With continued implementation of administrative  
2 management programs, such as ITAM, natural resource management, ecosystem management, and  
3 AR 350-19, The Army Sustainable Range Program, impacts would be less than significant because  
4 the training areas would be maintained and repaired as needed.

5 As a result of increased maneuver training under this alternative, UXO and lead would be generated  
6 and accumulate at accelerated rates compared to Alternative 1. Impacts associated with UXO and  
7 lead would be similar to those described for live-fire training. However, impacts on facilities would  
8 be less than significant because the impact zones would be remediated as needed.

#### 9 6.14.4.3.1.2 Utility Infrastructure

10 With the increase in maneuver training projected under Alternative 2, the demand for public utilities  
11 would increase; however, the Army would continue to implement water and energy conservation  
12 measures to minimize utility demands. Impacts on utility infrastructure would be less than significant  
13 because the existing utility infrastructure at YTC would have sufficient excess capacity for the  
14 anticipated peak demands for maneuver training as projected under this alternative (Army 2007e).

### 15 **6.14.5 Alternative 3 — GTA Actions + CSS Soldiers**

#### 16 **6.14.5.1 Construction Direct and Indirect Effects**

##### 17 **6.14.5.1.1 Less than Significant Effects**

##### 18 6.14.5.1.1.1 Facilities

19 Construction-related impacts on facilities would be the same as those described for Alternative 2,  
20 and would be beneficial and less than significant because the facilities at YTC would be adequate for  
21 training as projected for this alternative. No additional construction would occur under Alternative 3.

22 The addition of the CSS logistics units would create an increase in demand for adequate mobilization  
23 facilities at YTC. The facilities at YTC are anticipated to be adequate to support training under  
24 Alternative 3; however, the aging training and mobilization facilities at YTC would likely need to be  
25 replaced over time. If the need for new energy infrastructure were identified, construction of these  
26 facilities would be analyzed under separate NEPA studies.

##### 27 6.14.5.1.1.2 Utility Infrastructure

28 Construction-related impacts on utility infrastructure would be the same as those described for  
29 Alternative 2.

#### 30 **6.14.5.2 Live-fire Training Direct and Indirect Effects**

##### 31 **6.14.5.2.1 Less than Significant Effects**

##### 32 6.14.5.2.1.1 Facilities

33 Under Alternative 3, the number of live-fire training days per year would increase at YTC compared  
34 to Alternative 2; however, this increase would be minor. The two new ranges proposed under this  
35 alternative would support additional live-fire training and would offset some of the increased  
36 demand on the existing ranges at YTC. Impacts on facilities would be less than significant because  
37 live-fire training facilities are anticipated to be adequate to support the increased intensity of live-fire  
38 training as projected for Alternative 3. Impacts from the use of greater quantities of munitions under  
39 Alternative 3 would be similar to, but slightly greater than, those described under Alternative 2.

#### 6.14.5.2.1.2 Utility Infrastructure

The amount of live-fire training projected for this alternative would result in increased demand for utilities compared to Alternative 2; however, the Army would continue to implement water and energy conservation measures to minimize utility demands. Impacts on utility infrastructure would be less than significant because the existing utility infrastructure at YTC would have sufficient excess capacity for the anticipated peak demands for live-fire training as projected under this alternative (Army 2007e).

### **6.14.5.3 *Maneuver Training Direct and Indirect Effects***

#### **6.14.5.3.1 *Less than Significant Effects***

##### **6.14.5.3.1.1 Facilities**

Existing maneuver training facilities at YTC are anticipated to be sufficient to support the increased training requirements under Alternative 3. Additional maneuver land at YTC would also be available if needed. Impacts would be less than significant because maneuver training facilities at YTC are anticipated to be sufficient to support the training requirements as anticipated for Alternative 3.

