ENVIRONMENTAL ASSESSMENT

Construction and Operation of a Joint Base Access Road,
Joint Base Lewis-McChord, Washington

Recommended for Approval by:

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National Environmental Policy Act (NEPA)
Documentation prepared by the Environmental Division
Public Works, Joint Base Lewis-McChord

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Acronyms

ACP	Access Control Point
AIRFA	American Indians Religious Freedom Act
ALT	Alternative
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CVIP	Commercial Vehicle Inspection Point
CWA	Clean Water Act
DoD	Department of Defense
DOL	Directorate of Logistics
DPW	Directorate of Public Works
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EPA	Environmental Protection Agency
ESA	Endangered Species Act
GIS	Geographic Information System
INRMP	Integrated Natural Resources Management Plan
I-5	Interstate-5
JBLM	Joint Base Lewis-McChord
LCS	Lead Contaminated Soils
MAMC	Madigan Army Medical Center
mg/kg	Milligrams Per Kilograms
MILCON	Military Construction
min	Minute
NAGPRA	Native American Graves Protection and Repatriation Act
NEC	Network Enterprise Center
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
RECs	Record of Environmental Consideration
Sec	Seconds
SFG	Special Forces Group
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
TCE	Trichloroethylene
USAF	United States Air Force
USFWS	United States Fish and Wildlife Service
WDOE	Washington Department of Ecology

INTRODUCTION

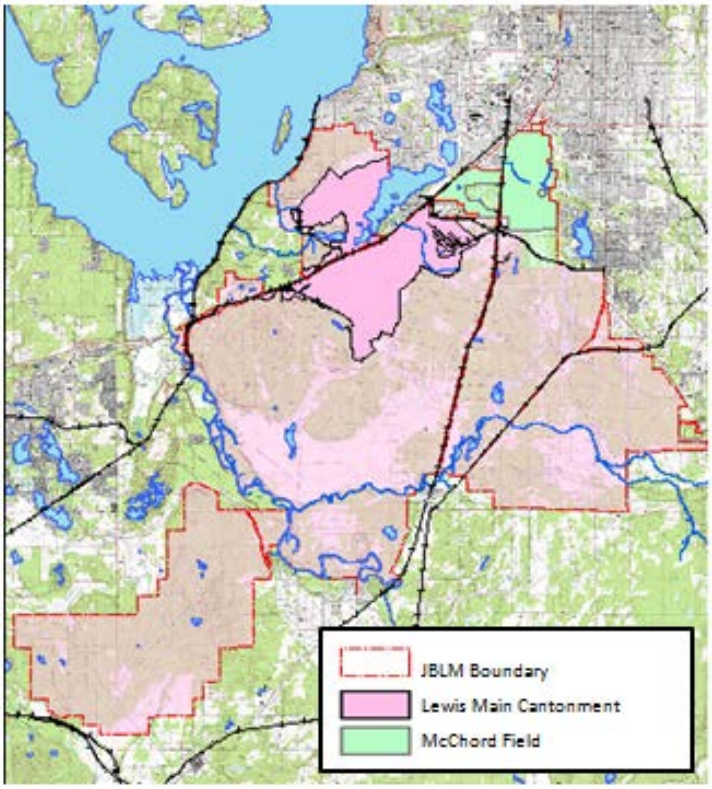
In 2005, the Base Realignment and Closure (BRAC) Commission recommended the transfer of installation support functions from the United States Air Force (USAF), McChord Air Force Base to the Department of Army (Army), Fort Lewis as part of the Department of Defense (DoD) mission realignment efforts. The amalgamation of these entities resulted in Joint Base Lewis-McChord (JBLM) which became a fully functional installation in 2010. Since the BRAC merger, the USAF and the Army have been streamlining operations (budgeting, acquisition, personnel, management systems, etc), in order to reduce costs and increase efficiency at JBLM.

Because JBLM was created from the merger of two distinct and separate military installations, connectivity between JBLM's Lewis Main (previously Fort Lewis) and McChord Field (previously McChord Air Force Base) is limited. Currently, there are two routes to travel between Lewis Main and McChord Field; both of which require exiting the installation and traveling on public roadways (either Interstate-5 (I-5) or a two-lane, county road (Perimeter Road)), and then re-entering the base through an Access Control Point (ACP).

Location and Background

JBLM is located in western Washington, 36 miles south of Seattle and 7 miles northeast of Olympia. It is the largest military installation on the west coast of the United States, with an area of approximately 90,600 acres on the west side of the Cascades. Interstate-5, which is the main transportation corridor in the Puget Sound region, runs through the installation.

Figure 1: Project Vicinity



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Purpose and Need

The purpose of the Proposed Action is to provide a direct and unimpeded vehicle connection between Lewis Main and McChord Field. The project is needed in order to:

- Create an adequate and reliable, unimpeded access route for deployment of personnel and equipment
- Create/improve emergency response for police/fire/public safety trips
- Reduce travel volume on I-5 (by removing or diverting traffic through an unimpeded and secure access between Lewis North and McChord Field)
- Increase productivity of Soldiers and personnel traveling between the Lewis Main and McChord Field communities (reduced ACP queuing times and higher roadway speeds)

Proposed Action

The Department of Army proposes to develop and construct a direct connection between the Lewis Main and McChord Field communities of JBLM. The proposed JBLM Access Corridor would be a four-lane road that will provide unimpeded access for JBLM north/south interbase travel and eliminate the need to exit and re-enter multiple ACPs. The proposed action would also facilitate deployment of personnel and equipment, improve emergency access, and reduce trips on the interstate system.

The Proposed Action would need to be constructed in phases.

Phase I: Construct a bridge that would span existing transportation corridors (a two-lane county road that runs along the boundary of the two installations, and the Burlington Northern Santa Fe [BNSF] railroad), which transect the installation. *These existing transportation corridors obstruct the direct routes and constrain potential design options for the project.* An access road is required on each side of the bridge to tie into an existing entry road. The bridge would include a two lane road, safety railings, curbs and gutters, lighting, and storm drainage.

Phase II: Expand on the Joint Base Access Bridge, and construct a roadway that would further link Lewis Main and McChord Field. Phase II would require the construction of new roadway and/or the expansion of existing roadways, depending on the design alternative that is selected. The preliminary design of a new roadway could be a 3 or 4 lane road and potentially include updating the traffic signals at a county road.

Scope of the Analysis

The scope of this document is to analyze the potential environmental effects of the alternatives identified that meet the proposed project's purpose and need. Section 102(2)(E) of the National Environmental Policy Act (NEPA) states that Agencies shall study, develop, and describe appropriate alternatives for any proposal which involves conflicts concerning alternative uses of available resources. Alternatives include the no action alternative and any reasonable alternatives to the proposed action that can be realistically accomplished.

This EA has been prepared in accordance with the NEPA; the regulations issued by the Council on Environmental Quality (CEQ), 40 Code of Federal Regulation (CFR) Part 1500-1508; and the Army's implementing procedures published in 32 CFR 651, *Environmental Analysis of Army Actions*.

Development of the Project Alternatives

During initial project scoping and planning, five design alternatives were identified for the JBLM Access Corridor project. Development of the designs took into consideration obvious environmental constraints (Murray Creek and wetlands), military training conflicts (firing ranges, blast zones, etc), and existing infrastructure (existing roadways and ACPs), to develop a range of project alternatives that would meet the project's purpose and need. These designs were reviewed with stakeholders to determine their viability, and to identify the advantages and disadvantages of each.

To be considered a reasonable alternative for this project, the proposal:

- Must meet the proposed project's purpose and need (unimpeded access).
- Avoid all non-mitigatable effects; including those to the environment, cultural resources, or the JBLM mission.

Other project goals and objectives considered include:

- Provide flexibility for JBLM planning and budgeting efforts (phased construction).
- Provide an adequate and reliable route for deployment of personnel and equipment. Including the potential for exclusive use during deployments.
- Provide for emergency services efficiency and improved workforce productivity (increased speed roadways on roadways, reduced distance, and reduced time at ACPs).
- Limits impacts to current land use and mission.
- Limits impacts to the environment.

DESCRIPTION OF THE ALTERNATIVES

No Action Alternative

The No Action Alternative serves as the baseline from which to compare all other reasonable alternatives, but is not analyzed as a viable option with which to accomplish the proposed action. Under the No Action Alternative, JBLM personnel would continue to travel between Lewis Main and McChord Field by exiting the installation and using public connector roadways (either I-5 or Perimeter Road) and reenter the installation at another ACP. The ACP on E. Lincoln Ave will remain open with this alternative.

Transmission Line/Tank Trail (Alternative 1)

The Transmission Line/Tank Trail (Figure 4) would travel from Lewis Main along Transmission Line Road and Tank Trail to E. Lincoln Ave. E. Lincoln Ave would travel north to tie into the connector bridge (Bridge Route A or B) which crosses over the BNSF railroad and Perimeter Road. The road would continue under the future Cross Base Highway (State Route [SR] 704) to the McChord Field, Barnes Gate (ACP). The ACP on E. Lincoln Ave will close and personnel wishing to enter JBLM will ingress at Barnes ACP and then use the bridge to enter the Lewis Main area. Benefits to this design include a reduced construction footprint, since the majority of the roadway construction would focus on widening existing roadways (Transmission Line and Tank Trail). Cons identified with this alternative include: restrictions for roadway widening potential (existing Network Enterprise Center [NEC] building); impacts to Murray Creek and existing wetlands; impacts to Special Forces Compound; and impacts to ranges. Further, this alternative would require a new and/or widened culvert along Rainier Drive where the roadway crosses Murray Creek.

North/DOL/SR 704 (Alternative 3)

The North/Department of Logistics (DOL)/SR 704 (Figure 5) would travel from Tank Trail, along the northern border of Lewis Main around Tacoma Drive and/or Madigan Bypass. The road would then travel parallel to the future Cross Base Highway, SR 704, to tie into the connector bridge (Bridge Route B) to McChord Field. The ACP on E. Lincoln Ave would close and personnel wishing to enter JBLM would ingress at Barnes ACP and then use the bridge to enter the Lewis Main area. The North/DOL/SR 704 design was considered because initial review found no impacts to Murray Creek, training lands, or the Special Forces compound. Disadvantages to this project are impacts to traffic (directs traffic into an already congested area of the installation).

Transmission Line/Training Land (Alternative 5)

The Transmission Line/Training Land (Figure 6) follows Transmission Line Road east to the intersection with Tank Trail. The roadway follows Tank Trail, following the eastern edge of Murray Creek and wetlands. The roadway meets the intersection of Tank Trail and E. Lincoln Ave, travels to the connector bridge (Bridge Route A or B) and then north under the future Cross Base Highway (SR 704) to the McChord Field, Barnes Gate ACP. The ACP on E. Lincoln Ave will close and personnel wishing to enter JBLM will ingress at Barnes ACP and then use the bridge to enter the Lewis Main area.

Benefits to this design include: improved horizontal geometry and design speeds; no impacts to Murray Creek; and no impacts to contaminated sites. Disadvantages of this project include: restrictions for roadway widening potential (existing NEC building); impacts to Special Forces Compound; impacts to ranges and training areas; may impact quarry and butterfly habitat; and the project is outside the ACP/cantonment fence line.

