Appendix Material

- Economics Appendix
- Housing Appendix
- Education and Child Care Appendix
- **Transportation Appendix**
- Land Use Appendix
- Public Safety Appendix
- Utilities/Infrastructure Appendix
- Health Care Appendix
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- Transportation Needs Assessment Technical Memorandum
- Prioritization Process and Recommendations Memorandum

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

transpoGROUP

TRANSPORTATION

Existing Conditions Memorandum

Date: April 5, 2010
To: Transportation Expert Panel Members
From: Jon Pascal, Transpo Group
Re: Existing Transportation Conditions Summary

INTRODUCTION

The Growth Coordination Plan identifies and analyzes community "gaps" that exist in the region in regards to accommodating anticipated growth at Joint Base Lewis McChord (JBLM). Transportation is one component of the overall planning effort. This memorandum summarizes the existing transportation conditions within the study area. The assessment identifies those transportation facilities and services currently being provided, while also evaluating current travel characteristics of JBLM. The assessment will be considered in evaluating future needs and identifying future strategies and project recommendations for the study area that benefit travel to/from JBLM. The assessment includes a review of the following items:

- Roadway Facilities
- Freight
- Rail
- Transit Facilities & Service
- JBLM Travel Patterns & Trends

The assessment of existing conditions builds off of prior studies and data collected by each of the participating agencies. Evaluation of the transportation network began in spring of 2009 as part of the *I-5 Alternatives Analysis and Operations Model* (I-5 Study) project. The I-5 Study was seen as the first phase of the transportation component for the Growth Coordination Plan. The transportation component incorporates the findings of the I-5 Study, but focuses on the transportation conditions and

needs outside the I-5 corridor, such as improvements along local arterials and streets, or other state highways.

Among the issues the transportation component will address are improvements needed to support increased travel demand in the entire study area resulting from JBLM growth, along with regional and local community growth. This effort identifies regional transportation opportunities and an assessment of the long-term viability of implementing such opportunities, with associated costs and level of effort. A list of strategies, prioritized alternatives, and transportation needs that address transportation impacts by growth at JBLM are a product of the overall planning effort. The work developed for the I-5 Study compliments the larger regional list of transportation needs.

Finally, recommendations will be made on how JBLM can best work with adjoining agencies and service providers to promote regional solutions to all the identified transportation challenges.

METHODOLOGY

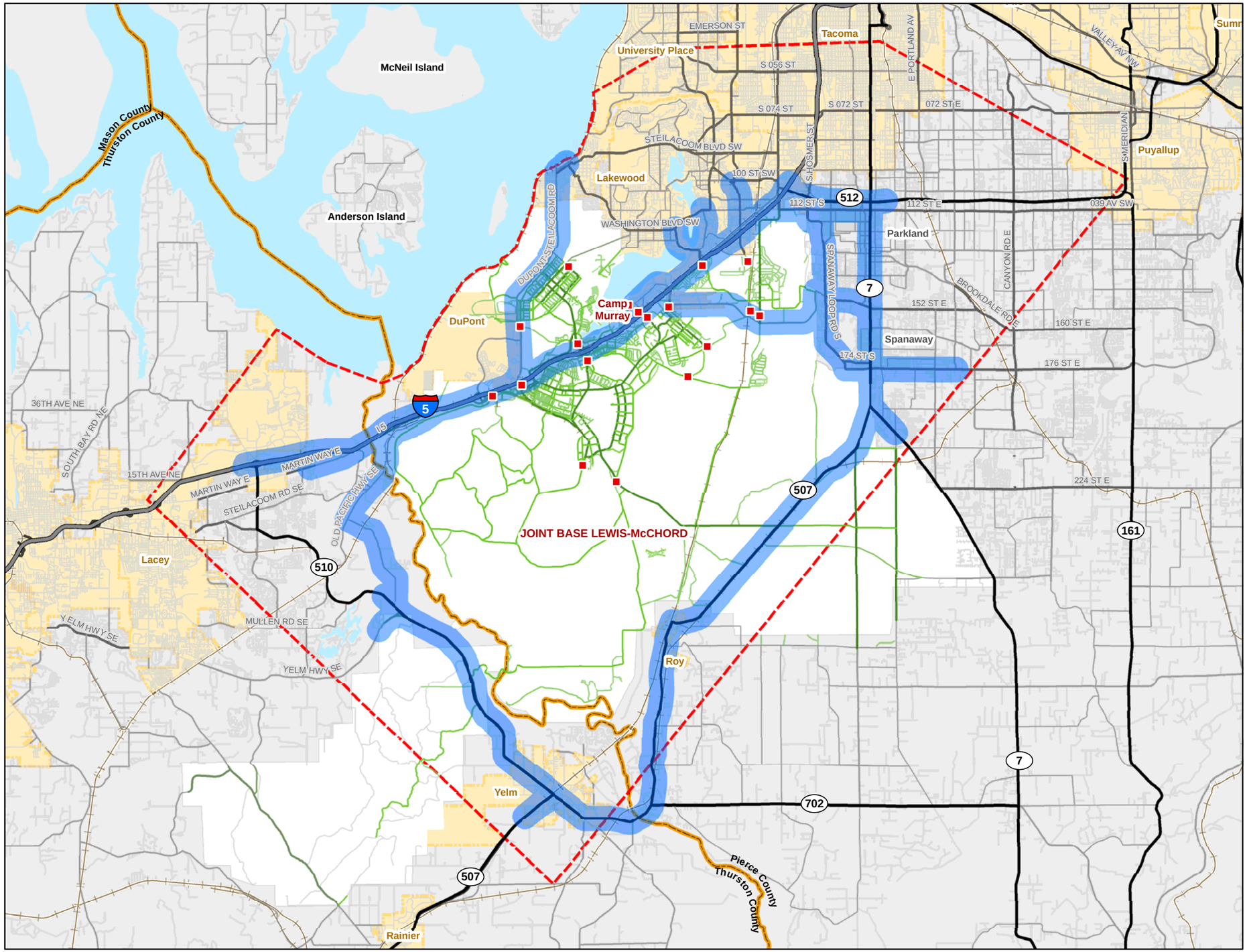
The transportation assessment focused on the identified study area for the Growth Coordination Plan. The study area generally includes the areas immediately surrounding JBLM such as Lakewood, Steilacoom, DuPont, Lacey, Yelm, Roy, Spanaway, southern portions of Tacoma, and parts of unincorporated Pierce and Thurston counties.

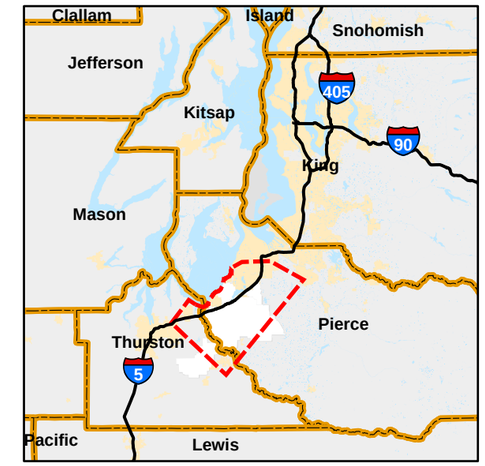
The assessment of the transportation system largely built off information assembled from each of the participating agencies. The inventory primarily summarizes the major transportation facilities in the study area. Information contained in the summary is based on local and regional transportation plans, and other data provided by the surrounding agencies. The primary analysis focuses on the weekday PM peak hour conditions.

ROADWAY FACILITIES

Access to JBLM is provided by a series of regional roadways that include State highways, County arterials, and City streets. Due to the size of JBLM, the roadway facilities are maintained and operated by over 10 different transportation departments of the various agencies. This section identifies the major roadway facilities in the project study area, their functional classification, and includes an inventory of the PM peak hour traffic volumes along the corridors.

Participating agencies were asked to identify those roadways under their jurisdiction that were a concern to them due to JBLM related traffic. These roadway corridors are shown in Figure 1 and are labeled “corridors of interest.” The existing conditions assessment and future needs analysis focuses on these identified corridors.





Project Location

LEGEND

- Corridors of Interest
- Military Access Control Points (Active)
- StudyArea
- Interstate 5
- State Route
- Principal Arterial
- Minor Arterial
- Collector
- City Roadways
- Railroads
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

Base Roadways

- Primary
- Secondary
- Tertiary

0 1 2 4 6 Miles

FIGURE 1: CORRIDORS OF INTEREST

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

Functional Classification

Functional classification is the grouping of highways, roads, and streets that serve similar functions into distinct systems or classes within the total existing or future roadway network. The objective of functional classification is to define the appropriate role, mobility versus access, of various roadways in providing service and influencing development. Higher functional classification routes provide high volume capacity mobility, accommodate higher travel speed, serve long distance travel, and place less emphasis on local access.

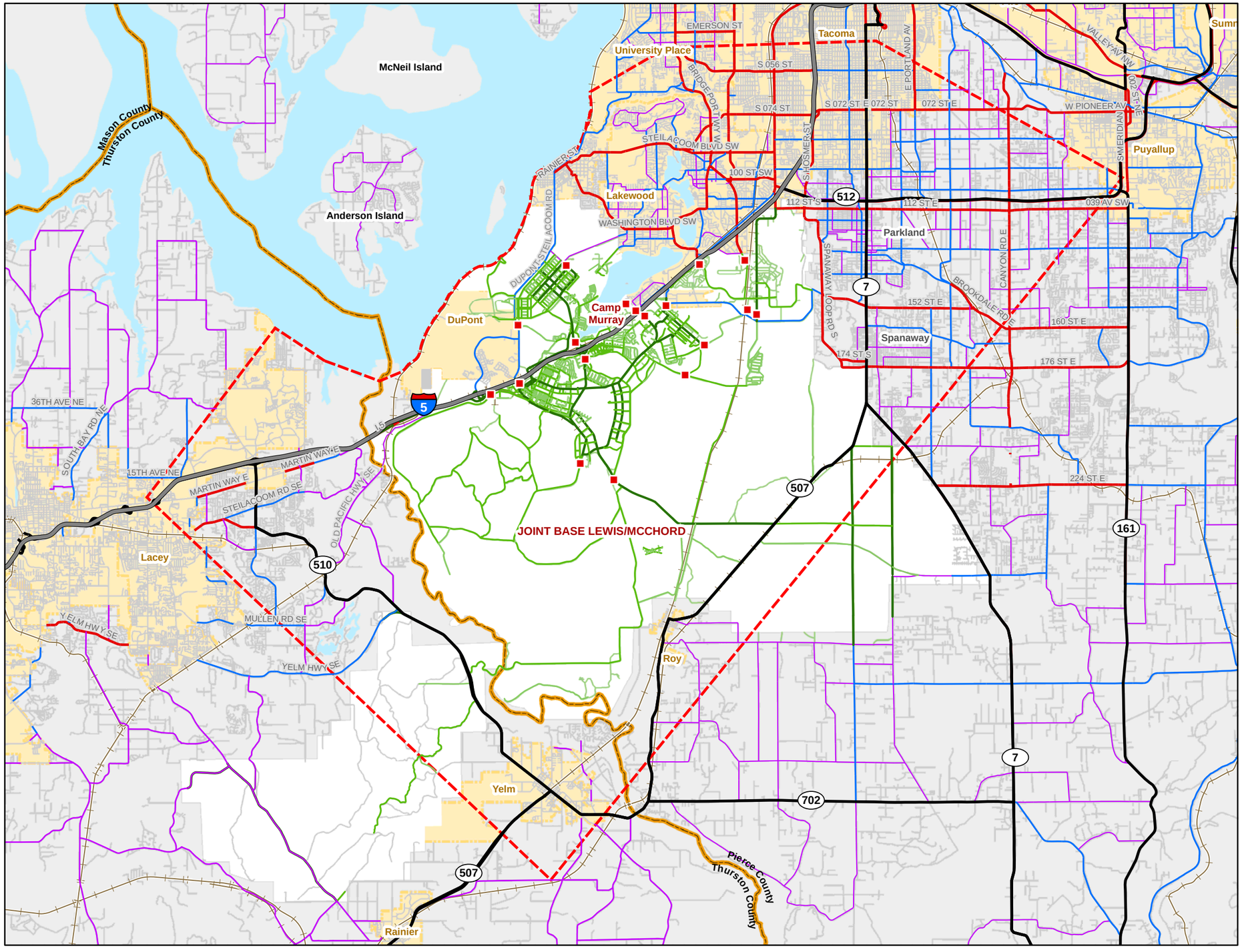
In general, the functional classifications used by most of the surrounding agencies include: state highway, principal arterial, minor arterial, collector, and local street. Figure 2 shows the functional classification of the major roadways within study area and is based on the most current version of the Federal Classification Map. The following is a summary of the roadway classifications.

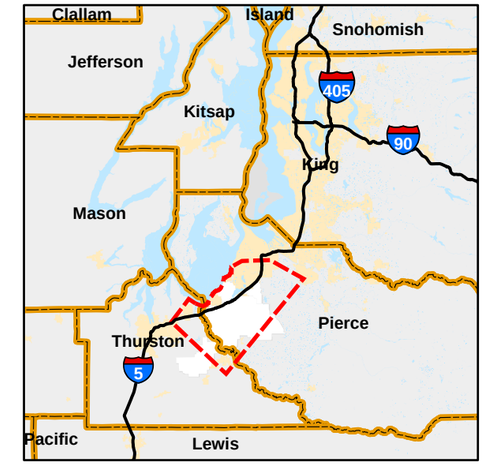
State Highways

The primary routes that serve JBLM are owned and maintained by WSDOT. The major state facility in close proximity to JBLM and which provides for the majority of access needs to the base is **I-5**. I-5 is classified as an Interstate and was built in the 1950's and 1960's as part of the Interstate Highway system to accommodate the movement of military personnel and equipment. The corridor either bisects or borders JBLM for approximately 10 miles, with a total of 9 interchanges in close proximity. Most of the interchanges are spaced between one to two miles apart, with the Thorne Lane and Berkley Street interchanges spaced the closest at approximately 0.9 miles. From Mounts Road to Thorne Lane, the interstate has 3 travel lanes in each direction. From Thorne Lane north to SR 512, I-5 widens out to 4 travel lanes in each direction.

SR 512, located at the northern end of the study area, is limited access facility and connects I-5 with Puyallup and the communities east of JBLM. It provides for two travel lanes in each direction. **SR 7** is located east of JBLM and travels through the Spanaway area, ultimately linking up to SR 512 and I-5 to the north, and SR 507 and communities to the south. **SR 507** also borders the east side of the JBLM and provides direct access to the east gate. It is the main highway through the Cities of Yelm and Roy. It is primarily a two-lane roadway and links up to other state facilities such as SR 702 and SR 510 in Thurston County. **SR 510** Connects the City of Yelm to I-5 in the City of Lacey. It borders the southern boundary of JBLM and is primarily a two-lane facility.

Highways of Statewide Significance (HSS) - Highways of Statewide Significance (HSS) include interstates and other state highways that are needed to connect major communities in the state. This designation assists with the allocation and direction of funding. I-5 and SR 512 are both HSS routes that connect the rapidly developing communities in Pierce and Thurston Counties.





Project Location

LEGEND

- Military Access Control Points (Active)
- StudyArea
- Interstate 5
- State Route
- Principal Arterial
- Minor Arterial
- Collector
- City Roadways
- Railroads
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

Base Roadways

- Primary
- Secondary
- Tertiary

*Source: Federal Functional Classification

0 1 2 4 6 Miles

FIGURE 2: ROADWAY FUNCTIONAL CLASSIFICATION

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

National Highway System (NHS) -The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) established the National Highway System (NHS). The NHS provides an interconnected system of state highways that serve major population centers, international border crossings, ports, airports, public transportation facilities, and other intermodal transportation facilities. In addition, these routes meet national defense requirements. I-5 is designated as an NHS route and supports the United States strategic defense policy by providing access to JBLM and Camp Murray. I-5 also provides access to intermodal transportation facilities and accommodates interstate and interregional travel. Designation as an NHS route influences the level of design standards applied to a route and establishes greater opportunities for federal funding.

Principal Arterials

Several County and City principal arterials also provide direct access to JBLM. They include roadways such as **Bridgeport Way** in the City of Lakewood. It is a 4 to 5 lane facility that links to I-5 and the main gate at JBLM McChord Field. **Gravelly Lake Drive** is another principal arterial in the City of Lakewood and is used to provide access to the neighborhoods to the west. It is a 2 to 3 lane facility and links to I-5 and the Family Housing Gate of JBLM McChord Field. Bordering the east side of the base is the **Steele Street / 116th Street S / Spanaway Loop Road** corridor. They are County principal arterials and are 3 to 5 lanes. The corridor links up to 176th Street to the south. The **176th Street** corridor is the location of the future Cross-Base Highway. It is a County principal arterial and links to the unincorporated areas to the east and eventually connects to SR 161. **Military Road** is another County east-west principal arterial and connects Perimeter Road and Spanaway Loop Road to SR 7. Military Road then turns into 152nd Street E, east of SR 7.

In Thurston County, the only principal arterial in the study area and identified as a corridor of interest is **Martin Way**. It parallels the south side of I-5 and begins at the Nisqually delta (exit #114), and provides another route into the City of Lacey. All other principal arterials in the Thurston County study area are state highways.

Minor Arterials

A number of minor arterials also provide direct or primary access to JBLM in Pierce County. They include **DuPont-Steilacoom Road**, a County arterial connecting the City of DuPont with the Town of Steilacoom. The corridor borders the northern portions of JBLM and often acts as a backdoor entrance to the City of Lakewood. Several JBLM access gates intersect with the corridor, such as D Street gate. **Nyanza Road,** in the City of Lakewood, provides a direct connection into Lakewood's central business district from the Gravelly Lake Drive interchange. The **150th Street / Perimeter Road** corridor is a City of Lakewood and County minor arterial. It separates JBLM Lewis Main and JBLM McChord Field. It will be the approximate location of the future Cross-Base Highway and is currently the only corridor that links I-5 with Spanaway Loop Road. Gates from JBLM Lewis Main and JBLM McChord Field access directly to the corridor.

The only minor arterial in Thurston County and within the study area is Yelm Highway. It links to SR 510 and provides access to southern Lacey.

Collectors and Local Streets

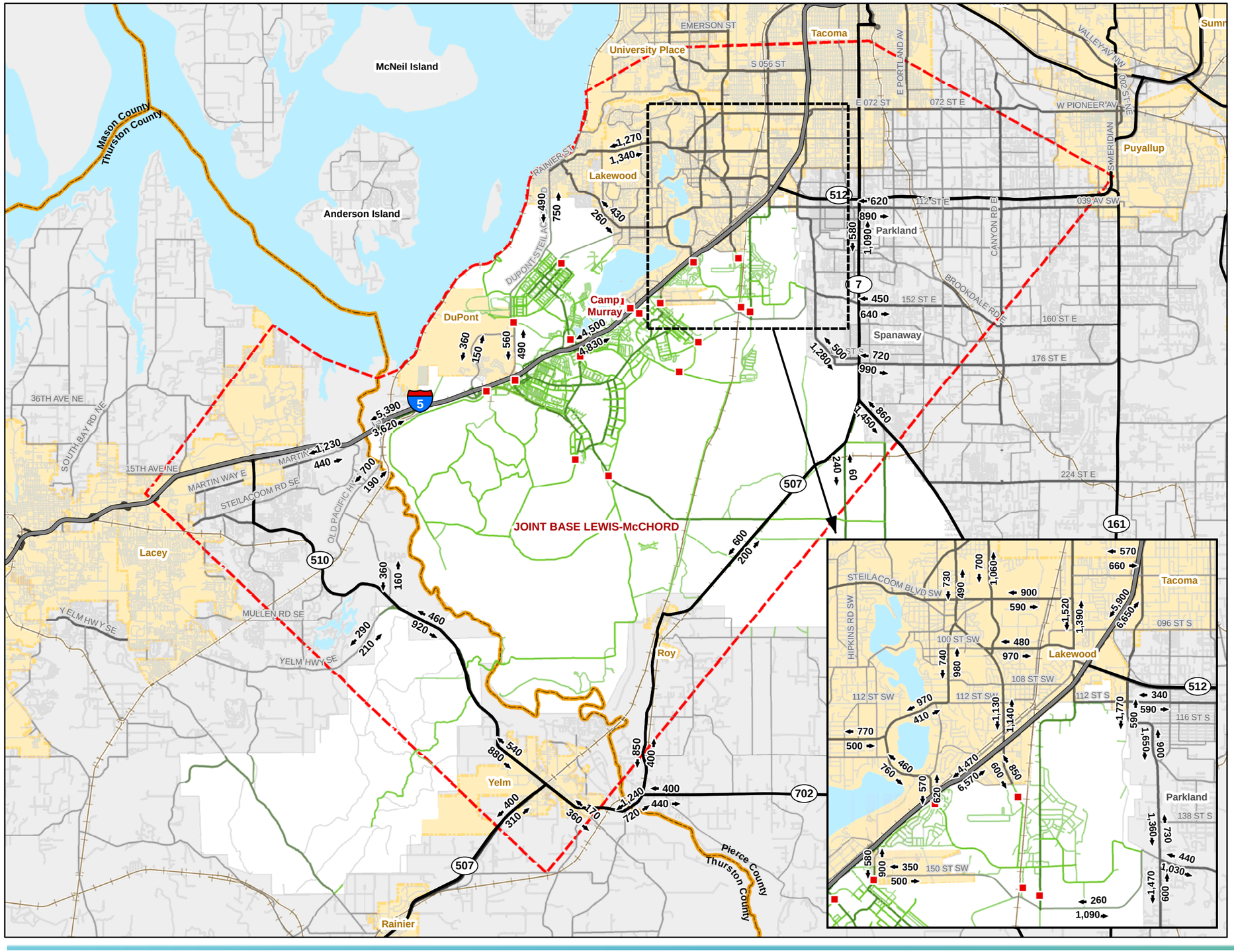
Several collector and local streets also serve as primary access points to JBLM. The collector streets in Thurston County that fit into this category are **Nisqually Cut-off Road** and **Reservation Road**, and at times, can serve similar amounts of traffic as urban arterials. These roadways provide a back door entrance into the Cities of Lacey and Yelm by way of the I-5 Mounts Road interchange (exit #116).

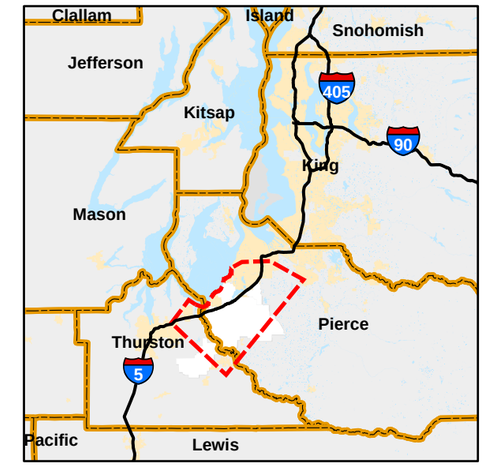
Traffic Volumes

Traffic data for the PM peak hour were assembled for the major highways and arterials in the study area. The PM counts typically represent the hour with the greatest number of vehicles within the two hour peak period from 4:00 pm and 6:00 pm. All of the traffic data were obtained from the participating agencies, and were typically conducted at some time over the past two years. These data were factored to 2010 volumes based on annual growth rates in the area. The existing 2010 PM peak hour directional traffic volumes are shown in Figure 3.

Regional traffic volumes fluctuate from year to year and are affected by population and employment trends and economic cycles within the region as a whole. The rapid population growth in Pierce and Thurston Counties over the past 20 years has led to some significant changes in traffic volumes. Until 2007, traffic volumes have historically increased on an annual basis in the region, but recent economic conditions have led to reductions in traffic volumes across the state. Although recent data shows reductions in both traffic volumes and congestion levels, it is important to understand that the current downward trends are likely to reverse course as the economy begins to recover and employment returns to traditional levels.

However the trend has not occurred on I-5 in the study area. Instead of reductions in traffic volumes, there was actually a minor increase in traffic on I-5 in the study area between 2006 and 2008. This increase is very likely the result of the influence of JBLM on I-5 traffic. It is likely similar trends have been observed on the other surrounding state highways and major arterials providing access to JBLM. Another factor to consider is the fact that the data was collected during a time of high troop deployment levels. Much of the troops are expected to return by Fall 2010, likely causing traffic volumes to increase in the vicinity of JBLM.





Project Location

LEGEND

- XXX Traffic Volumes
- Military Access Control Points (Active)
- StudyArea
- Interstate 5
- State Route
- Principal Arterial
- Minor Arterial
- Collector
- City Roadways
- Railroads
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

Base Roadways

- Primary
- Secondary
- Tertiary

FIGURE 3: 2010 PM PEAK HOUR TRAFFIC VOLUMES

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

Volume to Capacity Ratios

Congestion issues on a roadway can sometimes be identified by measuring the PM peak hour traffic volume by the capacity of the roadway (v/c ratio). Segments of a roadway nearing or over a 1.0 v/c ratio indicate the roadway is near or over capacity, and congestion and delays are experienced during peak conditions. A map of the 2010 PM peak hour v/c ratios for study area roadways is provided as Figure 4.

In general, many of the surrounding roadway corridors that were identified as "corridors of interest" serve a high number of vehicles every day. Many of the roadways are at or over capacity, or are expected to be in the years ahead. There is generally little connectivity between Pierce and Thurston County. The two main connections of interest are I-5 and SR 507. Both of these corridors border the west and east sides of JBLM. In addition to JBLM generated traffic, these corridors provide an important regional connection and serve a significant amount of regional traffic. I-5 provides the only high-capacity connection between northern Thurston County and southern Pierce County because routes such as SR 507 or SR 7 have a relatively dense number of access locations and intersection controls. Due to the high north-south travel route demands, these alternative routes also experience significant congestion as drivers seek to avoid congestion along the I-5 corridor. However, few alternative routes provide significant improvement over traveling along I-5. In addition, when incidents occur, such as collisions, there are no alternative routes for travelers, often times causing severe and prolonged congestion in northern Thurston County and impacting communities such as Yelm.

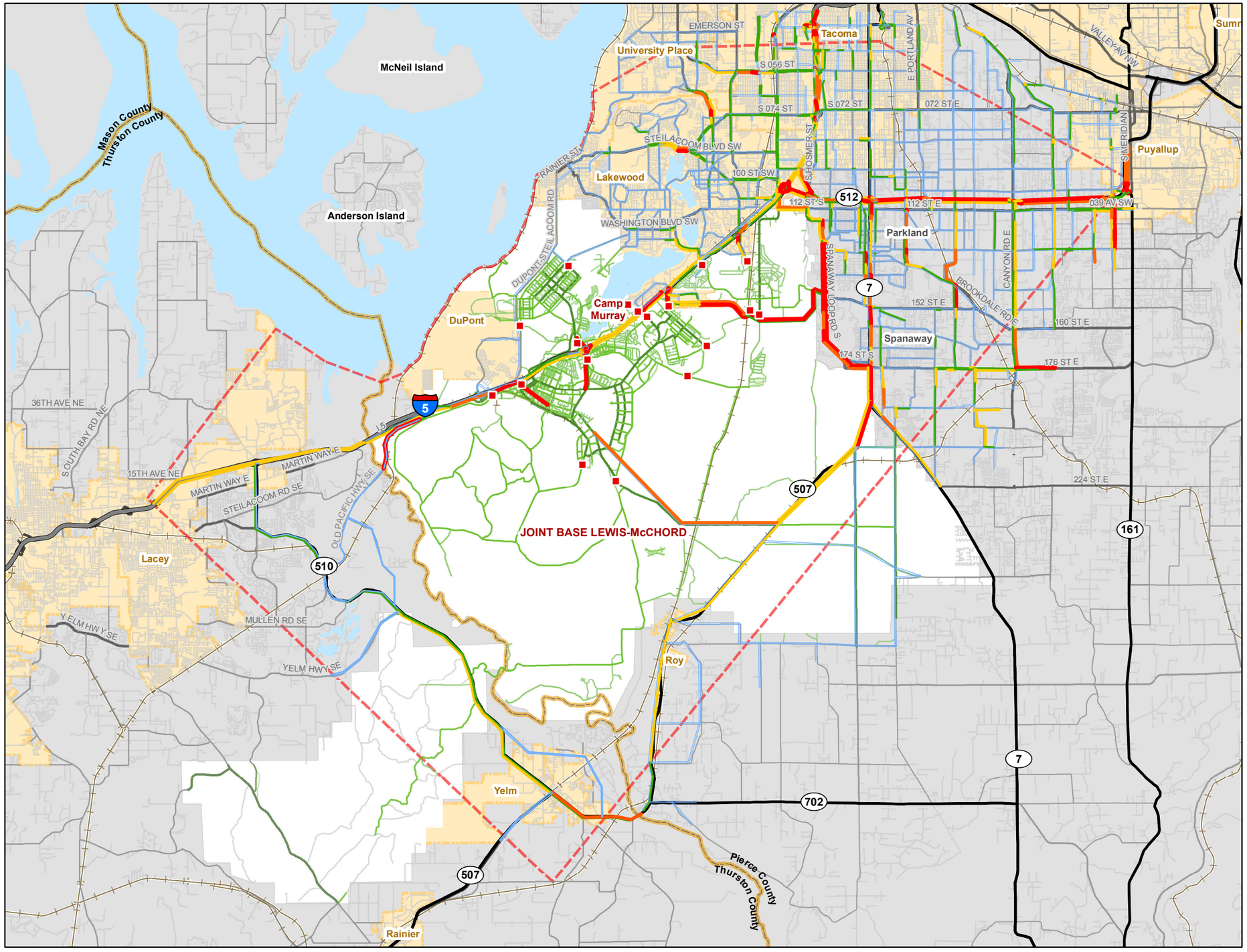
Freight

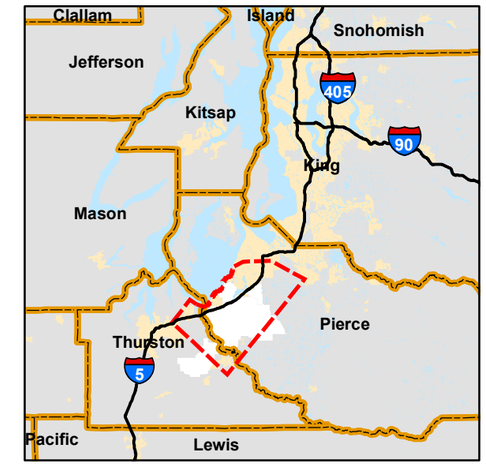
A principal function of the regional transportation system is to promote efficient movement of freight and goods. The State's economy depends on reliable, accessible, and cost effective freight routes for trucks, such as I-5. Area roadways provide an important connection for freight originating or destined for the Ports of Tacoma and Seattle. WSDOT has adopted a Freight and Goods Transportation System (FGTS) including state highways, county roads and city streets. The FGTS is a classification system used to classify roadways according to the average annual gross truck tonnage they carry. The FGTS is maintained by WSDOT and was last updated in 2007.

The FGTS classifies roadways using five freight tonnage classifications, T-1 through T-5, as follows:

- T-1: more than 10 million tons per year
- T-2: 4 million to 10 million tons per year
- T-3: 300,000 to 4 million tons per year
- T-4: 100,000 to 300,000 tons per year
- T-5: at least 20,000 tons in 60 days

All FGTS classifications are shown Figure 5. Interstate 5 is classified as a T-1 freight route, meaning that it carries more than 10 million tons of freight per year. Trucks make up 10-percent to 13-percent of the total daily volume of traffic on I-5 within the study area. This equates to almost 15,000 trucks per day





Project Location

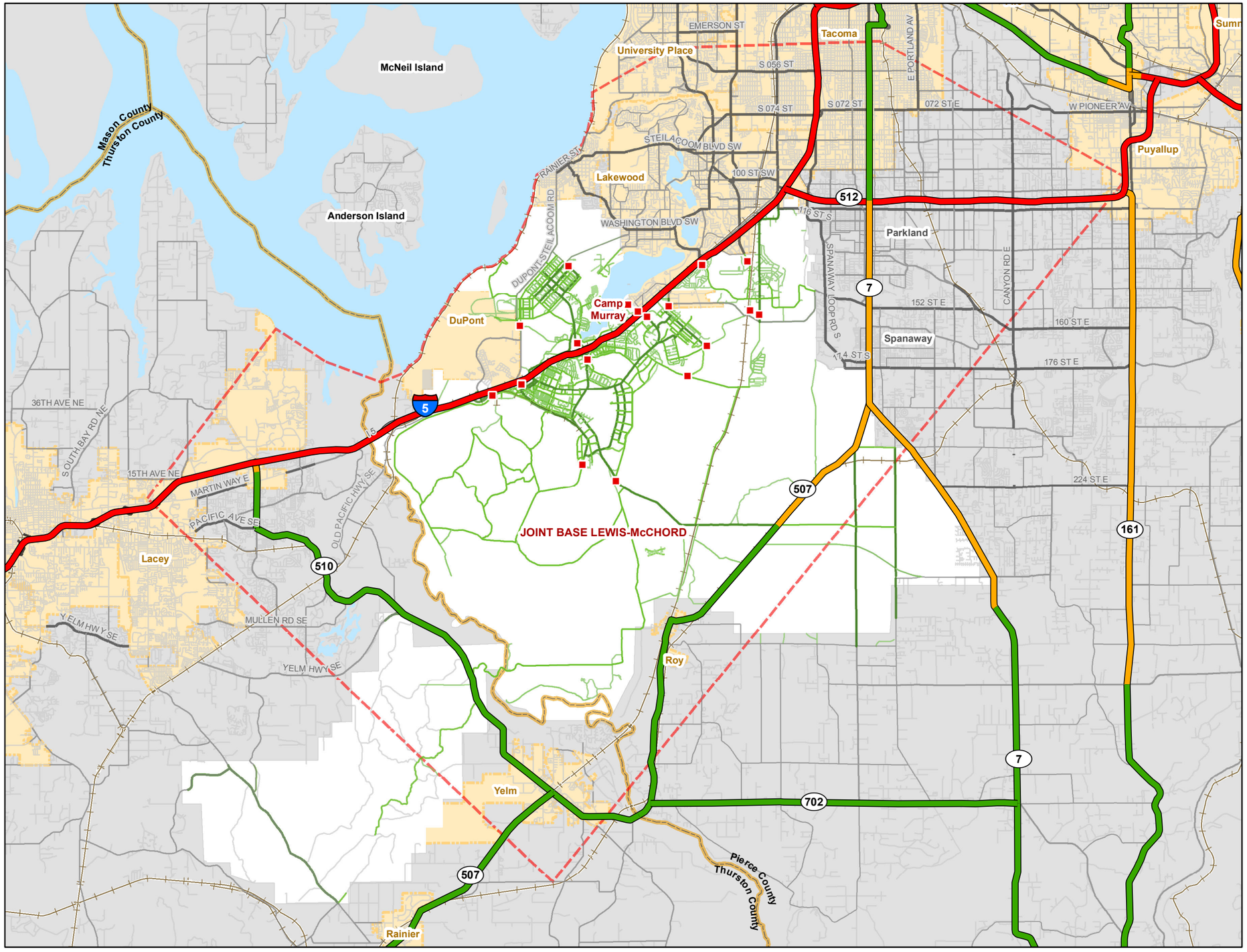
LEGEND

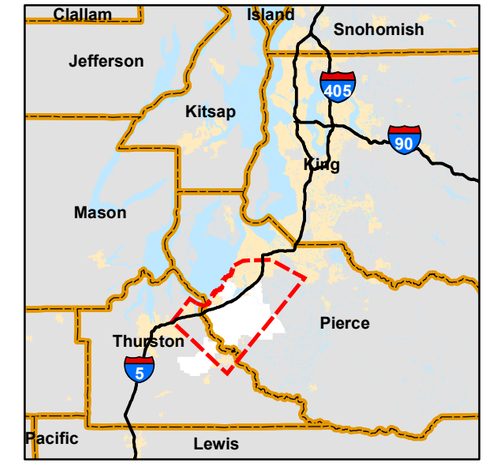
Volume/Capacity Ratios

- 0.01 - 0.59
- 0.60 - 0.79
- 0.80 - 0.99
- 1.00 - 1.09
- > 1.10
- **Military Access Control Points (Active)**
- **StudyArea**
- Railroads
- **Installation Area**
- **City Limits**
- **County Boundaries**
- **Major Water Bodies**

0 1 2 4 6 Miles

FIGURE 4: EXISTING (2010) VOLUME-TO-CAPACITY RATIOS





Project Location

LEGEND

FGTS Classification

- T-1 (More than 10 million tons per year)
- T-2 (4 to 10 million tons per year)
- T-3 (300,000 to 4 million tons per year)
- Military Access Control Points (Active)
- StudyArea
- Railroads
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

**Note: FGTS refers to the Washington State Department of Transportation's Freight & Goods Transportation System, which classifies roadways according to the average annual gross truck tonnage they carry. The most recent update of the FGTS occured in 2007.*

0 1 2 4 6 Miles

FIGURE 5: FREIGHT SYSTEM

using this stretch of interstate. State Route 512 is also classified as T-1 route. Segments of SR 7 and SR 507 are classified as T-2, and the remaining state highways are classified as T-3.

Rail

There are four rail operators who use rail lines located within the study area and in close proximity to JBLM: Burlington Northern Santa Fe (BNSF), Tacoma Rail, Amtrak, and Sound Transit. Within the study area these rail operators use three sets of rail tracks. One rail line travels along the coast of Puget Sound (mainline) and merges at Nisqually with a second line that runs parallel to I-5 (Lakeview). The third rail line runs through east Fort Lewis (between I-5 and SR 7) between Roy to South Tacoma. A map of the existing rail lines within the study area is shown in Figure 4.

Currently BNSF and Amtrak regularly use the mainline tracks along Puget Sound. Amtrak currently operates 10 trains per day along the mainline tracks while Tacoma Rail operates two to three trains per week on the Lakeview track adjacent to I-5. In addition, Sound Transit will increase rail operations within the study area by extending its existing commuter rail service to the Lakewood Station by 2012.

With completion of the Point Defiance Bypass Project that is currently under construction (High-speed rail Amtrak service will be shifted from the mainline tracks to the Lakeview tracks along I-5). This will result in increased rail crossings occurring at each of the I-5 interchanges from DuPont-Steilacoom Road to Bridgeport Way. The adjacent communities are concerned about the increase in trains due to the numerous at-grade crossings and their proximity to I-5.