The addition of the CSS logistics unit to the SBCT maneuver training under Alternative 3 would increase the number of vehicles involved in training exercises and potentially accelerate the rate of degradation of the training areas. Consequently, Alternative 3 would place increased demands on administrative management programs for sustainability of the training areas. The frequency of training area maintenance efforts would be adjusted for the intensity of use and rate of degradation under Alternative 3. With continued implementation of these programs, such as ITAM, natural resource management, ecosystem management, and AR 350–19, The Army Sustainable Range Program, impacts on facilities would be less than significant because the training areas would be maintained and repaired as needed.

##### **6.14.5.3.1.2 Utility Infrastructure**

Training projected for this alternative would result in an increased demand for utilities compared to Alternative 2; however, the Army would continue to implement water and energy conservation measures to minimize utility demands. Impacts on utility infrastructure would be less than significant because the existing utility infrastructure at YTC would have sufficient excess capacity for the anticipated peak demands for maneuver training as projected under this alternative (Army 2007e).

### **6.14.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB**

#### **6.14.6.1 *Construction Direct and Indirect Effects***

##### **6.14.6.1.1 *Less than Significant Effects***

##### **6.14.6.1.1.1 Facilities**

Construction-related impacts would be the same as those described for Alternative 2, and would be beneficial and less than significant. No additional construction would occur under Alternative 4.

The addition of a medium CAB training at YTC under Alternative 4 would create an increased demand for adequate mobilization facilities at YTC, as well as adequate helicopter hangar and maintenance facilities. Live-fire and maneuver training facilities are anticipated to be sufficient to support training requirements proposed under this alternative; however, the aging training and mobilization facilities at YTC would likely need to be replaced over time. If the need for new facilities were identified, construction of these facilities would be analyzed under separate NEPA studies.

1           6.14.6.1.1.2 Utility Infrastructure

2           Construction-related impacts on utility infrastructure would be the same as those described for  
3           Alternative 2.

4           **6.14.6.2   Live-fire Training Direct and Indirect Effects**

5           **6.14.6.2.1   Less than Significant Effects**

6           6.14.6.2.1.1 Facilities

7           The medium CAB would increase the use of aerial gunnery ranges for live-fire training. Existing  
8           live-fire training facilities are expected to be adequate for the increase in training under Alternative  
9           4. In addition, the two new proposed ranges would support additional live-fire training and would  
10          offset some of the increased demand on the existing ranges at YTC. Impacts on facilities would be  
11          less than significant because the ranges would be maintained and repaired as needed.

12          As a result of increased live-fire training under this alternative, UXO and lead waste would be  
13          generated and accumulate at accelerated rates. With continued implementation of administrative  
14          management programs, such as ITAM, natural resource management, ecosystem management, and  
15          AR 350–19, The Army Sustainable Range Program, impacts on facilities would be less than  
16          significant because the impact zones would be remediated as needed.

17          6.14.6.2.1.2 Utility Infrastructure

18          The amount of live-fire training projected for this alternative would result in an increased demand for  
19          utilities compared to Alternative 3; however, the Army would continue to implement water and  
20          energy conservation measures to minimize utility demands and the new water- and energy-saving  
21          features of the two new ranges would likely offset some of the additional demand on public utilities.  
22          Impacts on utility infrastructure would be less than significant because the existing utility  
23          infrastructure at YTC would have sufficient excess capacity for the anticipated peak demands for  
24          live-fire training as projected for this alternative.

25          **6.14.6.3   Maneuver Training Direct and Indirect Effects**

26          **6.14.6.3.1   Less than Significant Effects**

27          6.14.6.3.1.1 Facilities

28          Maneuver training with medium CAB support includes large-scale aviation training requiring  
29          extensive training areas. The medium CAB would also provide helicopter air support for some  
30          maneuvers and may change the scale and extent of some maneuver training. Impacts on facilities  
31          would be less than significant because maneuver training facilities would be adequate for training as  
32          projected for this alternative. Additional maneuver land would also be available at YTC if needed.