PROJECT COMPONENTS COMMON TO ALL ALTERNATIVES

Although the alternatives that were developed for this project focus on the design of the roadway, the proposed action would also include the design of a bridge that would provide secure travel between Lewis Main and McChord Field by separating JBLM traffic from Perimeter Road and the existing BNSF rail line. Two alternative routes were considered for the development of this project. Route A is longer than Route B, but is aligned nearly orthogonal to the existing railroad track and the roadway it crosses. The Route B alignment is heavily skewed relative to the alignment of the existing roadway it crosses.

The proposed bridge structure and related approach work will be all new construction. Under any action alternative or as a stand alone bridge under Phase I, the bridge would include a single 11-foot wide travel lane in each direction, a 6-foot-wide center median, and 6-foot shoulders on each side, resulting in a 40-foot curb to curb width. The pier locations and roadway profile were set to fit within the constraints of the site and would require placing fill approaches on BNSF property. Adequate horizontal and vertical clearance envelopes were provided over Perimeter Road and the BNSF railroad track. Additionally, the design allows BNSF to add new railroad tracks to the east of the existing track.

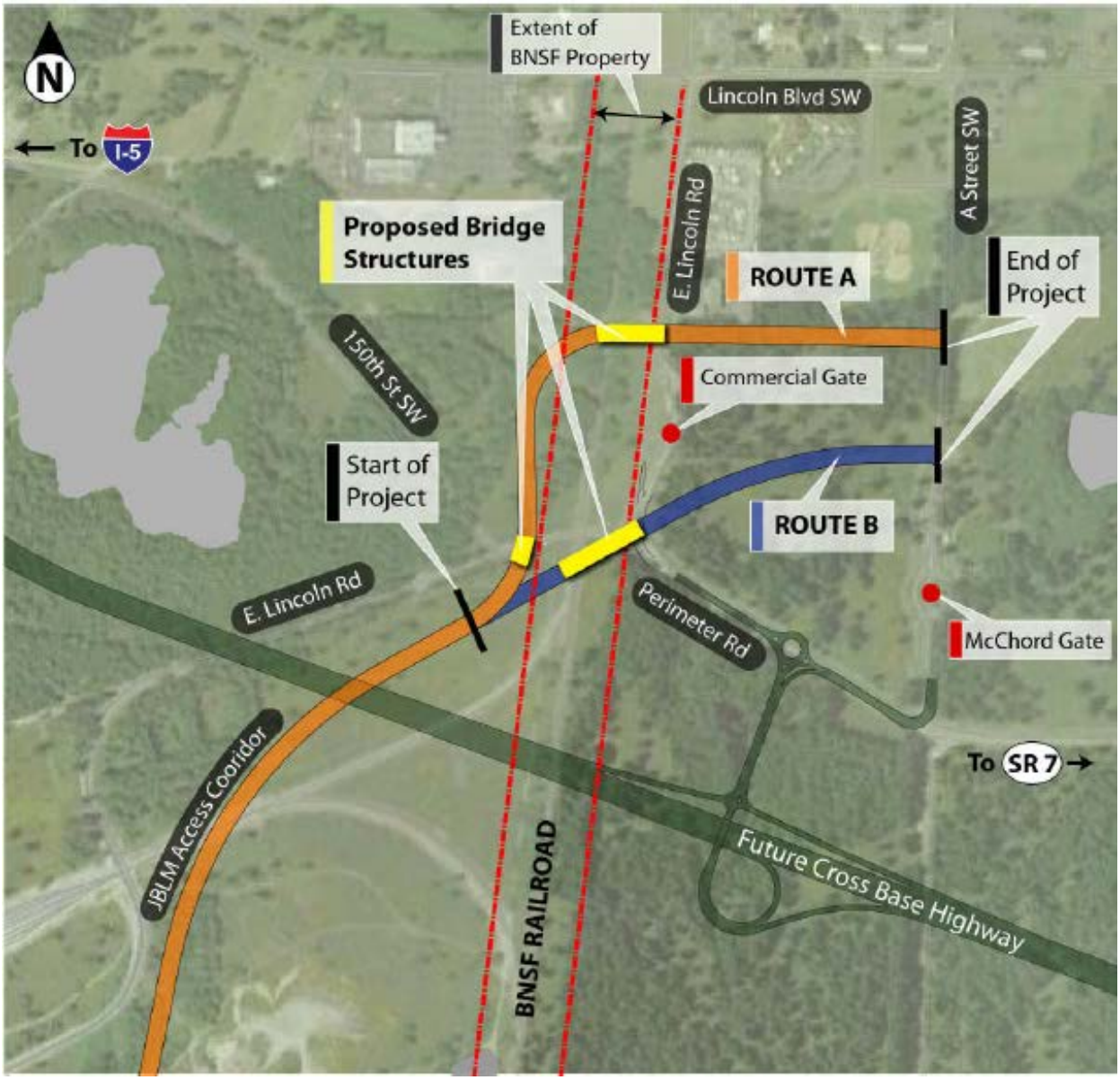
Bridge Route A

Bridge Route A turns north, crossing Perimeter Road while paralleling the BNSF railroad track. The alignment then turns east, crossing the BNSF railroad track and E. Lincoln Ave, and continuing on until it meets A Street SW, where a new intersection would be required (Figure 2). Bridge Route A would require two separate bridge structures: a single-span bridge that spans E. Lincoln Ave in the southern portion of the project site, and a two-span bridge that spans the existing BNSF railroad track and E. Lincoln Ave on the secured side of the Commercial Gate ACP, but the realignment of the Perimeter Road and E. Lincoln Ave intersection would not be required.

Bridge Route B

Bridge Route B begins immediately to the west of BNSF property and takes a direct route over the railroad track and the E. Lincoln Ave/Perimeter Road intersection. At grade level, the road would continue on until it terminates at A Street SW, where a new intersection would be required (Figure 2). Bridge Route B would be two-span concrete bridge, although this route could also accommodate a three-span concrete bridge or a two-span concrete and steel bridge.

Figure 2: Phase I Proposed Bridge Routes Alignments



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Note: Approximate locations are depicted in drawings

Figure 3: Example of Bridge Route B Design

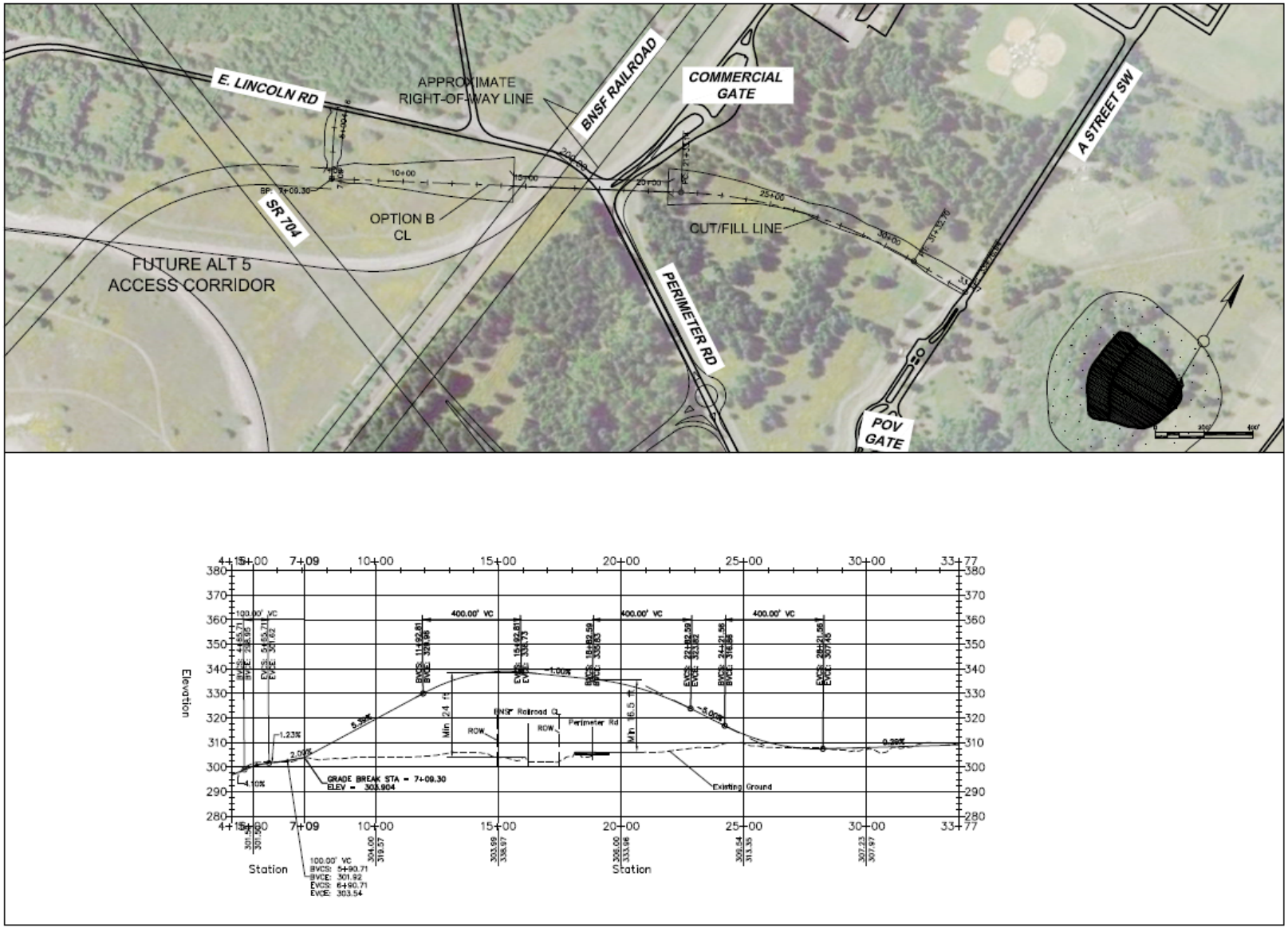

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Figure 4: Transmission Line/Tank Trail (Alternative 1)