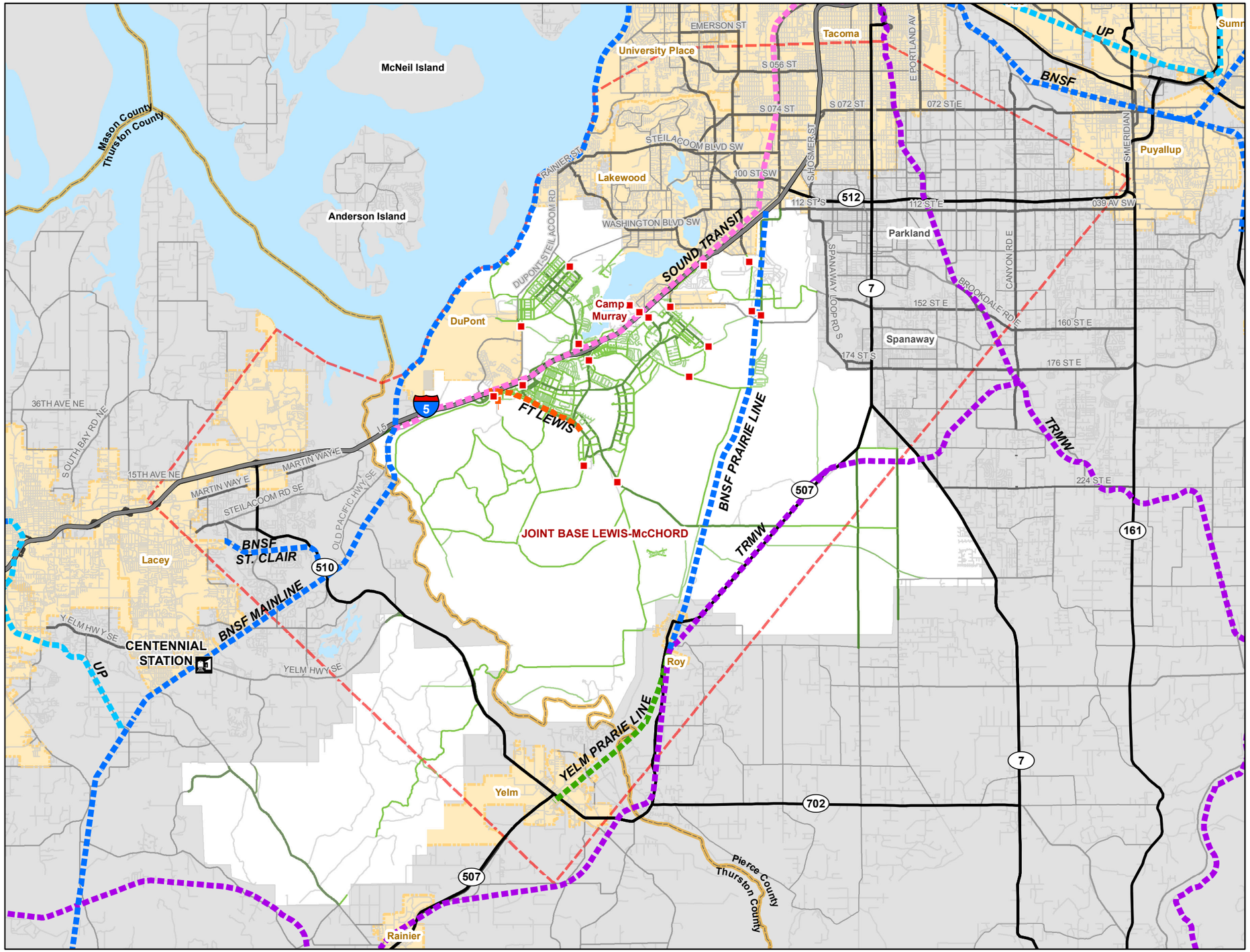
BNSF Railway

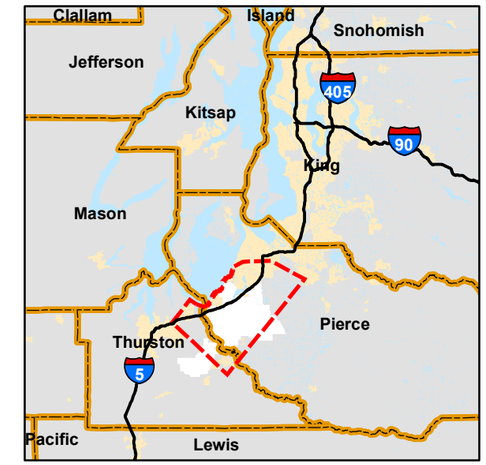
BNSF Railway is the major rail freight carrier in the Pacific Northwest. It operates freight trains on two separate tracks in the study area. The first set of tracks is the mainline that originates in Portland, Oregon. Near the Nisqually River the track branches off into two directions: the mainline and the Lakeview Line (for the Lakeview Line see Tacoma Rail description directly below). The mainline tracks veer to the north and continue along the coast through DuPont, Steilacoom, Lakewood and Tacoma. Another set of tracks, from Roy to Lakeview, travel through JBLM mainly carrying shipments about once a week from the Wilcox Farms. This set of tracks also serves MoBase, (southeast of JBLM McChord Field). MoBase traffic varies based on deployments from Fort Lewis and returning deployments.

The mainline tracks are also used by Amtrak but Amtrak service will eventually be rerouted onto the Lakeview tracks (see the Point Defiance Bypass Project description).

Tacoma Rail

This rail operator is owned by Tacoma Public Utilities and operates 2 to three times per week. Tacoma Rail's three divisions, Capital, Mountain and Tidelands move more than 20 million feet of rail equipment along 204 miles of track and serve major industries in the Puget Sound region. Most of the goods carried





Project Location

LEGEND

Railroads

- Burlington Northern Sante Fe
- Sound Transit
- City of Tacome - TRMW
- Union Pacific (UP)
- US Army
- City of Yelm
- Rail Station
- Military Access Control Points (Active)
- StudyArea
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

0 1 2 4 6 Miles

FIGURE 6: RAIL SYSTEM

by Tacoma Rail have the Port of Tacoma as their origin or destination. In total, Tacoma Rail carries about 330K gross tons/year.

The Port of Tacoma is one of the largest container ports in North America; handling more than two million TEUs (20-foot equivalent units) per year. Tacoma Rail serves shipping companies such as Evergreen, K Line, Yang Ming and Hyundai through the Port. In addition to containerized cargo, Tacoma Rail's freight includes chemicals, automobiles, scrap metal, feed, grain, frozen food, lime, petroleum products and lumber products.

Capital Division

On November 16, 2004, Tacoma Rail started providing service on three of the BNSF distribution lines. These distribution lines are:

- Lakeview Line
  - The Lakeview Line, which parallels the I-5 corridor from Nisqually to just before SR 512 and then on to South Tacoma, consists of 15 miles of track and carries animal feed, plastic pellets, polyethylene and sand. These tracks are owned by Sound Transit but are leased to Tacoma Rail.
- East Olympia Line
  - The East Olympia Line runs from East Olympia to Mottman Industrial Complex. Products shipped on this line range include lumber, bricks and aluminum.
- Quadlok Line
  - The Quadlok Line is the smallest of the three lines. It starts in St. Claire and heads Northwest three miles to Quadlok. It currently serves one customer who receives pulp board.

Mountain Division

In November 1998, Tacoma Rail began operating the Mountain Division to provide freight rail service between Tacoma, Frederickson in South Pierce County, Morton and Chehalis; a total of 132 miles. The City of Tacoma owns the line and has contracted with Tacoma Rail to operate it.

Current customers include Boeing, Hardie Building Products, MacMillan-Piper, Medallion Foods and Harris Rebar. The Mountain Division also provides storage services for the Union Pacific and BNSF Railroads.

The Mountain Division interconnects and interchanges with the Union Pacific and BNSF railroads in Tacoma and at Centralia/Chehalis. The Mountain Division is also connected with the Puget Sound and Pacific Railroad that serves Elma, Bangor, Bremerton, Shelton, Aberdeen and Hoquiam.

Tideland Division

The Tidelands Division services are concentrated solely at the Port of Tacoma's docks and do not operate in or near the study area.

Amtrak

Amtrak, the national passenger rail service operates trains between Seattle and Vancouver, B.C and between Seattle, Portland and Los Angeles. There are a number of stops along each route. The service between Seattle, Portland and Los Angeles operates on BNSF railway near Point Defiance. Eventually, this service will be rerouted from the section of track along the coast between Nisqually and Tacoma onto the Sound Transit owned tracks that parallel the I-5 corridor and bisect JBLM.

Currently, there are 10 trains per day; four round trips between Seattle and Portland and two Starlight Trains between Seattle and Los Angeles. It is anticipated that by 2014 another round trip train between Seattle and Portland will be added. It is likely the number will further increase to approximately 20 trains per day with possible completion of the Seattle to Portland high-speed rail line.

Sound Transit

Sound Transit currently operates commuter rail service between Tacoma and Seattle. As part of ST2, which was approved by voters on November 4, 2008, commuter rail will be extended to Lakewood, serving the Lakewood Station. Commuter rail service is expected to begin by 2012. This new commuter rail service will operate on tracks that are being upgraded as part of the Point Defiance Bypass Project. Service will operate to Tacoma and Seattle and from the new Lakewood Station.

Transit Facilities and Service

This section provides an overview of transit service and facilities available primarily in and around JBLM. This section also provides a description of park and ride facilities within the study area. There are currently three transit providers in the JBLM area; Sound Transit, Pierce Transit, and Intercity Transit.

Sound Transit

Sound Transit operates four regional express bus routes on the I-5 corridor within the study area. Sound Transit does not provide local bus service to JBLM. The Sound Transit routes are:

- 592: This route serves DuPont/Lakewood/Seattle operating only on weekdays mainly during the morning commuter peak period to Seattle and late afternoon and early evening back to Lakewood and DuPont.
- 594: Lakewood to Seattle providing weekday and weekend service from the early morning to late evening.

- 574: Lakewood to SeaTac Airport operating on weekdays and weekends from the early morning to the late evening.
- 599: Lakewood to Tacoma operating during the morning and afternoon peak periods. This is a temporary service that will end in 2012 when commuter rail service to Lakewood begins.

As part of ST2, commuter rail will be extended to Lakewood, serving the Lakewood Station. Commuter rail service is expected to begin by 2012. With the exception of the 599 bus service, Sound Transit is anticipating retaining the other parallel bus routes in the study area after commuter rail service is implemented.

Pierce Transit

Pierce Transit is responsible for the local bus service in Pierce County and operates four routes that provide access to the installation, or close to it. Three of these routes directly serve JBLM. The four routes are:

- Route 204: Parkland to Lakewood via South 112th Street and serving the SR 512 park and ride. Service on this route is provided seven days a week from the early morning to late evening.
- Route 206: operates between the Lakewood Transit Center and Madigan Hospital. Service is provided seven days a week from the early morning to late evening.
- Routes 207:
    - Route 207B: This route operates within JBLM between Madigan Hospital and Cemetery Road and 22nd Street. Service is provided on weekdays only from mid-morning to mid-afternoon.
    - Route 207G: This route serves Fort Lewis and operates between the DuPont Park and Ride and Madigan Hospital with a stop at the Fort Lewis bus depot. Service operates only during the weekend between the early morning and early evening.
    - Route 207P: This route also operates as a loop within Fort Lewis, serving the airfield and commissary. Service is provided only on the weekdays between late morning and late afternoon.
- Route 300: This route serves JBLM McChord Field operating between the Tacoma Mall Transit Center and McChord Commissary with stops at the SR 512 park and ride and the Lakewood Station.
- Olympia Express Routes 601 and 603A (operated separately from Intercity Transit's. See IT for their route details):
    - Route 601: Weekday express, peak hour service only between Gig Harbor, Lakewood (SR 512 Park and Ride, Sounder Station) and the downtown Olympia Transit Center. Afternoon peak service reverse route/stops between Olympia and Gig Harbor.
- Route 603A: Weekday bi-directional express service, morning and evening peaks, between downtown Tacoma, Lakewood and the downtown Olympia Transit Center.

A summary of the span of service, average headways, average daily boardings, and total boardings in 2009 for each route is shown in Table 1. The data displayed is the total ridership over the entire route, so for routes 204, 206, and 300, only a small portion of the ridership is likely base personnel.

Table 1. Pierce Transit Service Characteristics

Route #	Service Span (Daily)	Headway in Minutes (Peak / Base / Night)	Average Daily Boardings (2009)	Total 2009 Boardings
204	5:45 a.m. – 10:45 p.m.	15 / 15 / 60	1,835	574,190
206	5:00 a.m. – 11:15 p.m.	30 / 30 / 60	1,110	354,615
207	6:30 a.m. – 7:00 p.m.	various	70	18,090
300	4:30 a.m. – 11:00 p.m.	30 / 30 / 60	1,045	359,495

Source: Pierce Transit 2009

Due to security requirements at the bases, providing transit service for the general public to the bases is a challenge for Pierce Transit because it is not permitted to carry non-military personnel through the gates. The agency has been working with JBLM to develop a method that would serve both the general public's needs of wanting to take transit to the bases and satisfying the military's need for base security. Based on discussions with Pierce Transit, Route 207 is a very lightly used route that is being eliminated in 2010. Data from 2009 indicates the route serves only 70 passengers per day.

One option being considered is a transit center adjacent to one of the JBLM gates with access for military personnel to be discharged and walk through the gate and transfer to a bus inside the gate. Though this would not enable Pierce Transit to carry non-military personnel onto the base, it would enable Pierce Transit to co-mingle military and non-military personnel on the same bus from distant locations.

Intercity Transit

Intercity Transit operates two routes, 603 and 620, otherwise referred to as Olympia Express service. The weekday route operates between Tacoma/Lakewood (Pierce County) and Lacey/Olympia in (Thurston County).The weekend Route 620 operates to the Tacoma Mall. Olympia Express service has connecting service to a number of Pierce Transit's Local service routes and Sound Transit's Express Bus, Sounder commuter rail and Link light rail service. None of these routes directly serve JBLM. The Intercity Transit routes serving the study area are as follows:

- Route 603: Weekday bi-directional express service between downtown Olympia, Lakewood and Tacoma. The service is provided from early morning to mid-evening with stops, depending on the time of day, at Lacey Trnasit Center, the Martin Way Park and Ride, the Lakewood Sounder Station, the SR 512 Park and Ride, Tacoma Dome Station and downtown Tacoma Commerce Street Station.
- Route 620: Weekend service only between downtown Olympia, Lacey, Lakewood and Tacoma Mall, making stops at the Lacey Transit Center, Martin Way Park & Ride, the Lakewood Sounder Station, the SR 512 Park and Ride and the Tacoma Mall Transit Center. The service is provided from mid-morning to mid evening.

A summary of the span of service, number of buses per day, average boardings, and total boardings in 2009 for each route is shown in Table 2. The data displayed is the total ridership over the entire route.

Table 2. Intercity Transit Service Characteristics

Route #	Service Span (Daily)	Number of Buses per Day	Average Daily Boardings (2009)	Total 2009 Boardings
603	Weekdays Only 5:20 a.m. – 9:45 p.m.	Northbound: 7 in AM / 9 in PM Southbound: 7 in AM / 9 in PM	575	147,310
620	Weekends Only 9:00 a.m. – 9:00 p.m.	Saturday Northbound: 3 in AM / 6 in PM Southbound: 2 in AM / 7 in PM Sunday Northbound: 2 in AM / 3 in PM Southbound: 1 in AM / 4 in PM	230	24,255

Source: Intercity Transit 2009

Commute Trip Reduction (CTR) Program

Washington State's Commute Trip Reduction (CTR) law requires employers to implement programs that encourage alternatives to drive-alone commuting to their worksites. Each year employers are required to submit an annual report that describes the program used. A copy of the Fort Lewis CTR summary has been reviewed and is summarized below:

- A total of 38,895 employees (non-soldiers) are eligible to participate in the program
- Approximately 125 employees are using bus subsidies
- Approximately 375 employees are using vanpools from either Pierce Transit or Intercity Transit

The Department of the Army has a program called the "Mass Transportation Benefit Program" (MTBP) that provides reimbursement for using mass transit (either vanpool or carpool). The MTBP is available to all personnel on base (civilian and military) and is a non-taxable program that subsidizes the use of transit up to $230 per month.

Fort Lewis promotes vanpool, carpool, and transit through use of bulletin boards, email, and newsletters and has the Logistics Department coordinate the CTR program. A series of focus group meetings are being held to gather information as to how to promote ridership of Route 207 on base. Additionally, the installation is planning a Transportation Fair for sometime in 2010 to further promote alternatives to single occupant driving.

Park and Ride Lots

There are four primary park and ride lots within the study area, with one additional park and ride being constructed. They include:

SR 512 P&R (Lakewood)

It is located one half block east of the intersection of South Tacoma Way & Pacific Highway South, adjoining I-5 at exit 127 (SR 512). This park and ride is served by Pierce Transit Routes 204 and 300;

Sound Transit routes 574, 592, 594; and Intercity Transit routes 601, 603, 603A and 620. It has 493 stalls and is typically at or over capacity.

Lakewood Sounder Station (Lakewood)
It is located at 11424 Pacific Highway South and 47th Avenue SW, approximately 4/10th of a mile north of the I-5/Bridgeport Way interchange (Exit 125) and approximately 1.3 miles south of the I-5/SR512 interchange (Exit 127). The facility opened in September 2008 and contains 620 parking stalls plus shelters and kiosk ticket machines. The station is currently serving regional and local bus routes and will eventually be the south terminus for commuter rail. It is served by Pierce Transit routes 300; Sound Transit route 599 and InterCity Transit routes 601, 603, 603A and 620 and has a utilization rate of approximately 40 percent. This rate is expected to increase after Sound Transit commuter rail service commences in 2012.

DuPont Station (DuPont)
It is located at Wilmington Drive and Palisade Boulevard, DuPont. It has 125 stalls and is served by Pierce Transit route 207G and Sound Transit route 592. This facility is typically overcapacity.

Martin Way P&R (Lacey)
This is the largest park and ride lot in Thurston County (320 stalls) and it captures many commuters who are vanpooling or carpooling to Pierce and King Counties. The lot is served by Intercity Transit (local and inter-county Olympia Express service) and Pierce Transit (inter-county Olympia Express service).

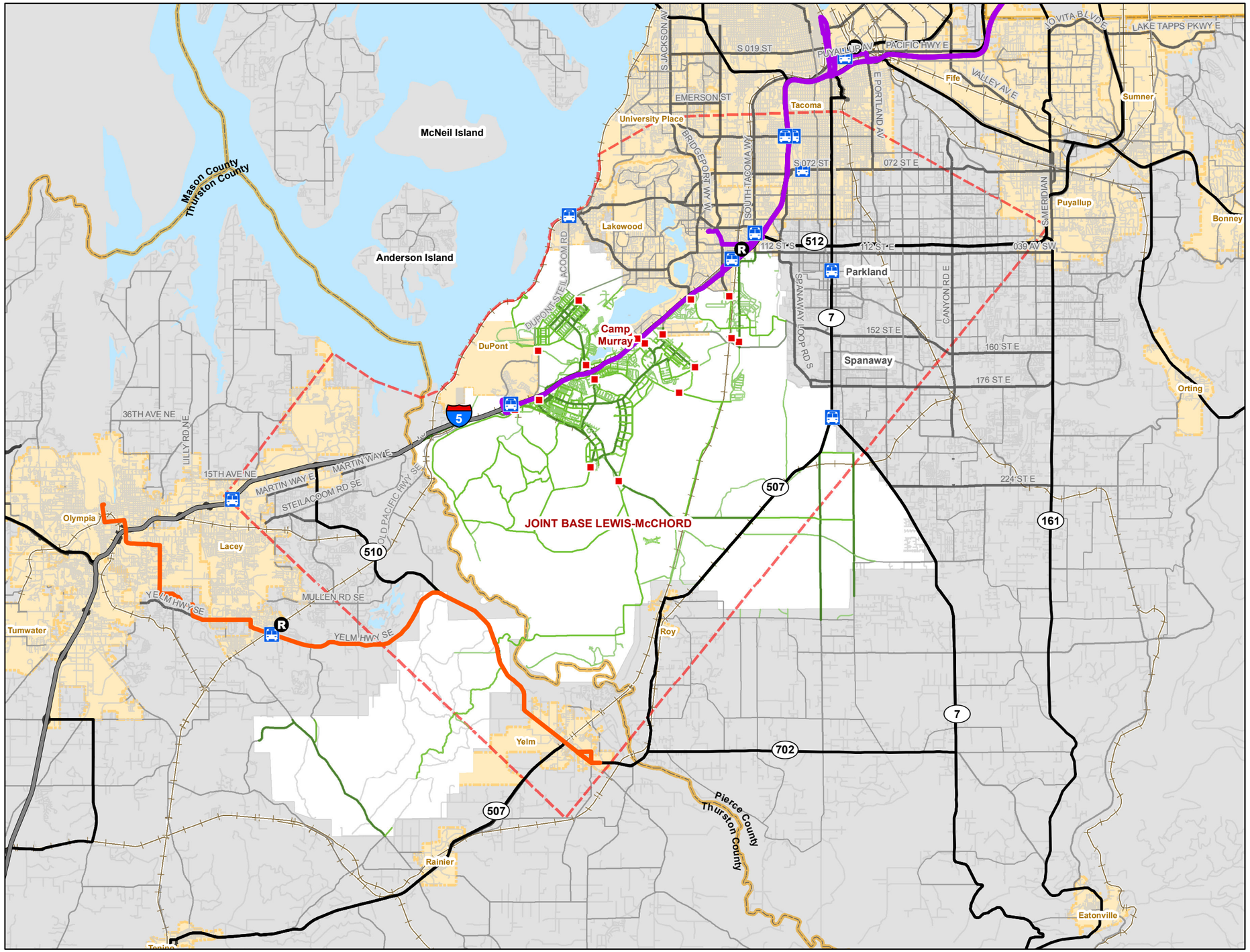
Hawks Prairie P&R (Lacey)
Intercity Transit is currently underway with the initial development and construction of a 300+ stall park and ride in NE Lacey, off of I-5, on Hogum Bay Road. The Hawks Prairie P&R is projected to open by the third quarter 2012. Anticipating Olympia Express will serve the lot.

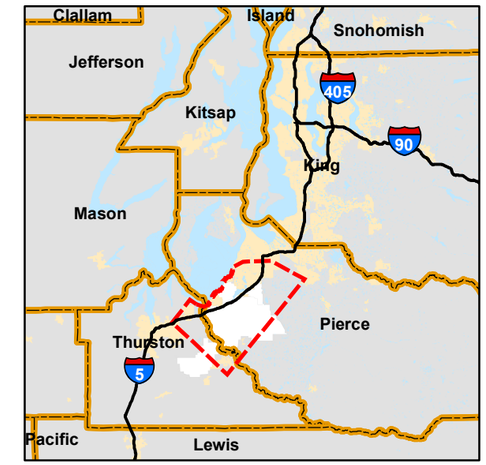
An illustration of the transit service and park and ride lots within the study area are shown in Figure 7. A summary of the park and ride inventory data, including number of parking stalls and utilization is shown in Table 3.

Table 3. Park and Ride Inventory

Facility / Lot	City	Location	Approximate Number of Parking Stalls	Average Daily Utilization
SR 512	Lakewood	I-5 & SR 512	493	103%
Lakewood Sounder Station	Lakewood	Pacific Hwy & 47th Ave SW	620	40%
DuPont	DuPont	Wilmington Dr & Palisade Blvd	125	104%
Martin Way	Lacey	I-5 & Martin Way	320	75%
Hawks Prairie	Lacey	I-5 & Hogum Bay Rd	300+	under construction

Sources: (1) Intercity Transit Park and Ride Study September 2008, (2) Pierce Transit Park and Ride Study December 2008





Project Location

LEGEND

- Rail Station
- Park & Ride
- Sound Transit
- Pierce Transit
- Intercity Transit
- Military Access Control Points (Active)
- StudyArea
- City Limits
- County Boundaries
- Major Water Bodies

0 1.25 2.5 5 7.5 Miles

FIGURE 7: TRANSIT FACILITIES & ROUTES

JBLM Travel Patterns & Trends

Traffic to and from JBLM is a significant contribution to traffic volumes within the study area. Variations of these impacts can sometimes be felt on a day-to-day basis and are dependent upon military operations. These operations can change depending on troop deployments, varying security levels, or holiday leave. In addition to the short-term changes, longer-term impacts also occur. Over the past several years the overall number of troops based at JBLM has increased, and is anticipated to continue to increase during the next several years. Because of variable short-term military operations, a look at broad and long-term military travel patterns and trends is necessary to better understand how to best address any identified impacts.

Gate Access

Multiple access points are provided for JBLM as shown in Figure 9. The estimated average weekday volume of traffic at each gate, both inbound and outbound, is graphically shown in Figure 8.

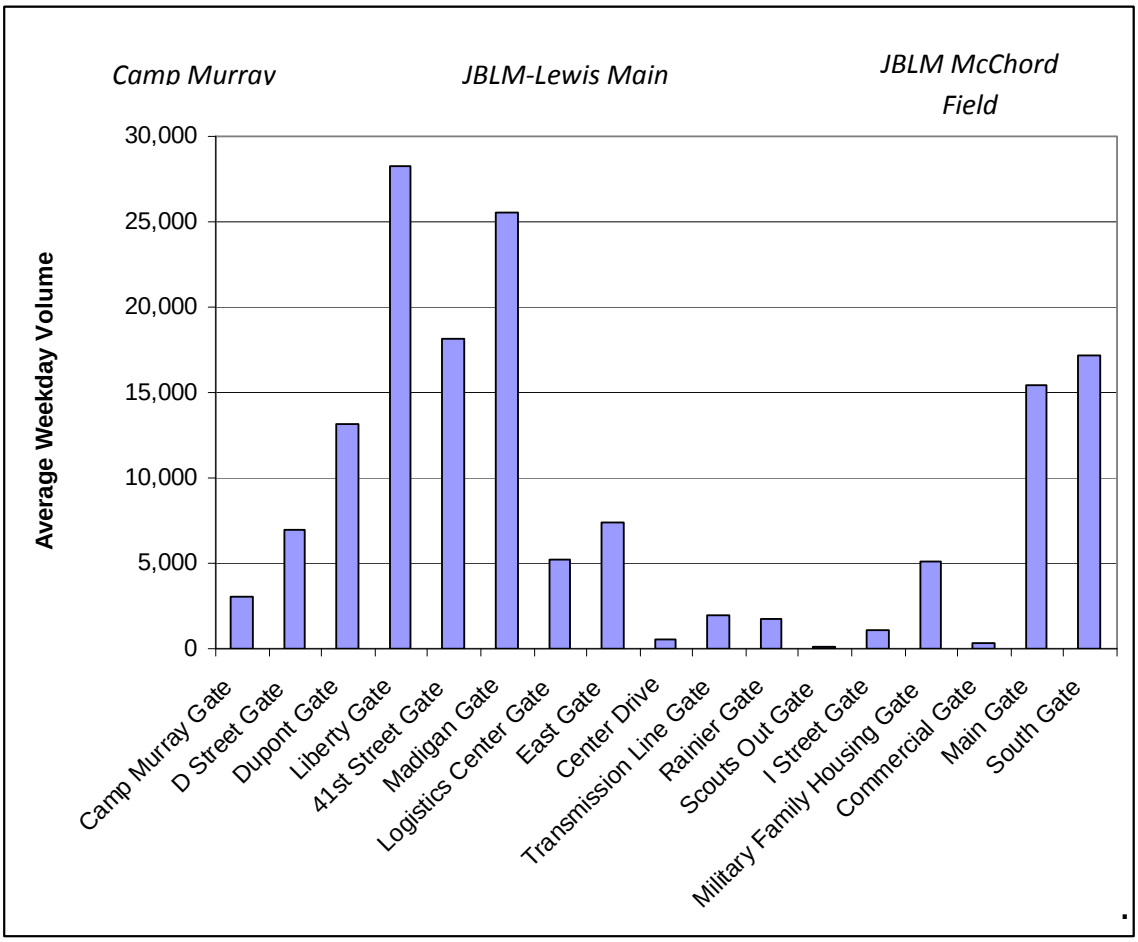
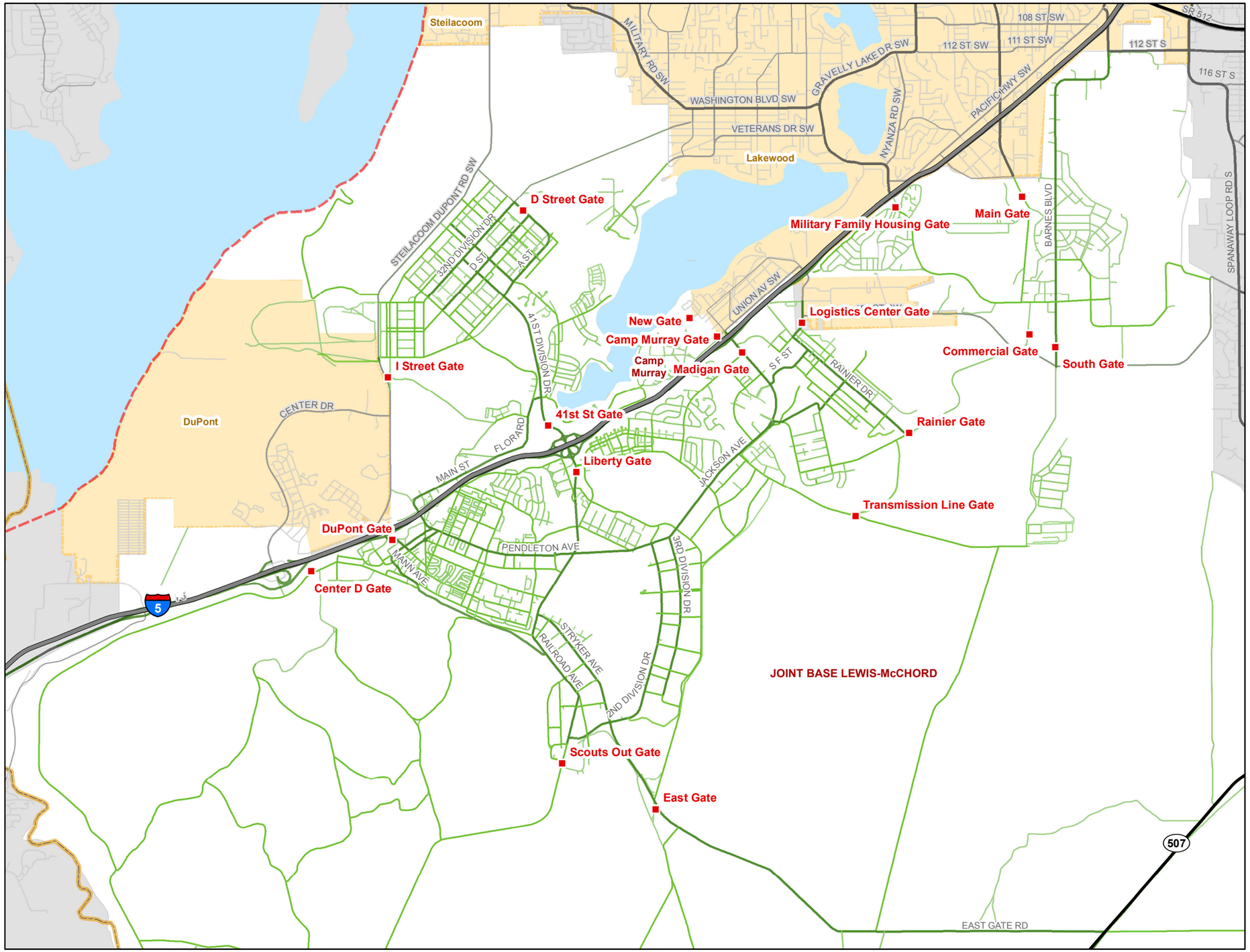


Figure 8. Total Gate Volumes (2009)



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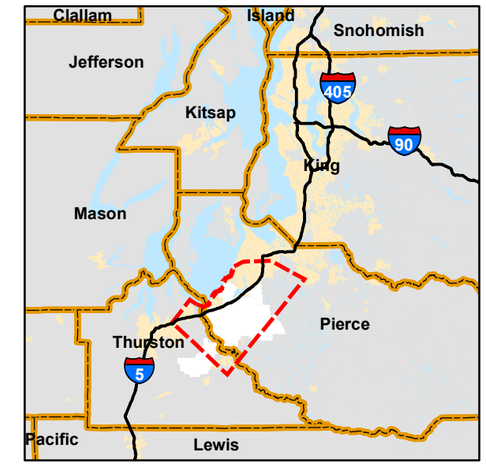


Project Location

LEGEND

- Military Access Control Points (Active)
- Study Area
- Installation Area

Base Roadways

- Primary
- Secondary
- Tertiary
- City Limits
- County Boundaries
- Major Water Bodies

0 0.375 0.75 1.5 2.25 Miles

FIGURE 9: JBLM GATE LOCATIONS

JBLM generates approximately 152,000 off-site vehicle trips per day (including Camp Murray), with most of the trips by single occupancy vehicle. These are defined as the number of vehicles entering or leaving the access control points on an average daily basis. JBLM has recently completed a gate study that estimates the total vehicle trips through the gates at approximately 126,000, but the data was not available to incorporate into this study. Within the vicinity of JBLM during the PM peak hour, traffic to and from the base contributes significant numbers of vehicles to the surrounding roadway networks. Estimates of the relative percentage of total traffic volumes that are military related on several roadways near JBLM range from as low as 10-percent to over 50-percent in some locations.

As Figure 8 shows, the majority of JBLM Lewis related traffic accesses via DuPont, Liberty, 41st Division, and Madigan gates while the majority of JBLM McChord Field traffic accesses via the Main and South gates. As Figure 9 shows, all four of the high volume JBLM Lewis gates are located in close proximity to the I-5 corridor (DuPont, Liberty, 41st Street, and Madigan) and one of the high volume JBLM McChord Field gates is located near I-5 (Main). In particular the DuPont, Liberty, and Madigan gates are located immediately adjacent to, or are accessed directly, via adjacent I-5 interchanges. Other JBLM gates access corridors such as the DuPont-Steilacoom Road, 150th Street / Perimeter Road, SR 507, or Warren Street in Roy. While there are a number of access locations, some of these local streets are not designed to handle the level of traffic from JBLM.

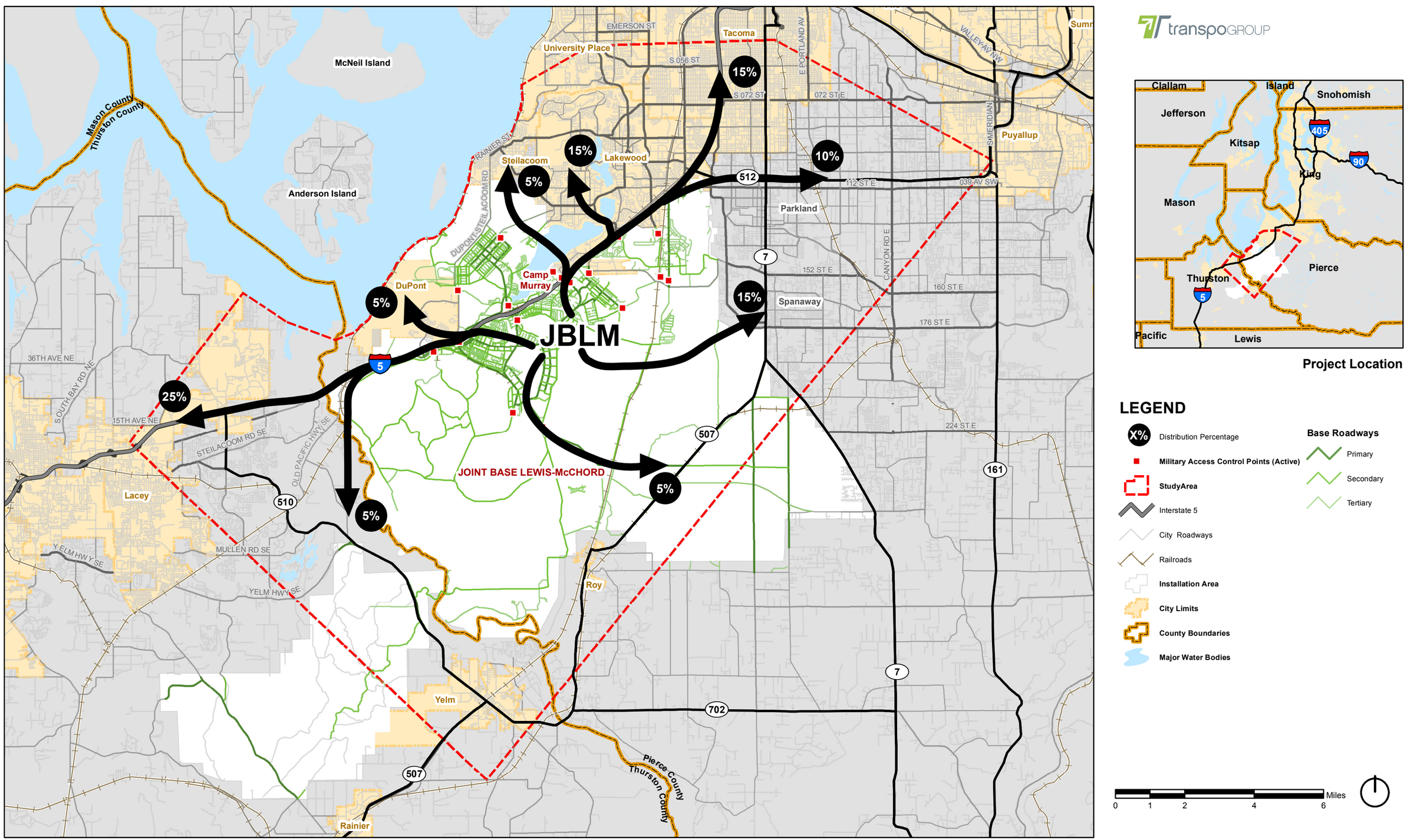
Historically, poor gate operations have sometimes resulted in gate queues extending onto the surrounding roadway system. These issues are primarily along I-5 at ramp intersections. Recent changes to gate operations have improved queuing at the gates such that queues infrequently extend back through adjacent ramp intersections or impact ramp and mainline traffic along I-5. However, due to the high variability of day-to-day base operations (i.e. troop deployments, security level changes) and anticipated increase in future troop levels, gate operations may impact mainline and ramp operations

Travel Patterns

The travel patterns and distribution of traffic from the military bases throughout the regional roadway network are important considerations when evaluating operations within the study area. Impacts from military travel demand are most notable at intersections and roadways located near access gates .Traffic to and from JBLM Lewis Main and JBLM McChord Field have differing distribution patterns due to the number and location of access control points. Based upon data from JBLM, existing traffic volumes, and planning model estimated distributions, general travel patterns are shown on Figure 10[1].

The travel patterns represent PM peak hour distributions and are an approximate estimate based on the information that was made available. The information will be useful when evaluating future needs and priorities for JBLM.

[1] Mailing address zip-code data for JBLM-McChord Field personnel (civilian & military) provided by JBLM-McChord Field (email, June 10, 2009)



Project Location

LEGEND

- X% Distribution Percentage
- Military Access Control Points (Active)
- StudyArea
- Interstate 5
- City Roadways
- Railroads
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

Base Roadways

- Primary
- Secondary
- Tertiary

0 1 2 4 6 Miles

FIGURE 10: JBLM TRIP DISTRIBUTION

Historical Trends

Over the past several years the number of military personnel and supporting civilian employees at JBLM Lewis Main has increased. The most current available data, from the first half of 2009, shows approximately 55,000 vehicles entering JBLM Lewis Main on an average day. This includes military personnel, families residing on base, and civilian employees.