33          Under Alternative 4, the addition of a medium CAB to maneuver training would increase the number  
34          of vehicles and equipment involved in training exercises and potentially increase the rate of  
35          degradation of the training areas. Consequently, Alternative 4 would place increased demands on  
36          administrative management programs for management of the training areas. The frequency of  
37          training area maintenance efforts would be adjusted for the intensity of use and rate of degradation  
38          under Alternative 4. With continued implementation of administrative management programs, such  
39          as ITAM, natural resource management, ecosystem management, and AR 350–19, The Army  
40          Sustainable Range Program, impacts on facilities would be less than significant because the training  
41          areas would be maintained and repaired as needed.

1           6.14.6.3.1.2 Utility Infrastructure

2           The amount of maneuver training projected for this alternative would result in an increased demand  
3           for utilities compared to Alternative 3; however, the Army would continue to implement water and  
4           energy conservation measures to minimize utility demands and the new water- and energy-saving  
5           features of the two new ranges would likely offset some of the additional demand on public utilities.  
6           Impacts on utility infrastructure would be less than significant because the existing utility  
7           infrastructure at YTC would have sufficient excess capacity for the anticipated peak demands for  
8           maneuver training as projected for this alternative (Army 2007e).

9           **6.14.7 Cumulative Effects**

10          **6.14.7.1   *Less than Significant Effects***

11          Other projects or actions that would contribute to cumulative impacts on facilities and infrastructure  
12          at and around YTC primarily include regional population growth; ongoing military activities at YTC;  
13          conversion of rural lands near the installation to commercial, industrial, and residential uses; and  
14          water developments on the Columbia and Yakima Rivers. In addition to growth at the installation,  
15          continued regional population growth and development in the surrounding region, as well as ongoing  
16          construction and training activities at YTC, would continue to increase regional utility demands.

17          Reasonably foreseeable actions include continuation of those past and present activities including  
18          continued training by all units currently stationed at Fort Lewis as well as visiting units and training  
19          by HIMARS battalions, and the necessary replacement of aging training and mobilization facilities at  
20          YTC. Facilities at YTC are designed to support units from Fort Lewis and other outside units  
21          rotating in and out of the installation for training. The addition of a third permanent SBCT training at  
22          YTC, in addition to training of GTA and CSS Soldiers and a medium CAB, under the action  
23          alternatives would likely accelerate the need for replacing aging training and mobilization facilities,  
24          as well as increase demand for adequate training and mobilization facilities and associated utilities at  
25          YTC. However, new commercial and residential development on and off Post would incorporate  
26          technologies for water and energy conservation, minimizing the impacts of regional utility demands.  
27          Long-term effects to facilities and utility demands and infrastructure at YTC would be less than  
28          significant.

29          Activities occurring in the region outside the installation would generally not affect facilities at YTC.  
30          Future construction projects, such as the proposed transmission line through the installation, could  
31          result in localized restrictions on land available for new facilities.

32          Under all of the alternatives, but most intense under Alternative 4, the long-term cumulative impacts  
33          to facilities would result in range degradation at an accelerated rate proportionate to the intensity of  
34          use. However, with continued implementation of administrative management programs, such as  
35          ITAM, natural resource management, ecosystem management, and AR 350–19, The Army  
36          Sustainable Range Program, cumulative impacts on facilities and utility infrastructure would be less  
37          than significant because ranges would be maintained and repaired as needed.

38          **6.14.8 Mitigation**

39          The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
40          effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
41          limit, repair, reduce, or compensate for the adverse effects.

**6.15 ENERGY DEMAND/GENERATION**

The evaluation of potential impacts to energy demand or generation, delivery systems, or costs is based on the project’s potential to affect energy demand and costs. Population changes, including the numbers of Soldiers training at YTC, as projected for each alternative were used for forecasting energy demands. These energy demand forecasts were compared to existing levels of energy use and generation to determine if regional energy prices are expected to increase significantly or if updates to the regional energy delivery systems are anticipated to be required.

This analysis includes identification and evaluation of the mission requirements for energy and the extent to which each installation component already meets these requirements. The analysis also evaluates whether the proposed project activities for each alternative would expand the specific installation components’ demand for regional energy, and if any additional demand for energy or price increases for energy would adversely affect the proposed project or ROI. The following sections summarize the estimated proportionate increases in projected consumption of electricity, natural gas, and liquefied petroleum gas based on the proposed increases in training personnel for each alternative.