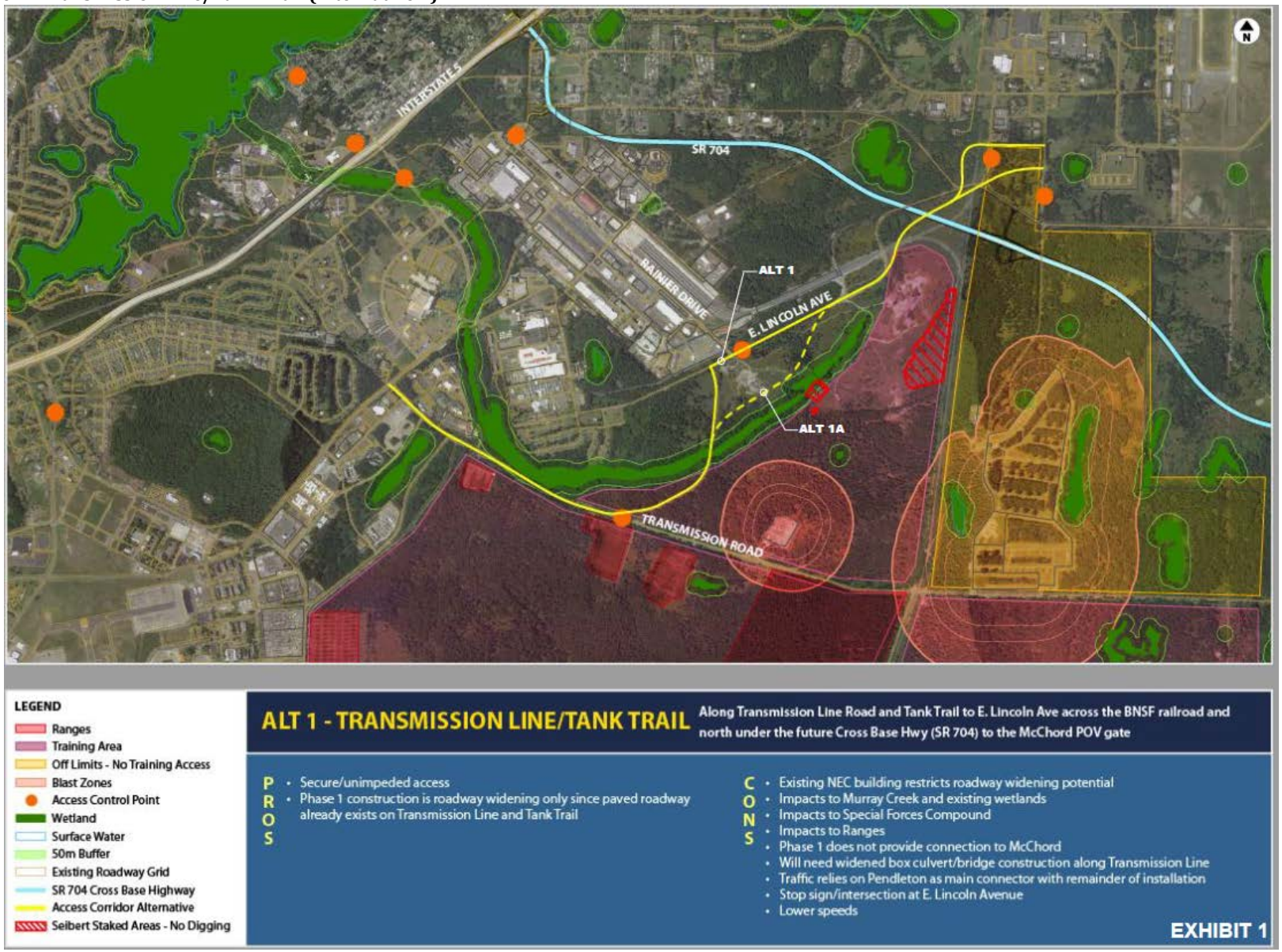

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Figure 5: North/DOL/SR 704 (Alternative 3)

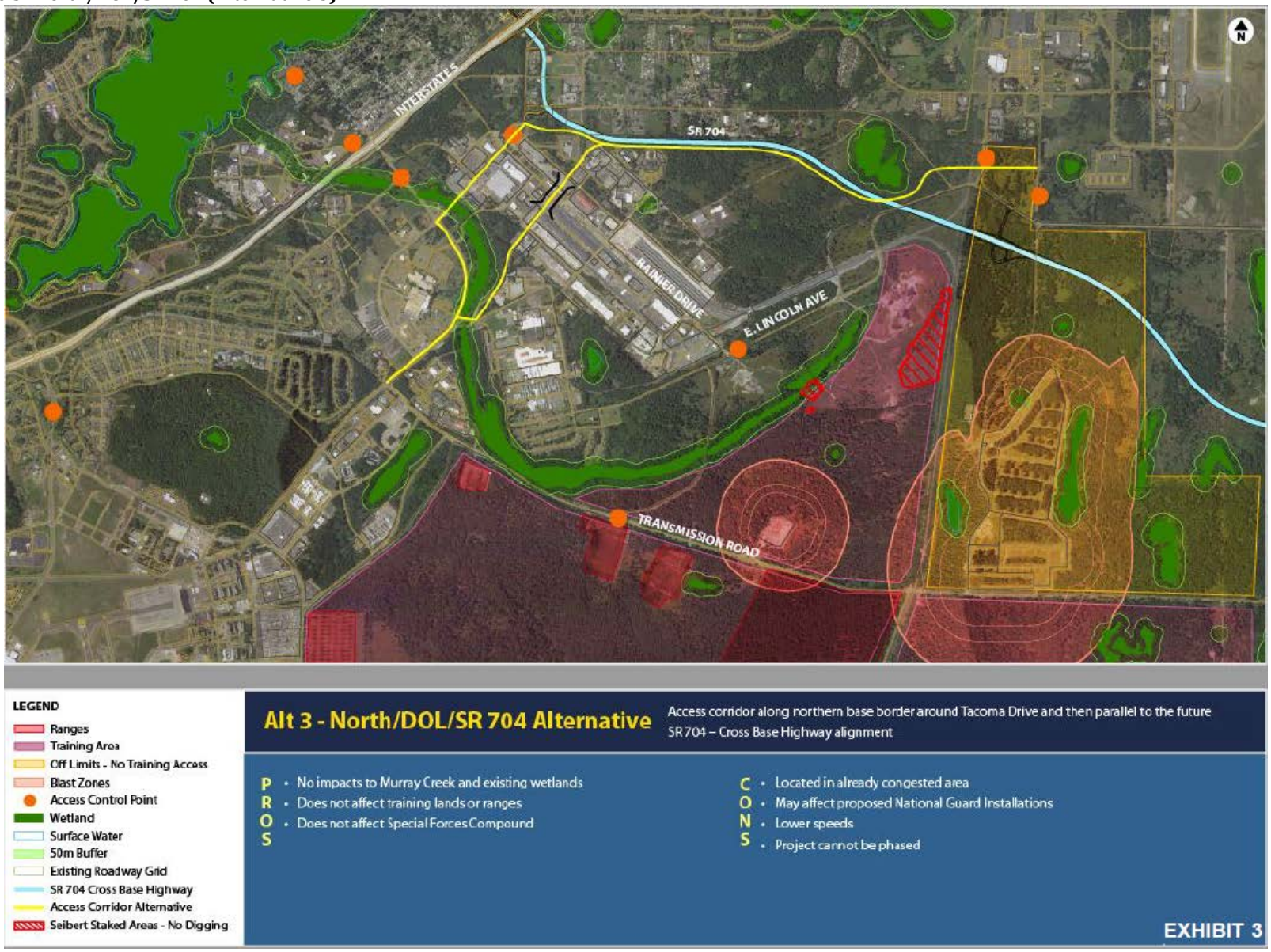

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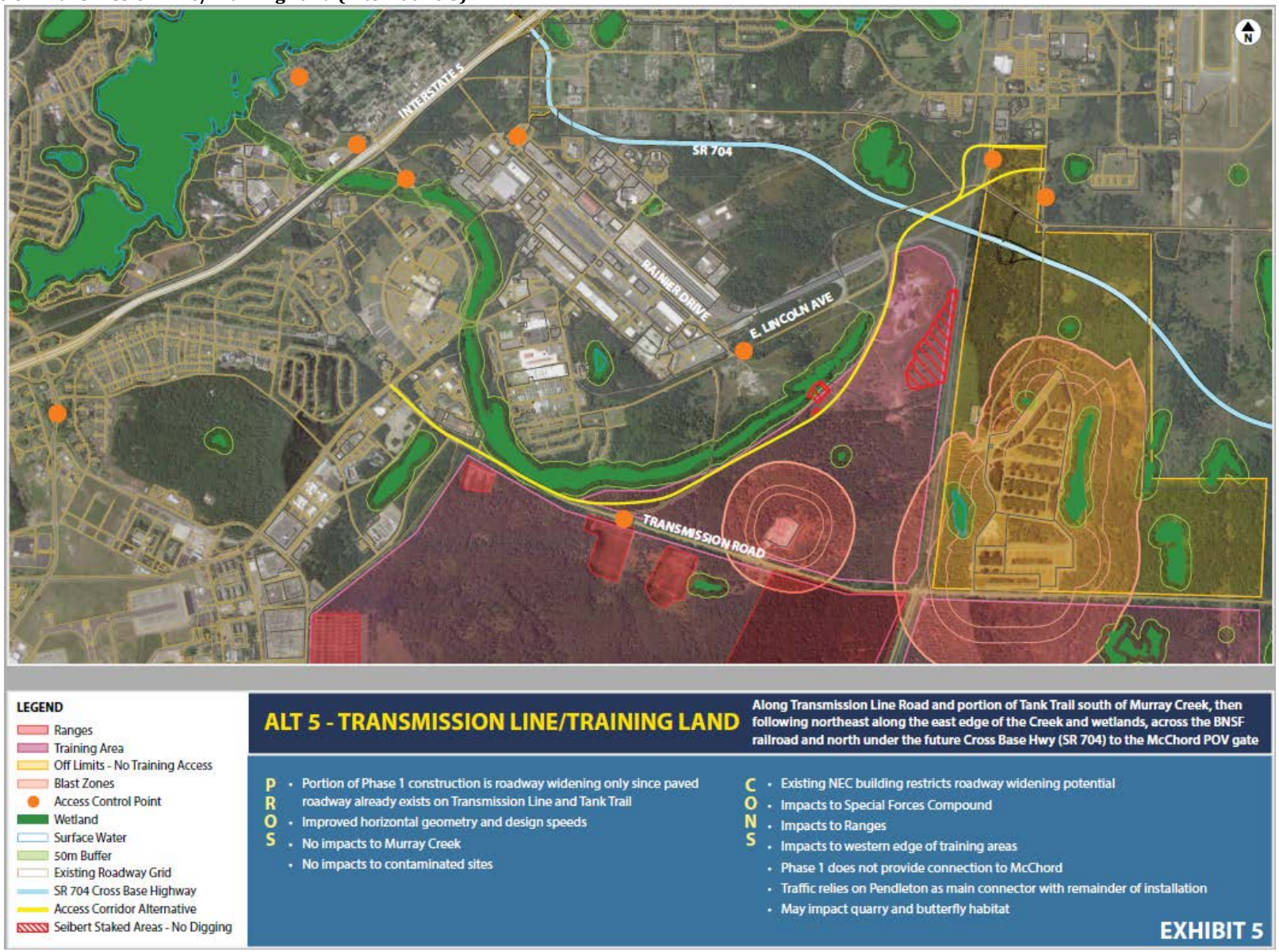
Figure 6: Transmission Line/Training Land (Alternative 5)