To assess the overall historical trends observed at JBLM Lewis Main, weekly entering traffic volumes at all gates was summarized and are shown in Figure 11. As shown, traffic to JBLM Lewis Main has generally increased over the past several years. During this time, volumes have increased and decreased as various troop deployments occurred. From 2005 to mid-2006, traffic can be seen to generally increase. Between mid-2006 and the end of 2007 traffic volumes decreased as deployments increase. From the end of 2008 through today, traffic volumes have again increased as deployed troops have returned and the total number of troops based at JBLM Lewis Main has also increased.

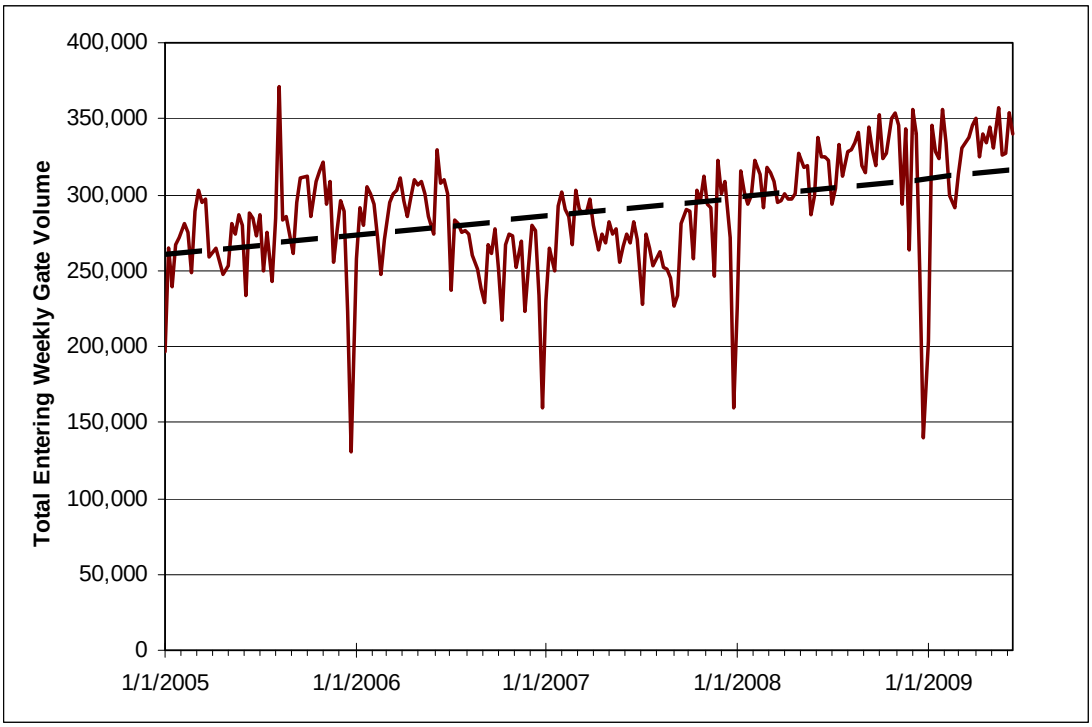


Figure 11. JBLM-Lewis Main Total Entering Weekly Volumes

*Volumes are the total for entire week for each year. Dips in volumes around the Christmas and New Years holidays occur due to holiday base operations.

In contrast to JBLM Lewis Main, military personnel levels at JBLM McChord Field have remained relatively constant over the past several years. Limited data is available for JBLM McChord Field traffic volumes, but estimated volumes for 2009 show approximately 19,000 vehicles enter JBLM McChord

Field on an average weekday. This includes military personnel, families residing on base, and civilian employees.

Planned Improvements

There are a number of improvements planned for the study area. A list of all the 6-year transportation improvement plans and 20-year project lists will be summarized for each of the surrounding agencies as part of the Needs Assessment. Projects that will be included will have the potential for impacting JBLM in some way. Below is a brief summary of the major projects planned for the study area.

- **Point Defiance Bypass** - The Point Defiance Bypass Project, a joint effort by WSDOT and Sound Transit, will reroute passenger trains operating on BNSF tracks between Nisqually and Tacoma to an inland route. Currently, trains must slow down due to curves and single-track tunnels on the BNSF Railway main line tracks near Point Defiance and along southern Puget Sound. The bypass is on an existing rail line that runs along the west side of I-5, through south Tacoma, Lakewood and DuPont. It reconnects back to the BNSF Railway main line near Nisqually. These improvements will enable Amtrak service to avoid being delayed by freight trains; resulting in faster and more reliable service for Amtrak and its passengers. This bypass will also allow travel speeds will be increased up to 79 mph, reducing travel times between Seattle and Portland by six minutes. BNSF will benefit by being able to operate more freight trains on the existing route. Part of the proposed route will also be used by Sound Transit to extend Sounder commuter rail to Lakewood. Amtrak stops will remain unchanged from today.
- **Cross-Base Highway** - The Cross-Base Highway (SR 704), when complete, will provide regional travelers with a new six-mile-long, multi-lane divided highway beginning at the I-5 Thorne Lane Interchange at the west end, connecting to 176th Street at SR 7 at the east end. This new alternate east-west route will ease congestion on I-5, SR 512, SR 7 and Spanaway Loop Road by providing a route through JBLM. The Thorne Lane interchange would be reconstructed as a single-point urban interchange to accommodate the increase in traffic volumes from construction of the new highway. The existing SW 150th Street corridor and Perimeter Road would no longer be used as the main east-west connection. The project is currently on hold with most of the design completed along with the environmental analysis. The segment between Spanaway Loop Road and SR 7 was recently completed in August 2009. No funding has been identified for the remaining segments (~$280 million), but the highway remains in WSDOT and PSRC's long range plans.
- **Joint-Base Connector** - The new connector road is currently funded ($13.5 million) by the Department of Defense to better connect JBLM Lewis Main with JBLM McChord Field. It would be a new north-south arterial between the two areas, and cross the existing Perimeter Road corridor. Security check points would still be necessary because the new connection would leave the controlled boundaries of the base as it crosses Perimeter Road. The new connection would likely align with the existing Rainier Gate on JBLM Lewis Main and the South Gate on JBLM McChord Field. In the future, when the Cross-Base Highway is constructed, the Joint-Base Connector will be fully within the perimeter of the installation with a grade separated crossing of the Cross-Base Highway and a new interchange.

- **Yelm Loop** – WSDOT is leading the effort to build a new roadway that connects SR 510 with SR 507 within the City of Yelm. The project will reduce congestion on Yelm Avenue and First Street, and improve freight mobility, safety and traffic circulation through the City of Yelm. The new road allows traffic to move more efficiently between Spanaway, Roy and McKenna in Pierce County and destinations in Thurston County. Stage 1 of this project, which builds a new roadway from Mud Run Road to Cullens Road, will begin construction in April 2010. Stage 2 construction, which includes extending Yelm Loop from Cullens Road to SR 507, is currently unfunded at $56 million.

Additional Information Needs

While the existing conditions assessment summarized the general transportation system routes and services, there is still a great deal of information that could be summarized or shared. In particular, performance measures should be identified that can be used to evaluate possible future improvements that directly benefit JBLM. The information could be supplemented by additional daily traffic volume and operational data from each of the participating agencies.

For items such as freight and rail, data on the amount of activity that is associated with JBLM would be of interest. The same type of information for transit would be useful to obtain. While it is known that transit is not widely used by base personnel, it would be interesting to understand where most carpools or vanpools originate from and which park and ride lots they may use. This information would help in evaluating future needs and strategies to promote the use of transit, and consider the needs of freight movement by JBLM.

Summary of Key Findings

The following summarize the key findings of the existing conditions assessment:

- **Congestion** - Heavy congestion along the primary routes (I-5 and SR 507) to the installation make traveling to and from JBLM difficult. Traffic congestion now occurs along I-5 throughout the day and is no longer limited to just weekday AM or PM peak hours.
- **Travel Characteristics of JBLM** – The installation generates approximately 126,000 to 152,000 off-site vehicle trips per day, with most of them by single occupancy vehicle. More than 30 percent of the daily trips are from Thurston County, with the remaining staying mostly within Pierce County.
- **Public Transportation** – Formulating successful public transportation and TDM strategies that are designed to service both military and civilian populations, on- and off-post, in a coordinated manner is an extreme challenge for installations and surrounding agencies. One transit route serves the base, although it is currently targeted for elimination due to low ridership and funding levels. Security requirements prevent the general public from entering the installation, making it difficult to provide a higher utilized bus route that could also serve the surrounding communities.
- **Existing Subsidies for Carpools and Transit** - The Department of the Army has a program called the “Mass Transportation Benefit Program” (MTBP) that provides reimbursement for using mass

transit (either vanpool or carpool). The MTBP is available to all personnel on base and is a non-taxable program that subsidizes the use of transit up to $230 per month. Currently it is not well utilized by base personnel.

- **Lack of Alternative Choices and Routes** – There are few routes between Pierce and Thurston Counties. Complicating this is the fact there are few other travel choices to the installation because it is also on the boundary of the two transit service areas for Pierce and Intercity Transit.
- **No Shortage of Needs**– There is already a long list of transportation needs in the area. One project, the Cross-Base Highway, is vitally important for the region but is currently. Additional needs along I-5, through the study area and at the interchanges with the installation, are estimated to be approximately $1 billion or more, but have not been incorporated into any long-term plan by the state or region.

Next Steps

The existing conditions assessment will be used to begin evaluating and summarizing future needs associated with growth at JBLM.

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

transpoGROUP

TRANSPORTATION

Needs Assessment Memorandum

Date: June 25, 2010
To: Transportation Expert Panel Members
From: Jon Pascal & Don Kostelec, Transpo Group
Re: Transportation Needs Assessment

INTRODUCTION

This technical memorandum is the second of in a series of three transportation studies prepared as part of the development of the Joint Base Lewis-McChord (JBLM) Growth Coordination Plan. The transportation needs assessment evaluates future travel characteristics throughout the study area and summarizes future needs and strategies that could benefit travel to and from JBLM. This summary provides the framework by which to complete the next step of the project; evaluating the list of projects and strategies to address the transportation needs in the study area and identify project prioritization and timing. The assessment summarizes needs by the following components:

- JBLM Gate Access
- Highways and Arterials
- Freight
- Public Transportation & Transportation Demand Management
- Additional Data Needs, Studies & Coordination

The first study, the Transportation Existing Conditions Technical Memorandum, was issued on April 5, 2010 for the Transportation Expert Panel, Growth Coordination Committee, and Regional Steering Committee to review and provide the consultant team with feedback. The stakeholders engaged in this process had the following input on the Transportation Existing Conditions Technical Memo:

- ***The analysis should better highlight the significance of the congestion regularly experienced along I-5 and the importance of the freeway to JBLM*** – The findings and proposed improvements from the *I-5 Transportation Alternatives Analysis* (I-5 Study) project have been incorporated into the needs assessment and the I-5 Study executive summary document has been released. The I-5 study was a

separate project, and more detail and background on the specific issues, needs, and proposed improvements along I-5 are highlighted in the I-5 Study Executive Summary, which is attached.

- ***Transit and transportation demand management strategies should be expanded and research conducted on how other installations address these components*** – The needs assessment summarizes the challenges in serving military installations and identifies potential strategies to assist in implementing successful public transportation services. Attached to this memorandum is a summary of national research conducted in regards to transit and transportation demand management on military installations.
- ***The preliminary work conducted highlights the need for better information on JBLM travel characteristics and improved coordination between the surrounding agencies*** – The needs assessment identifies additional information and summarizes key studies and coordination needed to further implement high-priority projects and strategies.

The feedback received is considered and addressed in the transportation needs assessment and highlighted in the potential opportunities that will be carried forward in the final JBLM Growth Coordination Plan.

NEEDS ASSESSMENT METHODOLOGY

The transportation needs assessment focused on the identified study area for the Growth Coordination Plan. The needs assessment builds off short and long-term capital improvement projects assembled from each of the participating agencies. The needs analysis focused on the weekday PM peak hour conditions, but also provides some overall daily travel behavior metrics to highlight the forecast conditions throughout the study area. The assessment was largely dependent on completed long-term transportation studies and plans, and adopted six-year transportation improvement plans.

Development of the Travel Forecasts

The City of Lakewood and Thurston Regional Planning Council (TRPC) travel demand models were used to prepare estimates of 2030 baseline travel demand in the study area. The Lakewood model is a refined version of the Pierce County model, which is based on the Puget Sound Regional Council (PSRC) travel demand model, and includes all major roadways within Pierce County. The TRPC model is maintained and operated by staff at TRPC and includes all major roadways and areas within Thurston County. Since the study area comprised of sections of both Pierce County and Thurston County, both models were utilized. A map of the model transportation analysis zones (TAZs) is shown as Figure 1.

<u>City of Lakewood Travel Demand Model</u>

As mentioned, the Lakewood model is a refined version of the Pierce County model and retains the Pierce County model level of detail for areas outside the study area but uses a more detailed network and zonal structure for the City of Lakewood and the areas directly surrounding JBLM. The Lakewood model was recently updated and used by WSDOT as part of the I-5 Transportation Alternatives Analysis; therefore it was the logical

model to be used for this study. The model represents a reasonable platform for evaluating transportation needs in the Pierce County study area and was used because it provides a refined trip distribution process for military related traffic. The model has a calibrated 2009 base year and a 2030 future horizon year. The model includes both local and regional residential and employment land uses, as well as approved future transportation projects, as developed by Pierce County. The 2030 horizon year land use data within the model was updated for the City of Lakewood and the travel demand generated by JBLM was modified to be consistent with existing travel behavior and anticipated growth at the installation.

The City of Lakewood model is a rather sophisticated model running on a VISUM software platform and uses the four step model process that includes trip generation, trip distribution, mode choice, and trip assignment. It forecasts PM peak hour traffic volumes for both single occupant and high occupant vehicles (2+). A model documentation report is available from the City of Lakewood and provides more information about the model.

TRPC Travel Demand Model

Data from the 2030 TRPC model was used as the basis for developing the 2030 travel forecasts for the Thurston County study area roadways. The TRPC model includes adopted household and employment projections for Thurston County. The model network includes all regional and local arterials, and reflects future roadway improvements identified in the current TRPC Regional Transportation Plan. The model has a calibrated 2008 base year and a 2030 future horizon year. The TRPC model runs on an EMME software platform and uses the four step model process similar to Pierce County's.

The travel forecasts at the Pierce County border were compared to forecasts from the Lakewood model to identify possible differences and determine that it was assuming similar levels of growth than the Lakewood model. It was observed that the TRPC model generally assumes higher travel demand to and from Pierce County than the Lakewood model for year 2030. This results in greater travel demands on the area roadways within the Thurston County study area, but more than accounts for growth at JBLM and the surrounding communities in Pierce County. The differences in forecasts will be taken into account as the transportation needs are evaluated and prioritized.

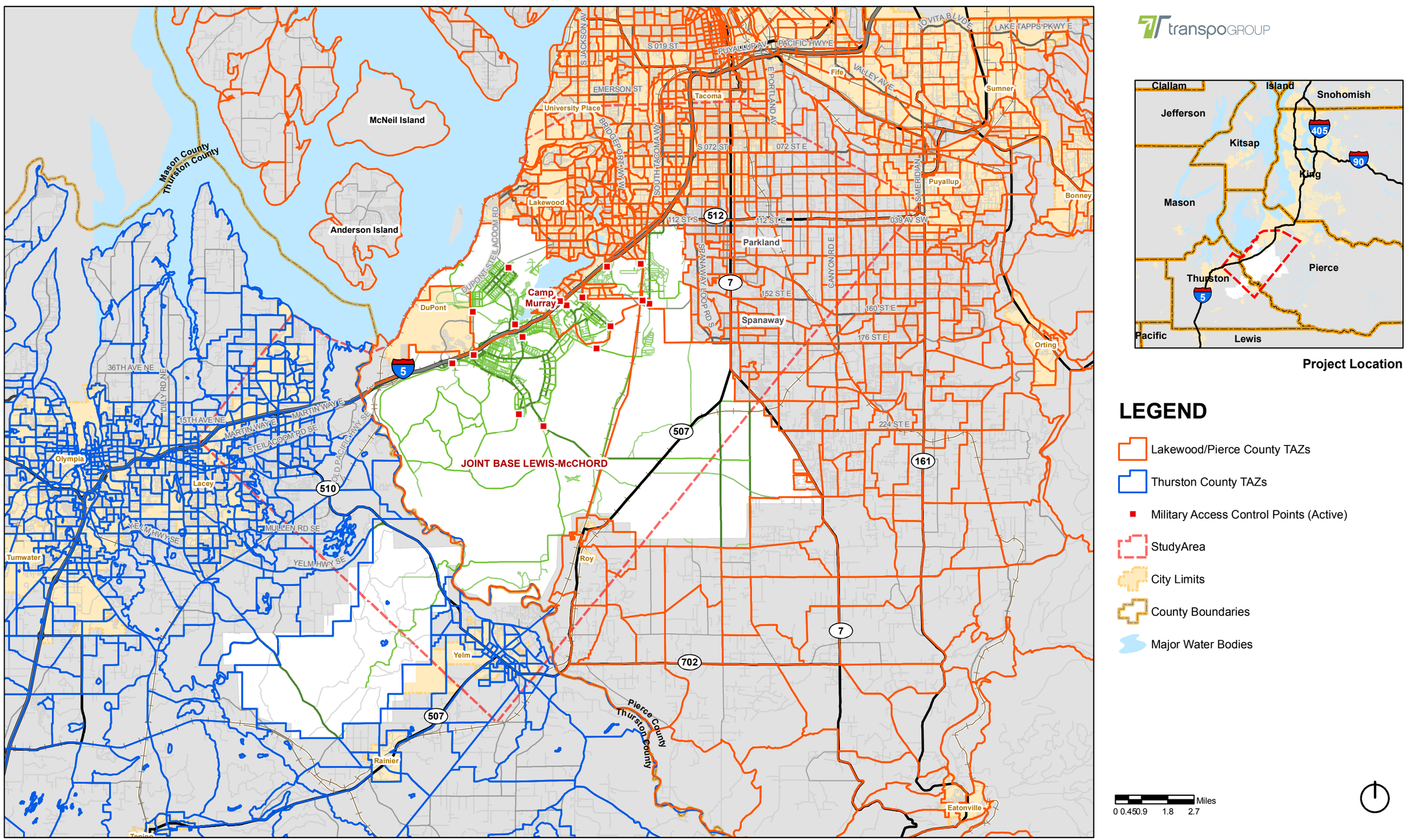


FIGURE 1: TRAVEL DEMAND MODEL TRANSPORTATION ANALYSIS ZONES

Identification of Highway and Arterial Improvements

The summary of highway and arterial improvements in the study area was primarily based on the short and long-term transportation improvement plans from each of the participating agencies. Each of the plans was reviewed, and highway and arterial projects that were within the study area or thought to have a benefit to JBLM were identified and summarized in the project list. In addition, forecast traffic volumes and estimated future roadway capacities were used to identify locations where volumes will exceed capacity. Locations where planned projects are not shown to address areas where volumes approach or exceed capacity have been identified because these are locations where congestion will likely occur or safety will be degraded in the future.

Identification of Public Transportation and TDM Strategies

The public transportation and transportation demand management (TDM) needs represent discussions with agency members and also include a literature review of salient research and practices that best correspond to the unique aspects of JBLM. There is little national research based on identifying specific transit practices related to military installations. However, previous military planning effort undertaken in a regional context provided reference points for applicable research and best practices. The existing conditions in and around JBLM helped drive the elements identified in the public transportation section.

NEEDS ASSESSMENT

This section documents the results of the needs assessment of 2030 baseline conditions within the study area. Among the issues the transportation needs assessment addresses are improvements and strategies to support increased travel demand in the study area resulting from JBLM growth, along with regional and local community growth. The needs assessment provides a list of transportation needs and strategies that help address transportation impacts by JBLM and regional growth. The improvements identified in the *I-5 Transportation Alternatives Analysis and Traffic Operational Model* (I-5 Study) project are included in the list of regional transportation needs.

JBLM Gate Access Needs

As mentioned in the existing conditions analysis, travel to and from JBLM is a significant contribution to traffic volumes within the study area. All vehicles are required to be processed through one of 17 security gates located at the controlled perimeter of the installation and which were illustrated in the existing conditions assessment. Expected increases in military generated vehicular traffic at the installation access gates were incorporated into the Lakewood travel demand model and included into the baseline 2030 traffic forecasts. The new traffic forecasts were then distributed to the access gates based in part on the relative distribution of existing JBLM generated trips, but also accounting for the Cross-Base Highway and where forecast household growth was assumed to occur.

Gate Traffic Forecasts

The number of trips to and from the installation will continue to grow over the next few years similar to the base population and employment growth summarized in the housing and economic memorandums. However, since this is a long-term evaluation of possible growth in the region and at the installation, the projections were carried forward to 2030. To be conservative, a half of one-percent (0.5 %) growth rate per year was added beyond 2015 to arrive at a total increase of 30,000 trips per day by 2030, or a 20-percent increase over 2009 levels. These gate forecasts assume a Combat Air Brigade (CAB) would be located at the installation, which will likely add a number of new military personnel, dependents, and civilian employment. The CAB assumption and the resulting gate forecasts are consistent with information presented in the Army Growth and Force Realignment Programmatic EIS.

However, the volume of traffic that accesses the gates on any given week depends heavily on how many troops are deployed. The volumes of traffic in the baseline needs assessment reflect traffic levels when military personnel are <u>not deployed</u>. Figure 2 and Table 1 show a detailed breakdown of the gate forecasts for both 2009 and 2030. While a simplistic methodology was used to develop the traffic forecasts for the gates, it is likely a conservative estimate of the amount of traffic growth at the base. If more information about JBLM travel characteristics is determined (see Additional Data needs, Studies & Coordination section), it is possible to better predict future travel behavior to and from the installation.

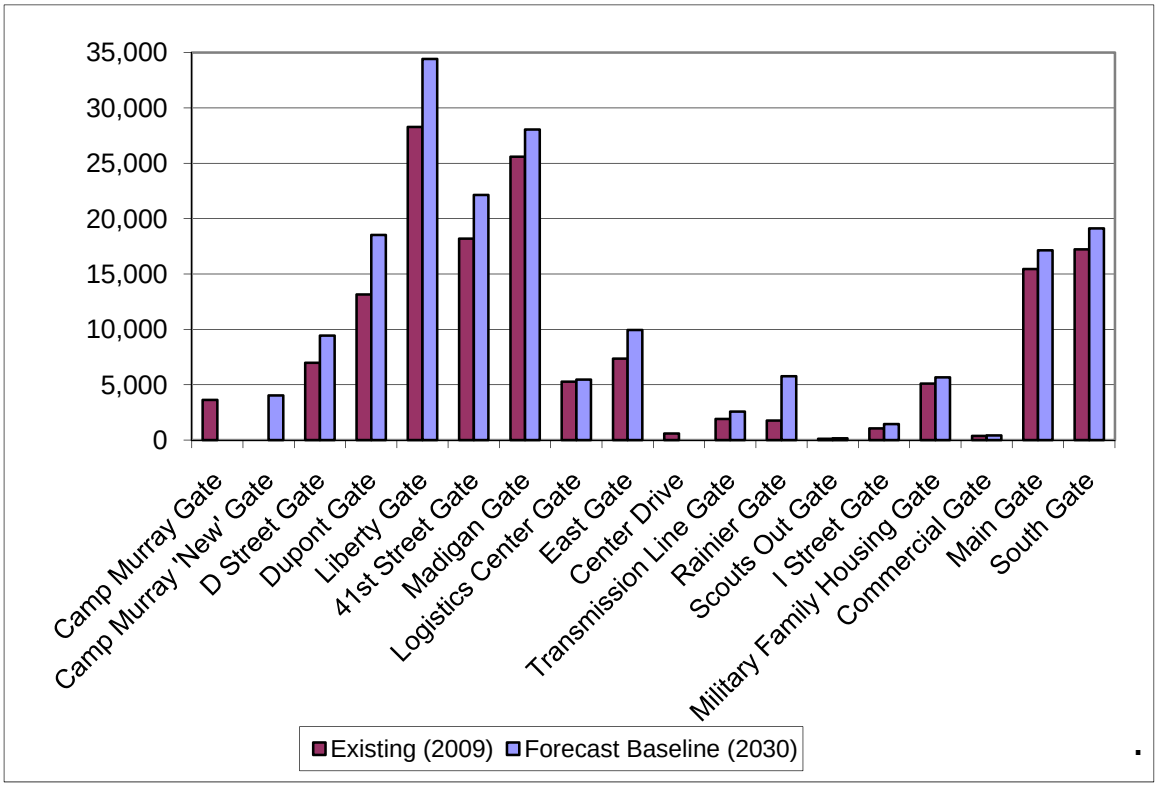


Figure 2. Forecast (2030) Gate Traffic Volumes

Table 1. Forecast (2030) Gate Traffic Volumes

			2009				2015				2030			
			Daily		PM Peak Hour		Daily		PM Peak Hour		Daily		PM Peak Hour	
Gate #	Gate Name	Street Location	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	Camp Murray Gate	Union Ave	2,210	1,420	120	295	0	0	0	0	0	0	0	0
2	New Camp Murray Gate	Portland Ave	0	0	0	0	2,280	1,460	120	300	2,450	1,580	130	330
		SUBTOTAL	**2,210**	**1,420**	**120**	**295**	**2,280**	**1,460**	**120**	**300**	**2,450**	**1,580**	**130**	**330**
JBLM Main														
3	D Street Gate	East Drive	3,493	3,493	70	274	4,380	4,380	90	340	4,720	4,720	90	370
4	DuPont Gate	Barksdale Ave/Clark Rd	6,573	6,573	177	847	8,250	8,940	220	1,750	8,890	9,640	240	1,900
5	Liberty Gate	41st Division Road S/I-5	14,136	14,136	740	1,740	15,970	15,970	840	1,970	17,210	17,210	900	2,120
6	41st Street Gate	41st Division Road N/I-5	9,098	9,098	590	1,120	10,280	10,280	670	1,270	11,070	11,070	720	1,360
7	Madigan Gate	Jackson Ave	12,797	12,797	370	1,654	13,010	13,010	380	1,680	14,020	14,020	410	1,810
8	Logistics Center Gate	North A St	2,635	2,635	80	590	2,530	2,530	80	570	2,730	2,730	90	610
10	East Gate	SR 507 & East Gate Rd	3,677	3,677	60	530	4,610	4,610	80	660	4,970	4,970	80	720
11	Center Drive	Center Drive I/C	0	597	0	597	0	0	0	0	0	0	0	0
12	Transmission Line Gate	SR 507	951	951	19	75	1,190	1,190	20	90	1,290	1,290	30	100
13	Rainier Gate	Lincoln St	882	882	18	69	2,680	2,680	70	330	2,880	2,880	70	350
14	Scouts Out Gate	SR 507	59	59	1	5	70	70	0	10	80	80	0	10
15	I Street Gate	I Street	529	529	11	42	660	660	10	50	720	720	10	60
		SUBTOTAL	**54,829**	**55,426**	**2,136**	**7,543**	**63,630**	**64,320**	**2,460**	**8,720**	**68,580**	**69,330**	**2,640**	**9,410**
JBLM McChord Field														
16	Military Family Housing Gate	Woodbrook Dr SW	2,548	2,548	145	200	2,630	2,630	150	210	2,830	2,830	160	220
17	Commercial Gate	East Lincoln Road	185	185	14	14	190	190	10	10	210	210	20	20
18	Main Gate	Bridgeport Way SW	7,720	7,720	550	1,328	7,950	7,950	570	1,370	8,570	8,570	610	1,470
19	North Gate	South Tacoma Way	0	0	0	0	0	0	0	0	0	0	0	0
20	South Gate	A Street	8,613	8,613	179	676	8,870	8,870	180	700	9,560	9,560	200	750
		SUBTOTAL	**19,066**	**19,066**	**889**	**2,218**	**19,640**	**19,640**	**910**	**2,290**	**21,170**	**21,170**	**990**	**2,460**
		GRAND TOTAL	**76,105**	**75,912**	**3,145**	**10,056**	**85,550**	**85,420**	**3,490**	**11,310**	**92,200**	**92,080**	**3,760**	**12,200**

Source: Transpo Group & WSDOT, Department of the Army, JBLM

Access Improvements

There are several access improvements, short- and long-term, already planned in the study area to address improved access to the base. In addition, several ideas and concepts have been discussed or evaluated as part of the *I-5 Transportation Alternatives Analysis* and capital project planning for JBLM. The public transportation strategies and needs assessment also identifies improvements that could be implemented at the gates to better promote the use of alternative modes. Table 2 lists the access improvement projects followed by a more detailed description of the improvements.

Table 2. List of Access Improvements

Improvement	Description	Source
Center Drive Emergency Access Gate	Short-term improvement to address temporary access gate at Center Drive. Evaluate alternative access locations and/or improvements to improve outbound access to Thurston County along I-5.	JBLM
Joint-Base Connector	New roadway to connect JBLM Lewis Main with JBLM McChord Field.	JBLM
Camp Murray Gate Relocation	Relocation of the Camp Murray gate from Union Avenue to Portland Avenue.	Camp Murray
I-5 Interchange Improvements	Improvements at the DuPont-Steilacoom Road, 41st Drive, Berkeley Street, and Thorne Lane interchanges that will include possible revisions to gate operations and multi-modal transfer hubs.	I-5 Study
Gate Operational Strategies	Operational strategies such as multi-modal transfer hubs, diamond lanes, and/or ITS improvements.	*See Public Transportation section

Sources: (1) JBLM, (2) Camp Murray, (3) I-5 Transportation Alternatives Analysis

Center Drive Emergency Access Gate

Due to a high demand to travel south on I-5 from JBLM during the PM peak period, JBLM opens the Center Drive emergency access gate located at the Center Drive interchange (Exit 118) in the City of DuPont for a few hours in the evening. The major reason JBLM opens the Center Drive gate during the PM peak period is due to the fact the DuPont-Steilacoom Road interchange (Exit 119) is unable to accommodate the demand. The location where the Center Drive gate intersects the regional roadway system occurs within the limited access area of the I-5 Center Drive interchange. The Federal Highway Administration (FHWA) is requiring that JBLM find a permanent solution since the emergency access gate was always intended to be a temporary solution. While the permanent solution is to reconstruct the I-5 DuPont-Steilacoom Road interchange to provide additional capacity from the DuPont Gate, it is a long-term project identified in the I-5 Study and is currently unfunded. Therefore, there is a need to identify and construct a short-term solution. Possible ideas could be to investigate the feasibility of improving other gate locations not currently being utilized, such as Pendleton gate or Mounts Road gate. Either of these locations would likely require additional improvements where they intersect the regional transportation system, while also needing additional improvements and upgrades to the JBLM roads that provide access to these gates.

Joint-Base Connector

The joining of both Fort Lewis and McChord Air Force Base into JBLM has heightened the need to provide an improved connection between the facilities. A new connector road is currently funded ($13.5 million) by the Department of Defense to better connect JBLM Lewis Main with JBLM McChord Field. It would be a new north-south arterial between the two areas, and cross the existing Perimeter Road corridor. Security check points would still be necessary because the new connection would leave the controlled boundaries of each installation as it crosses Perimeter Road. The new connection would likely align with the existing Rainier Gate on JBLM Lewis Main and the South Gate on JBLM McChord Field. It would allow for improved travel between the installations and avoid needing to use I-5. In the future, when the Cross-Base Highway is constructed, the Joint-Base Connector will be fully within the perimeter of JBLM and include a grade separated crossing of the Cross-Base Highway and a new interchange.

Camp Murray Gate Relocation

This project creates a new Main Gate to control vehicle and pedestrian access into and out of Camp Murray. The new Main Gate will replace the existing Main Gate located at the intersection of Berkeley Street SW and Union Avenue SW in Lakewood's Tillicum neighborhood. The new Main Gate will be located one quarter-mile from the current gate on State Property at the intersection of Portland Avenue SW and Boundary Street SW. The new Main Gate location, sometimes referred to as the Front Gate, is among the priority projects identified in the long-range Camp Murray Site Development Plan. The Plan moves Camp Murray towards a pedestrian-friendly campus with most vehicular traffic relocated to the perimeter of the campus.

Traffic from the existing Main Gate exits Camp Murray at the busiest intersection in the Tillicum neighborhood. The existing gate is within 100 to 150 feet of the I-5 southbound ramp intersection (Exit 122) and is even closer to the Sound Transit railroad line. Amtrak anticipates up to 20 high-speed trains per day within the next few years when the Point Defiance Bypass Project (see discussion under Rail & Freight Needs) is completed. Congestion and significant vehicle queuing occur frequently during the morning, noon, and late afternoon rush hours at the Berkeley Street interchange (Exit 122), impacting travel to and from Camp Murray, JBLM, and within the Tillicum neighborhood. Secondary access to Camp Murray is provided through the Rear or South gate, located in the far southwestern end of the installation. The Rear Gate provides access directly to the portion of JBLM lying on the west side of I-5. The Main Gate relocation project will address concerns arising from the close proximity of pedestrians, vehicle traffic, and eventual high speed trains.

I-5 Interchange Improvements

The *I-5 Transportation Alternatives Analysis* includes a proposed set of integrated mainline and interchange improvements through the study area. The interchange improvements, if implemented, would likely result in changes to gate operations or additional gate improvements to accommodate increased or decreased traffic demands. JBLM plans for future improvements to the DuPont Gate which will allow for additional vehicle storage on-site and reduce the length of vehicle queuing on the I-5 northbound off-ramp. Other improvements should be explored at the gates in combination with the gate operational strategies discussed below.

Gate Operational Strategies

Increasing transit and rideshare utilization hinges on the ability of persons using these modes to more efficiently move through base entry points to reach their destinations or the ability to easily transfer before entering or after exiting the base. These items are oftentimes the most difficult operational strategies to overcome due to security concerns and existing military practices. A transfer point or multi-modal hub could be created near the gate for transit riders or carpoolers so they could walk through the gate and connect to on-post services. Diamond lanes (explained in the Public Transportation section) should also be further explored at the entry points and link up to planned improvements along the regional highway system. ITS infrastructure could be added to better highlight travel times entering and exiting each gate so base personnel could make a more informed decision on their chosen route. These identified strategies and improvements could assist in improving access to JBLM.

Highway and Arterial Needs

This assessment of highway and arterial needs was developed by reviewing and summarizing the identified short and long-term transportation improvements in the study area. The future travel demand models were used to measure study area performance criteria and highlight the need for specific improvements. The adopted long-range projects were assumed as part of the baseline modeling.

System Wide Performance Metrics

The single-occupant vehicle (SOV) has been and continues to be the dominant transportation mode in the study area and at JBLM. Carpooling is the next highest mode utilized in the study area. It is estimated that these two modes likely account for 95 percent or more of travel for work in the study area (Pierce County 2009). Therefore, vehicle performance of the highway and arterial system provides the appropriate metrics to understand the impacts of growth in the region and at JBLM.

A series of performance measures were evaluated to identify how increased growth and travel demand will impact the transportation system. *Vehicles Miles Traveled* indicates the overall distance traveled by motorists. *Vehicle Hours of Delay* indicates the overall time motorists were delayed by traffic congestion. *Volume-to-Capacity* ratios indicate the level of congestion per roadway segment.

Vehicle Miles Traveled and Vehicle Hours of Delay

Table 3 compares the vehicle miles traveled and the vehicles hours of delay in the study area between years 2009 and 2030. The data is summarized for each county because the information is based on separate travel demand models. The vehicle miles traveled measure estimates the distance that all vehicles travel on major public roadways within the study area. Similarly, vehicle hours of delay measures the vehicle delay on the same study area roadways. The total growth in vehicle miles traveled between 2009 and 2030 during the PM peak hour is estimated at approximately 10 percent in Pierce County and 52 percent in Thurston County. The total growth in the vehicle hours of delay between 2009 and 2030 is estimated at approximately 54 percent in Pierce County and 398 percent in Thurston County.

Table 3. Vehicle Miles Traveled and Hours of Delay (PM Peak Hour)

	Pierce County		Thurston County	
Year	**Vehicle Miles Traveled**	**Vehicle Hours of Delay**	**Vehicle Miles Traveled**	**Vehicle Hours of Delay**
2009	518,700	2,000	129,000	950
2030	575,400	3,100	196,100	4,750
% Difference	*+10%*	*+54%*	*+52%*	*+398%*

Source: Lakewood and TRPC Travel Demand Models
Note: Information is based on models that contain different assumptions for the study area.

The results are significantly different for each county. The reasons for this are due to growth assumptions within each model, but also are due to the fact many of the roadways in Pierce County are already facing significant delays and congestion, where as Thurston County roadways have not reached that point yet in many cases. In Pierce County there will likely be a small increase in the number of vehicle miles traveled by 2030, but a much larger increase in the vehicle hours of delay. In Thurston County there will be a larger increased in vehicle miles traveled and a very significant increase in the amount of vehicle hours of delay. As delay increases, the ability to travel distances during the PM peak hour reduces.

Congestion on the roadways ultimately requires people to alter travel modes, shift travel time periods, or shorten travel distances. Complicating the matter is that making these types of changes in daily travel decisions can be difficult for military personnel given the unique requirements of their job, limited availability of alternative modes, and lack of flexibility in work schedules due to military demands. The results shown in Table 3 indicate 2030 congestion within the study area will make it much more difficult to travel during the PM peak hour without improvements, such as new capital investments along the major corridors or in alternative forms of transportation.

Volume to Capacity Ratios

Congestion issues on a roadway can sometimes be identified by measuring the PM peak hour traffic volume by the capacity of the roadway (v/c ratio). Segments of a roadway nearing or over a 1.0 v/c ratio indicate the roadway is near or over capacity, and congestion and delays are experienced during peak conditions. Figure 3 compares the PM peak hour volume to capacity ratios for both 2009 and 2030. A map of the 2030 PM peak hour v/c ratios for study area roadways is provided as Figure 4.