Steam facilities (boilers) have been decommissioned and, from mid-2009 forward, steam will no longer be used as a heat source at YTC (McDonald 2009f). Steam heating plants are not planned for the future energy needs at YTC; therefore, impacts to steam were not analyzed for any of the alternatives.

**6.15.1 Resource-specific Significance Criteria**

Factors considered in determining whether an alternative would have a significant impact on energy demand, generation, delivery systems, or costs would include the extent or degree to which its implementation would result in the following:

- Increased demand for energy beyond the current capacity of generation or delivery systems to the point that substantial expansion, additional facilities, or increased staffing levels would be necessary or result in substantial deterioration over current conditions.

**6.15.2 Overview of Impacts to Energy Demand and Generation by Alternative**

Table 6–32 summarizes the potential impacts on energy demand and generation that would occur under each of the alternatives.

**Table 6–32 Summary of Potential Effects on Energy Demand and Generation at YTC**

Activity Group	Alt 1	Alt 2	Alt 3	Alt 4
Construction Direct and Indirect Effects	•	€	€	€
Live-fire Training Direct and Indirect Effects	•	€	€	€
Maneuver Training Direct and Indirect Effects	•	€	€	€
Cumulative Effects	€	€	€	€

U = Significant Effects  
 W = Significant but Mitigable to less than Significant Effects  
 € = Less than Significant Effects  
 + = Beneficial Effect  
 N/A = Not Applicable  
 • = No Effects

### 6.15.3 Alternative 1 — No Action Alternative

#### 6.15.3.1 Construction Direct and Indirect Effects

##### 6.15.3.1.1 No Effects

No cantonment area or range construction would occur under Alternative 1. Therefore, there would be no effects to energy demand or infrastructure. The existing energy infrastructure would be sufficient to support existing facilities.

#### 6.15.3.2 Live-fire Training Direct and Indirect Effects

##### 6.15.3.2.1 No Effects

Under Alternative 1, live-fire training would continue to be conducted at YTC at current levels. There would be no impact to energy demand for live-fire training and the existing energy infrastructure would be adequate to support the projected live-fire training under Alternative 1.

#### 6.15.3.3 Maneuver Training Direct and Indirect Effects

##### 6.15.3.3.1 No Effects

Under Alternative 1, the intensity and frequency of maneuver training at YTC would be similar to current conditions. During maneuver training, power generation is typically self-contained (generators) and does not tap into the existing power infrastructure. There would be no impact to energy demand for maneuver training as projected under Alternative 1.

### 6.15.4 Alternative 2 — GTA Actions

#### 6.15.4.1 Construction Direct and Indirect Effects

##### 6.15.4.1.1 Less than Significant Effects

Energy demand for this alternative would be similar to current conditions because the resident population at YTC would not change for this alternative and both proposed new ranges would be outdoor ranges that would have minimal demands for electricity, natural gas, or LPG. New Army facilities would incorporate energy conservation measures in facilities designs and these energy-saving features would likely offset some of the additional energy demand. New facilities would be designed with energy-saving features and construction to comply with AR 11–27, Army Energy Program; EO 13123, Greening the Government through Efficient Energy Management; EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management; and the requirements under the new Energy Independence and Security Act of 2007. The Army would construct all new facilities to achieve a minimum of Silver rating LEED including energy efficiency. Short-term energy demand would increase during construction of the new facilities; however, this impact would be temporary and less than significant. Impacts to energy demand and generation would be less than significant because the additional long-term energy demand for operation of the two new ranges would be inconsequential compared to system capacity and the new energy-saving features of the new ranges would likely offset some of the additional energy demand.

Ongoing and planned projects include improvements to the capacity and energy efficiency of the electrical transmission, natural gas systems, and heating at YTC. An initial capital investment may be required to extend the energy infrastructure to the new range facilities; however, it is unlikely that the capacity of the electrical and natural gas distribution systems would be exceeded. Over the long-term, the impacts to energy infrastructure within the ROI would be less than significant because these impacts would be limited to the Army installation.