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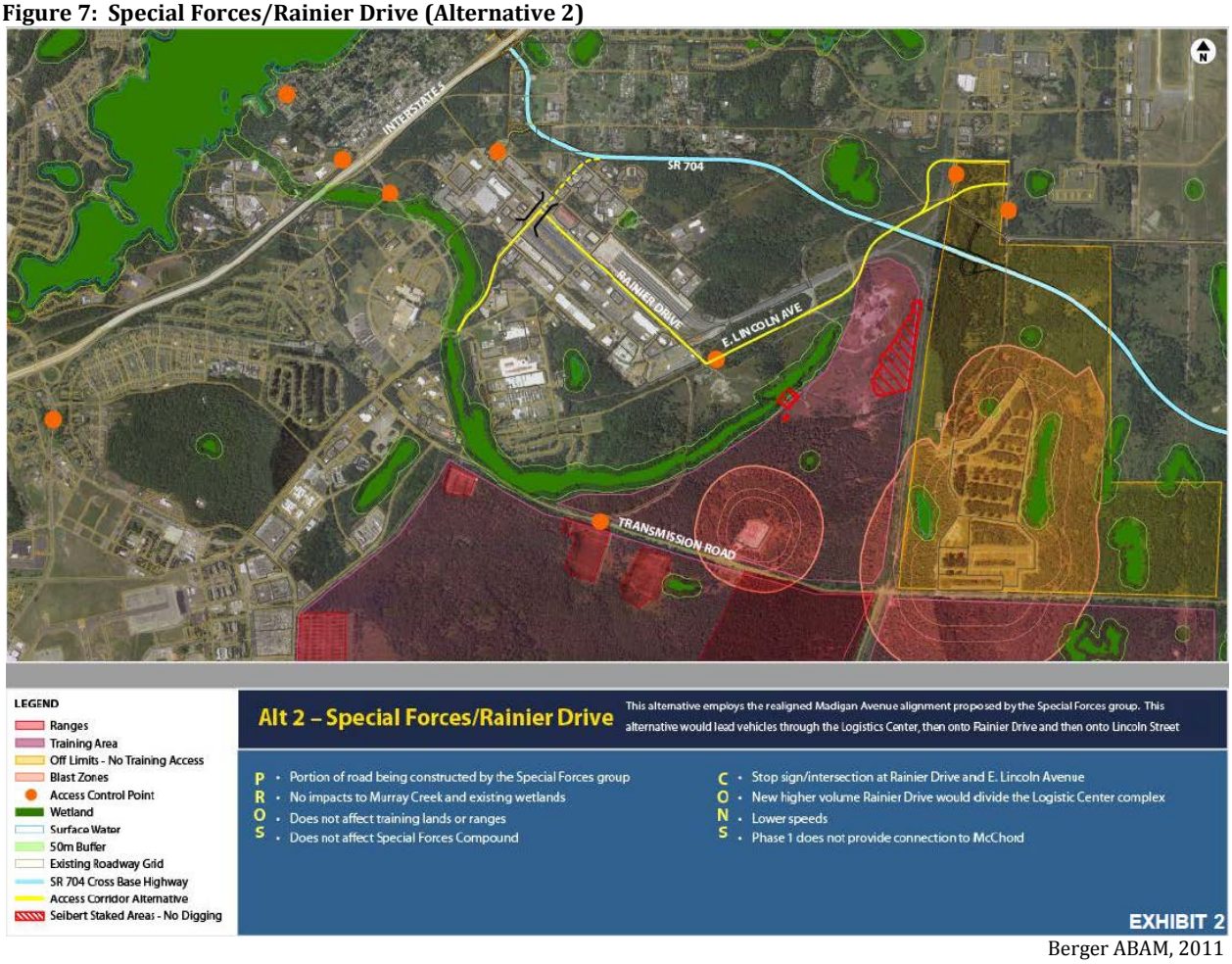
ALTERNATIVES RULED OUT FROM DETAILED ANALYSIS

Several design alternatives were developed and reviewed in consideration of this project. The following alternatives did not sufficiently meet the initial screening criteria for this action and have therefore been ruled out for further detailed analysis.

Special Forces/Rainier Drive (Alternative 2)

The Special Forces/Rainier Drive (Alternative 2) was excluded from detailed analysis because the design created non-mitigatable impacts to the JBLM Logistics Center. Directing thru traffic through the Logistics Center would segment the facilities and restrict travel between buildings which impacts military mission.

Figure 7: Special Forces/Rainier Drive (Alternative 2)



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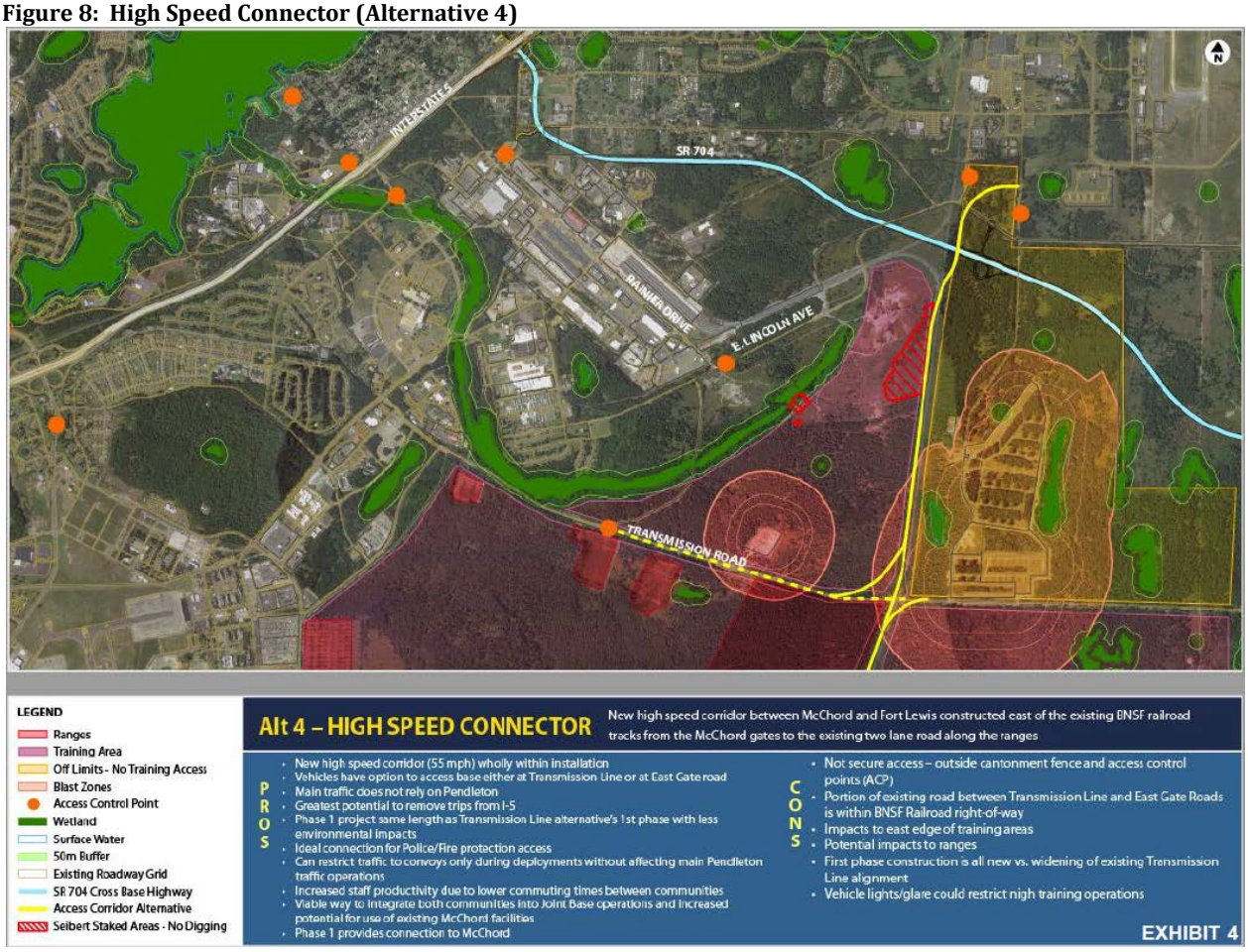
High Speed Connector (Alternative 4)

The High Speed Connector (Alternative 4) was excluded from detailed analysis because part of the roadway route is within the BNSF railroad right-of-way. This design impedes on private property, which was considered a non-mitigatable impact, and was therefore excluded from further consideration.

Figure 8: High Speed Connector (Alternative 4)



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AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The affected environment reviews the environmental setting or general environmental conditions of the proposed project area. It describes the environmental baseline against which the environmental effects can be evaluated. Throughout scoping of this project, specific resource areas were identified that may be affected by the proposed action. These included: land use, topography and soils, air quality, water quality and quantity, cultural resources, biological resources, traffic and transportation, and hazardous materials and waste management.

Impacts associated with Socioeconomics and Environmental Justice were not examined in this analysis because they are not expected to be impacted by the proposed action. All project alternatives occur within JBLM property boundaries and would not result in any negative effects to neighboring areas outside of the installation.

Following the summary of the affected environment, the environmental consequences are listed for each of the proposed alternatives. Environmental consequences are those impacts that directly or indirectly affect the environment as a result of the proposed action. The degree to which environmental resources are affected is based on significance criteria specific to each resource, as well as the time (long-term or short-term) and place (local or regional) that the proposed action would occur. The spatial parameters defined for individual activities are known as the region of influence.

Land Use and Mission

The proposed project alternatives are in an area of varied development intensity, including the development cantonment areas, industrial areas, training and ranges, and undeveloped areas. The cantonment area serves as the developed portion of JBLM. Within the cantonment, the Logistics Center and the 1st Special Forces Group (SFG) compound are the primary facilities within the proposed roadway vicinity. North of the Bridge Route A there is a Child Development Center and baseball fields. Undeveloped areas south of Murray Creek are used for Soldier training. This landscape is dominated by Puget Sound lowland forests. Open areas are maintained for prairie habitat. Although high-quality prairie habitat can be found on the installation, prairie within the projects vicinity is of mixed quality and prescribed burns are implemented to control invasive Scotch broom.

NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the proposed project. Land use would not be impacted with the implementation of the No Action Alternative.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

The Transmission Line/Tank Trail Alternative would not impact current long-term land use. Most of the Alternative would follow existing roadways. The existing NEC building (on the corner of Jackson Ave and Transmission Road) would restrict the widening potential of the roadway at that intersection.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

The North/DOL/SR 704 Alternative would have short and long-term, moderate negative impacts to land use within the Logistics Center, but is otherwise consistent with JBLM long-term planning. A

portion of the proposed roadway would segment the Logistics Center, which would conflict with future development and military mission within that center. Increase in traffic through this working center would also create a safety concern for personnel, during movement between the Logistics Center.

The proposed roadway segment that runs parallel to the future Joint Base Highway (SR 704) is consistent with long-term land use. Open-space (Murray Creek, forested riparian areas, etc) and military training areas would not be impacted by this alternative, which was considered a benefit to these resource areas.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

The North/DOL/SR 704 Alternative would have short and long-term, moderate, negative impacts to land use associated with military training areas. This impact was considered most notable to the military training ranges, specifically the western edge of Training Area 07 South. Realignment of Training Ranges (potentially Training Ranges 40-45), may be required as part of this proposed alternative.

BRIDGE ROUTE A

There were no impacts (adverse or beneficial) associated with land use identified with Bridge Route A. This option would require a lease agreement for the placement of fill structures on BNSF property, but would not impact surrounding land use. Realignment of Perimeter Road and E. Lincoln Ave intersection would not be required under this option.

Noise impacts from the proposed construction and resulting roadway traffic were analyzed to ensure that there would be no impacts to the Child Development Center or surrounding land use. Construction and traffic noise were determined to have no effect because the proposed project is distanced far enough away where noise will attenuate to background levels before reaching the Child Development Center.