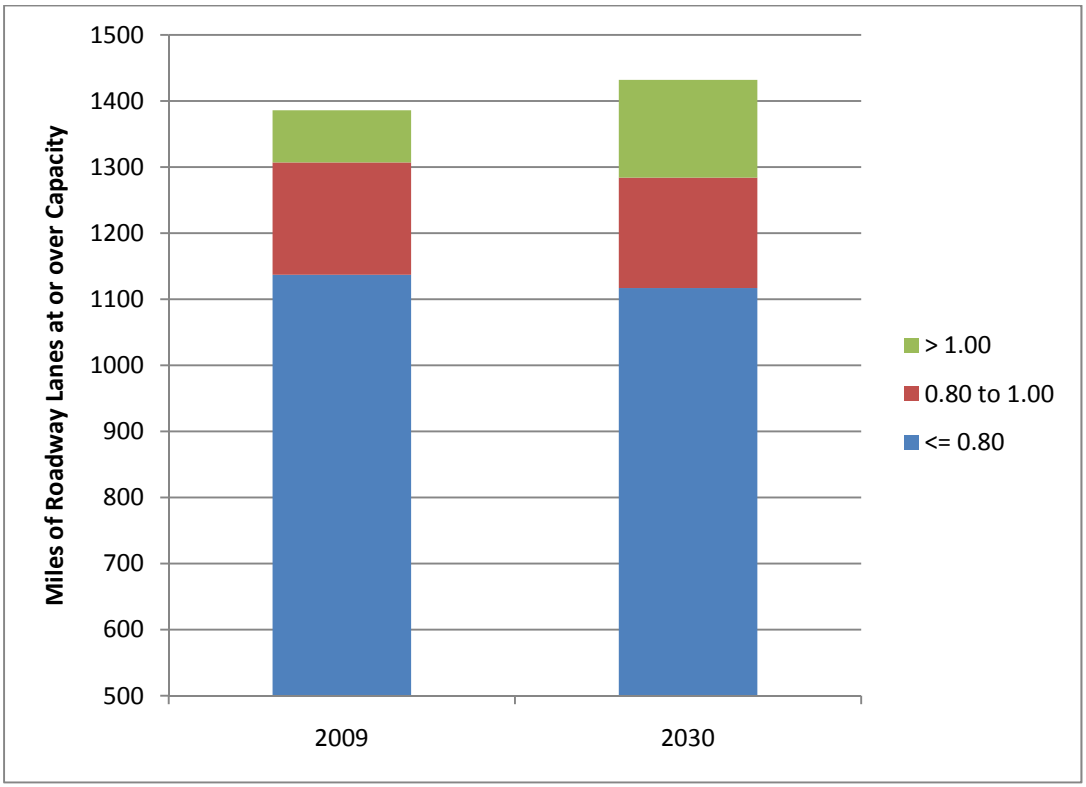
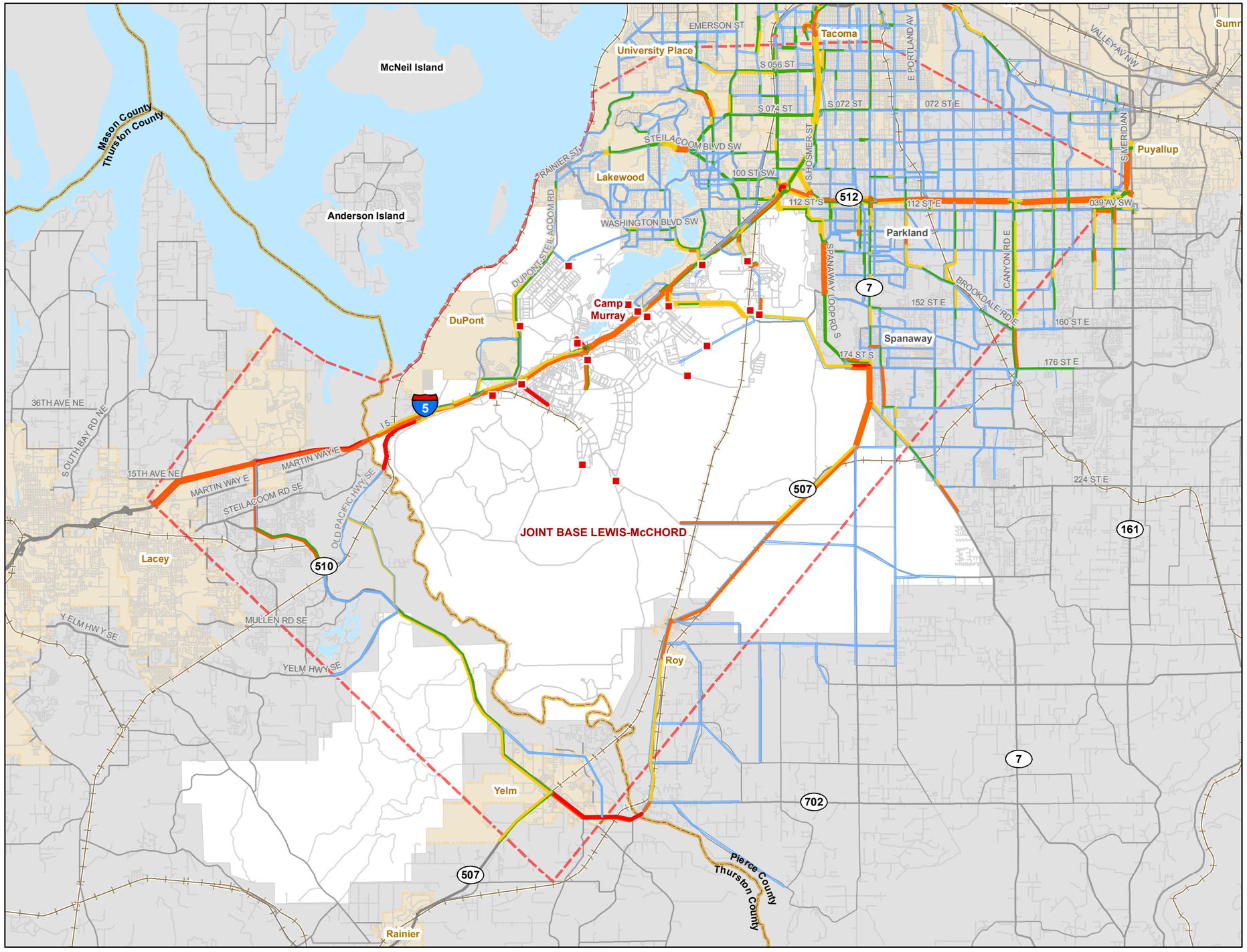
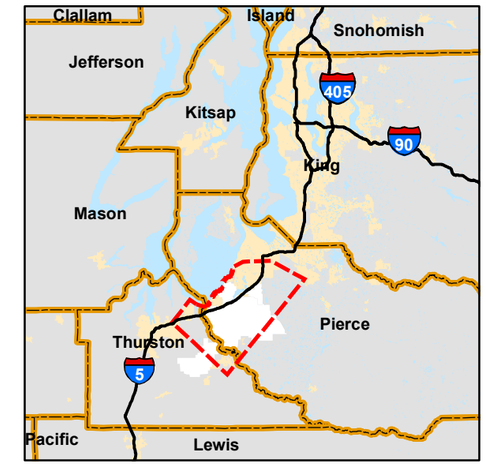


Figure 3. Comparison of Existing and Future V/C Ratios

The number of roadways approaching or over capacity is expected to increase in the future. This indicates that those roads with capacity concerns in 2009 will continue to have capacity concerns in 2030 even with completion of the set of baseline improvements. Within the study area, alternate travel routes are very limited so increased demand will continue to use similar routes and therefore there is not a large increase in the number of congested lane miles. Many of the roadways shown near or over capacity are state highways and major arterials within the study area, and are also near or over capacity today.





Project Location

LEGEND

Future_VC

- 0.01 - 0.59
- 0.60 - 0.79
- 0.80 - 0.99
- 1.00 - 1.09
- 1.10 +
- Military Access Control Points (Active)
- StudyArea
- Railroads
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

0 1 2 4 6 Miles

FIGURE 4: FUTURE (2030) VOLUME-TO-CAPACITY RATIOS

Vehicle Hours of Delay by Corridor

To better highlight the congestion issues experienced in the study area and by personnel from JBLM, the hours of delay have been summarized along several key corridors for the PM peak hour. The corridors listed comprise several of the corridors directly surrounding JBLM. Figure 5 illustrates the comparison of existing and future delay by corridor on a percentage basis.

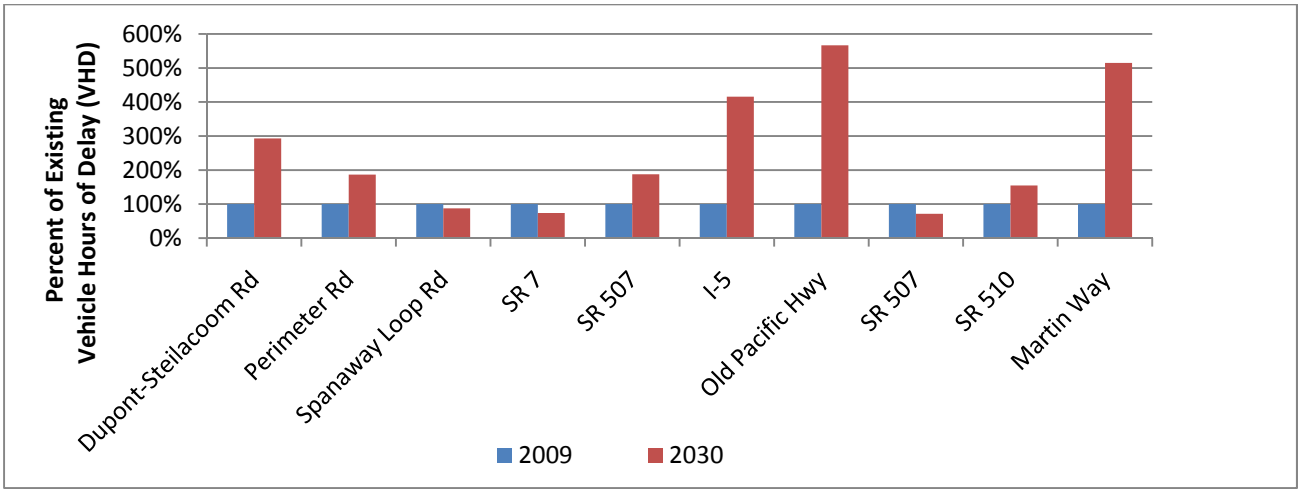


Figure 5. Comparison of Percent Change in Total Hours of Delay by Corridor

The results indicate that corridors such as Old Pacific Highway, Martin Way, DuPont-Steilacoom Road, Perimeter Road (Cross-Base Highway in the future), SR 507, and I-5 are expected to experience much more delay in the future. The future model assumes completion of the Cross-Base Highway, so the future delay shown for Perimeter Road accounts for congestion along the new highway. Delay along both SR 507 and Spanaway Loop Road decreases in the future due to a couple reasons. One reason is the completion of the Cross-Base Highway which redirects traffic from SR 512. The second reason is because the Spanaway Loop Road is assumed to be widened by one lane in each direction by 2030. I-5 will continue to experience high demand not only because of its proximity to JBLM, but because it is the shortest path and one of only a few connections between Thurston and Pierce Counties. *The proposed improvements from the I-5 Study have not been included as part of the baseline analysis.*

Future (2030) Traffic Volumes

The forecast traffic volumes were developed using the City of Lakewood and TRPC travel demand models as discussed in the methodology section. Detailed PM peak hour traffic volumes for 2030 were estimated for all major corridors throughout the study area and highlighted in the existing conditions summary. The PM peak hour traffic volumes for 2030 are illustrated in Figure 6. Traffic growth during the PM peak hour is forecast to be higher along the corridors operating under capacity today, with some of the largest growth rates expected in Thurston County.

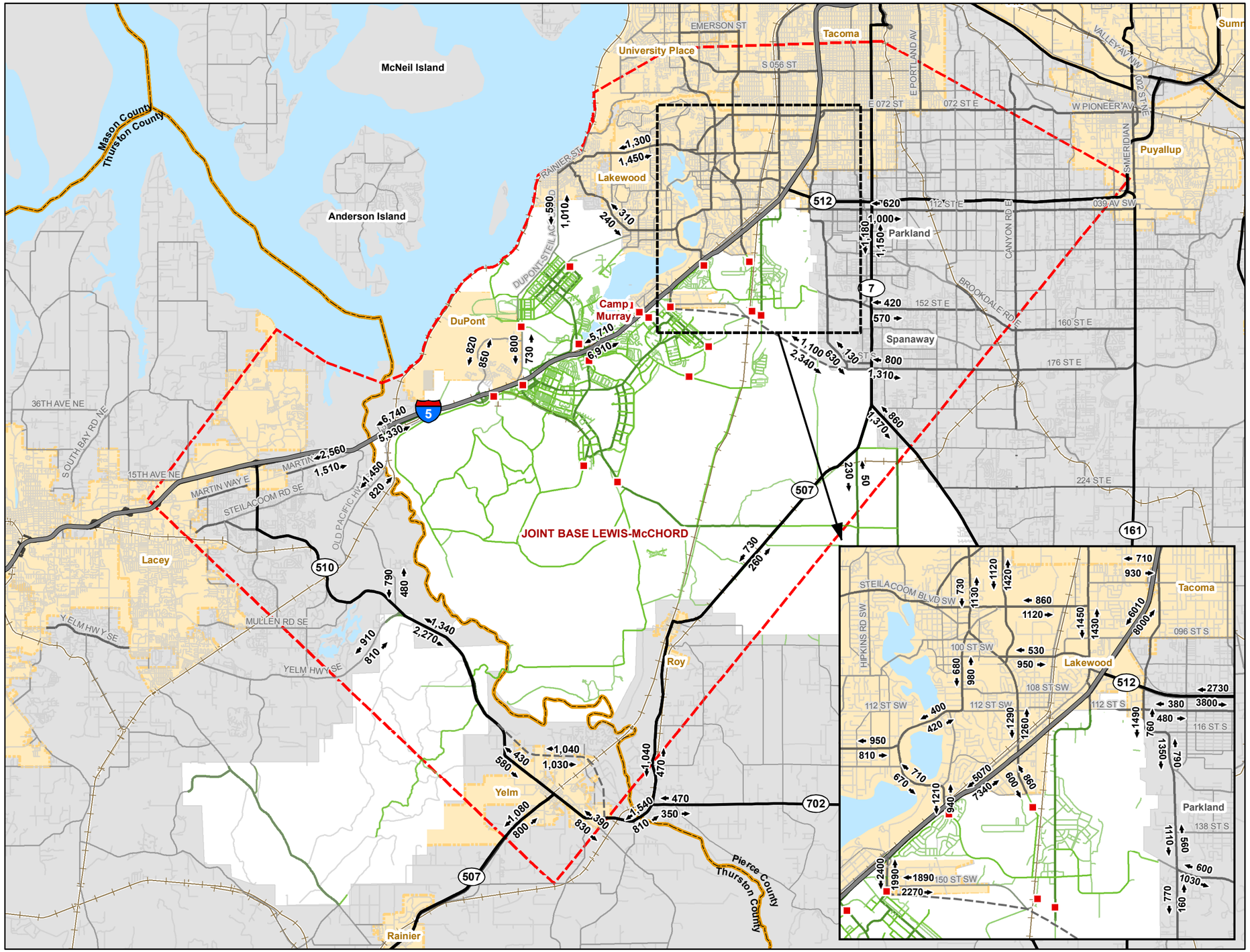
Regional Highway / Arterial Improvements

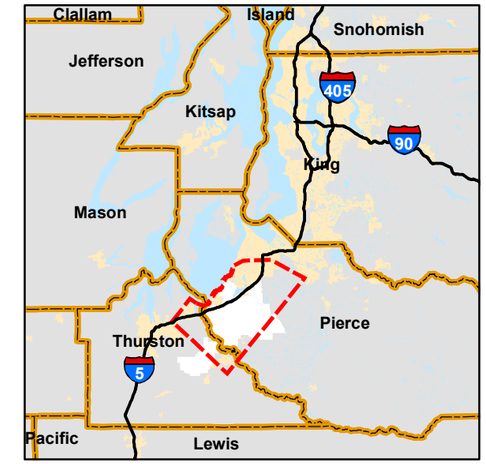
The regional highway and arterial roadway system provides for the movement of all modes of travel including automobiles, transit, freight, and non-motorized. The existing and future 2030 baseline analysis and performance measures indicate congestion will become worse without continued investments to address key chokepoints on the regional roadway system. This section highlights both short and long-term capital improvements in the study area that have already been identified by the participating agencies, with many of the projects assumed as part of the baseline analysis. The projects have been summarized by agency, with key improvements summarized in more detail.

Washington State Department of Transportation

The Washington Department of Transportation (WSDOT) owns and operates many of the key corridors throughout the study area. The State's Highway System Plan, PSRC's and TRPC's Regional Transportation Plans, along with some of the local agency Comprehensive Plans identify planned improvements to the state highway system. A total of 14 improvements have been identified in the study area and are listed in Table 4 and shown on Figures 7 and 8. Major improvements in the study area include:

Cross-Base Highway (State Route 704). WSDOT's Cross-Base Highway (SR 704) will provide regional travelers with a new six-mile-long, multi-lane divided highway beginning at the I-5/Thorne Lane interchange (Exit 123) at the west end, connecting to 176th Street at SR 7 at the eastern terminus. This new east-west route is intended to ease congestion on I-5, State Routes 512 and 7, Spanaway Loop Road, 152nd/Military Road, and 174th Street by providing a route through instead of around JBLM. The project includes construction of a significantly larger and improved I-5 interchange at Thorne Lane SW which includes a new road connecting Gravelly Lake Drive SW to Thorne Lane SW and construction of a roadway/railway grade separation. Environmental review and design are complete for the project, whose total estimated cost is $453 million (based on 2006 dollars). The segment between Spanaway Loop Road and SR 7 was recently completed in August 2009. No funding has been identified for the remaining segments, but the highway remains in WSDOT and PSRC's long range plans.





Project Location

LEGEND

- XXX Traffic Volumes
- Military Access Control Points (Active)
- StudyArea
- Interstate 5
- State Route
- Principal Arterial
- Minor Arterial
- Collector
- City Roadways
- Railroads
- Installation Area
- City Limits
- County Boundaries
- Major Water Bodies

Base Roadways

- Primary
- Secondary
- Tertiary

0 1 2 4 6 Miles

FIGURE 6: FUTURE (2030) PM PEAK HOUR TRAFFIC VOLUMES

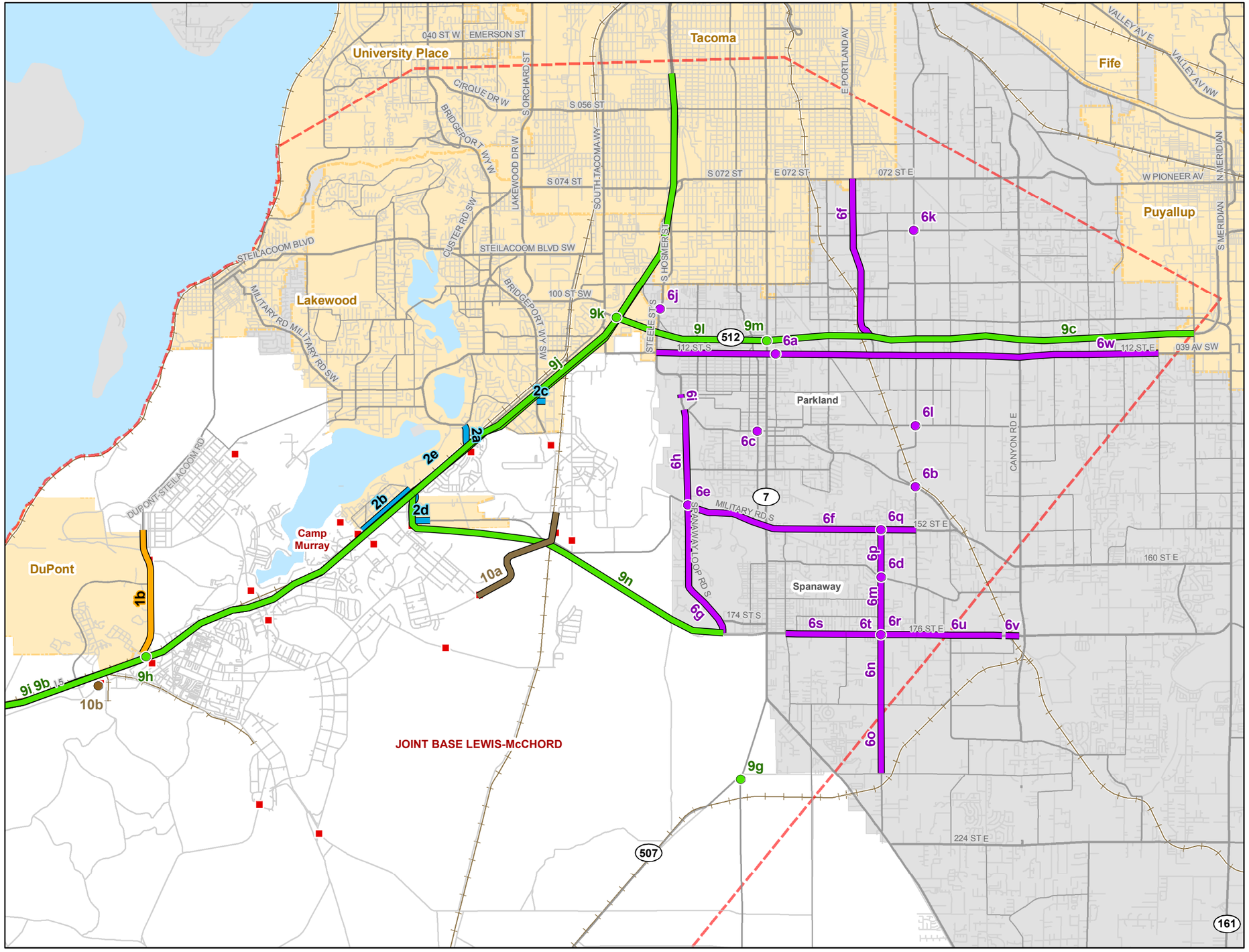
Table 1. Planned Capital Improvements by Agency in the Vicinity of JBLM

Map ID[1]	Project Name & Location	Description	Source
City of DuPont			
1a	Hoffman Hill Rd Extension Feasibility Study *Hoffman Hill - Mount Road to terminus*	Preliminary Engineering/Feasibility Study to extend Hoffman Hill Blvd to Mounts Rd	DuPont 2010 - 2015 TIP
1b	DuPont - Steilacoom Rd. Widening	Scope of the project has not been defined. Widening Improvements of DuPont-Steilacoom Rd.	PSRC 2040
City of Lakewood			
2a	Gravelly Lake Drive & I-5 Right Turn Lane *Gravelly Lake Drive & I-5 Right Turn Lane*	Widen GLD from Nyanza to I-5 SB on-ramp to provide dedicated right-turn lane. Traffic signal upgrades; bridge widening; r/w acquisition	Lakewood 2010 - 2015 TIP
2b	Union Avenue *Berkeley St SW to N Thorne Lane*	Widen to add left turn lanes, sidewalks, and street lighting	Lakewood 2010 - 2015 TIP
2c	123rd St SW - Realignment *123rd St SW & Bridgeport Wy SW*	Realign 123rd St SW as it enters Bridgeport Wy SW	Lakewood 2010 - 2015 TIP
2d	Murray Rd & 150th St Corridor Capacity *Thorne Lane Interchange to Spring Street*	Provide capacity for Woodbrook Industrial development including: widening of Murray Road and 150th; traffic signal, etc.	Lakewood 2010 - 2015 TIP
2f	Bridgeport Way Widening *TBD*	Widen roadway to accommodate continuous 2-way center turn lane. Widen outside travel lane to be a shared bike/vehicle facility. Add curb, gutter, sidewalks, streetlights, landscaping, and upgraded storm drainage. Signal upgrades as required to accommodate improvements.	PSRC 2040
City of Roy			
No identified capital improvements related to JBLM			
City of Yelm			
3a	Bald Hill Rd to SR 507 - New Connection *Bald Hill Rd - SR 507 to City Limits*	Connect Bald Hill Rd and SR 507 with a new arterial street. Y2C	TRPC STIP 2010 - 2014
3b	Burnett/93rd Intersection Improvements *SR 510 from Burnett Rd to 93rd Ave*	Realign the Burnett Rd/93rd Ave intersection on Yelm Ave (SR 510) and install appropriate intersection control	TRPC STIP 2010 - 2015
3c	Coates - New Connection *Coates Ave from Killion Rd to Cullens St*	Extend Coates Rd between Cullens and Killion. Y4A	TRPC STIP 2010 - 2016
3d	Southern Mini-Loop *Mosman/Solberg from Yelm Ave (SR 510) to Clark*	Reconstruct Solber and Mosman Roads to collector standards from Yelm Ave (SR 510) to 4th Street, realign the Mosman/1st St (SR 507) intersection, and extend Mosman from 4th St to Clark Rd. Y8B/C/D/E/F	TRPC STIP 2010 - 2017
3g	SR 510 - Burnett Rd to SR 507 - TWLTL and SW *Burnett Rd to SR 507 (MP 11.81 to 13.07)*	This City of Yelm project will provide a continuous TWLTL with sidewalk (curb & gutter), bike shoulders, and bus pullouts. Assume City of Yelm to be lead agency because they are establishing a LID from 93rd Ave to NW Killion Rd. SR 510 bottleneck/chokepoint limits are also within City of Yelm incorporation limits, therefore, roadway standards should conform to City standards (city streets as part of State Highways, RCW 47.24). Assume local arterial realignment at the skewed intersections of 93rd Ave and Killion Rd.	WSDOT HSP 2007-2026
Nisqually Tribe			
5a	Reservation Rd / 25th Ave *Intersection*	Realign to meet at 90 degrees, add left-turn lane on 25th Ave and deceleration lane on Reservation Rd	Nisqually Tran Plan 2009
5c	Reservation Rd/ Yelm Highway/ SR 510 Feasibility Study	Determine the best alignment and cost effectiveness of realigning the two intersections for maximum safety improvements; in partnership with Thurston County and WSDOT; possibly funded with federal High Priority Project funds.	Nisqually Tran Plan 2009

Map ID[1]	Project Name & Location	Description	Source
Pierce County			
6a	A Street S & 112th St E *Intersection*	Install traffic signal	Pierce Cnty 2010 - 2013 TIP
6b	Brookdale Rd E & Waller Rd E *Intersection*	Improve alignment, widen and reconstruct roadway to provide additional lane(s). Install traffic signal.	Pierce Cnty 2010 - 2013 TIP
6c	C Street S & Tule Lake Rd S *Intersection*	Install traffic signal	Pierce Cnty 2010 - 2013 TIP
6d	Military Rd E & 22nd Ave E *Intersection*	Install traffic signal and provide turn lane(s).	Pierce Cnty 2010 - 2013 TIP
6e	Military Rd S & Spanaway Loop Rd S *Intersection*	Provide turn lane(s).	Pierce Cnty 2010 - 2013 TIP
6f	Portland Ave E *SR 512 to Tacoma City Limits (Vicinity of 74th St E)*	Study to determine appropriate corridor improvements	Pierce Cnty 2010 - 2013 TIP
6g	Spanaway Loop Rd S *SR 704 to Military Rd S*	Restripe and reconfigure lanes. Failed concurrency (November 2004).	Pierce Cnty 2010 - 2013 TIP
6h	Spanaway Loop Rd S *Military Rd S to Tule Lk Rd S*	Widen and reconstruct roadway to provide additional lane(s). Anticipated concurrency failure (2015).	Pierce Cnty 2010 - 2013 TIP
6i	Spanaway Loop Rd S *s/o Garfield St S to n/o Wheeler St S*	Widen and reconstruct roadway to provide additional lane.	Pierce Cnty 2010 - 2013 TIP
6j	Steele St S & 102nd St St *Intersection*	Install traffic signal	Pierce Cnty 2010 - 2013 TIP
6k	Waller Rd E & 84th St E *Intersection*	Install traffic signal and provide turn lane(s).	Pierce Cnty 2010 - 2013 TIP
6l	Waller Rd E & 128th St E *Intersection*	Install traffic signal and provide turn lane(s).	Pierce Cnty 2010 - 2013 TIP
6m	22nd Ave E *176th St E to Military Rd E*	Reconstruct roadway	Pierce Cnty 2010 - 2013 TIP
6n	22nd Ave E *192nd St E to 176th St E*	Reconstruct roadway	Pierce Cnty 2010 - 2013 TIP
6o	22nd Ave E *208th St E to 192nd St E*	Reconstruct roadway to improve horizontal alignments	Pierce Cnty 2010 - 2013 TIP
6p	22nd Ave E *Military Rd E to 152nd St E*	Reconstruct roadway	Pierce Cnty 2010 - 2013 TIP
6q	22nd Ave E & 152nd St E *Intersection*	Install traffic signal and provide turn lane(s).	Pierce Cnty 2010 - 2013 TIP
6r	22nd Ave E & 176th St E *Intersection*	Widen and reconstruct roadway to provide additional lane(s). Phase 1 construction of CRP 5536. A segment of this project failed concurrency (November 2005).	Pierce Cnty 2010 - 2013 TIP
6s	176th St E *"B" St E to 14th Ave E*	Widen and reconstruct roadway to provide additional lane(s). A segment of this project failed concurrency (November 2005).	Pierce Cnty 2010 - 2013 TIP
6t	176th St E *14th Ave E to Waller Rd E*	Widen and reconstruct roadway to provide additional lane(s). A segment of this project failed concurrency (November 2005).	Pierce Cnty 2010 - 2013 TIP
6u	176th St E *Waller Rd E to 500 ft w/o 51st Ave E*	Widen and reconstruct roadway to provide additional lane(s). Failed concurrency (November 2003).	Pierce Cnty 2010 - 2013 TIP
6w	112th St E/S *86th St E to Steele St*	Widen and reconstruct existing (two-lane in sections) roadway to 5 lanes, improve intersections and provide non-motorized features.	PSRC 2040
6x	Military Rd S/152nd St E *Waller Rd to Spanaway Loop Rd*	Widen and reconstruct existing road (east of SR-7) to provide 2 additional general purpose lanes and non-motorized features along entire length.	PSRC 2040

Map ID[1]	Project Name & Location	Description	Source
Thurston County			
No identified capital improvements in the area			
Town of Steilacoom			
No identified capital improvements related to JBLM			
WSDOT			
9a	I-5 - ITS *Thurston/Pierce County Line to Thorne Lane (MP*	Construct ITS improvement per ITS Master Plan	WSDOT HSP 2007-2026
9b	I-5 - Install ramp metering on ramps *Mounts Road to 48th Street (MP 116.77 to 131.25)*	Install ramp metering on ramps where warranted	WSDOT HSP 2007-2026
9c	SR 512 - ITS	Install ITS including CCTV, data station, VMS, conduit and fiber optic line	WSDOT HSP 2007-2026
9d	I-5 Ramp Metering *Trosper Rd I/C to Pierce County Line (MP 102.86 to 115)*	Ramp metering - this project will improve upon the existing ITS by providing ramp metering at ~15 on-ramps in the NB and SB directions of I-5 in the urban areas of Tumwater/Olympia/Lacey.	WSDOT HSP 2007-2026
9e	SR 510 - Yelm Loop - New Alignment Y-3 *MP 10.75 to 13.07*	New northerly alignment for SR 510 in the City of Yelm (Y-3)	WSDOT HSP 2007-2026
9f	SR 510/ Reservation Rd SE - Safety *SR 510 @ Reservation Rd*	Install signal system	Nisqually Tran Plan 2009 TRPC STIP 2010 - 2013
9g	SR 507 & 8th Ave S *Intersection*	Intersection improvements	Pierce Cnty 2010 - 2013 TIP
9h	I-5 Exit 119 Reconstruction *I-5 MP 119*	Construct new interchange to add capacity	DuPont 2010 - 2015 TIP
9i	I-5 Auxiliary lanes *Mounts Rd to Thorne Lane*	Construct SB and NB auxiliary lanes. ** This will be updated with the recommendations from the I-5 Transportation Alternatives Analysis.*	PSRC 2040
9j	I-5 HOV/HOT Lanes *Thorne Lane to S 96th*	I-5 HOV/HOT Lanes and Interchange Improvements	PSRC 2040
9k	I-5/SR 512 Interchange Improvements *Interchange*	- NB I-5 to EB SR 512 - Widen off ramp and add an auxiliary lane on SR 512 to E Steele St. - WB SR 512 to NB I-5 on ramp - Widen on ramp and add an auxiliary lane on SR 512 from E Steele St - SR 512 SB Ramp - Construct WB to SB two-lane flyover ramp	PSRC 2040
9l	SR 512 Shoulder Conversion *I-5 to SR 161/Meridian*	Covert shoulders for use as additional lane during peak periods in the peak direction of travel (I-5 - SR 161/Meridian)	PSRC 2040
9m	SR 512 / SR 7 *Interchange*	Construct 2 lane EB off-ramp to SR 7	PSRC 2040
9n	SR 704 - Cross Base Highway *I-5 Interchange to Spanaway Loop Road*	Construct new four-lane, limited access facility between Fort Lewis and McCord Air Base. Includes reconstructed interchange at I-5. Includes Gravelly Thorne Connector: Construct one mile single lane SB roadway connecting Gravelly Lake Drive to Thorne Lane west of the Sound Transit/Burlington Northern Railroad tracks. Also includes bike/ ped separated path.	PSRC 2040

1. MapID corresponds to the numbers on Figures 7 and 8.



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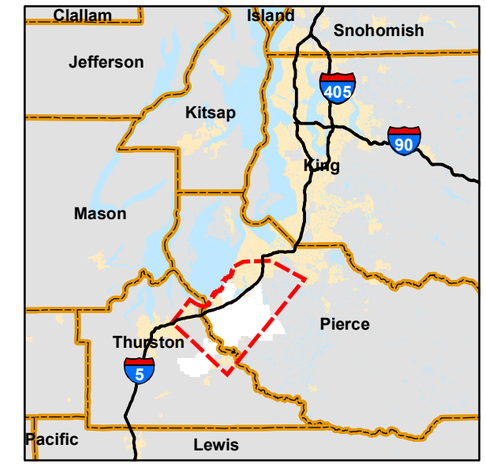


LEGEND

Project Location

Roadway & Trail Projects

- Dupont
- Lakewood
- Yelm
- Pierce County
- WSDOT
- JBLM

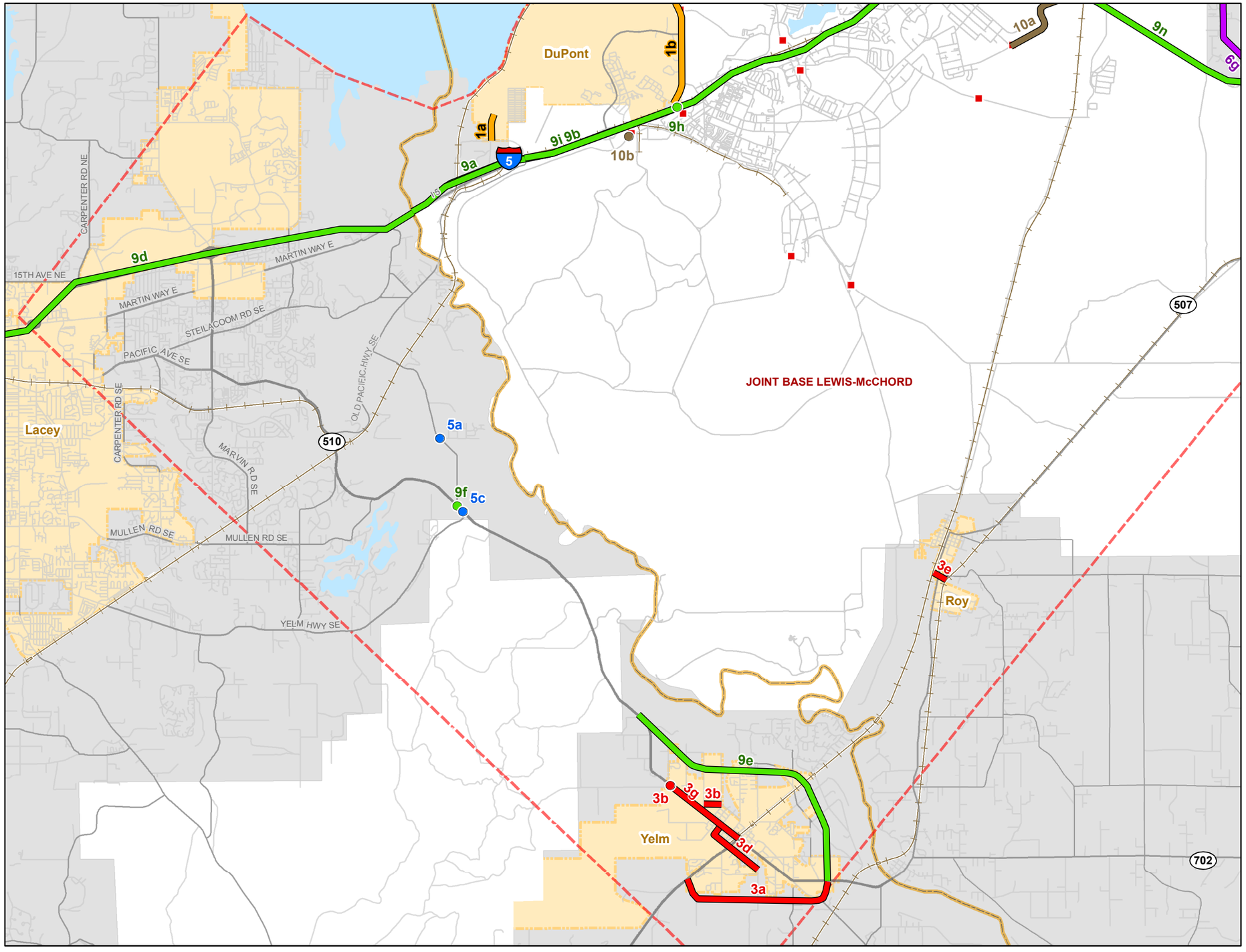
Intersection Projects

- Yelm
- Nisqually Tribe
- Pierce County
- WSDOT
- JBLM
- Military Access Control Points

- StudyArea
- City Limits (Active)
- County Boundaries
- Major Water Bodies

0 0.5 1 2 3 Miles

FIGURE 7: REGIONAL HIGHWAY / ARTERIAL IMPROVEMENTS (NORTH)



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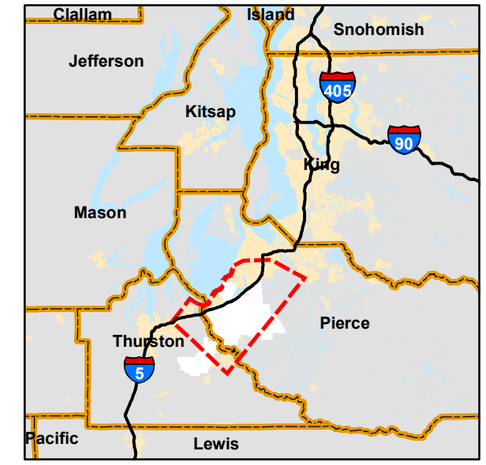


LEGEND

Project Location

Roadway & Trail Projects

- Dupont
- Lakewood
- Yelm
- Pierce County
- WSDOT
- JBLM

Intersection Projects

- Yelm
- Nisqually Tribe
- Pierce County
- WSDOT
- JBLM
- Military Access Control Points (Active)

- StudyArea
- City Limits
- County Boundaries
- Major Water Bodies

0 0.5 1 2 3 Miles

FIGURE 8: REGIONAL HIGHWAY / ARTERIAL IMPROVEMENTS (SOUTH)

I-5 Transportation Alternatives – Recommended Improvements. The recently completed *I-5 Transportation Alternatives Analysis,* which was also funded through the Office of Economic Adjustment, evaluated a set of proposed improvements along the segment of I-5 between SR 512 and the Thurston/Pierce border. The recommended improvements include a set of integrated concepts at four of the primary interchanges (Exits 119, 120, 122, and 123), while also adding a lane in each direction along I-5. The improvements are expected to improve mobility and access the JBLM and increase travel speeds though the study area. The executive summary from the study has been attached. The improvements were not assumed in the baseline modeling analysis.