1 During construction, power may need to be routed to the new facilities, and additional gas line  
2 connections or increased feeder line sizes may be needed to meet demands. Construction activities  
3 could result in service interruptions in order to connect new lines and extend service. This impact  
4 would be less than significant because service interruptions would be temporary, and the length of  
5 services interruptions would be minimized to the greatest extent possible. These impacts would be  
6 limited to the Army installation and service would be returned to normal after construction is  
7 completed.

#### 8 **6.15.4.2 Live-fire Training Direct and Indirect Effects**

##### 9 **6.15.4.2.1 Less than Significant Effects**

10 There would be an increase in energy demand because of increased use of the existing and two new  
11 live-fire training ranges; however, the energy demand for live-fire training would be similar to  
12 Alternative 1 because both new ranges would be outdoor ranges that would have minimal demands  
13 for energy. The new ranges would incorporate energy conservation measures and these energy-  
14 saving features would likely offset some of the additional energy demand. In addition, the Army  
15 would continue to implement SOPs for energy conservation to minimize energy demand. Impacts  
16 would be less than significant because the increased energy demand for live-fire training as projected  
17 for this alternative would be within the capacity of the current generation and distribution systems  
18 (Army 2007e).

#### 19 **6.15.4.3 Maneuver Training Direct and Indirect Effects**

##### 20 **6.15.4.3.1 Less than Significant Effects**

21 Under Alternative 2, the overall frequency of maneuver training activities would increase by as much  
22 as 50 percent compared to Alternative 1. Impacts to energy demand and generation would be less  
23 than significant because maneuver training is generally self-contained and has little direct effect on  
24 the demand for energy.

### 25 **6.15.5 Alternative 3 — GTA Actions + CSS Soldiers**

#### 26 **6.15.5.1 Construction Direct and Indirect Effects**

##### 27 **6.15.5.1.1 Less than Significant Effects**

28 Energy impacts associated with construction would be the same as those described for Alternative 2  
29 and would be less than significant because there would be no change in the resident population at  
30 YTC, the additional long-term energy demand for operation of the two new ranges would be  
31 inconsequential compared to system capacity, and the new energy-saving features of the two new  
32 ranges would likely offset some of the additional energy demand.

#### 33 **6.15.5.2 Live-fire Training Direct and Indirect Effects**

##### 34 **6.15.5.2.1 Less than Significant Effects**

35 There would be an increase in energy demand as a result of increased use of the existing and two  
36 new live-fire training ranges compared to Alternative 2; however, the energy demand for live-fire  
37 training would increase minimally and the new energy-saving features of the two proposed ranges  
38 would likely offset some of the additional energy demand. The Army would continue to implement  
39 SOPs for energy conservation to minimize energy demand. Impacts would be less than significant  
40 because the increased energy demand for live-fire training as projected for this alternative would be  
41 within the capacity of the current generation and distribution systems (Army 2007e).

### 6.15.5.3 *Maneuver Training Direct and Indirect Effects*

#### 6.15.5.3.1 *Less than Significant Effects*

The addition of CSS logistics units to maneuver training activities at YTC would result in an increased number of personnel and vehicles involved in some maneuver training and an overall increase in the extent and intensity of maneuver training compared to Alternative 2. Impacts to energy demand and generation would be less than significant because maneuver training is generally self-contained and has little direct effect on the demand for energy.

## 6.15.6 Alternative 4 — GTA Actions + CSS Soldiers + Medium CAB

### 6.15.6.1 *Construction Direct and Indirect Effects*

#### 6.15.6.1.1 *Less than Significant Effects*

Energy demand associated with construction would be the same as those described for Alternative 2. Energy demand impacts would be less than significant because there would be no change in the resident population at YTC, the additional long-term energy demand for operation of the two new ranges would be inconsequential compared to system capacity, and the new energy-saving features of the two proposed ranges would likely offset some of the additional energy demand.