BRIDGE ROUTE B

There were no impacts (adverse or beneficial) associated with land use identified with Bridge Route B. This option would require a lease agreement for the placement of fill structures on BNSF property, but would not impact surrounding land use. Realignment of Perimeter Road and E. Lincoln Ave intersection would be required under this option, but is not expected to impact existing or future land use.

Topography and Soils

Due to the glacial history of the area, the topography of the proposed project area is relatively flat. Soils are typically permeable and well drained. Any potential for soil erosion, vegetation removal, slope stability, hydric soil disturbance, and sedimentation will be addressed in the other sections.

NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the proposed project. Soils would not be disturbed with the implementation of the No Action Alternative.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

Minor, short-term impacts to soils are expected due to construction activities and the removal of trees. The impacts of this project to soils was considered, but has been determined to be minor to insignificant because of the relatively flat project area (there is minimal amount of elevation change

throughout the project area) and the erosion control measures that will be in place along the disturbed areas to prevent any sedimentation from entering water channels or creeks. Due to the acreage of the project area, the contractor will also be required to obtain a National Pollutant Discharge Elimination Permit (NPDES) permit, submit applicable construction drawings and a Stormwater Pollution Prevention Plan (SWPPP) to ensure preventative measures for soil erosion are put in place as part of project activities. Due to these actions and the topography of the project site, loss of soils due to erosion was considered discountable.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

Impacts to soils for the North/DOL/SR 704 Alternative are the same as Alternative 1, and are considered discountable.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

Impacts to soils for the Transmission Line/Training Land Alternative are the same as Alternative 1, and are considered discountable.

BRIDGE ROUTE A

Impacts to soils for Bridge A Option are the same as Alternative 1, and are considered discountable.

BRIDGE ROUTE B

Impacts to soils for Bridge B Option are the same as Alternative 1, and are considered discountable.

Air Quality

The potential for impacts to air quality from construction and long-term use of the roadway were identified during scoping of this project. JBLM's air quality is classified as good and is in attainment with the National Ambient Air Quality Standards (U.S. Army, 2010).

NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the proposed project. Air quality would not be impacted with the implementation of the No Action Alternative.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

Short-term, minor air quality impacts from construction of the proposed projects is considered negligible. Based on current baseline conditions at JBLM, it is expected that the total direct and indirect emissions from the proposed projects will be below the thresholds established in 40 CFR 51.853(b) and therefore considered regionally insignificant under 40 CFR 93.153(i).

This project's association to vehicle emissions was specifically considered against JBLM's sustainability goal to reduce air emissions by 85% by 2025 (2003 baseline). This project will have no measureable impact to emissions since it will neither add nor remove vehicles from the roadways. The implementation of this project may reduce emissions from vehicles idling in queue at multiple ACPs, but the effects of this would not be measurable, and were determined to be insignificant.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

Impacts to air quality for the North/DOL/SR 704 Alternative are the same as Alternative 1.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

Impacts to air quality for the Transmission Line/Training Land Alternative are the same as Alternative 1.

BRIDGE ROUTE A

Impacts to air quality for the Bridge Route A are the same as Alternative 1.

BRIDGE ROUTE B

Impacts to air quality for the Bridge Route B are the same as Alternative 1.

Water Quality and Quantity

Murray Creek and associated wetlands are within the proposed project's region of influence. Murray Creek is characterized by low-slope gradients which are associated with low flow velocities. The flat topography, compounded with the low stream velocities, reduces the ability of the stream to recruit and transport sediment. As a result, extensive wetland areas are found within the Murray Creek riparian zone. Wetlands have not been delineated as part of the master planning process, but existing GIS wetland boundary information from U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory was used to provide general guidance on the extent of wetlands along Murray Creek. These wetlands act as groundwater discharge or recharge areas, depending on seasonal changes in the water table and the direction of groundwater flow. While federal law does not protect wetland buffers, wetland buffers reduce the adverse impacts of adjacent land uses to wetlands. In the absence of federal guidance, JBLM has implemented a 50-meter wetland buffer surrounding wetlands and other waterbodies located at the installation.

While Murray Creek is not included on the Washington State 303(d) list of impaired water bodies, previous studies have identified elevated temperature, elevated nutrient levels, and the presence of trichloroethylene (TCE) as water quality concerns (Herrera Environmental Consultants, 2007). Summer baseflow in Murray Creek has also become an issue in recent years due to decreased water levels in the shallow aquifer, potentially exacerbated by pumping from the shallow aquifer for use as cooling water at Madigan Army Medical Center (MAMC) (Urban Collaborative, 2008). Historically a perennial stream, the reach of Murray Creek on JBLM adjacent to I-5 has gone dry during the summer periodically in the past two decades. Early in 2010, JBLM completed a project to direct treated deep aquifer groundwater from the Landfill 2 Remedial Action pump and treat system to the MAMC cooling system, which discharges the water back to the shallow aquifer. This reduced the amount water taken from the shallow aquifer for cooling and may have contributed to the sustained summer baseflows noted in 2010 and 2011 in Murray Creek.

Projects that construct new impervious surface also have the potential to affect the quality and quantity due to stormwater runoff originating from within the project area. Temporary Best Management Practices (BMPs) during construction and permanent BMPs will be used to control and treat runoff generated by the project. Properly designed, constructed and maintained stormwater BMPs can provide important benefits, but do not eliminated all stormwater impacts. Washington Department of Ecology's (WDOE) Stormwater Management Manual for Western Washington (stormwater manual), which has been adopted by JBLM, provides detailed guidance for handling stormwater runoff from development and redevelopment for the protection of water quality and quantity. JBLM implements requirements of the Energy Independence and Security Act (EISA) Section 438, in accordance with DoD and Army guidance, which requires Federal agencies to reduce stormwater runoff from federal development and redevelopment projects to protect water resources. New roadways will be required to manage stormwater consistent with this guidance. In

general, with any development or redevelopment, all stormwater must be retained on site and water quality and quantity controls must be provided.

NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the proposed project. There would be no impact to water quality and quantity with the implementation of the No Action Alternative.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

Short-term, moderate impacts to water quality are expected for the Transmission Line/Tank Trail Alternative. Construction activities in previously undisturbed areas can result in temporary increases in runoff and sedimentation which may affect surface water quality. These impacts are considered to be minimal to the implemented stormwater control measures that would be implemented for this project. Nevertheless, the Transmission Line/Tank Trail Alternative would need to expand current, or install new and improved culverts where the roadway already crosses Murray Creek. Permits required under the Clean Water Act would have to me obtained for this portion of the project. This roadway alternative also includes construction within the 50-meter Murray Creek wetland buffer along Transmission Road. Although no federal regulations protect wetland buffers, JBLM regulations have implemented this buffer area to protect the integrity of wetland functions at the installation.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

No impacts to water quality are expected for the Transmission Line/Tank Trail Alternative due to the proposed projects location away from wetland areas. In accordance with Army guidance, all stormwater will be retained on site and water quality and quantity controls will be provided, as described above.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

Short-term, minor to moderate impacts to water quality are expected for the Transmission Line/Training Land Alternative. Construction activities in previously undisturbed areas can result in temporary increases in runoff and sedimentation which may affect surface water quality. These impacts are considered to be minimal due to the implemented stormwater control measures that would be implemented for this project. Nevertheless, the Transmission Line/Training Land Alternative impacts the 50-meter Murray Creek wetland buffer along Transmission Line Road. Although no federal regulations protect wetland buffers, JBLM regulations have implemented this buffer area to protect the integrity of wetland functions at the installation. Impacts to wetland buffers were considered a moderate impact to water quality.

BRIDGE ROUTE A

No impacts to water quality are expected for the Bridge Route A Option due to the proposed project's location away from wetland areas.

BRIDGE ROUTE B

Impacts to the Bridge Route B Option are the same as for Bridge Route A.

Cultural Resources

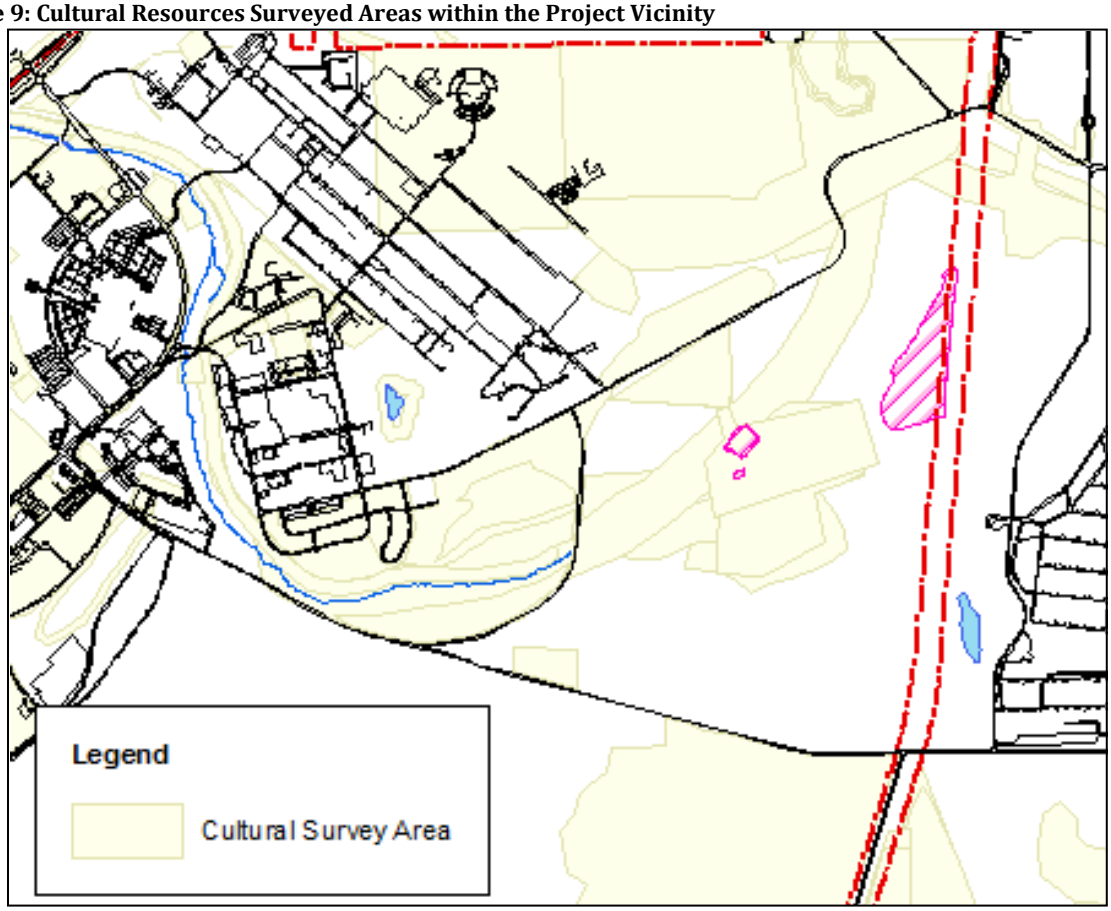
A cultural resource is any definite location or object or past human activity, occupation, or use, identifiable through inventory, historical documentation, or oral evidence. Cultural resources may include archaeological; historical buildings, structures and/or districts; or traditional tribal resource sites. If eligible, cultural resources can be listed under the National Register of Historic

Places (NRHP). In addition, some cultural and traditional tribal resources that may not be eligible under NRHP are protected under the National Historic Preservation Act (NHPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), or other federal or state laws.