Yelm Loop. WSDOT is leading the effort to build a new roadway connecting SR 510 with SR 507 within the City of Yelm. The project is expected to reduce congestion on Yelm Avenue and First Street, and improve freight mobility, safety and traffic circulation through the City of Yelm. The new road allows traffic to move more efficiently between Spanaway, Roy and McKenna in Pierce County and destinations in Thurston County. Stage 1 of this project, which includes a new roadway from Mud Run Road to Cullens Road, is slated for construction starting in April 2010. Stage 2 construction, which includes extending Yelm Loop from Cullens Road to SR 507, is currently unfunded at $56 million.

Other improvements along the state highway system focus on short-term needs such as ITS and ramp metering improvements along the I-5 and SR 512 corridors. Additional interchange improvements are identified for I-5 / SR 512 along with HOV/HOT lanes for both routes and shoulder conversions to lanes for use during peak times. Long-term improvements are also planned for SR 510 and SR 507 in Thurston County to address intersection safety and provision of turn lanes in the City of Yelm and within the Nisqually Reservation.

Pierce County

Pierce County has an extensive list of planned capital improvements in the vicinity of JBLM. The projects are generally focused in the Spanaway area and include upgrading and widening key arterials. The 176th Street E corridor, which will serve as the terminus to the new Cross-Base Highway, will be widened by an additional lane in each direction. Other corridors for widening include 22nd Avenue E and Spanaway Loop Road. These major corridor improvements will help address anticipated congestion issues that are observed today and are expected to worsen in the future. The remaining projects include intersection improvements such as new traffic signals or new turn lanes. Many of these improvements are partially funded in the County's traffic impact fee program.

Thurston County

No major capital improvements projects have been identified in unincorporated Thurston County that would likely benefit travel to and from JBLM.

City of DuPont

The City of DuPont's primary need is related to closure of the Center Drive Emergency Access gate, which was discussed under the Gate Access section. The City's other need relates to improvements at the DuPont-Steilacoom Road interchange with I-5 (Exit 119); however that would be a WSDOT-led project. The City's TIP does include a study to evaluate the extension of Hoffman Hill Road to Mounts Road. This project would provide

a backdoor connection into DuPont from Thurston County. The PSRC 2040 Plan identifies a project to widen DuPont-Steilacoom Road in the future, but no project has been defined by either the City or Pierce County. The widening project will be further explored in the alternatives analysis.

City of Lakewood

The City of Lakewood has identified several improvements surrounding JBLM. With the Cross-Base Highway likely being a long-term improvement, additional capacity projects are needed to support development in the Woodbrook subarea. These projects, such as a new traffic signal at 150th Street SW/Murray Road, and widening of Murray Road to four lanes would also benefit JBLM by improving access to the Logistics Center gate and the South gate to JBLM McChord Field. Other needs in Lakewood primarily are focused in the immediate vicinity of the I-5 interchanges such as turn lane improvements along Union Avenue SW and a new southbound turn lane along Gravelly Lake Drive as it approaches I-5. The PSRC 2040 Plan identifies al long-term project along Bridgeport Way to provide a continuous two-way center turn lane.

Other immediate issues and needs relate to significant congestion at the Berkeley Street SW interchange with I-5 and grade separation of the parallel railroad tracks. The I-5 Study addresses the needs at the Berkeley Street SW interchange and eventual grade separation of the Thorne Lane interchange as part of the Cross-Base Highway would provide for improved access into and out of the Tillicum neighborhood. Currently, WSDOT is evaluating impacts caused by additional high-speed passenger trains resulting from completion of the Point Defiance Bypass project. Additional trains along the I-5 tracks and their impacts to operations and safety at the nearby interchanges are of particular concern to the City.

City of Yelm

The City of Yelm experiences severe congestion during most times of the weekday and weekend around the SR 507 and SR 510 intersection. The Yelm Loop, discussed previously, has been a long-term need to help address connectivity within and through the community. The City is along one of only two primary routes between Thurston and Pierce County (I-5 being the other route) and therefore is impacted by both JBLM and regional travel demands. Future development in the area will only further increase travel demands creating a need for improved circulation routes throughout the City. Many of the long-term projects shown in the table and figure will complete the collector arterial circulation roadways. Other projects will improve SR 510 by adding a two-way left turn lane and installing signals or other traffic control at major intersections.

Nisqually Tribe

Transportation needs within and surrounding the Nisqually Tribe primarily focuses on the SR 510 corridor. Intersection improvements in the vicinity of Yelm Highway and Reservation Road intersections are needed to address congestion and safety issues. Future increases in traffic along the corridors will make these improvements even more critical. A study to identify possible concepts is shown to be conducted by the Nisqually Tribe with eventual project implementation being included as a WSDOT project.

Freight Needs

The State's economy depends on reliable, accessible, and cost effective freight routes for ships, railroads, and trucks. Within the study area, this includes major freight facilities such as I-5 and the BNSF mainline that serve interstate commerce, seaports, and north-south movement of goods throughout Western Washington. The freight system must co-exist with the automobile and passenger rail service and therefore must be considered with that context in mind. Many of the same improvements that benefit automobiles and passenger rail service also benefit freight, so both systems must be planned for accordingly to meet future needs. This section focuses on the freight component by identifying both rail and truck freight needs in the study area.

The Role of Freight for the Military

The growth at JBLM is due in part to the freight infrastructure system's ability to support the military's readiness and operational movements. JBLM's ability to efficiently move freight in and through the state is dependent on a functioning intermodal freight system that includes ports, railroads and highways. The Interstate freeway system was specifically built to support the movement of the military, particularly in times of war when it is crucial to move military equipment and supplies quickly throughout the nation and abroad.

Puget Sound seaports have a strategic role in support of JBLM as the only Power Projection Platform—for gathering, staging, and mobilizing forces and material—on the West Coast. If a major military conflict were to trigger mobilization activity, inbound cargo needed for that mobilization would travel by road and rail from across the nation to JBLM, for shipment through the Port of Tacoma to points outside the country. The below excerpt from the Washington State Rail Plan expands on the issues if large scale mobilization was needed:

> *"Under such a scenario, it is expected that the Port of Tacoma would need to handle daily volumes of up to 600 containers, 350 rail cars, and 1,100 wheeled vehicles. This volume could create truck bottlenecks at the I-5/Port of Tacoma Road exit and rail chokepoints at Bullfrog Junction in the Port of Tacoma tideflats. In 2004, the military also began using the Port of Olympia for shipments out of JBLM. The efficient movement of cargo may be hindered because of needed rail capacity enhancements at the ports. There has been a five-fold increase in the number of rail cars that have passed through the Port of Olympia since 2002. At that time 168 cars came through the Port of Olympia. It increased to 876 in 2004. The return of Army shipments related to the Iraq War accounted for about 17 percent of rail volume."*

Future (2030) Demands

While no specific modeling was performed to better highlight the freight demands in the study area, it is safe to assume they will continue to increase at a rate at or greater than the regional population growth. The segment of I-5 through Pierce County is the most heavily traveled corridor in the state in terms of the freight tonnage it serves (WSDOT 2005). Projections for the BNSF mainline indicate the Point Defiance segment is a chokepoint for freight traffic today and will continue to worsen in the future (WSDOT 2009). Without the improvements on the I-5 rail corridor, the available capacity on the mainline segment is expected to be exceeded by about 2018. The development of a dedicated high-speed passenger rail track along the I-5 corridor from Portland to Vancouver,

BC will help address freight capacity by allowing the separation of lower speed freight trains from the higher speed passenger trains and allow for increased service levels for both freight and passenger rail.

It is expected that BNSF will not allow growth in passenger operations along the I-5 corridor without a clearly defined set of capacity improvements for freight. Improvements, such as the Point Defiance Bypass, would protect freight performance while also serving various commuter trains and intercity passenger trains, such as Sounder, Amtrak Cascades and Coast Starlight passenger trains. Sounder service will be provided to Lakewood even if the Point Defiance Bypass Project is not implemented.

Currently, there are 10 Amtrak trains per day; four round trips between Seattle and Portland and two Starlight Trains between Seattle and Los Angeles. It is anticipated that by 2014 another round trip train between Seattle and Portland will be added. In addition, planned high speed rail service might result in eight additional trains per day for a total of up to 20 passenger trains per day. These passenger rail services would result in approximately one or two trains passing through the study area during each AM and PM peak period.

Freight Improvements

Without capacity improvements to both the rail and highway system, it will be difficult for the state to meet the demand of the expected future freight market and stay competitive with other states along the west coast. The study area contains two key routes, I-5 and the BNSF mainline, that are critical in moving freight within the state. Improvements have already been identified that address the freight needs and result in additional capacity along the BNSF mainline and the I-5 corridor.

Rail Improvements

Point Defiance Bypass Project. The project will allow high-speed passenger rail service along the Sound Transit rail line, adjacent to Camp Murray and parallel to I-5. The project will increase freight rail service by rerouting existing passenger rail service from the BNSF mainline along the Puget Sound shoreline. The environmental assessment conducted for the project indicated vehicle queues at the rail crossings would extend through adjacent intersections at the I-5 interchanges in DuPont and Lakewood. These safety issues are of great concern to both the Cities of DuPont and Lakewood. Mitigation of these impacts will include interconnecting all traffic signals, and installation or activation of traffic signals and turn-pocket improvements at the surrounding intersections. The Amtrak trains will operate at a speed of 79 mph through most of the study area. The speed of freight trains is expected to increase from 10 mph to approximately 40 mph after completion of the project. The combination of faster passenger trains and shorter trainsets means grade crossings will be occupied for less time when compared to freight trains. When completed, the project will improve on-time reliability, reduce rail congestion, and provide enhanced service without affecting freight capacity.

Truck Improvements

I-5 Transportation Alternatives – Recommended Improvements. The recently *completed I-5 Transportation Alternatives Analysis* evaluated a set of proposed improvements along the segment of I-5 between SR 512 and the Thurston/Pierce border. The recommended improvements include a set of integrated concepts at four of

the primary interchanges (Exits 119, 120, 122, and 123), while also adding a lane in each direction along I-5. The improvements are expected to improve freight speed and reliability throughout the day. The analysis estimated the average travel speed for freight will be improved by up to 15 mph during peak congestion times after the improvements are implemented.

Public Transportation and Transportation Demand Management Needs

Public transportation and transportation demand management (TDM) go hand-in-hand, particularly when evaluating how to best fit a variety of transportation services to the unique needs of a military population. Maximizing options and flexibility of service types are critical to drawing riders that have ever-changing work schedules and oftentimes variable work locations at JBLM. The issues that affect one's choice to ride a bus, find a carpool partner, or form a vanpool on a military installation are different than those many of us experience with a typical home-to-work commute. This section defines what the challenges related to developing transit and TDM solutions for military populations.

This assessment was developed through a nationwide literature review on the specific topic of coordinating public transit and TDM services to, from and on military bases throughout the United States. The capital needs are based on the short- and long-term plans of the participating transit agencies.

Challenges for Public Transportation

Formulating successful public transportation and TDM strategies that are designed to service both military and civilian populations, on- and off-post, in a coordinated manner is a common challenge throughout the United States. The most successful examples of coordinated transit services are located in Washington, DC, and the San Diego region. The success of these programs is largely contributed to:

- A critical mass of military and federal government installations;
- Profound traffic congestion;
- Strict regional policies and regulations that mandate greater service options; and
- Greater presence of federal offices on-post with more civilian employment.

While these regions may have unique features that have led to successful integration, they are not without their own challenges and are not necessarily distinct from JBLM and the surrounding region, as this memo outlined the projected increases in congestion levels throughout the study area. Below are summaries of various subject areas that collectively challenge the provision of public transportation services, increased patronage, and continued coordination and cooperation among the Base and area stakeholders. These challenges are not meant to dissuade pursuit of new or enhanced services, however the outlining of these regulatory and operational hurdles represent how difficult it can be to overcome them to introduce or maintain services within a military installation.

Transit agencies within the region have worked hard to model a service that best reflects these needs; however their abilities to fully respond to these challenges should not be left to their own resources. A transit agency's

ability to alter practices and spur regional coordination and cooperation is limited as their role in providing fixed route and demand response services is constrained both legislatively and fiscally. It is incumbent upon the communities with the region and JBLM to work with the transit agencies to address these challenges.

Base Access & Security

The need for all types of vehicles to access JBLM is a key component in achieving increased usage of public transportation and TDM-related services. Whether it is a transit bus, a wheelchair-equipped van, a taxi, a carpool, or a vanpool, there are challenges to providing access due to security requirements at JBLM gates. Ultimately, the success or failure of any service is highly dependent on how the vehicle interfaces with security requirements. Area transit agencies and JBLM have explored an option that would create a transit transfer center off-post but near one of the main gates. This would allow personnel to walk through the base gates to board transit services on-post.

While access for base personnel who are passengers of the transit and vanpool services has been the primary focus, there are also issues related to how non-military personnel, contractors, and civilians would be allowed access were they to utilize transit services.

Parking Availability

Parking spaces at JBLM are universally available at almost all buildings and are unconstrained from a capacity perspective. In a traditional city central business district, which is not all that dissimilar from main employment areas on JBLM, the availability of parking is seen as one of the primary factors that lead to low levels of transit usage. While there are a high number of available parking spaces throughout JBLM, it is acknowledged that some areas with a high concentration of employment have a shortage of convenient spaces. However the provision of free and generally convenient parking throughout JBLM contributes to the discouragement of public transportation use and can be a deterrent for both enlisted and civilian personnel to try transit.

This is not to suggest a program by which JBLM would charge for or limit parking on-post, however the purpose of this section is to stress the importance of other programs and services to understand how transit has to compete within this environment. The availability of free and convenient parking means that transit options must be convenient and user-friendly, as well as comparable from a travel time perspective, to compete with single occupancy vehicle use. Other options such as providing preferential treatment for carpool and vanpool riders could also be explored or enhanced.

Streamlined Operations

The location of JBLM within the region, in combination with commute patterns , mean that several different agencies currently provide some type of bus or vanpool service to the area. Sound Transit, Pierce Transit and Intercity Transit service areas on or near JBLM in the form of express buses, local routes, vanpools and park-and-ride lots. Operating in a military environment requires JBLM's Logistics Department, which coordinates the Commuter Trip Reduction program, or some other department, to coordinate with several different agencies to increase transit patronage. This will also require some level of approval from the Joint Base Commander or other base management if increased transit and TDM programs and access challenges are to be addressed.

Additionally, convenience or quality of service factors for the transit rider are also major drivers of the potential for transit services to provide meaningful relief to JBLM-related congestion. Providing seamless or direct services, reducing transfers, and making the system user-friendly provide for a more convenient trip. This is difficult to achieve in a service framework where the potential exists for a transit rider to have to rely upon different agencies and services to get from their home to an on-post employment location.

Transit Agency Coordination

Related to the streamlining of operations is the level of coordination among transit service providers to make it as easy as possible for JBLM personnel to use services and for JBLM management to coordinate with service providers. The prospects of providing operations or access agreements, driver security clearances, and other coordination aspects of transit services can complicate the issue for base management who are not regularly working within the same regulatory framework common to the transit industry. For transit riders, a coordinated fare structure or pass system as well as a centralized billing function for passes or incentive program reimbursement can also help make transit more convenient. The coordination of these fare structures has already been identified in short-term strategic planning efforts for the area's transit agencies.

Disbursement On-Base

Employment and activity centers located at JBLM are spread throughout areas within the boundaries of the base. The travel time between these locations and their arrangement in location to other activity generators can make it difficult to provide transit services to base personnel throughout the work day. Fixed route bus services are not tailored to shuttle personnel from one point on the base to another and vanpools can be difficult to organize when there is not a common destination. To effectively serve these disparate locations it would be difficult to economically provide point-to-point service via transit for personnel without requiring a transfer, thus reducing the potential effectiveness of on-post services.

Additionally, the nature of everyday military work sometimes requires quick response to move to different areas of the base. The prospect of waiting curb side for the next bus to arrive, particularly if headways are greater than 10 to 15 minutes, can impact the mobility of personnel who have to react on a military time line.

Deployments & Other Military Growth Projections

Transit services generally operate in urbanized areas that are subject to moderate and mostly predictable growth factors, utilizing estimates provided by the Census, regional planning organizations, and municipalities. These demographic, population and employment factors are time-tested and the unknown factors related to the shortcomings of long-range forecasts have been studied to account for inconsistencies. For military base populations, estimating the demand and potential for public transportation services is a different challenge for agencies as growth and retraction in base populations, growth rates, and schedule of deployments are reliant upon external influences. The base, its leadership, and nearby communities sometimes have little or no control over how or when growth or retraction will occur.

While the overall growth at JBLM for military and non-military personnel is known, the locations of where these employees will choose to reside within the region is not well understood, particularly in urbanized areas in

Pierce and Thurston Counties as well as other communities in the Puget Sound Region. Factors that contribute to these location choices are: availability of affordable housing, tax rates, opportunities for spousal employment, and commute time.

Deployments are also a key factor influencing transit services and ridership on a month-to-month or year-to-year basis. Transit services, particularly specialized operations such as vanpools, can be greatly impacted by deployments as major personnel are shifted away from the base and the allocation of resources to these services can cause transit operators to be reluctant to re-employ services as the loss of only a couple of riders can impact the short-term viability of a vanpool route.

Veterans Services

Retired military personnel and their families in the region rely upon JBLM for a variety of services, particularly related to medical care and treatment. Madigan Army Medical Center is one of the primary destinations for off-post destinations to JBLM due to the presence of these veterans and families in the Puget Sound Region. Veterans with mobility impairments who rely on the Medical Center for care are oftentimes reliant on dial-a-ride services provided by regional transit operators. While dial-a-ride vans provide door-to-door service, they are increasingly expensive on a per trip basis for transit operators when compared to fixed route bus services. By creating greater opportunities for fixed route services on-post, it is possible that some of these dial-a-ride trips can be transferred to fixed routes, thus reducing overall traffic volumes at base entry points and providing for more cost-effective operations for transit providers.

Funding

The funding shortfalls for public transportation agencies throughout the United States have been well-documented, particularly during the current economic climate where operators are trimming routes and staffing levels in order to meet budgetary constraints. The current funding issues at Pierce Transit will likely result in the elimination of some of the existing routes on JBLM. Transit providers fund service through a tax on the sale of goods and services (sales tax). The tax is not collected on JBLM, so no revenue is generated on-base to support funding of transit services for Pierce Transit, which then impacts the resulting farebox recovery ratio.

The farebox recovery ratio (FRR; the amount that fares contribute to the overall operating costs for a transit service) in the best transit systems struggle to maintain a 20 percent threshold. As such, transit operators are consistently in search of new or modified services to help maximize FRR and these ratios play a major factor in determining how and where services are located. In the Puget Sound Region the farebox recovery ratios for area transit agencies were reported as follows (FTA 2008):

- Pierce Transit: 16%
- Intercity Transit: 12%
- Sound Transit: 17%
- King County Metro: 20%

Given these rates, transit operators are very receptive to partnerships and incentive programs provided outside of their operating budgets to provide and promote new services and generate ridership. Without these types of partnerships, it is difficult for operators to justify new or expanded services in hard-to-reach markets such as military installations, especially when the base does not directly generate sales tax revenue towards operation of the transit system.

Marketing Services

The marketing of transit, carpooling, and vanpooling, tailored to the needs of base personnel, is vital to the success of these services. Transit surveys across the nation reveal that lack of awareness is a reason for not opting for such transit alternatives. Further, given that military personnel are eligible for fare subsidy programs that will pay, in most instances, for the entire monthly bus, rail or vanpool fare, the concept of basic awareness should be at the forefront of any effort to encourage transit ridership to JBLM. To create awareness of existing or potential services, the area's transit agencies, JBLM, and surrounding communities coordinate to develop joint promotional materials to inform employees about the services that are available. However it is possible that additional marketing strategies could be implemented such as:

- Increased promotion of federal transit and vanpool subsidies;
- Creation of a base-specific identity and promotional scheme for services;
- Promotion of the service through the in-processing offices and hiring offices on base; and
- Promotion of Guaranteed Ride Home programs.

Public Transportation & TDM Strategies

Based on the challenges and local conditions contained in this and the previous existing conditions summary memorandum, the following are a preliminary set of recommended strategies or improvements to promote public transportation and TDM operations on and around JBLM. They are highlighted in Table 5 and are intended for further discussion among key project stakeholders and may be modified as the planning effort advances and more input is gained from the Transportation Expert Panel, base personnel, municipalities and service providers.

Table 5. Recommended Public Transportation & TDM Strategies

Marketing	Operational	Capital
Formalize and expand role of base CTR coordinator	Streamline gate operations for alternative modes	Install "diamond" lanes at base entry points
Develop joint transit service marketing programs	Identify methods to streamline transit services & security screening	Provide fixed route service on-post
Improve Alternative Transportation Information on Base Website	Integrate new & emerging technologies to provide real-time information	Construct transit center and rideshare facilities
Enhance promotion and provision of carpool matching and vanpool services	Vanpool to Base; Vanshare on-post	

Marketing Strategies

Formalize & Expand the Role of the CTR Coordinator. While Washington State law requires the employers to provide commute trip reduction programs, the level to which these programs are conjoined with area transit service providers is not specified. For major regional employment and economic drivers such as JBLM there appears to be a need to formalize the role between the Base CTR Coordinator and transit service providers in the region and expand the role to address the wide array of transportation issues at JBLM that interface and impact transit services.

First, the role of CTR Coordinator could be expanded to perform the role of a overall Transportation Demand Management coordinator that serves not only in a performance tracking role for JBLM, but as the designated liaison with the transit agencies, parking services, the director of on-base marketing for transit services, and resource for base personnel. There would need to be at least one full-time staff person dedicated to this role.

The primary purpose of this position will be to develop and market the wide array of alternative transportation options available to the JBLM community. This would include the planning and regional coordination for transit center facilities and transit interfaces at base entry points. The expanded role of the CTR Coordinator would also make the individual(s) available to all the commands and agencies on JBLM to develop individualized CTR or TDM initiatives and interact with transit service operators to help them gain a better understanding of the command's specific needs. The Coordinator would also be the point person for job fairs, new personnel programs, and transportation fairs to promote these services.

Case Study: ACHD Commuteride

Outreach to Mountain Home Air Force Base and Gowen Field

Boise & Mountain Home, Idaho

The Ada County Highway District's Commuteride division is the regional rideshare agency for Southwest Idaho, operating more than 80 vanpools in the regional and promoting alternative transportation options to employers. Mountain Home Air Force Base is approximately 45 miles southeast of Boise and generates 22 vanpool routes for Commuteride.

To respond to the schedule of deployments and fluid nature of military personnel assignments, Commuteride is actively engaged in MHAFB's *RightStart* program, which is a mandatory new employee orientation program conducted monthly for new base personnel. Commuteride is on the monthly program to inform new personnel of the transportation options available in the region.

Commuteride also advertises in base publications, conducts vanpool rider appreciation events, and participates in on-base transportation fairs.

Gowen Field is a military reserve installation in Boise and generates 20 vanpool routes for Commuteride. Its proximity to the Boise region allows for greater flexibility in providing rideshare alternatives, including reverse commute.

Develop Joint Transit Services Marketing Programs. The transit services within the region could consider a joint marketing effort to identify a brand for base-related public transportation services. This would allow for direct on-base efforts to educate and inform personnel of the transportation options available to them without the

confusion that would arise due to several agencies providing service within the region. The marketing brand would produce a common logo for JBLM alternative transportation services, develop materials that described the services available in a common format, and provide guidance on how to provide joint incentive programs that provide a single identity for subsidies, incentives, and emergency ride home programs.

Improve Alternative Transportation Information on Base Website. JBLM should develop an alternative transportation-specific web page as part the Base's main website. This would provide more detailed links and information to available services, as existing transit operator web sites do not tailor to the specific needs of military personnel and without knowledge of the services, it can be difficult to locate bus routes and vanpools service to the base and nearby areas. The site could be modeled on the MilitaryOneSource program website. Given the sensitivities of base personnel and their location information, the page could also serve as a resource for ridematching under a similar format as Rideshare Online.com, which is managed by WSDOT.

Enhance promotion and provision of carpool matching and vanpool services. Carpools and vanpools are classified as rideshare modes, but should be considered a vital component of any universal public transportation strategy as rideshare modes account for the highest percentage of non-single occupant vehicle (SOV) use in most urban areas. As indicated by the JBLM Commute Trip Reduction program, there are a limited number of participants utilizing full-fare reimbursement programs for bus and vanpool fares. The aforementioned marketing strategies, as well as some of the operations- and capital-related strategies are geared toward creating greater utilization of rideshare-related alternative transportation.

Case Study: Hampton Roads Transit

Naval Station Shuttle, Naval Station Norfolk

Norfolk, Virginia

Naval Station Norfolk (NSN) has offered a free shuttle to designated areas on the military base since 2003. The shuttle service provides a complete transportation program for NSN commuters and eliminates the need to drive to work to get to another destination on base

In a coordinated effort between the U.S. Navy and Hampton Roads Transit to alleviate traffic congestion on the military installation, HRT expanded its fixed-route bus service to and from the base by adding a new shuttle system on the base itself. The service, called "Naval Station Shuttle", is a free service operating at 30 minute headways. The service allowed more people to move around the base without a car, alleviating traffic and simultaneously decreasing security concerns. The free shuttle provided a valuable service to active-duty and civilian personnel and permitted them to commute around the base easily, while fulfilling congestion mitigation efforts to decrease traffic flow and parking requirements.

There is no charge to ride either shuttle and both are available weekdays only and no holidays. As reported by the Hampton Roads Transit, between July 2006 and June 2007, the routes carried more than 80,000 passengers. The service is funded through Congestion Mitigation / Air Quality grants with the local match provided by Naval Station Norfolk. The route currently averages 125 ridership per weekday and 10 passengers per revenue hour.

Operational Strategies

Streamline Gate Operations for Alternative Modes. Increasing transit and rideshare utilization hinges on the ability of persons using these modes to efficiently move through base entry points to reach their destinations. This is oftentimes the most difficult operational strategy to overcome due to security concerns, military practices, and the manner in which sentries are assigned to these posts. As noted previously, one manner in which gate operations could be streamlined for transit would be to create a transfer point for transit services near the gate so riders could walk through the gate and connect to on-post services. Another option would be to secure off-post park-and-ride facilities whereby passengers would be pre-screened and vanpools or buses would be allowed to pass through gates more freely without taking the necessary time to check identification for each passenger. Diamond lanes (explained in Capital Strategies section) at entry points would be another method to provide more efficient gate operations that encourage non-SOV travel.

Case Study: San Diego Association of Governments (SANDAG)

"Buspools" to Regional Naval Facilities

San Diego, California

SANDAG has a study in progress to determine the feasibility of establishing interregional buspools from Riverside County to San Diego County. Buspools serve groups of 15 or more people sharing a ride in a prearranged vehicle and provide point-to-point service travel options for otherwise difficult-to-service trips.

Buspools are an option where demand exceeds that of a vanpool and where existing transit does not provide competitive travel times. One option being investigated is to convert some of the vanpools originating in Riverside County having similar destination and beginning and end commute times to the San Diego area into buspools. Consideration was given to operating a closed "Navy-Only" service since the operator for this part of the San Diego region, however, the region is reviewing federal guidance that impacts funding for such services to ensure it does not conflict with chartered services regulations.

Identify Methods to Streamline Transit Services. The scope of this report does not allow for a detailed analysis of specific transit operations by the various service agencies; however, it is advised that JBLM personnel coordinate with the operators to identify ways in which existing transit services can be streamlined. If issues such as gate operations could be remedied to pre-screen passengers or create a transfer point, the transit operators might find it more economical to provide base-specific services. If combined with significant on-post transit services or a circulator route, express and local bus services from off-post would need to "pulse" with on-post services to minimize wait times between transfers.

Integrate New & Emerging Technologies. The integration of Intelligent Transportation Systems (ITS) for public transit services has become more streamlined as technologies have advanced and vendors now have demand from operators nationwide to make these technologies more affordable. Recognizing the potential for security concerns, it is advisable that JBLM pursue joint ITS deployment opportunities with area transit operators to provide real-time data on traffic delay at base entry points. The rapid increase in mobile phone usage for information dissemination has also created a low cost and effective way in which to provide this type of information to JBLM personnel. Applications are available for mobile phones that provide real-time information

for transit services in Seattle and both Pierce Transit and Sound Transit are part of a regional online trip planner service. Google is also providing more detailed information for many agencies across the country.

Vanpool / Vanshare Combination Service. Vanpool operators are developing more flexible service options, including vanshare, where riders utilize a vanpool for "last mile" travel from a transit route to their destination. There exists the potential to combine the model for a vanpool and vanshare for on-post travel. A vehicle would serve as a regular vanpool route from an off-post location to the base during, say, the morning commute. When on-post that van could operate as an open ride for base personnel who need to quickly get from one point to another during the day. This would require the same registered drivers to operate the vehicle while on-post, but the other seats would be open to non-subscription or non-paying riders in order to facilitate carpooling during the course of day-to-day military duties.

Capital Strategies

Install Diamond Lanes at Entry Points. The operational strategies section outlines potential for streamlined operations at base entry points to help enhance the competiveness of non-single occupant vehicle trips. A capital strategy tied to this would be the inclusions of "diamond" lanes at major base entry points that can be used by carpools, vanpools, buses, and perhaps motorcycles. Prioritizing users of these modes at entry points allow greater ease in passage and encourage use of these modes. The institution of a diamond lane at entry points might not be sufficient when travel volumes are such that queues back onto nearby interstates and highways. Therefore, inclusion of diamond lanes on off-ramp or dedicated off-ramps for freeway diamond lanes at interchanges adjacent to entry points should be considered as part of major freeway capacity or re-building efforts along I-5.

Provide Fixed Route Services On-post. Central areas of JBLM act as a type of central business district for not only the base, but for communities in the area, due to the amount of employment. Fixed routes transit services are a common component of the transportation system in most communities of 40,000 people, particularly in suburban areas. Given these roles and the unique characteristics of military, there is a strong case to be made for a fixed route bus system on-post that is similar to what would be found in cities of similar size. Based on a cursory review of systems in cities of 30,000 to 40,000 via the Federal Transit Administration's National Transit Database, such a service would consist of four to 12 fixed routes operating on and around the base with connections to key off-post generators, such as rail stations, park-and-ride lots, downtown areas other major transfer centers. Hours of operation would ideally be between 6 am and 10 pm, but could be modified based on shift changes and common employment hours at JBLM.

There are several potential models for services that could be designed to meet these needs and specific solutions would depend on availability of funding (local, regional and Department of Defense) and willingness of JBLM, transit operators, and surrounding communities to develop the partnerships necessary to provide fixed route services. Some military installations use de-commissioned vehicles from area transit operators, as is the case in Everett, WA, where old King County Metro buses are being used for military purposes. Options for providing these services include:

- Contract services with existing transit operators in the region;
- Formation of a base-specific transit service managed by military personnel; or
- Contract services with national and international transit operations companies.

Further, opportunities should be explored to coordinate the opening of the Lakewood Sounder station with existing and future services. The current schedule for commuter rail services to Tacoma is designed to accommodate in-bound (Lakewood to Tacoma) passengers, with only two outbound runs during the AM peak period planned for the future Lakewood Station. If improvements were made to routes serving JBLM, there is the possibility for a link to the Lakewood Station given that it is 1.2 miles from the JBLM McChord Field main gate.

Construct Transit Center & Rideshare Facilities. JBLM appears to be conducive to a type of hub-and-spoke transit system with connections between central points of JBLM Lewis Main and McChord Field. Critical to the hub-and-spoke type of transit system is a transit center that enables convenient and efficient bus transfers between routes. Ridesharing facilities (park & ride lots) could be located at the outer edges of the base near entry points. This type of a system combined with parking management, frequent transit, and TDM programs would enable base personnel to park once while on the base and utilize transit services to get from post to post during the day.

Public Transportation Capital Investments

Existing transit capital improvements plans were reviewed for short- and long-term applicability to JBLM and surrounding communities. The documents identified as part of this review containing such capital investments included Puget Sound Regional Council's *Transportation 2040* plan, which includes recommendations for Sound Transit and Pierce Transit, and Intercity Transit's *2010-2015 Strategic Plan,* which includes recommendations for investments in Thurston County. Table 6 and Figure 9 identify specific projects identified in these plans.

<u>Sound Transit</u>

Investments identified for Sound Transit in the PSRC 2040 document relate primarily to the Sounder commuter rail corridor, which includes the Lakewood Station serving existing bus routes in the region and future commuter rail service set to begin in 2011. The existing parking facilities at Lakewood are designed to accommodate anticipated demand through the first several years of the new commuter rail service and these facilities are planned for expansion to a parking garage with the *Transportation 2040* plan.

Additionally, an expansion of the Sounder service south to DuPont is also included in the 2040 plan, but as an unfunded component of the plan. Currently, Sound Transit and Pierce Transit operate a bus transfer and park-and-ride facility near the railroad tracks in DuPont near Exit 118 and approximately one mile from the main gate of JBLM. The expansion of commuter rail to DuPont would most likely be part of a long-term strategy to connect the Sounder service to the Olympia area.

Pierce Transit

Improvements for Pierce Transit contained in the 2040 plan include expansion of the aforementioned DuPont park-and-ride lot as well as the Parkland lot at SR 512 / SR 7. A bus rapid transit line is also planned for construction from Roy to Downtown Tacoma via SR 7. Improvements are also planned for the 112th Street corridor from Puyallup to Lakewood.

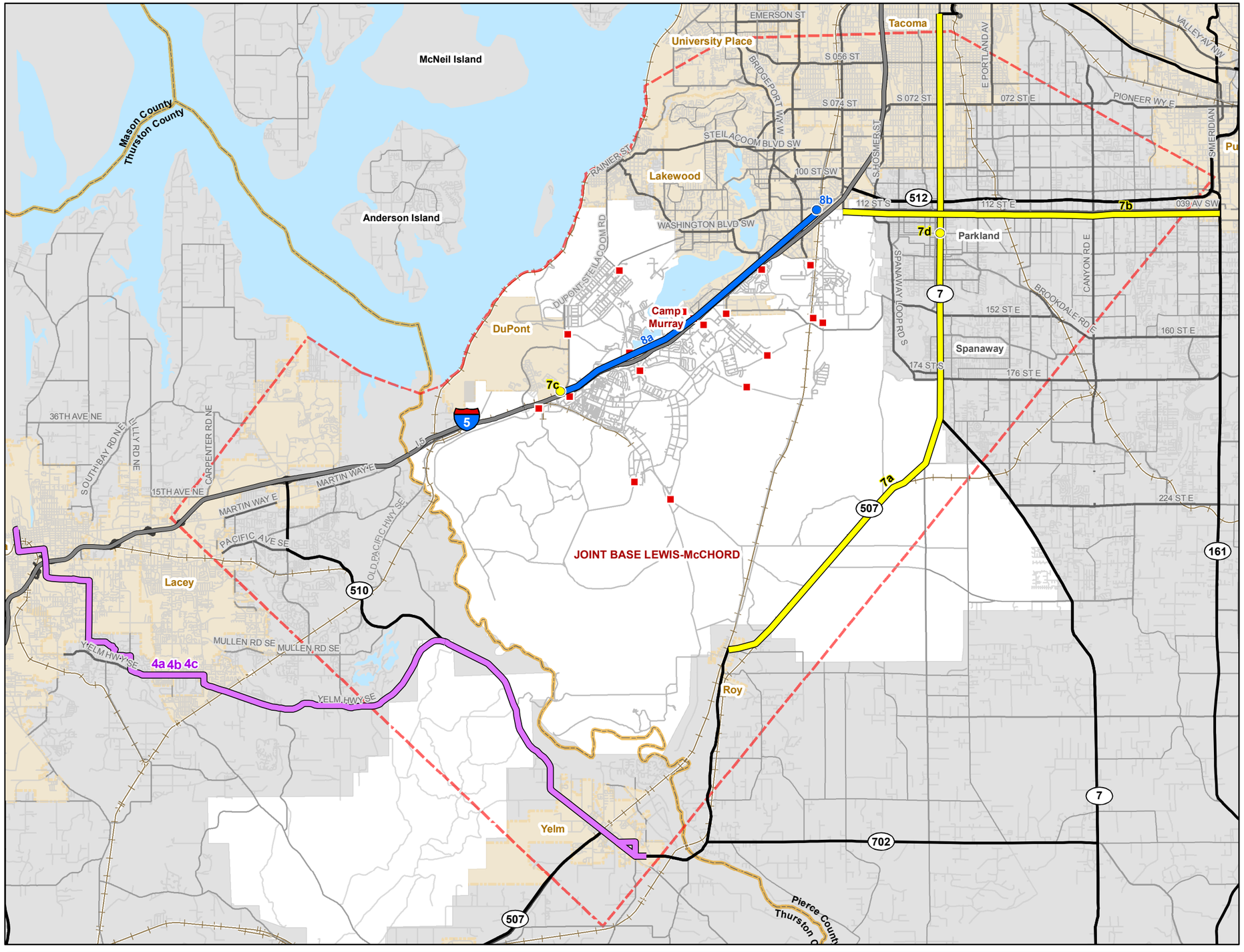
Intercity Transit

Planned improvements included as part of Intercity Transit's Strategic Plan and related to JBLM and its surrounding communities center on Yelm, as the plan identifies expanded and increased services on weekdays and Saturdays. The plan also includes additional services along Route 94, which runs between Yelm and the Olympia Transit Center. The construction of a park-and-ride lot in Yelm is also in the 2010-2015 plan.