### 6.15.6.2 *Live-fire Training Direct and Indirect Effects*

#### 6.15.6.2.1 *Less than Significant Effects*

There would be an increase in energy demand as a result of increased use of the existing and new live-fire training ranges compared to Alternative 3; however, the energy demand for live-fire training would increase minimally and the new energy-saving features of the two proposed ranges would likely offset some of the additional energy demand. The Army would continue to implement SOPs for energy conservation. Impacts would be less than significant because the increased energy demand for live-fire training as projected for this alternative would be within the capacity of the current generation and distribution systems (Army 2007e).

### 6.15.6.3 *Maneuver Training Direct and Indirect Effects*

#### 6.15.6.3.1 *Less than Significant Effects*

The addition of a medium CAB to training activities at YTC under Alternative 4 would result in an increased number of personnel and vehicles involved in some maneuver training and an overall increase in the intensity of maneuver training compared to Alternative 3. Impacts to energy demand and generation would be less than significant because maneuver training is generally self-contained and has little direct effect on the demand for energy.

## 6.15.7 Cumulative Effects

### 6.15.7.1 *Less than Significant Effects*

Within the YTC regional area, past, present, and reasonably foreseeable increases in population and commercial development have cumulatively resulted in increased energy demand. Cumulative increases in energy demand from ongoing SBCT and other unit training at YTC would be insignificant in the context of increases in energy demand associated with regional population growth. In addition, Army policies and practices for minimizing energy consumption and ongoing

1 renovation and construction that includes more energy-efficient heating systems would help to  
2 minimize the Army’s contribution to this regional increase in energy demand. The existing energy  
3 availability and delivery infrastructure at YTC are more than adequate for the anticipated peak  
4 demands and could accommodate large increases in demand, if needed. Within the region, newly  
5 constructed housing and other facilities should incorporate technologies that would help reduce  
6 energy use and increasingly take advantage of renewable energy sources, resulting in a less than  
7 significant impact to energy demand and generation.

8 The addition of a third SBCT to the training activities at YTC, as well as GTA Soldiers, CSS  
9 Soldiers, and a medium CAB under Alternatives 2, 3, and 4, respectively, would increase the  
10 frequency of use of the existing facilities at YTC and result in a slight increase in energy demand. In  
11 addition, the medium CAB under Alternative 4 would increase the demand for adequate mobilization  
12 facilities and helicopter hangar and maintenance facilities at YTC. The training activities that occur  
13 at the ranges and training areas contribute little to energy demand. Anticipated increases in energy  
14 demand under the action alternatives, in combination with other training at YTC, would be  
15 insignificant in the context of increases in energy demand associated with projected regional  
16 population growth. In addition, Army policies and practices for minimizing energy consumption and  
17 ongoing renovation and construction that include more energy-efficient heating and cooling systems  
18 would help to minimize the Army’s contribution to this regional increase in energy demand.

### 19 **6.15.8 Mitigation**

20 The analysis of the direct, indirect, and cumulative effects for the four alternatives concludes that the  
21 effects are less than significant. Therefore, no new or additional mitigation is necessary to avoid,  
22 limit, repair, reduce, or compensate for the adverse effects.

## 23 **6.16 UNAVOIDABLE ADVERSE EFFECTS**

24 There are unavoidable impacts that could occur as a result of implementing any of the action  
25 alternatives. Some of these impacts would be short-term, while others could be long-term. These  
26 unavoidable impacts, which have been described in the EIS, could include:

- 27 • The generation of fugitive dust and other pollutants during construction and training activities  
28 that could impact air quality in the region (short-term).
- 29 • Loss of or harm to vegetation, especially on shrub-steppe habitat, as a result of training  
30 activities. Proposed resource sustainability management and mitigation measures should  
31 reduce the rate of loss of shrub-steppe habitats (short- and long-term).
- 32 • Loss of fish habitat as a result of soil erosion and sedimentation from construction and  
33 training activities, and from stream crossing activities during training. Efforts by YTC to  
34 enhance riparian habitat on the installation should offset these losses (short- and long-term).
- 35 • Loss of or harm to wildlife and wildlife habitat from construction and training activities.  
36 Shrub-steppe species and habitats are most likely to be affected (short- and long-term).
- 37 • Loss of or harm to special status species as a result of training activities. Species that are most  
38 likely to be affected include those found in the shrub-steppe habitats such as greater sage-  
39 grouse, burrowing owl and other raptors, and several species of migratory birds and small  
40 mammals (short- and long-term).
- 41 • Increased noise levels and disturbance from construction and training that could affect human  
42 aesthetics and wildlife use of the installation and nearby areas (short-term).
- 43 • Increased on-road and off-road traffic on YTC as a result of higher levels of activity by  
44 vehicles (short-term).