Several cultural resources surveys have been conducted within the proposed project's area, in association with the Directorate of Public Works (DPW) Cultural Resources Program management activities, military construction activities, and/or the Cross-Base Highway (State Route 704) EIS (Figure 9).

There is one archeological site within the proposed project's vicinity. This site is National Register eligible and is the archeological remnant of an 1830's-1860's farming company. All proposed alternatives will avoid this cultural site.

Figure 9: Cultural Resources Surveyed Areas within the Project Vicinity



JBLM, 2012

NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the proposed project. There would be no impacts to cultural resources with the implementation of the No Action Alternative.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

There are no known cultural resources that would be impacted with the Transmission Line/Tank Trail Alternative. Although unlikely, in the event that human remains, artifacts, or features of archaeological interest are inadvertently discovered, the contractor shall immediately cease activity

in the vicinity of the discovery, and stabilize and protect such discoveries from further disturbance or public disclosure. Work may not proceed in the vicinity of the discovery until authorized to proceed by the Installation Cultural Resource Manager and the Contracting Officer's Representative.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

The North/DOL/SR 704 Alternative impacts to cultural resources are the same as Alternative 1.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

The Transmission Line/Training Land Alternative impacts to cultural resources are the same as Alternative 1. No construction or impacts will occur within the 25 meter buffer from the Tilithlow (45 PI 4P2) National Register eligible site.

BRIDGE ROUTE A

The Bridge Route A Option impacts to cultural resources are the same as Alternative 1.

BRIDGE ROUTE B

The Bridge Route B Option impacts to cultural resources are the same as Alternative 1.

Biological Resources

Forested openspace within the project area is largely dominated by dense coniferous species such as Douglas fir. In addition to the evergreen species, stands of cottonwood and Oregon white oak may be present within the project. Oregon white oaks have been identified for protection within JBLM because of the habitat that it provides to State-listed wildlife species, including the western gray squirrel. In addition to squirrels, these forested habitats provide habitat to many local species such as rodents, raccoons, black-tailed deer, and black bear. Bird species including bald and golden eagles and several species of migratory birds also populate these forests habitats. Although there are no federally listed species within the proposed project area, an old sand pit adjacent to Murray Creek has been identified for restoration and a possible re-location spot for Taylor's checkerspot butterfly which is a Federal candidate species.

While evergreen species are common, Oregon white oak are considered a priority habitat with Washington State and also have special management status within the JBLM Integrated Natural Resources Management Plan (INRMP). The proposed alternatives will avoid impacts to this species. If impacts cannot be avoided, six (6) 2-inch caliper balled Oregon white oak trees must be planted within the construction footprint for every one (1) mature tree removed within the construction footprint, as mitigation.

NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the proposed project. No biological resources would be impacted with the implementation of the No Action Alternative.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

Minor, short-term impacts to biological resources are expected with the Transmission Line/Tank Trail Alternative. The impacts to biological resources for this Alternative are considered minor because the proposed roadway would expand an existing roadway (from 2 lanes to 3 or 4 lanes), minimizing the amount of habitat that would have to be cleared to implement this alternative. Oregon white oak has been identified near the intersection of Rainier Drive and Transmission Line Road and would have to be avoided and/or mitigated.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

Minor to moderate, short-term impacts to biological resources are expected with the North/DOL/SR 704 Alternative. Although this alternative follows the proposed SR 704, this State Route has not yet been built and substantial forested habitat remains along this corridor and would have to be removed as part of the proposed project. Oregon white oak has been identified along this roadway. Impacts to the species would have to be avoided and/or mitigated.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

Moderate, short and long-term impacts to biological resources are expected with the Transmission Line/Training Land Alternative. Similar to the North/DOL/SR 704 Alternative, this proposal would require substantial forested habitat to be removed to construct the proposed roadway. In addition to the short-term construction impacts, minor long-term impacts may occur to biological resources due to habitat fragmentation between Murray Creek and the adjacent undeveloped training areas. Wetland buffers and upland riparian areas provide important habitat (and water source) for many mammal species. Although the impacts are not expected to be significant, minor increases in vehicle-wildlife strikes may occur due to the proposed roadway location and species movements between undeveloped JBLM training areas and adjacent riparian areas. In addition, this alternative would run adjacent to an old sand pit that has been identified for restoration and a possible re-location for Taylor's checkerspot butterfly which is a Federal candidate species. The proposed roadway may be inconsistent with species recovery goals in this area.

BRIDGE ROUTE A

No impacts to biological resources are expected with Bridge Route A. This project would occur in an area that is largely dominated by non-native grasses and Scotch broom, and invasive species. Minimal to no tree removal would be required for this option.

BRIDGE ROUTE B

Although minimal tree removal would required with Bridge Route B, minor, short-term impacts to biological resources are expected with this option because of the presence of Western grey squirrel in the project area. Although no Federal protections exist for this species, it is protected at the State level and JBLM has taken a proactive approach to species management. The protection of oak trees benefits the Western gray squirrel, thus impacts to Oregon white oak will also have to be avoided and/or mitigated.

Transportation and Traffic

Three existing roads and two ACPs are located in the vicinity of the proposed bridge project site, including the Lincoln Gate, the McChord Commercial Vehicle Inspection Point (CVIP) Gate, and Barnes Gate, which can be accessed from E. Lincoln Ave and Perimeter Road. ACPs would need to stay open during construction of the project.

Perimeter Road (which continues to become 150th Street SW), is the county roadway that divides the Lewis Main and McChord Field communities. This heavily used, two-lane route provides a direct public connection between I-5 to the west and the community of Spanaway to the east.

The I-5 corridor, just outside of the Madigan ACP, experiences significant congestion and was determined to be a significant issue in the Grow the Army Environmental Impact Statement (Department of Army, 2010). While I-5 is outside of the proposed action area, traffic diversion from I-5 was considered in association with the alternatives. In addition to impacts to roadways outside of the installation, impacts to traffic within the JBLM cantonment areas were considered.

A single track railroad line on BNSF property runs north-south through the project area. The BNSF property limits extend 200 feet to each side of the center of the existing railroad track (400-foot total width). Both bridge options assume an intermediate pier constructed within BNSF property. BNSF railroad requires a minimum 25 foot horizontal clearance, and 23.6 foot vertical clearance for the proposed structure.

Traffic studies have been conducted in association with the JBLM Access Corridor to measure potential impacts to road use, traffic diversion, and travel time for the various alternatives. A summary of traffic ranking information is located in Appendix A.

NO ACTION ALTERNATIVE

Moderate, long-term impacts to traffic and transportation are associated with the No Action Alternative. Implementing the No Action Alternative would maintain status quo, and serves as the baseline for the proposed project. Under this alternative, JBLM would not meet the proposed action's objective to provide an unimpeded access between the Lewis North and McChord Field areas. Traffic would continue to have to utilize public roadways for transportation between the installations and no JBLM traffic would be potentially removed from I-5.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

No impacts are expected within JBLM boundaries as a result of the implementation of this alternative. This alternative would expand an existing roadway and maintains the current route that is used for travel. Traffic counts at Barnes Gate would increase, but this is not expected to be significant because the increases would be within the design specifications of the gate.

This proposed alternative occurs completely within JBLM boundaries and is not expected to negatively impact traffic outside of the installation. Rather, minor, long-term, beneficial impacts are expected from the decreased traffic flow counts on I-5.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

Minor to moderate, long-term impacts are expected within the JBLM cantonment area. This alternative divides the Logistics Center at Rainier Drive. A higher volume of vehicles on Rainier Drive could make it difficult for Logistics operations. The addition of an overpass was identified as mitigation to make this alternative more viable, as it would provide for unrestricted movement within the Logistics Center complex. Traffic counts at Barnes Gate would increase, but this is not expected to be significant because the increases would be within the design specifications of the gate.

This proposed alternative occurs completely within JBLM boundaries and is not expected to impact traffic outside of the installation. Moderate, long-term, beneficial impacts are expected from the decreased traffic flow counts on I-5.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

Minor, short-term impacts to traffic and transportation within JBLM is expected with the construction of the Transmission Line/Training Land Alternative. The majority of this alternative would construct a new roadway and existing traffic would not be impacted. Expansion of the Transmission Road may require flagging or minor detours, but this impact is considered minimal. Traffic counts at Barnes Gate would increase, but this is not expected to be significant because the increases would be within the design specifications of the gate.

Minor, long-term beneficial impacts are expected to traffic outside of the installation. There are no short-term impacts associated with construction expected with this action. This proposed alternative occurs completely within JBLM boundaries and is not expected to impact traffic outside of the installation. Minor, long-term, beneficial impacts are expected from the decreased traffic flow counts on I-5.

BRIDGE ROUTE A

Traffic within the JBLM installation is not expected to be impacted by this option. Cars that currently enter the Lincoln Gate would enter JBLM at the Barnes Gate. Traffic would cross bridge and continue on to Lincoln Ave as they currently do. There would be no change in vehicle volume due to this bridge route option.

Minimal impacts to off-post traffic are anticipated with the Bridge Route A alternative. The need to close roads or ACPs during construction is not anticipated. However, depending on the final location and size of the footing, temporary delays dues to flagging or minor detours may be necessary for the placement of the bridge girders.

BRIDGE ROUTE B

Traffic within the JBLM installation is not expected to be impacted by this option. Cars that currently enter the Lincoln Gate would enter JBLM at the Barnes Gate. Traffic would cross bridge and continue on to Lincoln Ave as they currently do. There would be no change in vehicle volume due to this bridge route option.