Table 6. List of Transit Capital Investments

Map ID[1]	Improvement	Description	Source
Sound Transit			
8a	Sounder Commuter Rail DuPont Extension	Extension of service to DuPont, upgrade of track & signals between Lakewood and DuPont, and a new station at DuPont.	PSRC 2040
8b	Parking Garage at Lakewood Station	Construct a new multilevel parking structure with up to 600 stalls adjacent to the planned Lakewood Sounder Station parking garage on property currently owned by Sound Transit, for a total of up to 1,200 stalls upon completion.	PSRC 2040
Pierce Transit			
7a	BRT: Roy to Downtown Tacoma	BRT and transit supportive infrastructure from Roy to Downtown Tacoma via SR 7. Joint project by Pierce Transit and City of Tacoma.	PSRC 2040
7b	112th Street (Puyallup/Lakewood) Transit Corridor	Core Transit Service Improvements and Transit Supportive Infrastructure.	PSRC 2040
7c	DuPont P&R Expansion	Additional 250 stalls.	PSRC 2040
7d	SR 512 / SR 7 (Parkland) P&R Expansion	Additional 250 stalls.	PSRC 2040
Intercity Transit			
4a	Yelm Weekday Service	Add later weekday service to Yelm in 2011 on Route 94.	2010-2015 Strategic Plan
4b	Yelm Saturday Service	Increase Saturday service to Yelm.	2010-2015 Strategic Plan
4c	Additional Service	Add service to provide 30-minute frequency on Route 94.	2010-2015 Strategic Plan
4d	Yelm Park & Ride	Park & Ride Construction.	2010-2015 Strategic Plan

1. MapID corresponds to the numbers on Figure 9.



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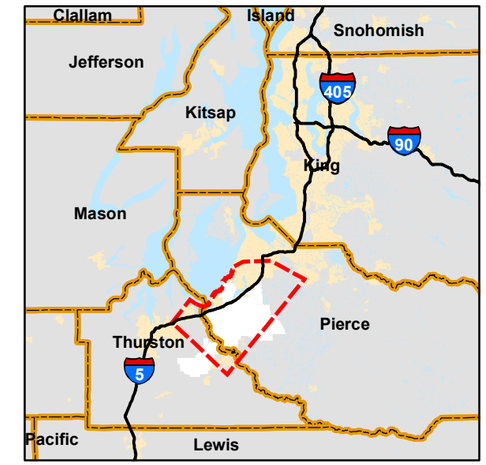


Project Location

LEGEND

Intersection Projects

- Pierce Transit
- Sound Transit

Roadway Projects

- Pierce Transit
- Sound Transit
- Intercity Transit
- Military Access Control Points (Active)
- StudyArea
- City Limits
- County Boundaries
- Major Water Bodies

0 1 2 4 6 Miles

FIGURE 9: TRANSIT IMPROVEMENTS

Additional Data Needs, Studies & Coordination

A major component of this memo focuses on the unique needs of military personnel and how to improve travel to the installation and provide the transportation services that best suit them. To further refine projects, strategies, and eventually implement the high priority items, additional information, studies, and agency coordination could be undertaken to more acutely define and address the needs. These items are highlighted in Table 7 and discussed below.

Table 7. List of Additional Data Needs, Studies & Coordination

Need	Description
Specific Base-related Travel Survey	Conduct a travel survey to identify trip origins and destinations, trip purpose, and modes used.
Vehicle Occupancy Counts	Collect vehicle occupancy counts at base entry points to determine how many persons are riding in each vehicle or using alternative modes.
Expanded Travel Demand Model	Combine both the Pierce County and TRPC models to create a regional model for state highways connecting both counties.
I-5 Master Plan	Develop a long-term plan for I-5 through Thurston County and tie into the recently completed I-5 Transportation Alternatives Analysis project.
JBLM Transportation Partnership Meetings	Organize a committee of transportation representatives from the participating agencies to discuss JBLM and cross-county issues, and work to implement recommendations in the Growth Coordination Plan.

Specific Base-related Travel Survey

It is recommended that a JBLM specific travel survey be conducted for both random base personnel and existing vanpool and transit riders. It could include transit passenger intercept surveys to gain a better understanding of the existing riders. A JBLM specific travel survey would help understand the daily travel characteristics of soldiers, DOD employees, dependents, and contractors.

- General origins and destinations of personnel traveling to the base;
- Trip purpose;
- Why current transit riders utilize the service;
- What factors lead them to find alternative transportation options;
- What are their ideas for improved services; and
- If they do not carpool, vanpool, or ride transit, why not, and what would entice them to do so.

Vehicle Occupancy Counts

Data has been obtained for purposes of conducting other transportation studies related to JBLM, however the vehicle occupancy rates at base entry points has not been collected. This information would be valuable to determine whether or not there were statistical similarities and differences among the base entry points in terms of how many persons are riding in each vehicle or using alternative modes. Collecting the data would consist of staging counters at each base entry point during the AM peak period to collect data on vehicle

occupancy. The potential also exists, albeit more costly, to determine if, how and why occupancy rates differ based on trip origin or base destination.

Expanded Travel Demand Model

It is difficult to evaluate planned improvements in the study area because it overlaps two counties and two regional transportation planning organizations. As a result, there is no travel demand model that includes the entire study area, resulting in no adopted tool that could be used to evaluate projects that might benefit both counties and regions. An expanded model would be useful in evaluating transportation priorities and projects that support JBLM and could be directly applied to a needed I-5 master plan or to evaluate extension of commuter rail or high-speed transit connections between the two counties.

I-5 Master Plan

While the *I-5 Transportation Alternatives Analysis* identified the need for additional capacity along the I-5 mainline, the recommendations ended at the Thurston County border. WSDOT currently has no long-term plans identified for I-5 through southern Pierce County and Thurston County. Specific interchange concepts have been developed around JBLM and also in the City of Lacey. The interchange concepts should be incorporated into the Master Plan along with additional long-term recommendations on mainline capacity, priorities, and funding.

JBLM Transportation Partnership Meetings

Similar to the need for an expanded travel demand model, the study area overlaps many jurisdictions and agency providers. The JBLM Growth Coordination Plan will have identified a list of strategies and projects for which to plan towards, but representatives from the agencies must regularly meet to discuss issues and move items forward. It is recommended a JBLM transportation partnership group be formed that will meet periodically to discuss region transportation issues and needs related to JBLM.

NEEDS ASSESSMENT & OPPORTUNITIES

This memo has described several aspects of the transportation system and services on and around JBLM that make it a unique entity within the region. The patterns of travel, work hours and job requirements associated with military populations differ from civilians and this impacts how we should plan for transportation improvements. In order to effectively address short- and long-term transportation strategies and projects there needs to be an acknowledgement of this uniqueness of JBLM and a corresponding set of strategies that can collectively be agreed to by JBLM, area municipalities, transit agencies, WSDOT and others.

Below are several specific subject areas where there are opportunities to align transportation strategies and project planning with the unique role JBLM plays within the region.

Regional Coordination

The impacts of JBLM are not only felt on the base and within surrounding communities, but are also a major driver of economic activities throughout Thurston and Pierce Counties as well as the greater Puget Sound region. The emergence of basic and non-basic jobs as a result of a growth at JBLM has a major impact on regional traffic patterns. It should be recognized that addressing increased traffic congestion and providing for alternative modes start at the policy and planning level, when land use and transportation plans are derived, land use permits are processed, and long-term investment decisions are made. This carries through to operational and capital investments in later years, but with increased requirements for reduced greenhouse gas emissions at the state level, greater scrutiny on transportation investments, and long-range funding shortfalls, it becomes imperative that regional stakeholders engage in a more meaningful dialogue to address these challenges, particularly around JBLM.

Potential Strategies for Pursuing

Below are some specific strategies to improve regional coordination:

- Formalize a JBLM transportation partnership group so the region's transportation stakeholders can work together to tackle emerging issues, form a collective voice for transportation interests related to JBLM, and learn from one another on how best to address the unique needs and challenges that arise from JBLM's presence.
- Coordinate specific land use, transportation and economic development plans related to the base and adjacent communities in a manner similar to what is carried out through regional councils but with a specific interest in JBLM, as currently Thurston and Pierce Counties exist under separate regional planning entities.

Investment Strategies

Funding has always been a universal issue in addressing transportation needs at the regional, municipal or corridor level. WSDOT, area transit agencies, PSRC and TRPC are all engaged in some level of short- and long-range fiscal analysis to identify how they will address the region's needs in a efficient and effective manner. This cannot be achieved without a series of partnerships among these entities and area municipalities that includes funding contributions, aligned policies for investments, and a common vision for the future of the transportations system. This memorandum has identified several areas that will require increased funding and coordination to improve transportation services around JBLM.

Potential Strategies for Pursuing

Below are some specific strategies to assist the region in addressing transportation funding needs:

- Support efforts to modify the Defense Access Roads program to allow funding towards off-base public transportation opportunities;

- Identify partnership opportunities between JBLM and surrounding communities, as well as WSDOT, to coordinate planning, corridor preservation and operational strategies along key corridors serving the base;
- Collectively support the forthcoming recommended transportation investments to work with WSDOT and upcoming federal transportation reauthorization to identify funding for unfunded transportation needs.

Interstate 5 Improvements

I-5 is designated as a National Highway System (NHS) route and supports the United States strategic defense policy by providing access to JBLM and Camp Murray. The *I-5 Transportation Alternatives Analysis* identified a list of short and long-term projects needed along I-5 through JBLM. Many of the improvements are needed to address congestion, safety, and access needs that are observed today. Reliable access to the base is an issue of national security and depends upon acceptable operations of the freeway. Implementation of the proposed improvements in the I-5 Study must be carried forward by in a joint effort by JBLM, FHWA, WSDOT, PSRC, TRPC, and the other local agencies.

Potential Strategy for Pursuing

Work with state and federal leaders to build support and identify funding to complete the high priority improvements identified in the *I-5 Transportation Alternatives Analysis* project.

Public Transit & Transportation Demand Management

Two key aspects of the public transit and TDM sections of this memo would provide immediate benefits to the alternative transportations system and associated demand related to JBLM. The streamlining of base access for transit users and operators is of primary importance if other short- and long-range strategies are to be addressed. In combination with this, the continued promotion and enhancement of transit and TDM services through a JBLM-specific marketing and branding will also be critical if there are to be measurable gains in utilization of alternative modes.

Potential Strategy for Pursuing

The streamlining of practices for base access can be addressed through both operational and capital strategies, with exploration of methods to provide more efficient security clearance for bus and vanpool riders being paramount to solving these problems. The institution of diamond lanes or off-post securement areas should be explored at a national level.

To coordinate marketing of alternative transportation modes, JBLM, surrounding communities and transit agencies could develop base-specific branding and marketing materials that tailor to the interests of JBLM personnel. The expansion of the existing CTR coordinator role to work with on-post and off-post transportation interests would also help provide a common voice and go-to person for transit and TDM programs and services.

SUMMARY OF NEEDS ASSESSMENT

Below is a summary of the detailed needs assessments and opportunities described above. They are intended to serve as a guidebook or toolbox for continued coordination and cooperation in addressing transportation needs related to JBLM.

Need	Opportunity	Potential Strategies
1. Regional Coordination	Improve understanding of issues among communities and JBLM	1. Formalize task force role in regional coordination for JBLM-specific efforts.
		2. Coordination of land use, transportation and economic development plans.
		3. Information clearinghouse for base-specific needs and analysis.
2. Investment Strategy	Collective interest in funding pursuits for transportation needs	1. Pursue Defense Access Road funding to also include transit facilities.
		2. Identify funding partnerships between WSDOT, transit agencies, JBLM and nearby communities.
		3. Collective support of ongoing funding efforts, including federal transportation reauthorization.
3. Interstate 5 Improvements	Continue implementation of proposed improvements from the I-5 Study	1. Outreach to state and federal leaders to gain support and interest in funding the improvements
		2. Integrate the projects into the region and state long-term plans
4. Streamline Base Access for Transit	Promote increased use of alternative transportation	1. Create more efficient access and security protocols for buses/vanpools
		2. Explore diamond lanes for base entry points
5. Coordinate Transit & TDM Services Marketing	Improve information available to base personnel	1. Develop base-specific marketing materials for transit and TDM services
		2. Formalize and expand role of base CTR coordinator to work on all facets of transit and TDM, as well as parking and access strategies

NEXT STEPS

The needs assessment will be used to begin evaluating alternatives and prioritizing the strategies and projects that will most benefit JBLM and the region.

REFERENCE LIST

City of Lacey. 2009. Transportation Systems Analysis and Alternatives Evaluation (LTSAAE) Technical Summary Report. Shea, Carr & Jewell, Inc. and Parametrix, Inc.

City of Lakewood. 2010. I-5 Transportation Alternatives Analysis and Traffic Operational Model Draft Executive Summary. Transpo Group and WSDOT.

City of Lakewood. 2009. Travel Demand Model Documentation. Transpo Group.

City of Yelm. 2001. Comprehensive Transportation Plan Update. SCA Consulting Group.

Department of the Army. 2009. Army Growth and Force Realignment Programmatic Environmental Draft EIS Traffic Study. Fehr and Peers.

FTA (Federal Transit Administration). 2008. National Transit Database, Transit Agency Individual Profiles. Available online at URL: http://www.ntdprogram.gov/ntdprogram/data.htm

Intercity Transit. 2009. 2010-2015 Strategic Plan. Intercity Transit.

Intercity Transit. 2008. Park-and-Ride Study. Fehr and Peers.

Nisqually Tribe. 2008. Nisqually Tribal Transportation Plan. WH Pacific.

Pierce County. 2009. 2010-2015 Transportation Improvement Program. Pierce County Public Works and Utilities.

Pierce County. 2009. Transportation Plan Preview. Pierce County Public Works and Utilities.

Pierce County. 2009. Transportation Concurrency Management Program Annual Report. Pierce County Public Works and Utilities.

Pierce Transit. 2008. Park-and-Ride Study. Fehr and Peers.

PSRC. 2010. Transportation 2040. Puget Sound Regional Council.

SANDAG (San Diego Association of Governments). 2010. Navy Transportation Demand Management Initiative Study. San Diego, CA. Available online at URL: http://www.sandag.org/uploads/meetingid/meetingid_2561_11172.pdf

TCRP (Transit Cooperative Research Program). 2007. Report 111: Elements Needed to Create High Ridership Transit Systems. Washington, DC. Available online at URL: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_86-v2.pdf

TCRP. 1999. Report 55: Guidelines for Enhancing Suburban Mobility Using Public Transportation. Washington, DC. Available online at URL: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_55-a.pdf

Transit Resource Center. 2004. Independent Study of District 2 Transit Services, Working Paper #1: Community Oriented Transit Best Practices. Winter Springs, FL. For Alameda-Contra Costa Transit District. Available online at URL: http://www.cities21.org/CommunityTransitBestPractices.pdf

TRPC. 2010. Regional Transportation Improvement Program 2010-2014. Thurston Regional Planning Council.

TRPC. 2004. 2025 Regional Transportation Plan Guiding Our Future. Thurston Regional Planning Council.

USDOD (United States Department of Defense). 2008. Mass Transportation Benefit Program. Available online at URL: October 2008. http://www.dtic.mil/whs/directives/corres/pdf/100027p.pdf

WSDOT. 2005. Freight and Goods Transportation System 2005 Update. Office of Freight Strategy and Policy.

WSDOT. 2009. 2010-2030 Freight Rail Plan. State Rail and Marine Office.

WSDOT. 2007. 2007 to 2025 Highway System Plan. Office of Planning and Programming.

I-5 Transportation Alternatives Analysis and Traffic Operational Model

Executive Summary

September 2010

City of Lakewood

WSDOT

transpoGROUP

What is the I-5 Transportation Alternatives Analysis and Traffic Operations Model Project/Study?

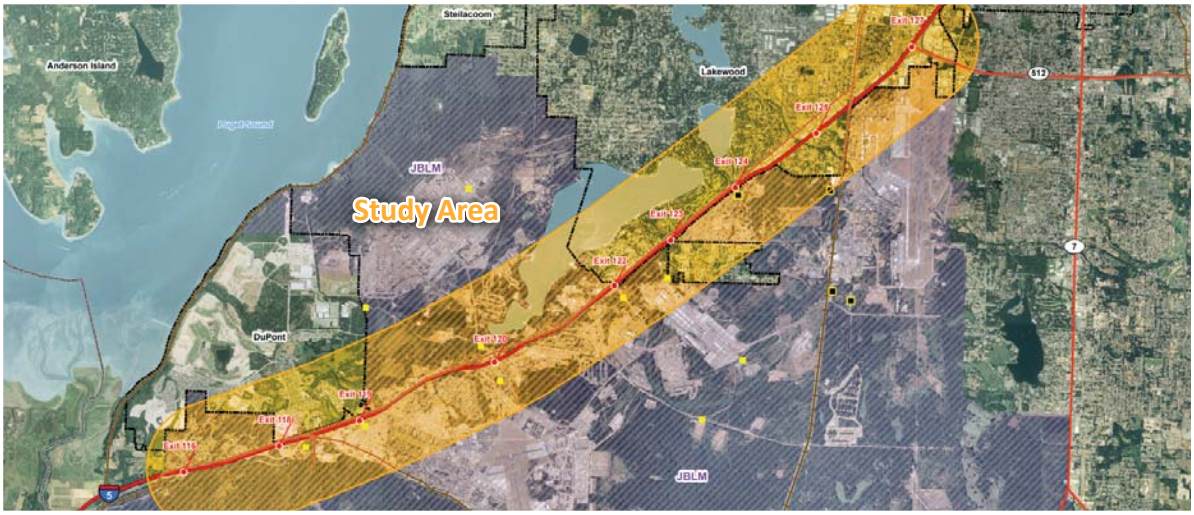
The City of Lakewood and Washington State Department of Transportation (WSDOT) partnered on this project supported with grant funding from the Office of Economic Adjustment (OEA) at the Department of Defense (DOD). The project is an evaluation of Interstate 5 (I-5) from Mounts Road to SR 512 in southern Pierce County, an approximately 11-mile segment of I-5. It includes the development of an operations model for I-5 and the adjacent arterial intersections to assess the potential impacts to I-5 and the local street system due to regional and Joint Base Lewis-McChord (JBLM) growth. The operations model is intended to evaluate impacts and long-term transportation improvement concepts for I-5 and the adjacent arterial intersections to support regional mobility needs, as well as providing improved access to JBLM. The alternative analysis included an evaluation of an integrated set of improvements to maintain safe, efficient and acceptable I-5 operations and address safety and current and future mobility deficiencies directly related to growth in the region and at the installation.

The recommendations from this project will be incorporated into a broader study of the growth impacts of the region and JBLM, otherwise referred to as the Growth Coordination Plan. The City of Lakewood is leading the Growth Coordination Plan, which identifies and analyzes community "gaps" that exist in the region in regards to accommodating anticipated growth at JBLM.

What is the Purpose of this Study?

I-5 is designated as a National Highway System (NHS) route and supports the United States strategic defense policy by providing access to JBLM and Camp Murray (home of the Washington National Guard, Washington Military Department, and the Washington State Emergency Management Center). I-5 also provides access to intermodal transportation facilities and accommodates interstate and interregional travel and is designated by the State Legislature as a Highway of Statewide Significance (HSS). Complicating the importance of this link is the lack of alternative north-south routes to facilitate regional and local travel. The topography of the area, combined with the presence of JBLM and Camp Murray make local travel difficult, with I-5 often serving as the only local connection.

Since 2003, Army restationing decisions have added more than 36,000 soldiers, family members and civilian employees to the population associated with JBLM. A majority of these new personnel reside in the local communities and daily commutes to/from the base along with local travel by this expanded population have added pressure to an already congested I-5 corridor and the interchanges that service the base and nearby communities. Increased travel demand through this section of I-5 from significant growth in Thurston and Pierce Counties has put severe strain on I-5 in this study corridor. Compounding the already congested corridor is the fact that the military-related growth exceeded the population projections developed by local jurisdictions. Further environmental documentation regarding military growth is being carried out by JBLM, but the analysis has not yet considered the I-5 corridor's operations.



The project evaluated I-5 from Mounts Road to SR 512 in southern Pierce County.

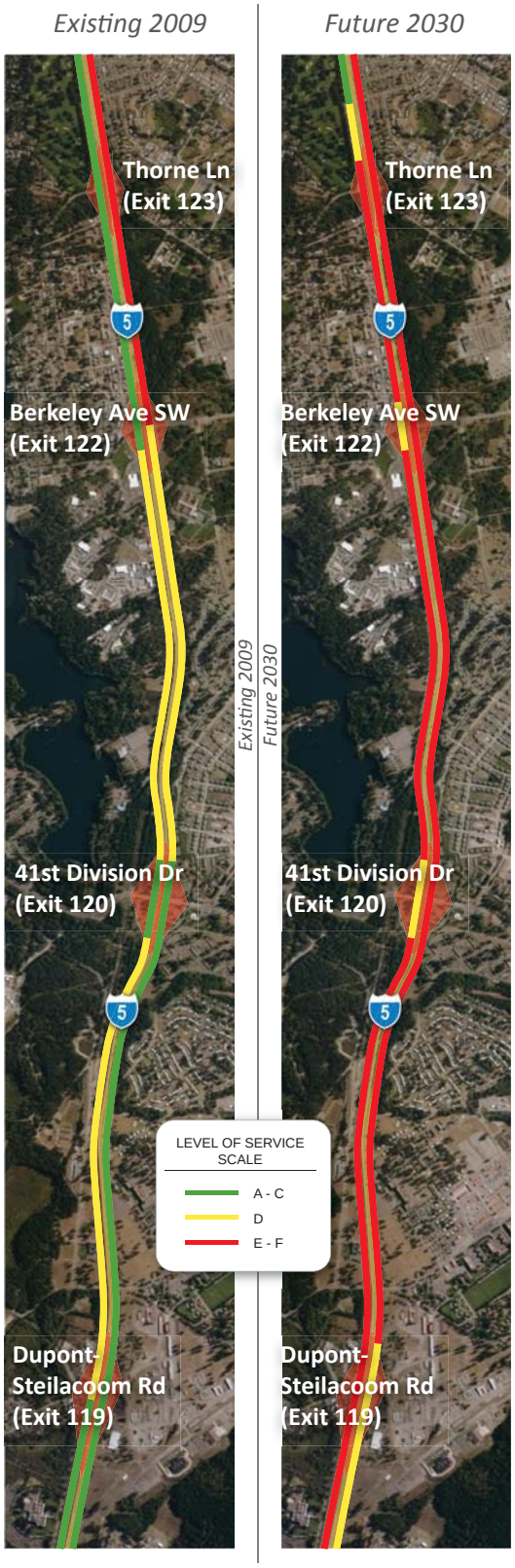
What Existing and Future Issues did the Study Identify and Address?

The analysis of existing and year 2030 conditions and identification of issues included a review of the baseline conditions as if no improvements were implemented. The analysis included an evaluation of traffic operations and general geometric constraints within the study area. Several of the key issues in this study include:

- I-5 is an important regional **freight corridor** where freight represents up to 15% of traffic in this section and is backbone of connectivity to the Port of Tacoma and Port of Seattle with global and local economic implications associated with increased freight delay.
- This section of I-5 serves as a key **commuter corridor** linking two of the fastest growing counties in the State of Washington and providing access to key employment centers.
- Traffic congestion on this section of I-5 occurs many hours of the day and is not just a weekday AM and PM peak hour phenomenon, and regional travel demands are increasing over the next 20 years.
- JBLM's primary mission is threatened by **increasing congestion and safety issues** on I-5.
- The Joint Base Lewis-McChord (JBLM) has seen significant growth in troop levels and activity and base activity is anticipated to grow further as JBLM also serves Veterans and other military personnel living throughout the Thurston and Pierce Counties.
- There is **very little transit and HOV** use along this corridor especially to/from JBLM.

Other specific operational and safety issues include:

- **Close intersection spacing and at-grade rail line crossings** at the I-5 ramp interchanges at Bridgeport Way, Thorne Lane, Berkeley Street, 41st Division Drive, and DuPont-Steilacoom Road.
- Additional safety and operational delays from the Point Defiance Bypass project that will reroute passenger rail service to the rail line that parallels I-5.
- Significant mainline congestion during PM peak hour periods at the Thorne Lane interchange due to the **choke point on I-5** from 4 lanes to 3 lanes.
- Poor circulation and frequent congestion in the Tillicum neighborhood due to the close proximity to the Berkeley Street interchange.
- Three of the four interchange structures serving as primary access to JBLM are considered **Structurally Deficient or Functionally Obsolete**.
- PM peak hour I-5 mainline and ramp congestion at the SR 512 interchange, northbound Gravelly Lake Drive off-ramp, and between the Berkeley Street northbound on-ramp and Thorne Lane off-ramp.
- AM peak hour congestion at the southbound I-5 off-ramp at Berkeley Street resulting from the general capacity of the interchange and access control at JBLM.
- **Poor out-bound JBLM operations** at Berkeley Street (to northbound I-5), DuPont gate/DuPont-Steilacoom Road (to southbound I-5), and Center Drive (to DuPont and southbound I-5).



What Existing and Future Issues did the Study Identify and Address? (continued)

JBLM generates 126,000 to 152,000 daily off-site vehicle trips. Approximately 80% of these trips use I-5 to access the installation.

- High incidence of rear-end and side swipe collisions due to frequent mainline congestion.
- Ingress/egress traffic from JBLM, as well as I-5 congestion impacts the speed and reliability of transit as well as the movement of freight.

Truck traffic currently accounts for 10 to 15 percent of the daily traffic along I-5, and as such, I-5 is classified as a T1 freight route meaning it carries more than 10 million tons of freight per year and provides primary access to the Ports of Tacoma, Olympia, and Seattle and has implications for local economic vitality.

Due to the congestion along the I-5 mainline as well as the operations at the interchanges themselves, transit speed and reliability along the corridor is expected to worsen in the future.

What Types of Improvements Were Considered?

ITS improvements can improve the efficiency of the existing system and have been identified as a high priority project along this segment of I-5 by WSDOT.

Through the screening process, multiple strategic geometric and system improvements at each of the four primary interchanges and the I-5 mainline were developed, evaluated and ultimately grouped to form three overall concept groupings. The following highlight the various types of improvements considered:

- **Intelligent Transportation System (ITS) Improvements** – Used to improve the efficiency of the system. Items include closed circuit cameras, variable message signs, and ramp meters.
- **Demand Management** – Used to reduce the demand of single occupant vehicle traffic. Strategies include vanpools, carpooling, and flexible work schedules.
- **Transit System Improvements** – Used to improve travel options for users along the corridor. Improvements could include expanded park-&-rides, more frequent bus service, and extension of commuter rail service.
- **Strategic I-5 Mainline Improvements** – Used to increase capacity on the I-5 corridor, such as new general purpose lanes, HOV lanes, and auxiliary lanes.
- **Parallel Corridor Improvements** – Used to reduce the demand and provide system redundancy for travel destined for I-5 by constructing or improving other parallel facilities, such as SR 507 or SR 7.
- **Interchange Widening/Reconfiguration** – Used to improve efficiency and better integrate I-5 and surface street operations along with serving ingress/egress movements from JBLM and/or capacity on the local arterial system. Alternative interchange configurations were considered including Single Point Urban Interchange and Diverging Diamond.

Transit strategies and facilities were evaluated as part of the improvement concepts.

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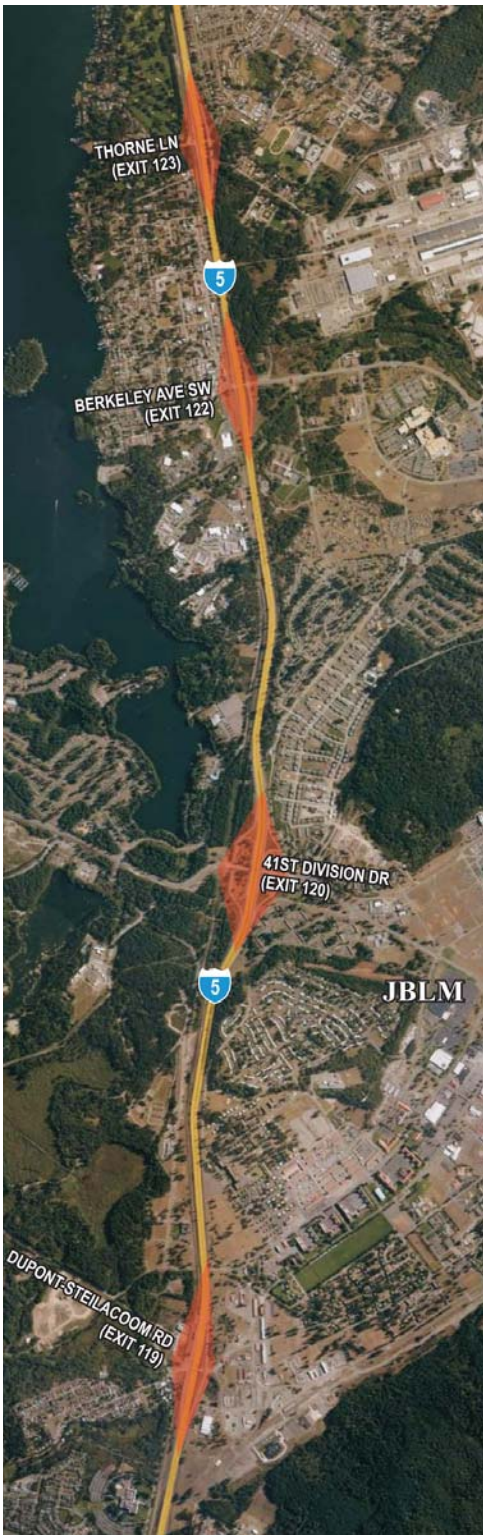
How were the Proposed Concepts Selected?

Three levels of screening were used to focus the study locations and identify improvements. The screening process was used to filter and refine improvements. The end result of the screening process was a group of preferred improvement concepts that will be carried forward in future environmental review and operational studies and for the required through the Federal Interchange Justification Report (IJR) and NEPA processes.

The project team worked closely with a Technical Review Committee (TRC) throughout the study process. The purpose of the TRC was to review basic analysis methodologies and evaluation criteria, and assist in developing key findings and recommendations. The TRC members included representatives from the surrounding jurisdictions, including JBLM. A three level screening process was used to identify and refine proposed improvement concepts. This process enabled broad participation in the development and refinement of concepts.

- **Level I Screening.** The study area included a total of nine interchanges, over ten miles of interstate freeway, numerous local arterials, and four primary military installation gates and access roads. This screening identified the locations in the study area with the greatest need of improvement and which are directly related to military operations and/or growth.
- **Level II Screening.** Typically a "fatal flaw" screening is conducted first; however the Level 1 screening process focused on refining the study area and did not evaluate actual improvement concepts. The Level 2 screening process utilized in this study was a relatively simple evaluation of "yes" or "no" to ascertain fatal flaws with any of the proposed interchange improvement concepts or system improvements within the refined study area.
- **Level III Screening.** The Level 3 screening evaluated the concept groupings, rather than focusing on individual interchange improvements. This required the preparation of preliminary engineering drawings and cost estimates for each of the concept groupings in order to evaluate each based on the categories and metrics identified for this evaluation process.

A defined screening process was used to refine the set of improvements.



Improvements were ultimately focused on four interchanges along I-5 after the completion of Level 1 screening.

What are the Proposed Concepts?

The proposed strategic capacity improvements include a set of integrated concepts along I-5 and at the four study area interchanges and are illustrated on the following pages. The improvements work hand-in-hand to improve regional mobility and safety along I-5, coupled with improved access to/from JBLM and the adjoining local communities. They are summarized by system or interchange improvement.

System Improvements:

- Construct ITS improvements along the corridor consistent with Tier 1 improvements identified in the 2007-2026 State Highway System Plan. These improvements include ramp metering at each interchange and driver information systems along the I-5 corridor.
- Construct northbound and southbound general purpose lane from Mounts Road to Thorne Lane.
- Construct southbound auxiliary lanes between the Berkeley Street and Thorne Lane interchanges. Construct braided ramps northbound between Berkeley Street and Thorne Lane interchanges.
- Construct northbound auxiliary lane between Thorne Lane and Gravelly Lake Drive.

Transit and Travel Demand Management Improvements:

In addition to the strategic capacity improvements, formulating successful public transportation and TDM strategies that are designed to service both military and civilian populations, on- and off-post, in a coordinated manner is a common challenge throughout the United States. The location of JBLM within the region, in combination with commute patterns, mean that several different agencies currently provide some type of bus or vanpool service to the area. Sound Transit, Pierce Transit and Intercity Transit service area on or near JBLM in the form of express buses, local routes, vanpools and park-and-ride lots. Whether it is a transit bus, a wheelchair equipped van, a taxi, a carpool, or a vanpool, there are challenges to providing access due to security requirements at JBLM gates. The types of improvements that will incremently improve the operations on/off the base and assist in reducing demand on I-5 include:

- Area transit agencies and JBLM creating a transit transfer center off-post but near one of the main gates at one of the re-built interchanges. This would allow personnel to walk through the base gates to board transit services on-post.
- Options such as providing preferential treatment for carpool and vanpool riders could also be explored or enhanced in combination with the interchange and I-5 improvements.
- For transit riders, a coordinated fare structure or pass system as well as a centralized billing function for passes or incentive program reimbursement can also help make transit more convenient.
- To create awareness of existing or potential services, the area's transit agencies, JBLM, and surrounding communities could coordinate to develop joint promotional materials to inform employees about the services that are available.

The location of JBLM within the region, in combination with commute patterns, mean that several different agencies currently provide some type of bus or vanpool service to the area.

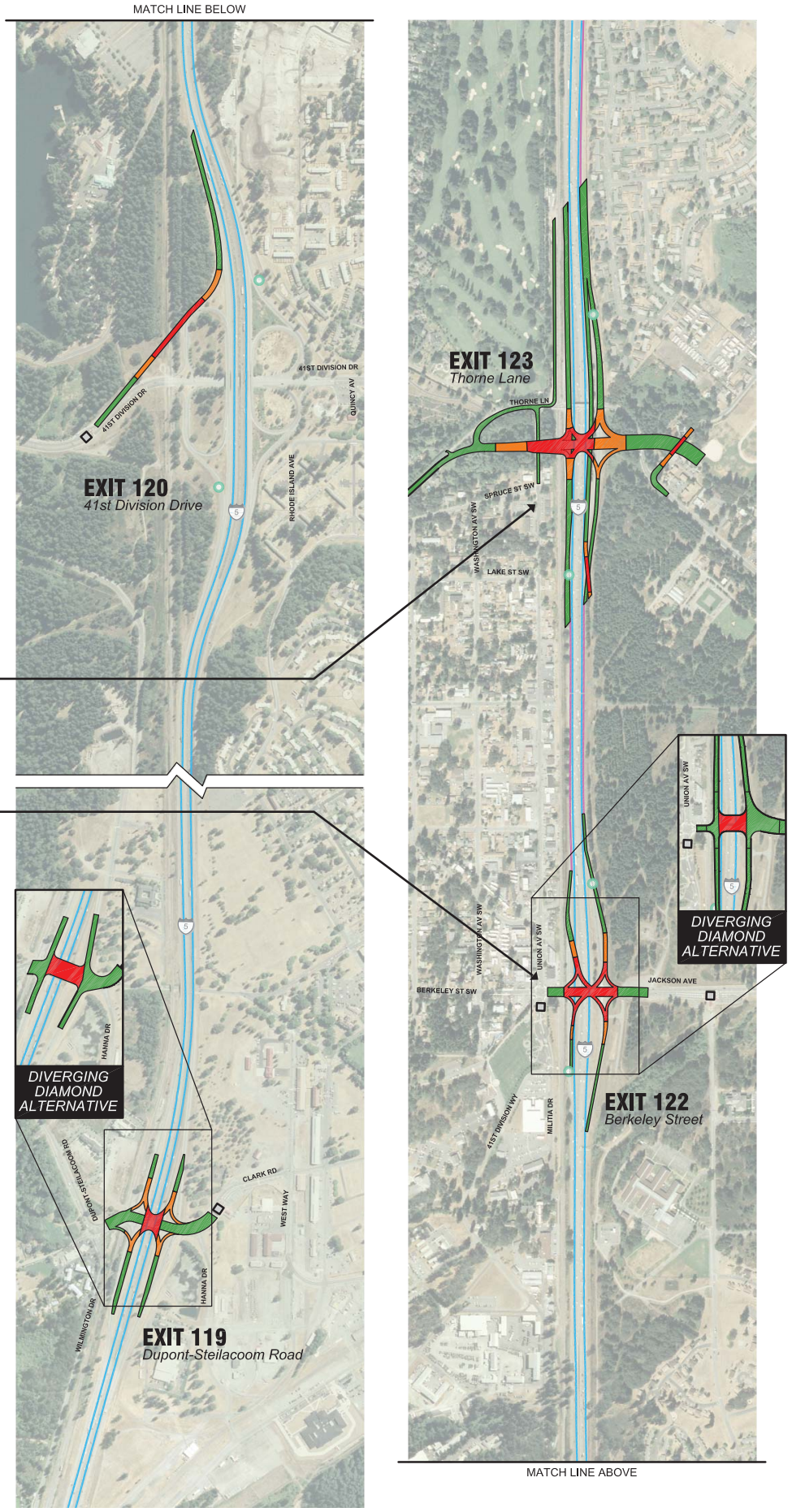
Long-term Improvement Concepts

41st Division Drive (Exit 120):
Provide grade separation for the southbound off-ramp to JBLM North access gate. In addition, due to the widening of I-5, it is anticipated that the clover leaf design on the east (JBLM Main) side of I-5 would be reconstructed.

Thorne Lane (Exit 123):
Construct single point urban interchange (SPUI) consistent with the Cross-Base Highway design plans.

Berkeley Street (Exit 122):
Construct a single point urban interchange or a diverging diamond interchange.

DuPont-Steilacoom Road (Exit 119):
Construct a single point urban interchange or a diverging diamond interchange.



LEGEND

- ARTERIAL BRIDGE
- ELEVATED RAMP
- SURFACE IMPROVEMENTS
- AUXILIARY LANE
- GENERAL PURPOSE LANE
- MILITARY ACCESS CONTROL POINT
- RAMP METER

How will the Improvements Benefit the Region and the Local Communities?

The list of improvements identified to be implemented by 2030 would provide the region and local communities with the following benefits:

Freight Mobility – Average travel speed along the I-5 corridor will be improved by up to 15 mph during peak congestion times, allowing freight to move more efficiently along the I-5 corridor.

Congestion – The amount of congestion experienced by the average motorist is expected to decrease by over 70 percent during the peak travel times, reducing the length of back-ups and stop and go traffic along the I-5 mainline.

Safety – Improved travel speed is expected to result in a reduction in the number of rear-end vehicle collisions which are typically caused by stop and go traffic. Rebuilding the interchanges will reduce vehicles queuing back onto the I-5 mainline.

Access – The interchange improvements allow for improved access to and from JBLM and the adjacent local communities by reducing the amount of congestion experienced by the average motorist by up to 85 percent.

Transit – The mainline improvements to I-5 provide up to 11 minutes in travel time savings for buses traveling between Pierce and Thurston Counties. In addition, transit stops and other facilities will be integrated into interchange designs to provide improved access to transit.

Pedestrian/Bicycle – All improvements at the interchanges will include facilities for pedestrian and bicycles, enhancing the non-motorized connections across the freeway.

Single Point Urban Interchange Concept

Diverging Diamond Interchange Concept

Joint Base Lewis-McChord

JBLM is one of the most highly requested bases by service men and women in the country due to its military opportunities, premier location in the backyard of Mount Rainier, and urban amenities in the south Puget Sound. The U.S. Army's I Corps is the primary unit on Fort Lewis, and the U.S. Air Force 62nd Airlift Wing is the primary unit on McChord Air Force Base. They join more than 30 different units from the Army, Air Force, Navy, Marine Corps, Reserve and National Guard, and Department of Defense agencies on the joint base.