- Increased production of hazardous wastes as a result of construction and training. It is anticipated that higher levels of Stryker vehicle miles would result in a greater likelihood of petroleum and related spills from vehicles.

## 6.17 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Short-term uses are those that generally occur on a year-to-year basis. Examples are wildlife use of forage, rangeland management, recreation, and uses of water resources. Long-term productivity is the capability of the land to provide resources, both market and non-market, for future generations.

YTC has been used as a military installation since 1942. The military mission at YTC is to train, mobilize, and deploy combat-ready forces to fight and win throughout the world. The proximity of Fort Lewis and YTC to interconnected road, rail, sea, and air facilities makes them, together, the premier force deployment center on the West Coast of the United States. The vision of Fort Lewis and YTC is to be an enduring strategic installation that is ready to project combat power for decisive victory. Fort Lewis and YTC will also provide support for Soldiers, their Families, and the civilian workforce, and do what is necessary to sustain a quality installation. The mission will be accomplished by:

- Providing training areas with modern ranges and other support facilities that meet the needs of assigned and visiting units and tenant activities;
- Developing and maintaining state-of-the-art simulation facilities;
- Providing and maintaining world-class power projection facilities;
- Providing first-class living and working environments for the total force;
- Ensuring quality services that meet the continuing professional requirements of Soldiers and civilian employees and the personal needs of Soldiers, their Families, and other authorized individuals; and
- Demonstrating leadership and innovation in environmental stewardship.

At the same time, the Army's commitment to natural resources management is emphasized in Army Regulation 200-1 (Environmental Protection and Enhancement), which requires that INRMPs or CNRMPs be developed and maintained for all Army installations.

In this context, long-term impacts to site productivity would be those that last 75 to 100 years or more. Army actions would adversely affect long-term productivity by reducing the productivity of soil and vegetation and ability of shrub-steppe communities (and to a lesser extent other vegetation types) to provide quality habitats that support fish and wildlife. The Army has ongoing programs in place that restore and enhance upland and wetland habitats to slow this loss, but the gradual loss of soil and plant productivity and habitat quality appears inevitable, even with limits on training and other land disturbing activities.

From a regional perspective, however, the military mission has had numerous positive impacts on natural resources at YTC. The most significant is YTC's commitment to the protection and management of cultural and natural resources on the installation. Given the large amount of agricultural, residential, and commercial development occurring near YTC, and the importance of protecting and conserving natural and cultural resources within the region, the protection and management of these resources on the 327,102 acres (132,400 ha) that comprise YTC has become increasingly important.

1 There are approximately 241,000 acres (97,500 ha) of sagebrush-dominated plant communities on  
2 YTC. As noted above, YTC lies within the core of the largest remaining block of shrub-steppe  
3 habitat in Washington. The Army works to revegetate and rehabilitate areas that are damaged by  
4 training, and to control the spread of noxious weeds. Sagebrush restoration activities have included  
5 seeding with grasses and forbs and planting sagebrush seedlings.

6 The Army protects springs, seeps, and wetlands on YTC from military vehicles to reduce  
7 sedimentation caused by erosion. Several springs, seeps, and wetlands were used as livestock  
8 watering sites historically. The Army has been active in removing livestock watering troughs and  
9 other debris, and revegetating many of these sites. These activities have greatly benefited the fish and  
10 wildlife that use these wetlands, as well as recreational users of the installation.