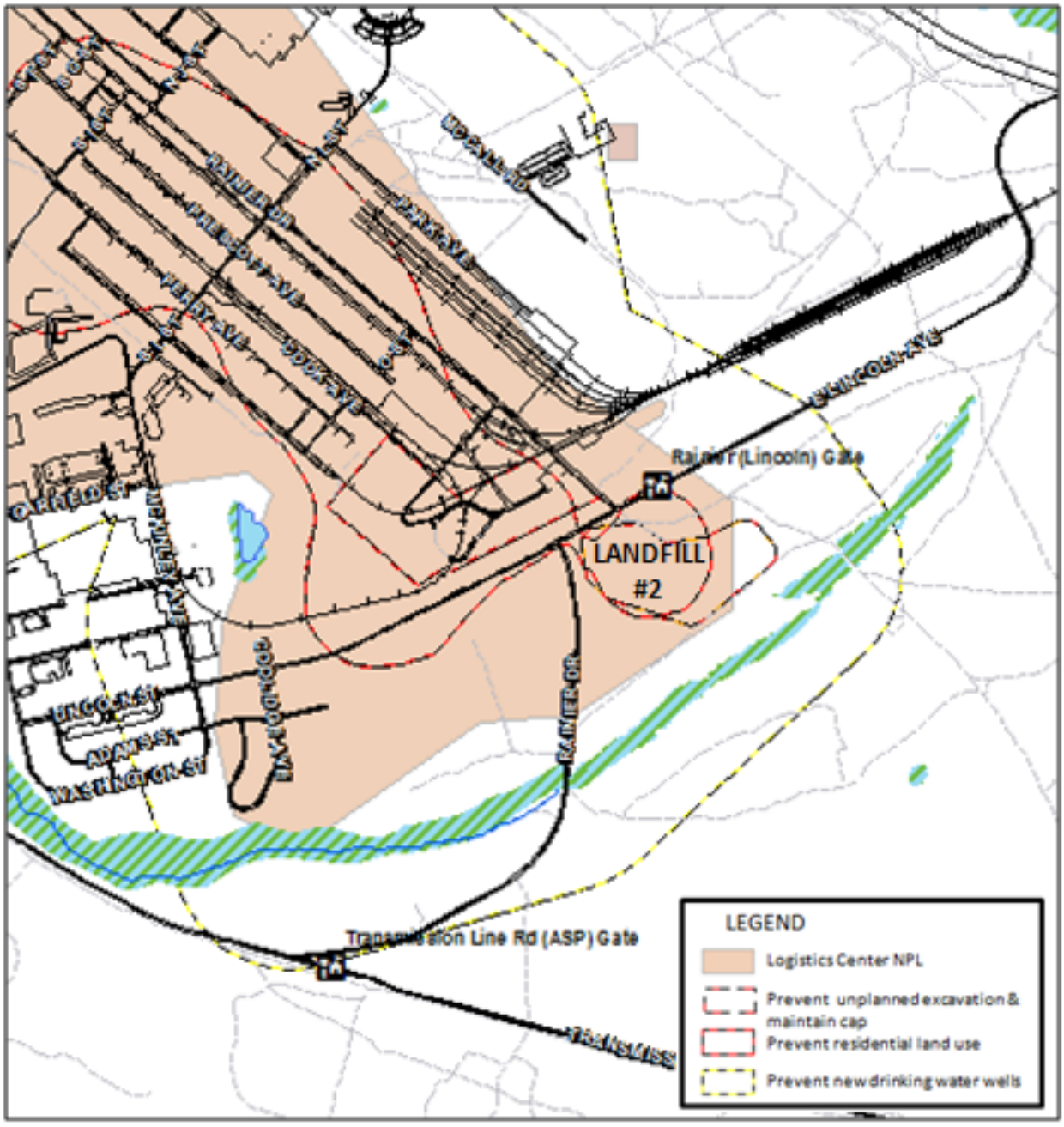
Minor, short-term traffic impacts are expected on Perimeter Road during the construction of the intermediate pier foundation and girders. The option includes a realignment of the E. Lincoln Ave and Perimeter Road Intersection. The realignment will allow optimal positioning of the east bridge abutment, minimizing the span length to allow the use of a less expensive structure type and/or construction method. Modifications to this intersection will result in short-term impacts to vehicles entering the Commercial Gate ACP.

Hazardous Materials and Waste Management

The old Landfill #2 Superfund site is located south of the Lincoln Gate ACP (Figure 9). Landfill #2 is an approximately 25 acre landfill that is part of the Logistic Center National Priorities List (NPL) site. It was used from 1946 to 1960 for disposal of industrial liquid wastes and plating wastes, including trichloroethylene (TCE) and oil. Disposal activities have resulted in contamination of a drinking water aquifer with chlorinated organic compounds. Groundwater extraction wells have been installed to remediate the aquifer and land-use controls are in place to control the activities that occur within the Landfill's impact area.

Current guidelines for all construction activities at JBLM require the diversion of at least 60 percent of construction and demolition activities from the landfill. Waste material generated by the project may be recycled or reused on post in designated recycling and reuse areas. Materials not designated for on post recycling and/or reuse will be disposed off post and diverted to the highest degree practicable in accordance with Army's Net Zero Waste program.

Figure 10: Logistics Center NPL and Landfill #2



JBLM, 2012

NO ACTION ALTERNATIVE

The No Action Alternative serves as the baseline for the proposed project. No waste or hazardous materials would be generated with the implementation of the No Action Alternative.

TRANSMISSION LINE/TANK TRAIL (ALTERNATIVE 1)

The E. Lincoln Ave and Rainier Drive intersection is directly adjacent to Landfill #2. Lead contaminated soil (LCS) within the construction zone caused by deteriorating ammunition may be an issue during construction. If selected, this alternative would require soil surveys within the construction zone to characterize the degree of lead contamination that is present. Surveys will

utilize the "Lead-In-Soil-Analyzer" or a composite soil-sampling methodology and findings will be presented to the Government in a Draft/Final Lead Soil Report. If lead contamination is present above the action level of 250 mg/kg, the site will be further analyzed by the Total Characteristics Leaching Procedure and analyzed for lead per Environmental Protection Agency's Method 1311/1620 and Department of Defense Environmental Laboratory accreditation. Soil removal will be required if elevated levels of lead are identified >250 mg/kg. The Government Contracting Officer will facilitate clean-up and soils would be transported to an on-base disposal location for contaminated soils (≤1000 mg/kg). All specific JBLM environmental requirements can be found at http://designstandards.lewis.army.mil.

While no hazardous (≥2000 mg/kg) LCS are expected to be found within the project area, it is possible that lead contamination may be discovered during pre-construction testing. Because of this, moderate, short-term impacts to hazardous wastes are expected due to soil clean-up activities. This will result in minor, long-term benefits to the soils, due to remediation and proper disposal of the contamination. Several monitoring wells are located within the area surrounding Landfill #2. Although wells can be paved over, they still need to be accessible for monitoring and may have to be re-leveled to match the ground surface.

NORTH/DOL/SR 704 (ALTERNATIVE 3)

The North/DOL/SR 704 Alternative avoids the contamination associated with Landfill #2, but transects through the Logistics Center NPL. A pump-and-treat remedy was selected under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the NPL to address impacts to groundwater. Ongoing remediation, land-use controls, and monitoring are implemented at this site. Because of the potential for contamination, pre-construction surveys would be completed (as described in the Transmission Line/Tank Trail Alternative) and soils would have to be removed in accordance with JBLM Requirements.

If contaminated soils are identified, the North/DOL/SR 704 Alternative has a potential for short-term, minor to moderate impacts to hazardous wastes due to soil cleanup activities within the project area. These short-term impacts would result in minor, long-term improvements to hazardous soils after clean-up has occurred. Several monitoring wells are located along Tacoma Drive and within the Logistics Center. Although wells can be paved around, they still need to be accessible for monitoring and may have to be re-leveled to match the ground surface.

TRANSMISSION LINE/TRAINING LAND (ALTERNATIVE 5)

No hazardous waste would be impacted with the implementation of this alternative.

BRIDGE ROUTE A

No hazardous waste would be impacted with the implementation of this option.

BRIDGE ROUTE B

No hazardous waste would be impacted with the implementation of this option.

CUMULATIVE EFFECTS DISCUSSION

Cumulative effects address the incremental environment impacts of the proposed action, together with impacts of past, present, and reasonably foreseeable future actions. The cumulative effects addresses the impacts from projects that may be individually minor, but result in collectively significant impacts when taking into account actions occurring over a period of time.

The Army is pursuing several projects within the vicinity of JBLM Access Corridor project to update their facilities. The 1st SFG compound, located at the western end of the proposed project area, has planned 21 military construction (MILCON) projects between fiscal years 2012 and 2019, and possibly an additional 10 projects to be completed through 2030. Projects would include space for training and operations support, vehicles and equipment, administrative functions, barracks, and dining facilities. Also included in the proposal are a Physical Training Trail that runs adjacent to the Creek and a proposed bridge crossing that crosses the waterway. These projects were determined to have short-term, moderate impacts to Murray Creek.

At Madigan Army Medical Center (MAMC), several projects are in development including expansion of hospital facilities to include an operational medicine addition and a birthing center. A Record of Environmental Considerations (RECs) was completed for these projects. Within the REC, the Fish & Wildlife Program Manager recommended that infiltration ponds be incorporated into the design of the project to help recharge Murray Creek. The MAMC is also currently repairing the drain field underneath one of the parking lots. This drain field was put in to address the water quantity and water temperature impacts to Murray Creek. The Logistics Center is also proposing an expansion of their facilities. Current proposals would expand the north eastern corner of the Logistics Center for the construction of additional warehouses and operational facilities.

The Federal Highway Administration, Washington Department of Transportation, and Pierce County, have proposed the Cross-Base Highway project which is within the proposed projects boundaries. The Cross-Base Highway was proposed to improve the transportation system linkage and capacity between mid-Pierce County and destinations along the I-5 corridor. These areas have been designated by local and regional land use plans as centers for future development and the Cross-Base Highway project would provide a direct route and shorter travel times for those communities. An EIS was prepared for this project in 2003, but the project is currently on-hold due to project funding and it is unknown when planning and development will continue.

It was determined that this project would not have any significant cumulative impact when considered with past, present, and reasonably foreseeable future actions.

Mitigation Measures

In addition to those BMPs that were described as part of the proposed action, mitigation measures will be required to offset the projects potential impacts to Oregon white oak. Although not a factor in reaching significance levels, implementation of the project will replace oaks impacted by the proposed action at a ratio of 6:1, where six Oregon white oak trees will be replanted for every white oak removed by the implantation of the project. Trees will be replanted in clumps, mimicking the natural growth patterns and habitats. To ensure survival, scheduled watering will be included in the contract and/or monitoring plan until roots have been established. A 25 meter buffer will also be enforced to restrict any impacts to the National Register eligible site.

OTHER CONSIDERATIONS REQUIRED BY NEPA

Endangered Species Act

The Endangered Species Act (ESA) of 1973 provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered. Water howellia has not been identified at

the project site. The USFWS has not identified any water howellia within Murray Creek and a wetland delineation that included plant identification also confirmed that there was no water howellia within the project area.

The Taylor's Checkerspot Butterfly, Mazama Pocket Gopher and Streaked Horned Lark are Candidates for ESA listing. Although these species are present at JBLM, none of these species can be found within the proposed project area. At this time, all actions proposed in Phase I will have no effect to Candidate Species. Because the Proposed Action has been phased and the timeline for funding for Phase II is unknown, impacts to ESA listed species will have to be reevaluated when Phase II (the connector roadway) is ripe. If and when Phase II is scheduled for funding, JBLM Environmental Division will reassess the proposed project to ensure that no changes have occurred to species listings and/or species distribution that would trigger consultation requirements with the USFWS.

Clean Water Act and EO 11990

The Transmission Line/Tank Trail (Alternative 1) would require an expanded or new culvert across Murray Creek. This alternative would be required to ensure compliance with Section 404 and Section 401 of the CWA, and Executive Order 11990, Protection of Wetlands. A CWA Section 404 permit will be needed for work in-waters of the United States and the construction and operation of the proposed facilities will comply with any other applicable permit conditions. Projects will be required to comply with NPDES permits where applicable.