In 2005, the Base Realignment and Closure Commission designated Fort Lewis and McChord Air Force Base as a joint base, one of 12 joint bases in the Department of Defense. On January 31, 2010 Joint Base Lewis-McChord became operational. When the transition period is completed on September 30, there will be one base with a common boundary, an Army joint base commander, an Air Force deputy commander, and base services managed and provided by the Army.

How Will the Improvements be Implemented?

The proposed improvement concept provides a long-term list of transportation mobility needs and investments along the I-5 corridor. Due to the need to secure additional funding and conduct environmental studies for the improvements, it is estimated that the identified improvements will be implemented over a time frame that is 10 to 15 years with immediate steps taken for implementation. The next step in the process is to complete an environmental analysis of the recommendations, along with an Interchange Justification Report (IJR), to satisfy both state and federal requirements. Once these further studies have been completed, further design of the improvements can occur.

The following steps are needed to implement the proposed improvements:

- **Step 1:** Update Regional Plans and State Highway System Plan (HSP)
- **Step 2:** Complete an Interchange Justification Report and Conduct an Environmental Analysis of Impacts
- **Step 3:** Prepare Final Design, Acquire Right-of-Way (if needed), Obtain Necessary Permits
- **Step 4:** Construct Improvements

Cost estimates for each of the various infrastructure improvement concepts were prepared after the schematic, 10% designs for the proposed concepts were developed. These planning level estimates included costs associated with new structures, new roadway, right-of-way, utilities, engineering and design fees, and a contingency.

Project Component	Estimated Cost*
DuPont Steilacoom Road Interchange	$22 to $72 million**
41st Division Drive Interchange	$16 million
Berkeley Street Interchange	$22 to $72 million**
Thorne Lane Interchange	$300 million (included in cross-base highway project)
I-5 Mainline Improvements (ITS, Auxillary Lanes, General Purpose Lanes)	$600 million

**Planning level costs only (2010 dollars)*
***Range of costs represent alternate interchange concepts as diverging diamond is less expensive due to reduced additional structure need*

Transportation Review Committee Participants

- Joint Base Lewis-McChord
- City of Lakewood
- Washington State Department of Transportation (WSDOT)
- Federal Highway Administration (FHWA)
- Puget Sound Regional Council (PSRC)
- Pierce County
- Thurston Regional Planning Council (TRPC)
- City of DuPont
- City of Lacey
- Camp Murray
- Nisqually Tribe
- Pierce Transit
- Sound Transit
- Clover Park School District
- Office of Congressman Norm Dicks

How Can I Find Out More Information on the Project?

The City of Lakewood is managing efforts, along with assistance from the WSDOT Urban Planning Office. The main contacts include:

Dan Penrose
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6000 Main Street SW
Lakewood, WA 98499
Phone: (253) 983-7772
dpenrose@cityoflakewood.us

Richard Warren
WSDOT Urban Planning Office
401 2nd Avenue South, Suite 300
Seattle WA 98104
Phone: (206) 464-1262
urbanplanning@wsdot.wa.gov

The following web sites provide more information about this specific project, along with more general information about the larger Growth Coordination Plan being prepared for JBLM.

WSDOT Project Web Site
http://www.wsdot.wa.gov/projects/i5/ftlewismcchordtransportation/

City of Lakewood Web Site
http://www.cityoflakewood.us/departments/economic-development/military-growth.html

JBLM Growth Coordination Plan Web Site
http://www.jblm-growth.com/

This study was prepared under contract with the City of Lakewood, Washington, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the City of Lakewood and does not necessarily reflect the views of the Office of Economic Adjustment.

TRANSIT LITERATURE REVIEW & BEST PRACTICES

LITERATURE REVIEW

The transit-specific elements of this report represent a literature review of salient research and practices that best correspond to the unique aspects of Joint Base Lewis McChord. There is little national research based on identifying specific transit practices related to military installations. However, previous military planning efforts undertaken in a regional context provided reference points for applicable research and best practices. The existing conditions for public transportation in and around JBLM helped drive the elements identified in the transit sections of the Transportation Needs Assessment report.

This sections summarizes documents identified and reviewed as part of the literature review, with some components of these documents used as the basis for sections of the Transportation Needs Assessment report. Full references are listed at the end of this Appendix section.

This list indicates publications that were used as foundational documents for the transit component of the Transportation Needs Assessment report.

- TCRP Report 55: Guidelines for Enhancing Suburban Mobility Using Public Transportation
- TCRP Report 111: Elements Needed to Create High Ridership Transit Systems
- Transit Resource Center: Community-Oriented Transit Best Practices

This list indicates publications that were used for reference materials and case studies to frame transit strategies and case studies related to military installations.

- BRAC Public Transportation Report. Maryland Transit Administration
- Comprehensive Regional Growth Plan for the Fort Bragg Region (NC), Chapter 4 Transportation
- Navy Transportation Demand Management Initiative Study
- TCRP Report 21: Strategies to Assist Local Transportation Agencies in Becoming Mobility Managers
- Transit Shuttle Project: A Literature Review and Best Practices

TCRP Report 55: Guidelines for Enhancing Suburban Mobility Using Public Transportation

This report, prepared by the Transit Cooperative Research Program in 1999, identified, assessed, and documented best practices applicable for transit operators to improve their bus networks to better serve suburban travel needs. It is particularly relevant to the JBLM effort in that military installations act and operate within a region as a type of edge city or suburban economic and residential center. Military bases near urbanized areas are generally reliant upon larger regional influences to provide non-basic jobs, housing stock, and regional transportation mobility, similar to larger suburban communities throughout the United States.

The report is also relevant in that it devotes considerable attention to the concept of circulator routes and deviated fixed route systems, which can also be relevant to JBLM as security issues at base entry points might dictate such services to connect to external bus routes in order to allow for passage of base personnel without requiring civilian riders to alight a municipal operator's bus in order for it to enter the base. TCRP Report 55 summarized common elements of successful transit strategies for serving suburban marketing by outlined these key findings:

- Develop services around focal points;
- Operate along moderately dense suburban corridors;
- Connect land-use mixes that consist of all-day trip generators;
- Serve transit's more traditional markets such as lower income, blue-collar neighborhoods;
- Link suburban transit services, especially local circulators and shuttles, to the broader regional line-haul network;
- Target markets appropriately;
- Economize on expenses;
- Adapt vehicle fleets to customer demand;
- Creatively adapt transit service practices to the landscape;
- Obtain private sector support;
- Plan with the community;
- Establish realistic goals, objectives, and standards; and
- Develop supportive policies, plans, and regulations.

The report defined three generic types of circulators services that could be utilized for potential connections between on-base and off-base services. These are fixed-route circulators, route deviation services, and demand response or dial-a-ride services.

Fixed Route Services. These services are generally configured to meet the needs of the community and are characterized as non-linear, connecting multiple origins and destinations in the service area. Fixed route systems have short headways given the scope of service and are to serve as complementary services in a regional network. In the context of JBLM this would represent existing service types employed on-post by Pierce Transit or some manner of service that circulates between major activity generators with a connection to base entry points.

Route Deviation Services. The systems exist where a specific route design (e.g. connecting a base entry point to a downtown area; or connecting a base entry point to activity generators on-post) is in place but allows deviations at the drivers' discretion within certain parameters, such as distance from the designated route. These services provide transit opportunities in areas where conventional fixed-route services do not perform as well in terms of ridership generation because of various factors, including density, demographics, terrain, or an inability to compete favorably with automobile travel.

Local Area Circulators. These services are defined as demand response or dial-a-ride services. These types of systems are used as circulators in a number of settings and are generally applied in areas of low to moderate density where the number of transit trips and size of the area would probably be insufficient to justify a network of fixed-route services. Demand response services are intended to provide greater area coverage with fewer vehicle resources than a fixed-route network. They provide door to-door drop-off and pickup within a designated service area, are available to the general public, and generally operate throughout the day.

TCRP Report 111: Elements Needed to Create High Ridership Transit Systems

Developed by the Transit Cooperative Research Program in 2007, this report was written as a guideline to enable transit agencies to employ strategies for increasing and sustaining ridership. The guidelines identify and outline appropriate strategies that contribute to the goal of creating/retaining ridership including operating/service adjustments, partnership/coordination initiatives, marketing and information initiatives, and fare collection/structure initiatives.

The report notes that transit demand results from a combination of a broad range of factors, some within an operating agency's direct control and others through the roles of other economic and social considerations, as well as external stakeholders. In categorizing the specific types of factors/strategies of both types, the report summarized the parameters that contribute to mode choice decisions, particularly those that influence the decision to use transit. The basic considerations involved in mode choice decisions are the characteristics of the mode and the characteristics of the individual traveler and can be summarized as follows:

- **Price and availability of each mode.** This includes factors such as:
    - The availability and cost of automobile use; and
    - The availability and cost of transit.
- **Quality of service of each mode.** This includes factors such as:
    - Travel time;
    - Convenience;
    - Comfort;
    - Service reliability;
    - Perceived personal security/safety; and
    - Perceived overall "image" of each mode.
- **Trip characteristics for each particular trip.** This includes factors such as
    - Trip length and purpose,
    - Number of people to be making the trip, and
    - Whether there are multiple destinations involved.
- **Personal (sociodemographic) characteristics of the traveler.** This includes factors such as
    - Income;
    - Origin and destination locations; and
    - Status (e.g., employed, student, or retired).

These factors are particularly relevant not just to transit operators, but to JBLM as the majority of these factors are outside a transit agency's purview and represent external factors that can be influenced positively and negatively by policies and practices employed by the Base and other regional partners. It should also be noted that major regional stakeholders such as JBLM can also influence factors generally seen as within a transit agency's control, particularly as it relates to travel time and perceive image. Nevertheless, the main challenge for developing a an effective transit service operations structure related to JBLM is generating high ridership for

transit services by making transit as competitive as possible in the areas of pricing and service quality, while developing a clear understanding of how best to address the considerations in the latter two categories being mindful to the unique populations related to JBLM.

Table 1 illustrates findings of TCRP Report 111 related to external factors that affect transit ridership. The table is divided into demand side and supply side factors, recognizing that some may apply to both. While not specifically addressing military installations and their impact on ridership, several categories are applicable to the region and communities surrounding JBLM.

Table 1. External Factors Influencing Transit Ridership

Type of Factor	Type of Impact		
	Demand		Supply (i.e., ability to provide adequate transit)
	Mode choice decision	Need/market for transit	
Population characteristics/changes			
General growth in the region		X	X
High/increased immigration		X	
High/increased number of seniors		X	
High/increased tourism		X	
High number of college students		X	
Economic conditions			
Employment/unemployment levels	X	X	
Per capita income levels	X	X	
Household auto ownership levels	X	X	
Cost and availability of alternative modes			
Fuel and toll pricing	X		
Parking pricing and availability	X		
Taxi fares	X		
Fuel taxes	X		
Auto purchase and ownership costs	X		
Availability of commuter benefits programs by employers	X		
Land use/development patterns and policies			
Density of development		X	X
Relative locations of major employers and residential areas (e.g., increasing suburbanization)	X	X	X
Land use/zoning controls and incentives			X
Travel conditions			
Climate/weather patterns	X		
Traffic congestion levels/highway capacity	X		
Traffic disruptions (e.g., from major construction projects)	X	X	X
Public policy/funding initiatives			
Air quality mandates	X		X
Auto emission standards	X		
Federal/state transit funding levels (capital and operating)			X
Local transit funding (e.g., sales or other tax receipts)			X

Transit Resource Center: Community-Oriented Transit Best Practices

The Transit Resource Center (TRC), acting on behalf of the Alameda-Contra Costa (CA) Transit District, produced a working paper that documented best practices of community-oriented services as they analyzed services within the region. Community oriented services are defined as those that respond to a community's unique transit needs through a variety of services and recognizes that such transit operations are in the business of mobility management. These could include traditional transit services such as bus and rail, but should also account for dial-a-ride services, vanpools, flexible service options and promotion of other alternative transportation modes (e.g. rideshare, bicycling, walking).

The TRC's work revealed seven strategic themes that can best be used to serve the transit needs of its market area. The key theme of these strategies are particularly relevant to JBLM and regional transit operators as they stress partnerships that effectively develop services focused on the unique needs of the community. The challenge here for transit operators is related to funding and flexibility within their existing service types. The military populations will have distinct needs as it relates to these seven factors that will likely require different types out outreach, marketing and development of new service types to serve their needs. The themes identified in the TRC report are:

- **Matching Services to Market Needs:** Match service delivery methods to unique market needs and community objectives;
- **Customer Service and Community Orientation:** Providing good customer service includes reliability of the service and responsiveness of its operators to daily service and individual riders; it may be necessary to brand services for JBLM to the base community.
- **Maintaining a Cost-Effective Cost Per Passenger:** Maintaining reasonable costs per passenger and pricing of services is an incentive to transit utilization.
- **Collaborative Partnerships to Leverage Resources and Engender Local Ownership:** Bringing stakeholders and different public and private interests together under one umbrella, perhaps in the form of an advisory or service council, can produce strategic and innovative partnerships that can lead to win-win situations for stakeholders.
- **Integration with Regional Transit Service Backbone:** A successful public transportation system thrives off a comprehensive system that includes a well-connected community-oriented service with the regional transit service.
- **Flexibility to Meet Needs:** As communities are constantly changing, community transit services need to remain adaptable and flexible in order to meet these changing needs.
- **Entrepreneurial Management:** It is essential for the community oriented transit agencies and their partners to have leadership that is able to implement successful mobility management practices.

BRAC Public Transportation Report, Maryland Transit Administration

Developed in 2009, the Maryland BRAC Public Transportation Report was prepared in response to the anticipated effects of BRAC. The State of Maryland initiated a State Subcabinet and developed a state-wide BRAC Action Plan to examine the impacts to transportation, infrastructure, housing, schools, workforce and financial and regulatory issues. In addition, local jurisdictions prepared their own BRAC action reports. These, and other BRAC-related reports, have identified transportation needs and offered highway, roadway, intersection and transit recommendations. As a supplement to these recommendations, the Maryland Transit Administration (MTA) developed this BRAC Public Transportation Report to specifically focus on the provision of transit as a means to address the impending BRAC influx. This report focuses on the provision of transit and ridesharing services now available to the five BRAC-impacted military installations and documents all current public transportation planning efforts by local governments, transit agencies and military installations in Maryland. The report contains specific assessment of public transportation for Maryland military installations, including Andrews Air Force Base (AAFB), Fort Meade, Fort Detrick, Aberdeen Proving Ground (APG), and the National Naval Medical Center (NNMC).

Comprehensive Regional Growth Plan for the Fort Bragg Region (NC), Chapter 4 Transportation

The regional growth plan for Fort Bragg (2008), located in North Carolina, included a comprehensive evaluation of growth factors for the seven counties surrounding the base, the City of Fayetteville, and Seymour Johnson Air Force Base. The plan highlights the anticipated impacts of mission growth on the region and suggests many actions that will better prepare the community for the coming changes. The complete Regional Growth Plan for the Fort Bragg Region contains details of anticipated impacts and action plans on both a regional and county-by-county basis. The transportation chapter provides recommendations for regional transportation needs specific to Fort Bragg along with data and analysis for future use. It recognizes that increased usage of mass transit could help alleviate the growing congestion and decrease the time needed to access the base; further increases in gasoline prices could boost transit usage. Further, the analysis notes on-base transit will face the same challenges that now face the Fayetteville Area System of Transit (FAST) if transit is not incorporated into the traffic planning for on-post circulation. At the time of the report, there were no plans to actively manage parking, transit, and traffic operations in a coordinated and complimentary fashion with supporting linkages to the Access Control Points (ACPs) or gates and the external transportation system. The report concluded that transit services should be planned and implemented both on- and off-post due to the military-related expansion as well as natural growth of the region.

Navy Transportation Demand Management Initiative Study

The San Diego Association of Governments (SANDAG) partnered with the United States Navy and Metropolitan Transit System (MTS) to conduct an analysis of commuter travel activity between three regional Navy housing clusters and the eight San Diego area naval bases/facilities. The report is still under review by SANDAG and the

latest version (May 2010) was used for this report. The purpose of the analysis was to identify demand-side strategies that the Navy could utilize for their service and civilian commuters. A range of transit and Transportation Demand Management (TDM) strategies were analyzed. After a presentation to the SANDAG Board in 2008, the Board recommended that staff continue investigating options for improving commuter travel for Navy personnel and to propose a pilot commuter program. The large number of personnel that move between the housing areas and naval bases suggest that large vans or buses would be the best mode of transport for a pilot program. After an in-depth analysis, including surveys, the study of travel times, locations, access to the general public, and circulation, a Limited Express Transit Service from Murphy Canyon Housing Complex to Naval Base San Diego (NBSD) is the preferred alternative for a pilot commuter program. The report also identified buspools as a service type to enhance transit alternatives.

TCRP Report 21: Strategies to Assist Local Transportation Agencies in Becoming Mobility Managers

As an outgrowth of federal transportation legislation in the 1990s, this 1997 research report reviewed the concept of how transportation agencies can become mobility managers. The goals of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the Clean Air Act Amendments of 1990, and the APTA *Transportation 2000* report call for an intermodal approach to mobility problems and needs. Local transportation agencies were encouraged to become flexible "mobility managers"—not just providers of traditional fixed-route services. The term "transportation agencies" includes both transit operating agencies and agencies that have responsibility only for managing public transportation services. Effective mobility management requires viewing the passenger transportation system as a whole. Specifically, mobility management means brokering, facilitating, encouraging, coordinating, and managing both nontraditional and traditional services to expand the array of transportation services to diverse consumer groups. Making the transition from a traditional transit operating agency to one with mobility management responsibilities is not easy because institutional barriers, both internal and external to transit agencies, can impede success. Internal barriers include organizational focus and objectives, organizational risk/reward structure, organizational inertia, attitudes of personnel, and restrictive regulations. The report presents a useful compendium of mobility management functions; identifies barriers to mobility management; includes findings drawn from seven case studies; and presents actions to promote mobility management.

Transit Shuttle Projects: A Literature Review and Best Practices

This report identified transit shuttle projects in regions throughout the nation that are comparable to the Hampton Roads, Virginia region which is home to several Navy facilities. Results, best practices, and factors needed to make a shuttle project successful were summarized in the report. Given the commitment of this region to provide its residents the most efficient alternative mode of travel, the purpose of this study was to assist Newport News and other localities in Hampton Roads with information on successful shuttle projects while providing examples of best practices from Virginia and other regions in the nation. The scope was limited to reviews of the literature and the state of practice in implementing efficient and successful transit shuttle

projects. It was prepared by the Hampton Roads Metropolitan Planning Organization (HRMPO) in cooperation with the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), the Virginia Department of Transportation (VDOT), the Hampton Roads Transit (HRT), and the Williamsburg Area Transport (WAT). The report identified the Naval Station Norfolk shuttles, which were used as a case study for the JBLM transportation assessment, as one of the best practices in transit shuttle projects.

CASE STUDIES

Research is continuing through the course of the JBLM transportation assessment to identify relevant case studies that may be applicable and achievable to address public transportation and TDM needs at the base. Three case studies were identified in the Transportation Needs Assessment memo as sidebars in the strategies section of the report. Additional case studies are outlined here in addition to those sidebar studies. They are:

- Ada County (ID) Highway District Commuteride, Outreach to Mountain Home Air Force Base and Gowen Field
- Chicago Transit Authority & Pace Suburban Bus, Short-term Contract Services
- Hampton Road (VA) Transit, Naval Station Shuttle at Naval Station Norfolk
- Kitsap (WA) Transit, Worker/Driver buses to Bremerton Naval Shipyard
- Pace Suburban Bus & Lake Cook TMA (IL), Transit Shuttle Bugs & Short-term Contract Routes
- San Diego Association of Government, Buspools to regional naval facilities

ACHD Commuteride, Outreach to Mountain Home Air Force Base and Gowen Field

Boise & Mountain Home, Idaho

The Ada County Highway District's Commuteride division is the regional rideshare agency for Southwest Idaho, operating more than 80 vanpools in the region and promoting alternative transportation options to employers. Mountain Home Air Force Base (MHAFB) is approximately 45 miles southeast of Boise and generates 22 vanpool routes for Commuteride. To respond to the schedule of deployments and fluid nature of military personnel assignments, Commuteride is actively engaged in MHAFB's *RightStart* program, which is a mandatory employee orientation program conducted monthly for new base personnel. Commuteride is on the monthly program agenda to inform new personnel of the transportation options available in the region. Commuteride also advertises in base publications, conducts vanpool rider appreciation events, and participates in on-base transportation fairs. Gowen Field is a military reserve installation in Boise and generates 20 vanpool routes for Commuteride. Its proximity to the Boise region allows for greater flexibility in providing rideshare alternatives, including reverse commute.

The reliance on federal and military riders for most of its vanpool patronage has motivated Commuteride to develop special programs and policies to keep ridership on individual vans meeting their service standards in

terms of monthly ridership thresholds. Commuteride adjusts several vanpool routes per year and actively utilizes a regional ridematching database to pair riders to vans with available space in the event of deployment or transfer of personnel. Commuteride also examines routes for consolidation during these deployments. The agency trains and certifies more than two drivers on most of its MHAFB and Gowen Field vanpool routes to provide for flexibility for riders who are subject to military assignments.

Chicago Transit Authority & Pace Suburban Bus, Short-term Contract Services

Chicago, Illinois and suburban communities

The Chicago Transit Authority and Pace Suburban Bus, the two primary bus transit operators in the Chicago region, have worked with major employers in the region for more than a decade to develop short-term specialized bus services. These short-term services are developed in close coordination with employers such as UPS or major retail distribution centers, with the employer providing for a substantial percentage of the operating costs of the routes. In the late 1990s, UPS was identifying transportation needs for workers at its facility in suburban Willow Springs, about a 17-mile trip from downtown Chicago. UPS employed several residents within the City of Chicago and recognized that some were transit-dependent. In working with Chicago Transit Authority, UPS developed and funded portions of several specific routes that provided circulators within specific neighborhoods in Chicago as well as a local university that would then run as express routes along Interstate 55 to the UPS facility. Routes were also developed from major endpoints of regional rail routes.

Pace Suburban Bus also contracts with employers to provide short-term services through a funding partnership with the employers. These services are typically in response to seasonal needs or predicted fluctuations in employment levels; similar to what is experienced during deployments on military installations. By entering into short-term agreements for specialized bus routes, Pace can better predict its financial burden and align these services with funding agreements with employers. These routes have been organized to serve major retail distribution centers during the Christmas shopping season or short-term shifts in employment concentrations at major regional manufacturing facilities.

Hampton Roads Transit, Naval Station Shuttle at Naval Station Norfolk

Norfolk, Virginia

Naval Station Norfolk (NSN) has offered a free shuttle to designated areas on the military base since 2003. The shuttle service provides a complete transportation program for NSN commuters and eliminates the need to drive to work to get to another destination on base. In a coordinated effort between the U.S. Navy and Hampton Roads Transit to alleviate traffic congestion on the military installation, HRT expanded its fixed-route bus service to and from the base by adding a new shuttle system on the base itself. The service, called "Naval Station Shuttle", is a free service operating at 30 minute headways. The service allowed more people to move around

the base without a car, alleviating traffic and simultaneously decreasing security concerns. The free shuttle provided a valuable service to active-duty and civilian personnel and permitted them to commute around the base easily, while fulfilling congestion mitigation efforts to decrease traffic flow and parking requirements.

There is no charge to ride either shuttle and both are available weekdays only and no holidays. As reported by the Hampton Roads Transit, between July 2006 and June 2007, the routes carried more than 80,000 passengers. The service is funded through Congestion Mitigation / Air Quality grants with the local match provided by Naval Station Norfolk.

Kitsap (WA) Transit, Worker/Driver buses to Bremerton Naval Shipyard

Kitsap County, Washington

Worker driver routes are a strategy for reducing the cost of long-distance commuter services. Kitsap Transit operates an extensive worker-driver program to the Bremerton Naval Shipyard and is one of the few agencies in the United States operating such a program. The worker driver arrangement is advantageous in that drivers are not subject to security clearances as they can pass through the gate like any other military employee.

Much of the cost of these services is typically associated with deadheading buses over long distances. Worker-driver services attempt to reduce these costs by using part-time operators who have regular jobs at the shipyard. In normal express bus service design where commute traffic is highly directional, a bus may transport a full load of passengers to their worksite then, for the sole reason of getting the operator back to the garage, the bus deadheads (runs empty without picking up riders) back to the bus garage or another facility. A few hours later, the bus repeats its deadhead, returning to the employment site where customers are now waiting to return home. For directional services this practice is less efficient and drives up the costs of express services. In the case of worker/drivers, the operator picks a bus up at area maintenance facility, deadhead to the route's starting location, operate the service route and then parks at the final destination, leaving the bus parked for the day.

Kitsap Transit worker/driver buses fluctuate between 35 and 50 vehicles carrying 35–40 passengers in 40-ft suburban coaches. Fares for the subscription buses, as well as the 70 vanpools Kitsap sponsors, are distance-based rather than self-supporting, in keeping with the philosophy that they are extensions of the fixed-route services and should be subsidized accordingly.

Worker drivers park the buses at their homes or at park-and-ride lots at night and on weekends. On work mornings, buses loop around the neighborhoods and then run express into the shipyard, which employees 25,000 people. Riders are dropped off at the door of their workplace and drivers return the vehicles to the bus barn. Subscription bus drivers are then taken back to the shipyard by Kitsap drivers. The shipyard builds in time for this shuttling with no late penalty for the worker drivers. Wages of the worker drivers, who are represented by the transit union during the time that they are driving the bus, are close to those of part-time union

employees. Each bus has two trained backup drivers, and the safety record of the worker drivers is excellent. Kitsap hopes to expand the program to accommodate the 10,000 sailors who will soon be assigned to Bremerton as their home port. However, the Navy rule prohibiting union membership will have to be overcome to enable the sailors to become worker drivers.

Pace Suburban Bus, Metra Rail, & TMA of Lake Cook, Transit Shuttle Bugs

Lake County & Cook County, Illinois

Pace Suburban Bus, which is one of three transit agencies operating in the Chicago region, has developed a Shuttle Bug program as a public-private partnership between the Transportation Management Association (TMA) of Lake Cook, Metra Commuter Rail, and area businesses to provide shuttle service connections between participating businesses and Metra stations. Shuttle service is provided on 12 routes serving 24 companies to Metra stations on the North Central, Milwaukee North and Union Pacific North lines. The shuttle serves the communities of Bannockburn, Deerfield, Glenview, Northbrook, Lake Forest, Lincolnshire, Mettawa, Prospect Heights and Riverwoods in both Cook and Lake County, Illinois. Average daily ridership totals over 1,300 daily trips/330,000 annual trips.

The program is the largest employer sponsored program in Northeastern Illinois and nationally recognized by the Federal Highway Administration & USEPA as effective model to reduce traffic congestion and improve air quality. Door to door service is provided on fully accessible Pace buses & costs are shared between the agencies and the businesses represented by the TMA. Employees of participating firms ride free utilizing their Easy Rider passes. The Shuttle Bug program reduces employer costs by sharing expenses, minimizing company program administration, increasing the opportunity to attract and retain quality employees, providing for a more diverse workforce, helping reduce employee commute costs and decreasing commuting stress. The Shuttle Bug was started in 1996 as a Congestion Mitigation / Air Quality (CMAQ) "demonstration" project that used shuttle buses to connect commuter rail riders with suburban employers.

Metra, the Chicago region's commuter rail service, has nearly 1.5 million boardings per week with most of Metra's riders travel to downtown destinations. For those who work in fast growing suburbs like the Lake Cook Road area however, campus style office and industrial parks often require automobile transportation, even in areas served by rail transit. They are also traveling in a reverse commute pattern. And as travel grows, traffic corridors such as Lake Cook Road are clogging up quickly. Growing traffic problems have led several employers in the area to form the Lake Cook TMA. The TMA's support for innovative solutions to congestion provided the catalyst for establishing a free shuttle that connects a new local Metra station to major employers nearby, like Underwriters Laboratories, Walgreens, and Morgan Stanley Dean Witter. Employer contributions help to make up the local match for the CMAQ grant used to meet the cost of operating shuttles. The Shuttle Bug also receives support from Metra.

San Diego Association of Governments (SANDAG), "Buspools" to Regional Naval Facilities

San Diego, California

SANDAG has a study in progress to determine the feasibility of establishing interregional buspools from Riverside County to San Diego County. Buspools serve groups of 15 or more people sharing a ride in a prearranged vehicle and provide point-to-point service travel options for otherwise difficult-to-service trips. Buspools are an option where demand exceeds that of a vanpool and where existing transit does not provide competitive travel times. One option being investigated is to convert some of the vanpools originating in Riverside County having similar destination and beginning and end commute times to the San Diego area into buspools. Consideration was given to operating a closed "Navy-Only" service since the operator for this part of the San Diego region, however, the region is reviewing federal guidance that impacts funding for such services to ensure it does not conflict with chartered services regulations.

REFERENCE LIST

BRAC Regional Task Force. 2008. Comprehensive Regional Growth Plan, Chapter 4: Transportation. Fayetteville, NC. Available online at URL: http://www.bracrtf.com/community_impact.php

Federal Highway Administration. 2010. Conclusions and Perspectives: Estimating the Impacts of the CMAQ Program. Washington, DC. Available online at URL: http://www.fhwa.dot.gov/environment/cmaq_pt2.htm

Hampton Road Metropolitan Planning Organization. 2008. Transit Shuttle Projects: A Literature Review and Best Practices. Hampton Roads, VA. Available online at URL: http://www.hrtpo.org/Documents/Reports/2008/TransitShuttleProj_LitRev_BestPrac.pdf

Maryland Transit Administration. 2009. BRAC Public Transportation Report. Hanover, MD. Available online at URL: http://www.mdot.maryland.gov/Planning/brac/06-09_MTA-BRAC_%20PublicTransReport.pdf

Misek, Shamus. 2010.Washington State Department of Transportation, Rideshare Program Manager. Phone conversations with Don Kostelec, Transpo Group, Kirkland, WA. May 25, 2010.

Montgomery, Kirk. 2010. ACHD Commuteride, Program Director. Phone conversations with Don Kostelec, Transpo Group, Kirkland, WA. May 25, 2010.

SANDAG (San Diego Association of Governments). 2010. Navy Transportation Demand Management Initiative Study. San Diego, CA. Available online at URL: http://www.sandag.org/uploads/meetingid/meetingid_2561_11172.pdf

TCRP (Transit Cooperative Research Program). 1997. Report 21: Strategies to Assist Local Transportation Agencies in Becoming Mobility Managers. Washington, DC. Available online at URL: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_21-a.pdf

TCRP. 1999. Report 55: Guidelines for Enhancing Suburban Mobility Using Public Transportation. Washington, DC. Available online at URL: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_55-a.pdf

TCRP. 2007. Report 111: Elements Needed to Create High Ridership Transit Systems. Washington, DC. Available online at URL: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_86-v2.pdf

Transportation Management Association of Lake Cook. 2010. TMA Shuttle Program. Deerfield, IL. Available online at URL: http://www.tmalakecook.org/shuttle_overview.html

Transit Resource Center. 2004. Independent Study of District 2 Transit Services, Working Paper #1: Community Oriented Transit Best Practices. Winter Springs, FL. For Alameda-Contra Costa Transit District. Available online at URL: http://www.cities21.org/CommunityTransitBestPractices.pdf

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

transpoGROUP

Transportation

Prioritization Process and Recommendations Memorandum

Date: August 30, 2010
To: Transportation Expert Panel Members
From: Jon Pascal & Don Kostelec, Transpo Group
Re: Transportation Prioritization Process and Recommendations

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INTRODUCTION

This memorandum details the methodology and results of the strategies and project prioritization employed for developing final recommendations for the Transportation component of the Joint Base Lewis McChord (JBLM) Growth Coordination Plan. The findings in this memo will be included in the Appendix to the overall plan report and the list of top recommendations (including a combination of different projects, programs, and operational strategies) will be highlighted in the report.

METHODOLOGY

The method for identifying and prioritizing strategies and projects has been developed throughout the transportation planning effort. The effort began with identification of the regional and JBLM needs (see the Needs Analysis Memorandum) and a scan of strategies and projects listed within various regional and local capital improvement plans. Additionally, identification of other needed programs, projects and operational strategies were further identified and developed. For the final piece of the effort, the Expert Panel identified factors deemed important to evaluate to help organize the projects, programs, and strategies into three ranked tiers for potential implementation.

It was recognized by the panel that not all factors could be considered during the prioritization process due to various constraints, including time and resources. The panel also had a brief discussion on how to appropriately address the inter-jurisdictional and regional roles and responsibilities that will be at play in overseeing the ultimate implementation of the transportation recommendations.

The prioritization criteria were identified through a facilitated discussion led by a focus question that aligned with the goals and objectives defined early in the Growth Coordination effort. The panel was asked to brainstorm answers to the following question:

- What specific factors should be utilized to guide the prioritization and selection of transportation projects, services, and strategies to help improve mobility and accommodate future growth on and around Joint Base Lewis McChord? Things that…
  - Accommodate all users of the transportation system;
  - Provide for a reasonable return on investment;
  - Consider social, environmental and economic impacts;
  - Relieve current and future congestion;
  - Align with adopted plans and policies;
  - Benefit multiple jurisdictions and agencies;
  - Leverage other Growth Coordination Plan opportunities; and
  - Can be quantified or objectively documented in some way.

From this process the group identified the following subject areas (bolded) and broad criteria below by which the recommendations will be evaluated, as shown in Table 1.

Table 1. Recommended Criteria for Transportation Strategies/Project Prioritization

Ensure Mobility	Provide Alternatives	Capital Considerations	Regional Outlook	System Integration	Promote Sustainability
Balance gate demand	Reduce trips to/from JBLM	Long- and short-term benefits	Benefit multiple jurisdictions	Achieve systemic cohesion	Safety
Efficient military access & mobility	Develop alternative choices	Implementability	Promote partnership	Increased predictability	Environmental
		Cost/Benefit	Changing policies	On-base land use	Energy independence

Using these factors, the consultant team developed a qualitative ranking system that would allow for comparative consideration of the prioritization factors among various capital project, operational projects, studies and policies. While the ranking factors included a qualitative measure, determining the ranking under each category was based on quantitative data, where available.

Projects were evaluated for each factor based on four levels of relevance:

● Crucial (4 pts) ◉ High Relevance (3 pts) ◉ Moderate Relevance (2 pts) ○ Low Relevance (1 pt)

Using the points to calculate a total raw score, the projects were then ranked into three primary tiers for inclusion in the draft transportation recommendations. The level of relevance was determined based on the following guidelines:

- **Ensure Mobility**
    - *Balance gate demand:* The spread of demand to other gates and ability of the project to reduce the burden on the main gates. Projects deemed crucial would be those that provided the highest level of improvements to accomplish these goals. Projects of low relevance would have negligible effects on gate demand.
    - *Efficient military access & mobility:* Provide for the most effective methods of movement of military personnel both to/from the base for day-to-day duties and deployment. Projects deemed crucial would ensure the highest levels of long-term efficiency in providing for movement of personnel. Projects of low relevance would not promote or improve this movement.

- **Provide Alternatives**
    - *Reduce trips to/from JBLM:* The management and reduction of trips through project, policies or operational actions to decrease reliance on JBLM's gates and on-post functions. Projects deemed critical would have the highest potential for measurable impacts on decreasing demand when compared to no build or status quo alternatives. Projects of low relevance would do little to reduce the travel burden.
    - *Develop alternative choices:* The provision of other means of travel to access JBLM. Projects deemed critical would provide for the highest level or quality of service in accommodating alternative modes specifically to and from the base. Projects of low relevance would not provide alternative choices or not improve existing choices.

- **Capital Considerations**
    - *Long and short-term benefits*: Projects whose outcomes would provide immediate and sustainable benefits. Those deemed critical would have major short- and long-term positive impacts on the transportation system. Low relevance would mean limited benefits both short- and long-term or only short-term.
    - *Implementability*: The capabilities exist within the current funding and institutional arrangements to reasonably foresee a scenario in which the project could be realized. Projects deemed crucial would have a path to implementation that required little deviation from current programs, plans and practices. Projects of low relevance would require substantial changes to existing practices and organizational structures.
    - *Cost/benefit*: The most effective use of limited funding to provide measurable benefits to JBLM and surrounding communities. Projects deemed critical could be accomplished in a way that provided for maximum benefits with little or low costs when compared to other projects where low relevance is defined as high cost with few tangible or intangible positive effects.

- **Regional Outlook**
    - *Benefits multiple jurisdictions*: Positive impacts on more than one municipality, county, agency or installation. Crucial projects would provide benefits to several jurisdictions within the region. Projects of low relevance would be benefit only one.
    - *Promote partnerships*: Encourage collaboration among municipalities, counties, agencies and installations. Projects deemed critical would rely on partnerships among two or more agencies where there already exist a relationship or organizational

framework to maximize the potential for the project. Those of low relevance would enforce the status quo and not encourage collaboration.
    - *Change policies*: The necessity for regional agencies and municipalities to change existing policies and practices to promote a regional vision. Crucial projects would promote proactive altering or refinement of existing policies within a cooperative environment. Those of low relevance would reinforce policies that are considered detrimental to the goals of the region to efficiently provide for transportation services to and from JBLM.

- **System Integration**
    - *Achieve systemic cohesion*: Synergistic relationships between projects, programs, policies and jurisdictions. Projects deemed crucial would have the highest level of synergies among the various influences on regional transportation. Those of low relevance would provide for or promote only a single purpose.
    - *Predictability*: The ability for agencies and the base to know the outcomes of project and reduce unintended consequences. Crucial projects would include the fewest unknowns. Those of low relevance would have the highest potential for unintended consequences.
    - *On-base land use*: Promoting a change in land use and development practice at JBLM to positively impact the on- and off-post transportation system. Projects deemed crucial would provide for the highest level of change in current practice to promote efficient transportation through land use actions. Those of low relevance would not provide for a change in existing practices or policies related to land use.

- **Promote Sustainability**
    - *Safety:* Increase the safety for base personnel and other users of the transportation system. Crucial projects would provide for measurable increases in safety where there is a documented problem. Projects of low relevance would not provide for recognizable increases in the safety of system users.
    - *Environmental*: Promote the most efficient use of natural resources and lowest impact on the surrounding environment. Crucial projects would promote and provide for a variety of positive impacts or minimize the footprint of more substantial facilities. Those deemed to have low relevance would have negative impacts on the environment or provide for little improvement.
    - *Energy Independence*: Promote the use of energy sources that are sustainable. Projects deemed critical would efficiently use existing energy sources and have the ability to leverage the use of alternative sources in the future. Those of low relevance would continue to rely on traditional energy sources with little or no chance of future diversification.