11 YTC has taken numerous actions to benefit threatened and endangered species. The YTC Sage  
12 Grouse Management Plan directs management for sage-grouse and their habitat on YTC, including  
13 the protection of leks and nesting and brood rearing habitat. To benefit bald eagles, military activities  
14 are limited near bald eagle roost sites during winter, and YTC has conducted riparian tree plantings  
15 to provide future roost sites. The installation monitors raptor populations and protects raptor nest  
16 sites as they are found. Riparian habitat associated with several streams has been restored or  
17 enhanced to improve habitat for salmonids and other fish.

18 The goal of resource sustainability management is to tie training activity levels to the quality of the  
19 land and to slow or avoid the loss of soil and plant resources and the fish and wildlife that depend  
20 upon them. When combined with current efforts to manage resources on the installation, this  
21 management strategy should ensure that, as long as the Army strives to maintain and enhance its  
22 natural resources, YTC should continue to provide some of the most productive lands in the region.

## 23 **6.18 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF** 24 **RESOURCES**

25 Irreversible resource commitments are those that cannot be reversed (loss of future options), except  
26 perhaps in the extremely long term. The term relates primarily to nonrenewable resources, such as  
27 minerals or cultural resources, or those resources that are renewable only over long periods of time  
28 such as old-growth forest. Irretrievable resource commitments are those that are lost for a period of  
29 time. For example, if shrub-steppe habitat is in poor condition and is likely to remain so, the time gap  
30 between its current and its ideal (potential) productivity is in itself an ongoing irretrievable loss.

31 The irreversible commitment of resources would include the consumption of non-renewable energy  
32 or materials, such as petroleum products used to operate Stryker vehicles, and sand, gravel, and rock  
33 materials used to maintain and construct roads on the installation that would be later unavailable for  
34 other uses. Eroded soil that is transported off the installation by storm water runoff and streams  
35 would also constitute an irretrievable loss.

36 Irretrievable resource commitments include the loss of vegetation and fish and wildlife habitat from  
37 construction and training activities. Ongoing and proposed mitigation and resource management  
38 would reduce these impacts, but the quality of vegetation and habitat is likely to be reduced if  
39 training levels remain high or increase.

40 Populations of special status species, especially those using shrub-steppe habitats, could be  
41 irreversibly and irretrievably affected by the action alternatives. The population of greater sage-  
42 grouse found on YTC is one of only two populations in Washington. Loss of these populations could  
43 have significant impacts on the future success of the species.

1 **6.19 OTHER DISCLOSURES**

2 **6.19.1 Migratory Birds**

3 There would be minor impacts to migratory birds from action alternatives. Direct impacts could  
4 potentially occur from mortality or injury by Army vehicles or munitions during training. Indirect  
5 impacts would occur from training-related disturbance and noise and from loss of habitat. Species  
6 using shrub-steppe habitat would be most affected, while impacts to species using grasslands, rock  
7 outcrops, and wetlands should be minor. The Army has identified passerine and upland game birds  
8 as a key biological resource deserving of attention on YTC; many of these species are also  
9 migratory. In addition, the Army has other ongoing activities, including habitat enhancement  
10 projects, to benefit migratory species.

11 Proposed training activities could cause the injury and loss of migratory and other birds, but would  
12 not result in significant adverse effects on bird populations. Rocket firing activities would comply  
13 with the USFWS rule (as directed by Section 315 of the National Defense Authorization Act of FY  
14 2003) that authorizes such take, with limitations, that result from military readiness activities of the  
15 Armed Forces (50 CFR Part 21).

16 **6.19.2 Threatened and Endangered Species**

17 There are no federally listed threatened or endangered wildlife that would be likely to use YTC.  
18 Impacts to water quality from soil disturbance and erosion, and spills, could affect bull trout,  
19 Chinook salmon, and steelhead trout using rivers and streams on or near YTC. However, these  
20 impacts would likely be minor. A BA and EFH assessment has been prepared to assess the potential  
21 impacts of the alternatives on threatened and endangered species, and species proposed for listing  
22 (**Appendix F**).

23