CONCLUSIONS

Three different connector road designs, two bridge routes, and the no action alternative were evaluated for JBLM's proposed action of constructing and operating a Joint Base Access Corridor. The alternatives considered included the Transmission Line/Tank Trail (Alternative 1), the North/DOL/SR 704 (Alternative 3), and the Transmission Line/Training Land (Alternative 5), Bridge Route A and Bridge Route B. All of these actions met the project's purpose and need, of providing a direct and unimpeded vehicle connection between Lewis Main and McChord Field. The No Action alternative, which served as the baseline to compare the other projects, was determined to not be a viable option because it would not meet the project's purpose and need.

In evaluating the potential actions, the screening and evaluation process took into account the environmental impacts of each option, as well as their effectiveness in meeting the project goals. The EA analyzed several resource areas that had the potential to be affected by the proposed alternative. Potential impacts to land use and mission, topography and soils, air quality, water quality and quantity, cultural resources, biological resources, traffic and transportation, and hazardous materials and waste management were all considered. Although there were various advantages and disadvantages of the various resource areas, there were no significant impacts identified with any of the proposed alternatives.

In review of the proposed actions and their expected impacts, it is recommended, at this time, that only Phase I - Bridge Route B, be selected as the JBLM's Preferred Alternative for the Joint Base Access Corridor project. The evaluation of the bridge options considered the environmental impacts, as well as cost, maintenance, aesthetics, and construction complexity (evaluation factors). Based on these factors, Bridge Route B was chosen because it was the lowest-cost option, there were no significant environmental impacts identified with this route, and it scored the highest in

the sum of the evaluation factors when compared to Bridge Route A. The Bridge is a stand alone action that will satisfy the purpose and need by providing unimpeded connectivity for JBLM . It will do so by connecting to existing roadways without foreclosing any known reasonable or prudent connector road alternatives.

Phase II of this project included potential routes for a connector road which were considered in this EA; however, currently there is a potential lengthy delay in funding for this Phase which renders implementation questionable. If a selection of a connector road was to be made at this time, Alternative 5 would be considered the superior route. Alternative 1 is similar to Alternative 5, but was considered inferior because of the projects impacts to wetlands. Alternative 1 would require 'in-water work' and associated permits for the replacement/expansion of the culvert where the proposed roadway crosses Murray Creek. Secondly, Alternative 3 was considered inferior to Alternative 5, because of the potentially considerable impacts the proposed roadway would have on land use and mission, specifically the base's Logistics Center. If and when Phase II is scheduled for funding, JBLM Environmental Division will reassess the proposed project to ensure that no changes have occurred or whether there is a need for further evaluation before a route for a connector road is selected.

Based on the data and analysis presented within this EA, Phase I, Route B would produce no significant adverse impacts to human health or the environment and an Environmental Impact Statement is not required. .

Table 1: Summary of Alternatives and Impacts to Resource Areas

RESOURCE AREA	No Action Alternative	Transmission Line/ Tank Trial (Alternative 1)	North/DOL/SR 704 (Alternative 3)	Transmission Line/ Training Land (Alternative 5)	Bridge A	Bridge B
Land Use & Mission	No impacts to land use are expected with this alternative.	No impacts to land use are expected with this alternative.	Moderate, short and long-term negative impacts to land use are expected, due to impacts within the Logistics Center.	Moderate, short and long-term negative impacts to land use are expected, due to impacts to military training ranges.	No impacts to land use are expected with this option.	No impacts to land use are expected with this option.
Topography & Soils	No impacts to topography and soils are expected with this alternative.	Minor, short-term impacts to topography and soils are expected, due to temporary construction activities.	Minor, short-term impacts to topography and soils are expected, due to temporary construction activities.	Minor, short-term impacts to topography and soils are expected, due to temporary construction activities.	Minor, short-term impacts to topography and soils are expected, due to temporary construction activities.	Minor, short-term impacts to topography and soils are expected, due to temporary construction activities.
Air Quality	No impacts to air quality are expected with this alternative.	Minor, short-term impacts to air quality are expected as a result of construction activities. Impacts are predicted to be below threshold and considered regionally insignificant.	Minor, short-term impacts to air quality are expected as a result of construction activities. Impacts are predicted to be below threshold and considered regionally insignificant.	Minor, short-term impacts to air quality are expected as a result of construction activities. Impacts are predicted to be below threshold and considered regionally insignificant.	Minor, short-term impacts to air quality are expected as a result of construction activities. Impacts are predicted to be below threshold and considered regionally insignificant.	Minor, short-term impacts to air quality are expected as a result of construction activities. Impacts are predicted to be below threshold and considered regionally insignificant.
Water Quality & Quantity	No impacts to water quality and quantity are expected with this alternative.	Moderate, short-term impacts to water quality are expected due to the required upgrades to the existing culvert that would be required with this project. USACE permits required for all in-	No impacts to water quality and quantity are expected due to the projects location away from wetland areas. In accordance with Army guidance, all stormwater will be retained on site and water quality	Minor, short-term impacts to water quality and quantity are expected, due to construction activities within the wetland buffer. In accordance with Army guidance, all stormwater will be	No impacts to water quality and quantity are expected due to the projects location away from wetland areas. In accordance with Army guidance, all stormwater will be retained on site and	No impacts to water quality and quantity are expected due to the projects location away from wetland areas. In accordance with Army guidance, all stormwater will be retained on site and

		water culvert work. In accordance with Army guidance, all stormwater will be retained on site and water quality and quantity controls will be provided.	and quantity controls will be provided.	retained on site and water quality and quantity controls will be provided.	water quality and quantity controls will be provided.	water quality and quantity controls will be provided.
Cultural Resources	No impacts to cultural resources are expected with this alternative.	No impacts to cultural resources are expected with this alternative.	No impacts to cultural resources are expected with this alternative.	No impacts to cultural resources are expected with this alternative.	No impacts to cultural resources are expected with this option.	No impacts to cultural resources are expected with this option.
Biological Resources	No impacts to biological resources are expected with this alternative.	Minor, short-term impacts to biological resources are expected, due to the minimal amount of trees that would have to be removed for this project.	Minor to moderate, short-term impacts to biological resources are expected, due to the extensive tree removal that would be required along the proposed SR 704.	Moderate, short-term impacts to biological resources are expected, due to the required tree removal, habitat fragmentation between Murray Creek and undeveloped training areas, and impacts to the wetland buffer.	No impacts to biological resources are expected with this option.	Minor, short-term impacts to biological resources are expected, due to the presences of Western grey squirrel (federal Species of Concern), within the project area.
Traffic & Transportation	Moderate, long-term impacts to traffic and transportation are expected, due to the maintained use of public roadways (I-5 and Perimeter Road) for travel between Lewis Main and McChord Field.	No impacts are expected for traffic and transportation within JBLM (project maintains current traffic route). Minor, long-term beneficial impacts to traffic and transportation are expected outside of JBLM, due to the	Minor to moderate, long-term impacts are expected for traffic and transportation within JBLM , due to segmentation of the Logistics Center Compound. Personnel safety is a concern under this alternative.	Minor impacts are expected to traffic and transportation within JBLM because of minimal flagging and detours that would be required with this alternative. Minor, long-term beneficial impacts to traffic and	No impacts to JBLM traffic and transportation are expected with this option. Minor, short-term impacts to off-post traffic is anticipated due temporary delays associated with the placement of the bridge	No impacts to JBLM traffic and transportation are expected with this option. Minor, short-term impacts to off-post traffic is anticipated due temporary delays associated with the placement of the bridge

		reduced traffic from I-5.	Moderate, long-term beneficial impacts to traffic and transportation are expected outside of JBLM, due to the reduced traffic from I-5.	transportation are expected outside of JBLM, due to the reduced traffic from I-5.	girders.	girders.
Hazardous Materials & Wastes	No impacts to hazardous materials and wastes are expected with this alternative.	Moderate, short-term impacts to hazardous wastes are expected, due to the need for soil testing and possible soil removal, in association with this alternative.	Minor to moderate, short-term impacts to hazardous wastes are expected, due to the need for soil testing and possible soil removal, in association with this alternative.	No impacts to hazardous materials and wastes are expected with this alternative	No impacts to hazardous materials and wastes are expected with this option	No impacts to hazardous materials and wastes are expected with this option

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[1] Disclosure statement on file. Contractor has no direct/indirect financial or other interest in the outcome of this project.

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Town of Steilacoom
Planning Department
1030 Roe Street
Steilacoom, WA, 98388

Libraries

Graham Library
9202 224th St E
Graham, WA 98338

Lacey Timberland Library
500 College St SE
Lacey, WA 98503

Olympia Timberland Library
313 8th Ave SE
Olympia, WA 98501

Pierce County Library, Dupont
1540 Wilmington Drive
DuPont, WA 98327

Pierce County Library, Tillicum
14916 Washington Ave SW
Lakewood, WA 98498

Pierce County Library, Parkland
13718 Pacific Avenue S
Tacoma, WA 98444

Pierce County Library, Puyallup
15420 Meridian E
Puyallup, WA 98375

Rainier Library
207 Centre Street
Rainier, WA 98576

Yelm Timberland Library
210 Prairie Park St SE
Yelm, WA 98597

Other

BNSF Railroad
Richard Wagner
2454 Occidental Ave S., #2-D
Seattle, WA 98134

APPENDIX A: TRAFFIC COMPARISON OF ALTERNATIVES

Terms:

Traffic Diversion: is the amount of PM peak hour traffic diverted from other surrounding roadways. In this study, JBLM looked at the amount of traffic that would be diverted from I-5 to the new roadway.

Total Traffic on Link: is the expected PM peak hour traffic in both directions on the new roadway, as predicted/forecasted by the travel demand model.

Travel Time: is the total time to travel from Jackson Ave/Transmission Line Road area, to the new roadway extension and SR 704 connection.

Benefits of 4 Lane: is the net new peak hour traffic on the new roadway extension if road was modeled in the travel demand model as a four lane cross-section, rather than a two lane cross-section. The second column is the estimation of additional traffic (beyond the two land cross-section) that would be diverted from I-5.

JBLM Access Corridor

Alternatives Sensitivity Ranking

Comparison of Measures of Effectiveness

	Traffic Diversion	Total Traffic on Link	Travel Time		Benefits of 4 Lane	
			Eastbound	Westbound	New Traffic on Road	Diverted from I-5
Alternative 1	130	620	8 min 38 sec	8 min 12 sec	55	-15
Alternative 1a	130	620	8 min 38 sec	8 min 12 sec	55	-15
Alternative 2	125	650	9 min 19 sec	8 min 48 sec	40	-15
Alternative 3	360	780	9 min 19 sec	8 min 43 sec	175	-100
Alternative 4	< 100	150	10 min 15 sec	10 min 4 sec	100	-50
Alternative 5	160	550	8 min 9 sec	7 min 42 sec	50	-25

Rankings Based on MOEs

	Traffic Diversion	Total Traffic on Link	Travel Time	Average Rating
Alternative 1	3	4	3	3.33
Alternative 1a	3	4	3	3.33
Alternative 2	3	4	4	3.67
Alternative 3	5	5	4	4.67
Alternative 4	1	1	1	1.00
Alternative 5	3	3	5	3.67

Note: Ranking based on scale of 1 to 5, with 1 being worst/bad and 5 being best/good.

APPENDIX B: INTERAGENCY AND PUBLIC REVIEW AND CORRESPONDENCE