RECOMMENDATIONS

A summary of the Tier I strategies and projects from the prioritization process that address the identified Transportation Needs was developed and is attached to this memo. The summary table outlines the specific opportunity related to the identified need and then provides a brief summary of the prioritized Tier I potential strategies and projects that address the specified need. Additional comments

are provided to help further explain the strategy and/or project and provide context for the summary table. The specific benefit derived from the noted strategy/project is summarized along with the potential level of effort (or "implementability"); rated as high, medium, or low is provided to assess how easily the strategy can be employed or project can be constructed, if cost is not able to be estimated. For those capital or operational strategies where costs can be estimated, the resulting costs are provided for comparative purposes to demonstrate the level of financial commitment required to move each item to completion. The list of partners necessary for success is identified and finally whether the strategy and/or project could reasonably be implemented in the short-term (<6 years) or long-term.

The list of recommendations are based on a broader list that includes all projects and strategies that were identified as part of the planning effort. The results of the prioritization process for each project or strategy is highlighted in this longer list, which has also been attached.

TRANSPORTATION STRATEGY / PROJECT RECOMMENDATIONS

JBLM Growth Coordination Plan

Need	Opportunity	Recommended Strategies / Projects	Additional Comments	Benefit	Level of Effort	Estimated Cost	Partners	Short or Long-Term
1. Regional Coordination	Improve understanding of issues among communities and JBLM, and develop and implement high priority strategies and projects to improve both regional and installation mobility.	A. Organize a committee of transportation representatives from JBLM and the surrounding agencies and organizations to coordinate on JBLM and cross-county issues, and work to implement recommendations in the Growth Coordination Plan.	The multi-jurisdictional issues and needs will require regular communication between all affected parties and the organization of a formal committee to guide implementation.	Implementation of plan recommendations and clearinghouse for JBLM specific data.	Medium	N/A	JBLM, OEA, WSDOT, FHWA, PSRC, TRPC, Pierce County, Thurston County, Pierce Transit, Intercity Transit, Sound Transit, Nisqually Tribe, Cities of Lakewood, DuPont, Yelm, Tacoma, Lacey, and Town of Steilacoom.	Short-term
		B. Integrate regional planning activities between the two regional planning organizations. PSRC and TRPC need to establish a process and mechanism for joint planning at a regional level.	Given the location of JBLM on the Thurston/Pierce County and PSRC and TRPC boundaries - the integration of regional planning needs to be a priority and steps taken to ensure it continues.	Identification and implementation of regional projects and strategies affecting Pierce and Thurston Counties.	Low	N/A	PSRC, TRPC, WSDOT, JBLM, Pierce County, Thurston County	Short-term
		C. Assure that the local agencies surrounding the base are coordinating not only with JBLM, but with each other in the context of JBLM.	Local agencies need access common information from JBLM to plan for transportation needs surrounding the installation.	Transportation improvements and priorities that are also reflective of changes expected at JBLM.	Low	N/A	JBLM, Pierce County, Thurston County, Pierce Transit, Intercity Transit, Sound Transit, Nisqually Tribe, Cities of Lakewood, DuPont, Yelm, Tacoma, Lacey, and Town of Steilacoom.	Short-term
2. Interstate 5 Improvements	Implement needed capital improvements along the I-5 corridor to improve safety and mobility for the installation and region.	A. Construct ITS improvements including fiber optic line, conduit, CCTV, VMS, and data stations between Pierce/Thurston County line and SR 512.	Improvements identified in the WSDOT ITS Master Plan.	Operate the freeway more efficiently and provide quicker response to incidents.	N/A	$5.2 million	WSDOT, FHWA	Short-term
		B. Perform an Interchange Justification Report (IJR) and conduct necessary environmental analysis for the proposed improvements along I-5 between Center Drive and Thorne Lane per the I-5 Transportation Alternatives Analysis study.	IJR and environmental analysis needed to move the projects along and to seek capital funding from federal, state, and local sources.	To receive various approvals/permits and identify preferred design elements and impacts.	N/A	$3.5 million	WSDOT, OEA, FHWA, JBLM, Lakewood, DuPont, Pierce County	Short-term
		C. Develop a long-term master plan for I-5 through Thurston County and tie into the recommendations in the I-5 Transportation Alternatives Analysis study at Mounts Road.	Improvements along I-5 within Pierce and Thurston Counties are inter-related. Significant improvements from Mounts Road south are difficult due to constraints such as a railroad bridge and the Nisqually River.	Provide a long-term vision and implementation strategy for the I-5 corridor.	N/A	$1.5 million	WSDOT, FHWA, TRPC, PSRC, Pierce County, Thurston County, Lacey, Olympia, Tumwater, DuPont	Short-term
		D. Construct one additional NB and SB lane between Mounts Road and Thorne Lane, approximately six miles in length. Reconstruct the interchanges as necessary per the I-5 Transportation Alternatives Analysis study. Explore whether the new lane could be designated as a HOV/HOT lane.	The construction of the improvements is dependent on the IJR and environmental analysis identified above.	Improved access to JBLM, increased safety, and reduced congestion.	N/A	$1,055 million	WSDOT, FHWA, JBLM, PSRC, Pierce County, DuPont, Lakewood	Long-term
3. Transportation Demand Management Policies and Strategies	Reduce the number of vehicle trips to the installation by promoting and enhancing on-post transit and transportation demand management (TDM) techniques, or off-post services.	A. Work with the Department of Defense (DOD) and the Department of the Army to introduce additional policies related to HOV and transit only access and security screening at installation gates.	Existing security check points make it difficult to efficiently operate transit routes to and through the base.	Reduce delay for transit and HOV users and provide a plan to operate transit routes though the base.	High	N/A	DOD, Department of the Army, JBLM, OEA, Pierce Transit, Intercity Transit, Sound Transit, PSRC, TRPC	Short-term
		B. Work with DOD and the Department of the Army to authorize the funding and contracting of an on-post shuttle system using local transit service providers.	Existing DOD policy prevents the base from funding a shuttle service on-post that is operated by a local transit provider.	An on-post shuttle system could link up to existing and planned routes off-post.	Medium	N/A	DOD, Department of the Army, JBLM, OEA, Pierce Transit, Intercity Transit, PSRC, TRPC	Short-term

Need	Opportunity	Recommended Strategies / Projects	Additional Comments	Benefit	Level of Effort	Estimated Cost	Partners	Short or Long-Term
		C. Expand the federal workforce program, including potential requirement for all base personnel to obtain a monthly bus pass, to allow continued and increased services from Pierce and Intercity Transit, such as an on-post shuttle system.	DOD allows base personnel to enroll in the Mass Transportation Benefit Program (MTBP) and be reimbursed up to $260 a month for travel costs, such as a monthly bus pass.	Could fund an on-post shuttle system akin to those in cities with similar population and employment to JBLM.	High	N/A	DOD, Department of the Army, JBLM, OEA, Pierce Transit, Intercity Transit, Sound Transit	Long-term
		D. Implement a program to allow JBLM personnel to use a vanpool/vanshare system for on-post mobility, potentially as a hybrid of the subscription vanpool service to the base.	Vanpools are highly utilized and could appeal to more base personnel if the vans could be used throughout the day as shuttles for on-post travel needs.	Increase the amount of vanpooling and reduce the number of vehicles trips to the base.	Low	N/A	JBLM, OEA, Pierce Transit, Intercity Transit	Short-term
		E. Develop a multi-agency marketing campaign and branding strategy to promote base-related transit and TDM services. Increase the role of the base CTR Coordinator and improve base website.	There are a number of service providers and places to go to obtain information, making it difficult to understand options.	Assimilate information related to travel options into one spot for base personnel.	Low	N/A	JBLM, Pierce Transit, Intercity Transit, Sound Transit	Short-term
		F. Coordinate with on-post service providers, such as health service providers, to locate some services off-post to reduce the amount of service related trips to the installation.	Health care related trips for personnel, dependents, and veterans represent a portion of trips to the installation each day.	Improve accessibility to service providers.	Medium	N/A	JBLM	Long-term
4. HOV and Transit Improvements	Promote increased use of HOV and Transit usage by investing in capital improvements that make these travel modes efficient and reliable options.	A. Fund and provide on-post shuttles through a contract with local service providers.	The policies and strategies above could help implement and fund on-post shuttles.	An on-post shuttle system could link up to existing and planned routes off-post.	N/A	$1 to 2 million/year	JBLM, Pierce Transit, Intercity Transit	Long-term
		B. Provide specific diamond lanes for carpools, vanpools and buses at major entry points (could be based on time-of-day).	Could encourage the use of carpooling and transit if wait times were significantly reduced for those modes.	Reduce delay for transit and HOV users, and reduce the number of vehicles to and from the installation.	N/A	$2 to $5 million	JBLM, Pierce Transit, Intercity Transit, Sound Transit, PSRC, TRPC	Short-term
		C. Construct flyover bus stations at major base entrypoints, and/or multi-modal hubs external to the entry gates for transfer to an internal base circulation system.	Transit facilities must be provided off-post to link with those on-post.	Improved transit wait times and accessibility.	N/A	$5 to $40 million	JBLM, Pierce Transit, Intercity Transit, Sound Transit, PSRC, TRPC, WSDOT	Long-term
		D. Construct multi-modal hubs and/or park-and-rides adjacent to, but inside the base at major entry points, to allow for carpools, vanpools, and bus services once on-post.	Hubs provide users the ability to walk through the gates or park and take on-post shuttles to where they need to go.	Reduced travel demand to the base and on-post.	N/A	$2 to $15 million	JBLM, Pierce Transit, Intercity Transit	Long-term
5. Gate and On-Post Improvements	Improve access to the base and at major entry points to the regional roadway system, and reduce the need to use external roadways for on-post circulation purposes.	A. Construct short-term improvements at the Center Drive Interchange to improve the existing emergency access gate for use during peak demand.	FHWA has required JBLM to modify the existing access point to comply with existing safety design standards.	Improved safety and access to I-5.	N/A	$2 million	WSDOT, JBLM, FHWA	Short-term
		B. Upgrade gates based on recent JBLM access study; could include diamond lanes for carpools, vanpools and buses at major entry points (see HOV and Transit Improvements above).	The Military Surface Deployment and Distribution Command (SDDC) conducted a study to identify improvements at each of the entry gates to JBLM.	Improved access to the base and reduced security screening times.	N/A	$91 million	JBLM	Long-term
		C. Construct a new arterial roadway (Joint-Base Connector) between McChord Air Field and Lewis Main to provide for improved internal circulation on-post.	Providing a direct connection between McChord Field and Lewis Main has become a high priority with the joining of the two installations.	Improved internal circulation and reduced number of vehicle trips off-post.	N/A	$17 million	JBLM	Short-term

TRANSPORTATION STRATEGY / PROJECT RECOMMENDATIONS

JBLM Growth Coordination Plan

Need	Opportunity	Recommended Strategies / Projects	Additional Comments	Benefit	Level of Effort	Estimated Cost	Partners	Short or Long-Term
6. Completion of the Cross-Base Highway	Improve regional east-west travel, reduce congestion, construct improvements at the Thorne Lane interchange, and improve overall accessibility to the installation.	A. Construct a new four-lane, six-mile, limited access facility through JBLM between the I-5 Thorne Lane interchange and the 176th Street corridor. Includes reconstructed interchange at I-5/Thorne Lane along with the Gravelly Thorne Connector Road. Also includes a ped/bike separated pathway.	The highway is in the adopted PSRC 2040 plan as a long-term project. An Environmental review and design have been completed. Right-of-way is in the process of being acquired.	Improved east-west connectivity and access to the base, and reduced congestion along SR 7, SR 512, and Spanaway Loop Road.	N/A	$453 million	WSDOT, FHWA, JBLM, PSRC, Pierce County, Pierce Transit, Lakewood, Tacoma	Long-term

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

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Prioritized List of Transportation Projects and Strategies

Type	ID	Project Name or Strategy	Description	Priority Tier	Weighted Score	Ensure Mobility (30%)		Provide Alternatives (30%)		Capital Considerations (15%)			Regional Outlook (10%)			System Integration (10%)			Promote Sustainability (5%)		
						Gate Demand	Military Movement	Reduce Trips	Provide choices	Long / Short Benefits	Implement-ability	Cost / Benefit	Multiple agencies	Partnerships	Change Policies	Systemic Cohesion	Predict - ability	On-base land use	Safety	Enviro.	Energy Indep.
	CAPITAL PROJECTS																				
	City of DuPont																				
	1b	DuPont - Steilacoom Rd. Widening	Widening of DuPont-Steilacoom Rd between I-5 and Center Drive.	II	52	◉	◉	○	◉	◉	◉	◉	◉	●	◉	◉	○	◉	◉	○	○
	City of Lakewood																				
	2a	Gravelly Lake Drive & I-5 Right Turn Lane *Gravelly Lake Drive & I-5 Right Turn Lane*	Widen GLD from Nyanza to I-5 SB on-ramp to provide dedicated right-turn lane. Traffic signal upgrades; bridge widening; r/w acquisition	III	39	○	◉	○	○	◉	◉	◉	◉	◉	○	○	○	○	◉	◉	○
	2b	Union Avenue *Berkeley St SW to N Thorne Lane*	Widen to add left turn lanes, sidewalks, and street lighting	III	38	○	◉	○	○	◉	◉	◉	○	○	○	○	○	○	◉	◉	○
	2c	123rd St SW - Realignment *123rd St SW & Bridgeport Wy SW*	Realign 123rd St SW as it enters Bridgeport Wy SW	III	30	○	○	○	○	◉	◉	◉	○	○	○	○	○	○	◉	◉	○
	2d	Murray Rd & 150th St Corridor Capacity *Thorne Lane Interchange to Spring Street*	Provide capacity for Woodbrook Industrial development including: widening of Murray Road and 150th; traffic signal, etc.	II	44	○	◉	○	○	◉	◉	◉	◉	◉	○	◉	◉	○	◉	◉	○
	2e	Non-Motorized Trail *N Thorne Lane to Gravelly Lake Dr*	Provide non-motorized path prior to Cross Base Hwy "Gravelly to Thorne Connector" construction. Sound wall required as part of Cross Base.	II	45	○	○	◉	◉	◉	●	◉	◉	◉	○	○	○	◉	○	◉	◉
	2f	Bridgeport Way Widening *TBD*	Widen roadway to accommodate continuous 2-way center turn lane. Widen outside travel lane to be a shared bike/vehicle facility. Add curb, gutter, sidewalks, streetlights, landscaping, and upgraded storm drainage. Signal upgrades as required to accommodate improvements.	III	41	○	◉	○	◉	◉	◉	◉	◉	◉	○	○	◉	○	◉	◉	○
	City of Yelm																				
	3a	Bald Hill Rd to SR 507 - New Connection *Bald Hill Rd - SR 507 to City Limits*	Connect Bald Hill Rd and SR 507 with a new arterial street. Y2C	III	30	○	○	○	○	◉	○	○	◉	○	◉	○	◉	○	◉	◉	○
	3b	Burnett/93rd Intersection Improvements *SR 510 from Burnett Rd to 93rd Ave*	Realign the Burnett Rd/93rd Ave intersection on Yelm Ave (SR 510) and install appropriate intersection control	III	30	○	○	○	○	○	○	○	◉	◉	◉	○	◉	○	●	◉	○
	3c	Coates - New Connection *Coates Ave from Killion Rd to Cullens St*	Extend Coates Rd between Cullens and Killion. Y4A	III	28	○	○	○	○	○	○	○	○	○	◉	○	◉	○	◉	◉	○
	3d	Southern Mini-Loop *Mosman/Solberg from Yelm Ave (SR 510) to Clark*	Reconstruct Solber and Mosman Roads to collector standards from Yelm Ave (SR 510) to 4th Street, realign the Mosman/1st St (SR 507) intersection, and extend Mosman from 4th St to Clark Rd. Y8B/C/D/E/F	III	29	○	○	○	○	○	◉	○	○	○	◉	○	◉	○	◉	◉	○
	3e	Yelm Prairie Line connection to Tacoma Rail *Yelm Prairie Line Railroad to Tacoma*	Connect the Yelm Prairie Line railroad at Roy to the Tacoma Mountain Line railroad	III	33	○	○	○	○	○	◉	◉	◉	◉	◉	◉	◉	○	○	◉	◉
	3f	Yelm Prairie Line Trail *Canal Rd to Roy*	Extend the Yelm Prairie Line pedestrian/bicycle trail from canal road to Roy	II	47	○	○	◉	◉	◉	●	◉	◉	◉	○	◉	◉	◉	○	◉	◉

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

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Prioritized List of Transportation Projects and Strategies

Type	ID	Project Name or Strategy	Description	Priority Tier	Weighted Score	Ensure Mobility		Provide Alternatives		Capital Considerations			Regional Outlook			System Integration			Promote Sustainability		
				Weighting Factor		*30%*		*30%*		*15%*			*10%*			*10%*			*5%*		
						Gate Demand	Military Movement	Reduce Trips	Provide choices	Long / Short Benefits	Implement-ability	Cost / Benefit	Multiple agencies	Partnerships	Change Policies	Systemic Cohesion	Predict - ability	On-base land use	Safety	Enviro.	Energy Indep.
	3g	SR 510 - Burnett Rd to SR 507 - TWLTL and SW *Burnett Rd to SR 507 (MP 11.81 to 13.07)*	Provide a continuous TWLTL with sidewalk (curb & gutter), bike shoulders, and bus pullouts. Roadway standards should conform to City standards (city streets as part of State Highways, RCW 47.24). Assume local arterial realignment at the skewed intersections of 93rd Ave and Killion	II	51	○	◉	○	◉	●	◉	◉	◉	◉	◉	◉	◉	○	●	◉	○
Intercity Transit																					
	4d	Yelm Park & Ride	Park & Ride Construction	II	51	◉	○	◉	◉	◉	●	◉	◉	◉	○	◉	○	○	○	◉	◉
Nisqually Tribe																					
	5a	Reservation Rd / 25th Ave *Intersection*	Realign to meet at 90 degrees, add left-turn lane on 25th Ave and deceleration lane on Reservation Rd	III	32	○	○	○	○	◉	◉	◉	◉	◉	○	○	○	○	◉	◉	○
Pierce County																					
	6a	A Street S & 112th St E *Intersection*	Install traffic signal	III	35	○	○	○	○	◉	◉	◉	○	○	◉	○	◉	○	◉	◉	○
	6b	Brookdale Rd E & Waller Rd E *Intersection*	Improve alignment, widen and reconstruct roadway to provide additional lane(s). Install traffic signal.	III	31	○	○	○	○	◉	◉	◉	○	○	○	○	◉	○	◉	◉	○
	6c	C Street S & Tule Lake Rd S *Intersection*	Install traffic signal	III	35	○	○	○	○	◉	◉	◉	○	○	◉	○	◉	○	◉	◉	○
	6d	Military Rd E & 22nd Ave E *Intersection*	Install traffic signal and provide turn lane(s).	III	33	○	○	○	○	◉	◉	◉	○	○	◉	○	◉	○	◉	◉	○
	6e	Military Rd S & Spanaway Loop Rd S *Intersection*	Provide turn lane(s).	III	37	◉	◉	○	○	◉	◉	◉	○	○	○	○	○	○	○	◉	○
	6g	Spanaway Loop Rd S *SR 704 to Military Rd S*	Restripe and reconfigure lanes. Failed concurrency (November 2004).	III	43	◉	◉	○	○	◉	◉	◉	○	○	○	◉	◉	○	◉	◉	○
	6h	Spanaway Loop Rd S *Military Rd S to Tule Lk Rd S*	Widen and reconstruct roadway to provide additional lane(s). Anticipated concurrency failure (2015).	III	42	◉	◉	○	○	◉	◉	◉	○	○	○	◉	◉	○	◉	○	○
	6i	Spanaway Loop Rd S *s/o Garfield St S to n/o Wheeler St S*	Widen and reconstruct roadway to provide additional lane.	III	42	◉	◉	○	○	◉	◉	◉	○	○	○	◉	◉	○	◉	○	○
	6j	Steele St S & 102nd St St *Intersection*	Install traffic signal	III	38	○	◉	○	○	◉	◉	◉	○	○	◉	○	◉	○	◉	◉	○
	6k	Waller Rd E & 84th St E *Intersection*	Install traffic signal and provide turn lane(s).	III	33	○	○	○	○	◉	◉	◉	○	○	◉	○	◉	○	◉	◉	○
	6l	Waller Rd E & 128th St E *Intersection*	Install traffic signal and provide turn lane(s).	III	33	○	○	○	○	◉	◉	◉	○	○	◉	○	◉	○	◉	◉	○
	6m	22nd Ave E *176th St E to Military Rd E*	Reconstruct roadway	III	39	○	◉	○	◉	◉	○	◉	○	○	◉	◉	◉	○	◉	○	○
	6n	22nd Ave E *192nd St E to 176th St E*	Reconstruct roadway	III	38	○	◉	○	◉	◉	○	◉	○	○	○	◉	◉	○	◉	○	○
	6o	22nd Ave E *208th St E to 192nd St E*	Reconstruct roadway to improve horizontal alignments	III	38	○	◉	○	◉	◉	○	◉	○	○	○	◉	◉	○	◉	○	○
	6p	22nd Ave E *Military Rd E to 152nd St E*	Reconstruct roadway	III	38	○	◉	○	◉	◉	○	◉	○	○	○	◉	◉	○	◉	○	○
	6q	22nd Ave E & 152nd St E *Intersection*	Install traffic signal and provide turn lane(s).	III	37	○	◉	○	○	◉	◉	◉	○	○	◉	○	◉	○	◉	◉	○

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Prioritized List of Transportation Projects and Strategies

Type	ID	Project Name or Strategy	Description	Priority Tier	Weighted Score	Ensure Mobility		Provide Alternatives		Capital Considerations			Regional Outlook			System Integration			Promote Sustainability		
					Weighting Factor	*30%*		*30%*		*15%*			*10%*			*10%*			*5%*		
						Gate Demand	Military Movement	Reduce Trips	Provide choices	Long / Short Benefits	Implement-ability	Cost / Benefit	Multiple agencies	Partnerships	Change Policies	Systemic Cohesion	Predict - ability	On-base land use	Safety	Enviro.	Energy Indep.
CAPITAL PROJECTS	6r	22nd Ave E & 176th St E *Intersection*	Widen and reconstruct roadway to provide additional lane(s). Phase 1 construction of CRP 5536. A segment of this project failed concurrency (November 2005).	III	33	○	◉	○	○	◉	◉	×	○	○	◉	○	○	○	◉	○	○
	6s	176th St E *"B" St E to 14th Ave E*	Widen and reconstruct roadway to provide additional lane(s). A segment of this project failed concurrency (November 2005).	III	36	◉	◉	○	○	◉	○	◉	○	○	○	◉	○	○	○	○	○
	6t	176th St E *14th Ave E to Waller Rd E*	Widen and reconstruct roadway to provide additional lane(s). A segment of this project failed concurrency (November 2005).	III	36	◉	◉	○	○	◉	○	◉	○	○	○	◉	○	○	○	○	○
	6u	176th St E *Waller Rd E to 500 ft w/o 51st Ave E*	Widen and reconstruct roadway to provide additional lane(s). Failed concurrency (November 2003).	III	32	○	◉	○	○	◉	○	◉	○	○	○	◉	○	○	○	○	○
	6w	112th St E/S *86th St E to Steele St*	Widen and reconstruct existing (two-lane in sections) roadway to 5 lanes, improve intersections and provide non-motorized features.	III	38	○	◉	○	◉	◉	○	◉	○	○	◉	◉	◉	○	◉	○	○
	6x	Military Rd S/152nd St E *Waller Rd to Spanaway Loop Rd*	Widen and reconstruct existing road (east of SR-7) to provide 2 additional general purpose lanes and non-motorized features along entire length.	III	39	○	◉	○	◉	◉	○	◉	○	○	◉	◉	◉	○	◉	○	○
	Pierce Transit																				
	7a	BRT: Roy to Downtown Tacoma	BRT and transit supportive infrastructure from Roy to Downtown Tacoma via SR 7. Joint project by Pierce Transit and City of Tacoma.	II	55	○	○	◉	●	◉	○	◉	◉	◉	◉	◉	◉	○	○	◉	◉
	7b	112th Avenue (Puyallup/Lakewood) Transit Corridor	Core Transit Service Improvements and Transit Supportive Infrastructure	II	60	○	○	●	●	◉	◉	◉	◉	◉	◉	◉	◉	○	○	◉	◉
	7c	DuPont P&R Expansion	Additional 250 stalls	II	55	◉	○	◉	◉	◉	●	◉	◉	◉	○	◉	○	○	○	◉	◉
	7d	SR 512 / SR 7 (Parkland) P&R Expansion	Additional 550 stalls	II	51	◉	○	◉	◉	◉	●	◉	◉	◉	○	◉	○	○	○	◉	◉
	Sound Transit																				
	8a	Sounder Commuter Rail DuPont Extension	Extension of service to DuPont, upgrade of track & signals between Lakewood and DuPont, and a new station at DuPont	II	60	◉	○	◉	●	◉	○	◉	◉	◉	◉	◉	●	○	○	◉	◉
	8b	Parking Garage at Lakewood Station	Construct a new multilevel parking structure with up to 600 stalls adjacent to the planned Lakewood Sounder Station parking garage on property currently owned by Sound Transit, for a total of up to 1,200 stalls upon completion.	II	48	◉	○	◉	◉	◉	◉	◉	◉	◉	○	◉	○	○	○	◉	◉
	WSDOT																				
	9a	I-5 - ITS *Thurston/Pierce County Line to Thorne Lane (MP 115 to 123.64)*	Construct ITS improvement per ITS Master Plan	I	75	◉	●	◉	◉	●	●	●	◉	◉	◉	◉	◉	○	◉	◉	◉
	9b	I-5 - Install ramp metering on ramps *Mounts Road to 48th Street (MP 116.77 to 131.25)*	Install ramp metering on ramps where warranted	II	66	◉	◉	◉	◉	◉	●	●	○	○	○	◉	◉	○	◉	◉	◉

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						Gate Demand	Military Movement	Reduce Trips	Provide choices	Long / Short Benefits	Implement-ability	Cost / Benefit	Multiple agencies	Partnerships	Change Policies	Systemic Cohesion	Predict - ability	On-base land use	Safety	Enviro.	Energy Indep.
	9c	SR 512 - ITS	Install ITS including CCTV, data station, VMS, conduit and fiber optic line	II	59	○	⊙	◉	◉	◉	●	●	○	○	○	◉	◉	○	⊙	⊙	⊙
	9d	I-5 Ramp Metering *Trosper Rd I/C to Pierce County Line (MP 102.86 to 115)*	Ramp metering - this project will improve upon the existing ITS by providing ramp metering at ~15 on-ramps in the NB and SB directions of I-5 in the urban areas of Tumwater/Olympia/Lacey.	II	63	◉	⊙	◉	◉	◉	●	●	○	○	○	◉	◉	○	⊙	⊙	⊙
	9e	SR 510 - Yelm Loop - New Alignment Y-3 *MP 10.75 to 13.07*	New northerly alignment for SR 510 in the City of Yelm (Y-3)	III	37	○	⊙	○	○	⊙	⊙	⊙	⊙	⊙	○	⊙	⊙	○	⊙	⊙	⊙
	9f	SR 510/ Reservation Rd SE - Safety *SR 510 @ Reservation Rd*	Intersection improvements. Joint project with Thurston County and the Nisqually Tribe.	III	43	○	⊙	○	○	◉	⊙	⊙	⊙	⊙	○	⊙	⊙	○	●	⊙	○
	9g	SR 507 & 8th Ave S *Intersection*	Intersection improvements	III	41	○	⊙	○	○	◉	⊙	⊙	⊙	⊙	○	⊙	⊙	○	◉	⊙	○
	9h	I-5 Exit 119 Reconstruction *I-5 MP 119*	Construct new interchange to add capacity	I	82	●	●	◉	◉	◉	⊙	⊙	●	◉	⊙	◉	◉	⊙	●	◉	⊙
	9i	I-5 Additional Lanes *Mounts Rd to Thorne Lane*	Construct one additional SB and NB lane along I-5 from Mounts Road to Thorne Lane.	I	73	◉	●	◉	●	◉	⊙	◉	●	◉	⊙	◉	◉	⊙	●	⊙	⊙
	9j	I-5 HOV/HOT Lanes *Mounts Road to S 96th*	I-5 HOV/HOT Lanes and Interchange Improvements	I	78	◉	●	◉	●	◉	⊙	◉	●	◉	⊙	◉	●	⊙	⊙	⊙	⊙
	9o	I-5 Flyover Bus Stations *Mounts Road to Thorne Lane*	Construct flyover bus stations in exclusive right-of-way at interchanges/major base entrypoints.	I	75	●	⊙	◉	●	◉	○	⊙	◉	◉	●	◉	◉	⊙	⊙	⊙	⊙
	9k	I-5/SR 512 Interchange Improvements *Interchange*	- NB I-5 to EB SR 512 - Widen off ramp and add an auxiliary lane on SR 512 to E Steele St. - WB SR 512 to NB I-5 on ramp - Widen on ramp and add an auxiliary lane on SR 512 from E Steele St - SR 512 SB Ramp - Construct WB to SB two-lane flyover ramp	II	53	◉	◉	○	⊙	◉	⊙	⊙	⊙	⊙	⊙	◉	◉	○	●	⊙	○
	9l	SR 512 Shoulder Conversion *I-5 to SR 161/Meridian*	Covert shoulders for use as additional lane during peak periods in the peak direction of travel (I-5 - SR 161/Meridian)	II	49	○	⊙	○	⊙	●	◉	●	⊙	⊙	⊙	⊙	◉	○	○	◉	⊙
	9m	SR 512 / SR 7 *Interchange*	Construct 2 lane EB off-ramp to SR 7	III	40	○	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙	⊙	○	⊙	⊙	○
	9n	SR 704 - Cross Base Highway *I-5 Interchange to Spanaway Loop Road*	Construct new four-lane, limited access facility between Fort Lewis and McCord Air Base. Includes reconstructed interchange at I-5. Includes Gravelly Thorne Connector: Construct one mile single lane SB roadway connecting Gravelly Lake Drive to Thorne Lane west of the Sound Transit/Burlington Northern Railroad tracks. Also includes bike/ ped separated path.	I	76	◉	●	◉	●	◉	⊙	⊙	●	◉	⊙	◉	◉	⊙	●	○	⊙

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

● = Crucial ◉ = High Relevance ◎ = Moderate Relevance ○ = Low Relevance

Prioritized List of Transportation Projects and Strategies

Type	ID	Project Name or Strategy	Description	Priority Tier	Weighted Score	Ensure Mobility		Provide Alternatives		Capital Considerations			Regional Outlook			System Integration			Promote Sustainability		
					Weighting Factor	*30%*		*30%*		*15%*			*10%*			*10%*			*5%*		
						Gate Demand	Military Movement	Reduce Trips	Provide choices	Long / Short Benefits	Implement-ability	Cost / Benefit	Multiple agencies	Partnerships	Change Policies	Systemic Cohesion	Predict - ability	On-base land use	Safety	Enviro.	Energy Indep.
	9p	*Flyover/exclusive busway stops*	Construct flyover or exclusive busway stops along the Cross-Base Highway to allow for efficient bus services. Includes pedestrian-only entry points to key base locations.	II	68	◉	◉	◉	◉	◉	○	◉	◉	◉	●	●	◉	◉	◉	◉	◉
	Joint Base Lewis-McChord																				
	10a	Cross-Base Connector *Fort Lewis to McChord Air Field*	Construct new arterial roadway between both installations to provide for improved internal circulation.	I	73	◉	●	●	◉	●	◉	◉	◉	○	○	◉	◉	◉	◉	◉	◉
	10b	Center Drive Gate Access Improvements *Gate*	Identify short-term improvements to close and relocate emergency access gate from Center Drive.	I	73	●	●	◉	◉	●	◉	◉	◉	◉	○	◉	◉	○	●	◉	○
	10c	Gate Improvements *Various Locations*	Upgrade gates based on recent study; include diamond lanes for carpools, vanpools and buses at major entry points	I	75	◉	●	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
	10d	Gate(s) Park-and-Ride / Multi-modal Hubs	Construct park-and-ride adjacent to, but inside, main gate, to allow for carpools, vanpools, bus services once on-post.	I	73	◉	◉	◉	◉	◉	◉	◉	◉	◉	●	●	◉	◉	○	◉	◉
	OPERATIONAL NEEDS / STRATEGIES																				
	1	Yelm Weekday Service	Add later weekday service to Yelm in 2011 on Route 94	II	43	○	○	◉	◉	◉	◉	◉	◉	◉	○	◉	○	○	○	◉	◉
	2	Yelm Saturday Service	Increase Saturday service to Yelm	III	42	○	○	◉	◉	◉	◉	○	◉	◉	○	◉	○	○	○	◉	◉
	3	Additional Service	Add service to provide 30-minute frequency on Route 94	III	42	○	○	◉	◉	◉	◉	○	◉	◉	○	◉	○	○	○	◉	◉
	4	On-post Vanpool/Vanshare Program	Implement program to allow JBLM personnel to use a vanpool/vanshare system for on-post mobility, potentially as hybrid of subscription vanpool service to base.	I	75	◉	◉	◉	●	◉	◉	◉	◉	◉	●	◉	◉	○	○	◉	◉
	5	Transit / HOV Access Lanes at Gates	Provide specific diamond lanes for carpools, vanpools and buses at major entry points (could be based on time-of-day)	I	74	◉	◉	◉	◉	◉	◉	◉	◉	◉	●	●	◉	◉	○	◉	◉
	6	Technology Upgrades and Enhancements for Transit/Gate Operations	The integration of Intelligent Transportation Systems (ITS) for public transit, including real-time data on traffic delay at base entry points, applications for mobile phones, increased used of regional online trip planning.	II	70	◉	◉	◉	◉	●	◉	◉	◉	◉	◉	◉	◉	○	○	◉	◉
STUDIES / DATA NEEDS	**STUDIES / DATA NEEDS**																				
	1	Specific Base-related Travel Survey	Conduct a travel survey to identify trip origins and destinations, trip purpose, and modes used.	II	61	◉	◉	○	◉	●	●	●	◉	◉	◉	◉	◉	○	○	○	○
	2	Vehicle Occupancy Counts	Collect vehicle occupancy counts at base entry points to determine how many persons are riding in each vehicle or using alternative modes.	II	56	◉	○	◉	◉	◉	●	●	◉	◉	◉	◉	◉	○	○	◉	○
	3	Expanded Travel Demand Model	Combine both the Pierce County and TRPC models to create a regional model for state highways connecting both counties.	II	66	◉	◉	○	◉	●	●	◉	●	◉	◉	●	◉	◉	○	◉	○
	4	I-5 Master Plan	Develop a long-term plan for I-5 through Thurston County and tie into the recently completed I-5 Transportation Alternatives Analysis project.	I	73	◉	◉	◉	◉	●	●	◉	●	◉	◉	●	◉	◉	◉	◉	○

JOINT BASE LEWIS MCCHORD GROWTH COORDINATION

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Prioritized List of Transportation Projects and Strategies

						Ensure Mobility		Provide Alternatives		Capital Considerations			Regional Outlook			System Integration			Promote Sustainability		
					Weighting Factor	*30%*		*30%*		*15%*			*10%*			*10%*			*5%*		
Type	**ID**	**Project Name or Strategy**	**Description**	**Priority Tier**	**Weighted Score**	**Gate Demand**	**Military Movement**	**Reduce Trips**	**Provide choices**	**Long / Short Benefits**	**Implement-ability**	**Cost / Benefit**	**Multiple agencies**	**Partnerships**	**Change Policies**	**Systemic Cohesion**	**Predict - ability**	**On-base land use**	**Safety**	**Enviro.**	**Energy Indep.**
	5	I-5 IJR & Environmental Analysis	Perform an Interchange Justification Report (IJR) and EIS for the proposed improvements along I-5 from Center Drive to Thorne Lane.	I	78	◉	●	⊙	◉	●	●	◉	●	◉	◉	●	◉	◉	●	⊙	○
	6	Hoffman Hill Rd Extension Feasibility Study	Preliminary Engineering/Feasibility Study to extend Hoffman Hill Blvd to Mounts Rd	II	46	⊙	⊙	○	◉	◉	⊙	⊙	⊙	⊙	◉	⊙	◉	○	⊙	⊙	○
POLICIES / COORDINATION																					
POLICIES / COORDINATION	1	Base-specific Transit/TDM Marketing	Develop a multi-agency marketing campaign & branding strategy to promote base-related transit and TDM services. Increase the role of the base CTR Coordinator and improve base website.	I	83	◉	◉	●	●	●	●	●	●	●	◉	⊙	○	○	○	⊙	◉
POLICIES / COORDINATION	2	Federal Workforce Commute Benefits	Expand program at JBLM, including potential requirement for all (similar to a U-Pass) base personnel to allow continued and increased services from Pierce Transit and Intercity Transit	I	76	●	⊙	●	⊙	◉	⊙	⊙	⊙	⊙	●	⊙	⊙	○	○	⊙	◉
POLICIES / COORDINATION	3	Interagency Planning Coordination	Assure that the local agencies surrounding the base are coordinating not only with JBLM, but with each other in the context of JBLM	I	71	⊙	⊙	⊙	⊙	●	●	●	●	●	●	●	●	⊙	⊙	⊙	⊙
POLICIES / COORDINATION	4	Impact Fee/Project Funding Mechanisms	As part of funding priorities in the region assure that JBLM interests are acknowledged and accounted for in prioritization processes	II	54	○	○	⊙	⊙	●	●	●	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
POLICIES / COORDINATION	5	Security Requirements for alternative mode accessibility	Existing security check points make it difficult if not impossible for transit accessibility to the base. Additional policies related to HOV only access to "by-pass" SOV	I	83	●	●	●	●	◉	◉	●	○	○	○	○	○	⊙	●	●	●
POLICIES / COORDINATION	6	On Base Shuttle Coordination with Local Transit Providers	Providing improved alternatives for mobility within the base that could utilize existing and./or under-utilized local transit agency provider assets	I	85	●	●	●	●	⊙	⊙	⊙	⊙	⊙	●	⊙	⊙	⊙	⊙	⊙	●
POLICIES / COORDINATION	7	Military Planning Integration with GMA Planning and Procedures for Cities	GMA requirements do not include any mention and/or need for coordination with Federally/Military controlled Land and Land Uses	II	53	○	○	⊙	⊙	⊙	⊙	⊙	●	●	●	●	●	●	⊙	⊙	⊙
POLICIES / COORDINATION	8	JBLM Transportation Partnership Meetings	Organize a committee of transportation representatives from the participating agencies to discuss JBLM and cross-county issues, and work to implement recommendations in the Growth Coordination Plan.	I	72	◉	◉	⊙	⊙	●	●	●	●	●	⊙	⊙	⊙	⊙	○	⊙	⊙
POLICIES / COORDINATION	9	MPO and Regional Coordination	Given the location of JBLM on the Thurston/Pierce County and PSRC and TRPC boundaries - the integration of regional planning needs to be a priority and steps taken to ensure it continues	I	70	◉	◉	⊙	⊙	●	●	●	●	●	●	●	●	⊙	⊙	⊙	⊙

1. Tier I = 70 pts and over; Tier II = 70 to 43 pts; and Tier III: less than 43 pts.
2. A total score of 100 points is possible, with each category adjusted by the weighting factor.